



## M.I.E.T. ENGINEERING COLLEGE

(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai)  
UG - CSE, EEE & MECH Programs Accredited by NBA, New Delhi  
Accredited with 'A+' grade by NAAC  
An ISO 9001:2015 Certified Institution  
Recognized by UGC under section 3(f) & 12(B) of UGC Act, 1956  
Trichy - Padakkottai Road, Tiruchirappalli - 620 007, Phone:0431-2668 303  
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**2.6.1: Programme and course outcomes for all Programmes offered by the institution are stated and displayed on website and communicated to teachers and students**

### COs for all Programmes

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**2.6.1. Programme and course outcomes for all Programmes offered by the institution are stated and displayed on website and communicated to teachers and students.**

The institute offers a high quality holistic education in an under developed and semi urban area. The vision and mission of the institution emphasize to provide a conducive learning environment that facilitates the students to achieve professional and personal growth in technical field and capable of solving the societal issues. The institute provides a good and modern infrastructure for the development of the students to explore their hidden talents and innovative skills.

The teaching learning process effectiveness can be measured through learning outcomes and in turn it can be achieved by comparing the Course Outcomes (CO) and Programme Outcomes (PO) target and attainment.

The Programme Outcomes (PO), Programme Educational Objectives (PEO) and Program Specific Outcomes (PSO) are displayed and disseminated in each and every department classrooms, corridor, faculty rooms, laboratories, cabin of HOD's and it is also available in departmental webpage of Institutional website ([www.miet.edu](http://www.miet.edu)).

The course outcomes are communicated by individual faculty to the students in classrooms, displayed in lesson plan, log book, course file and displayed in departmental web page of institutional website and also displayed in the course material available in departmental web page.

**BLOOMS TAXONOMY LEVELS**

| LEVELS | DESCRIPTIONS |
|--------|--------------|
| K1     | REMEMBER     |
| K2     | UNDERSTAND   |
| K3     | APPLY        |
| K4     | ANALYZE      |
| K5     | EVALUATE     |
| K6     | CREATE       |

  
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## PROGRAMME OUTCOMES

|      |   |
|------|---|
| PO1  | Ability to apply knowledge of solving Mathematical problems, applied science and engineering.   |
| PO2  | Ability to propose and conduct practical experiments as well as to assert and recognize data in Civil Engineering.  |
| PO3  | Ability to design a structure, element or process to meet desired needs within economic, environmental, social, political, ethical, health and safety and sustainability. |
| PO4  | Capability to task with multidisciplinary teams.  |
| PO5  | Capability to identify, makes, clarifies and simplify Civil Engineering crisis.   |
| PO6  | Ability to take up professional and ethical responsibility.   |
| PO7  | Capability to be in contact professionally and effectively.   |
| PO8  | Capability to realize the impacts of engineering solutions in global, economic, environmental and societal circumstances.   |
| PO9  | Ability to engage in continuous long-term learning.   |
| PO10 | Capabilities of accepting current issues and develop continuously.  |
| PO11 | Capability to employ the talent, technique and contemporary Engineering tools.  |
| PO12 | Capability to apply the Engineering and management principles to one's individual work and to supervise the projects as a member and team leader.                         |



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### **PROGRAMME SPECIFIC OUTCOMES – CIVIL ENGINEERING**

|       |  |
|-------|--|
| PSO 1 | Enhancing the employability skills by making the students capable of qualifying National level competitive examinations.                       |
| PSO 2 | Competency in professional areas like water supply and sanitation, Design, Measurement and Quality Control, Geo techniques and transportation. |
| PSO 3 | Analyze, Design, Construct, Maintain and Operate infrastructural projects  |

### **PROGRAMME SPECIFIC OUTCOMES –COMPUTER SCIENCE AND ENGINEERING**

|       |  |
|-------|--|
| PSO 1 | Ability to apply programming and interpersonal skills to implement various algorithms for complex engineering problems.    |
| PSO 2 | Ability to design effective solutions for real time problems of both industry and society using cutting edge technologies. |

### **PROGRAMME SPECIFIC OUTCOMES – ELECTRICAL AND ELECTRONICS ENGINEERING**

|       |  |
|-------|--|
| PSO 1 | Apply fundamental knowledge to identify, formulate, design and investigate various problems of Electrical and Electronics circuits, power electronics and power systems. |
| PSO 2 | Graduants are able to apply their technical and professional skills in multidisciplinary environments.   |



**PROGRAMME SPECIFIC OUTCOMES – ELECTRONICS AND  
COMMUNICATION ENGINEERING**

|       |  |
|-------|--|
| PSO 1 | To understand concepts of Electronics, Computer & Communication, Communication Systems, Signal Processing, VLSI and embedded systems design have a sustainable passion to achieve successful career by fulfill societal needs. |
| PSO 2 | To solve electronics and communication engineering problems using latest hardware and software tools, along with analytical skills to arrive cost effective and appropriate solutions.   |

**PROGRAMME SPECIFIC OUTCOMES – MECHANICAL ENGINEERING**

|       |  |
|-------|--|
| PSO 1 | Ability to apply the concepts of Mechanical Engineering fields to design mechanical systems and processes. |
| PSO 2 | Ability to demonstrate professional and entrepreneurial skills to meet the industrial requirements.        |

  
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# SCIENCE AND HUMANITIES



A handwritten signature in green ink, appearing to read 'A. S. S.', is positioned above the printed name of the principal.

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## REGULATION – 2017

### SEMESTER - I

| S.No  | COURSE OUTCOME   | BT LEVEL |
|---|--|----------|
| <b>C101/ HS8151/ COMMUNICATIVE ENGLISH</b>  |  |          |
| C101.1                                      | Speak clearly, confidently, comprehensibly, and communicate with one or many listeners using communicative strategies. | K1       |
| C101.2                                      | Write coherently and flawlessly using a wide diction.  | K2       |
| C101.3                                      | Read different genres of texts adopting various reading strategies.  | K2       |
| C101.4                                      | Comprehend different spoken discourses in different accents.   | K2       |
| C101.5                                      | Communicate in group and to larger audience appropriately.   | K1       |
| C101.6                                      | Enable to understand process descriptions and present it in the relevant field.  | K2       |
| <b>C102/ MA8151/ENGINEERING MATHEMATICS</b> |  |          |
| C102.1                                      | Find the eigen values and eigen vectors to diagonalise and reduce a matrix to quadratic form.                          | K2       |
| C102.2                                      | Check the converges, diverges of infinite series   | K2       |
| C102.3                                      | Find the solutions of algebraic equations solved by iterative methods gets close to the required solution.             | K2       |
| C102.4                                      | Obtain the evaluate and envelopes of a given curves by means of radius and centre of curvature                         | K2       |
| C102.5                                      | Calculate the maxima and minima value functions of two variables   | K2       |
| C102.6                                      | Find the area of plain curves and volume of solid using double and triple integrals                                    | K2       |
| <b>C103/ PH8151/ENGINEERING PHYSICS</b>     |  |          |
| C103.1                                      | Discuss various crystal structures and different crystal growth techniques   | K1       |
| C103.2                                      | Demonstrate the properties of elasticity and heat transfer through objects   | K1       |
| C103.3                                      | Explain black body radiation, properties of matter waves and Schrodinger wave equations                                | K1       |
| C103.4                                      | Illustrate the acoustic requirements, production and application of ultrasonics.                                       | K2       |
| C103.5                                      | Examine the characteristics of laser and optical fiber   | K1       |
| C103.6                                      | Improve the property of the materials for the application of commercial devices  | K2       |

  
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| <b>C104/ CY8151/ENGINEERING CHEMISTRY</b>                               |  |    |
|---|--|----|
| C104.1  | Classify polymers and their utility in the industries and describe the techniques of polymerization and properties of polymers                   | K2 |
| C104.2  | Relate various thermodynamic functions such as enthalpy, entropy, free energy and their importance and equilibrium constant and its significance | K1 |
| C104.3  | Explain the photophysical processes such as fluorescence and phosphorescence and various components of UV and IR                                 | K2 |
| C104.4  | Illustrate the phase transitions of one component and two component systems and the types of alloys and their applications in industries         | K1 |
| C104.5  | Outline the synthesis, characteristics and the applications of nano  | K2 |
| C104.6  | Knowing the various applications related to photophysical laws   | K2 |
| <b>C105 / GE8151/ PROBLEM SOLVING AND PYTHON PROGRAMMING</b>            |  |    |
| C105.1  | Demonstrate algorithm, flowchart for various programs  | K2 |
| C105.2  | Do simple programs using python programming basics   | K2 |
| C105.3  | Illustrate programs by using arrays and string functions   | K2 |
| C105.4  | Develop simple programs using functions and pointers   | K2 |
| C105.5  | Design mini projects with structures.  | K3 |
| C105.6  | Develop applications using python Programming Language   | K3 |
| <b>C106 / GE8152/ ENGINEERING GRAPHICS</b>                              |  |    |
| C106.1  | Construct engineering curves   | K2 |
| C106.2  | Sketch all the views of engineering objects in free hand.  | K2 |
| C106.3  | Draw the projection of points, lines and planes.   | K3 |
| C106.4  | Draw the projection of solids in any orientation.  | K2 |
| C106.5  | Develop the section and lateral surfaces of sectioned solids   | K2 |
| C106.6  | Sketch the solids in perspective and isometric approaches  | K2 |
| <b>C107 / GE8161/ PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY</b> |  |    |
| C107.1  | Demonstrate algorithm, flowchart for various programs  | K3 |
| C107.2  | Do simple programs using python programming basics   | K2 |
| C107.3  | Illustrate programs by using arrays and string functions   | K2 |
| C107.4  | Develop simple programs using functions and pointers   | K2 |
| C107.5  | Design mini projects with structures.  | K3 |
| C107.6  | Develop applications using python Programming Language   | K2 |

  
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| <b>C108 / BS8161/ PHYSICS AND CHEMISTRY LABORATORY</b>               |   |    |
|--|---|----|
| C108.1   | The student will be able to analyze the physical principle involved in the various instruments, also relate the principle to new application.       | K2 |
| C108.2   | The various experiments in the areas of elasticity, optics, mechanics and thermal physics will nurture the students in all branches of Engineering. | K3 |
| C108.3   | The students will be able to think innovatively and also improve the creative skills that are essential for engineering.                            | K2 |
| <b>SEMESTER – II</b>   |   |    |
| <b>C109 / HS8251/ TECHNICAL ENGLISH</b>                              |   |    |
| C109.1   | Speak clearly, confidently, comprehensibly, and communicate with one or many listeners using communicative strategies.                              | K1 |
| C109.2   | Write coherently and flawlessly using a wide diction.   | K1 |
| C109.3   | Read different genres of texts adopting various reading strategies.   | K2 |
| C109.4   | Comprehend different spoken discourses in different accents.  | K2 |
| C109.5   | Communicate in group and to larger audience appropriately.  | K1 |
| C109.6   | Enable to understand process descriptions and present it in the relevant  | K2 |
| <b>C110 / MA8251/ ENGINEERING MATHEMATICS II</b>                     |   |    |
| C110.1   | Apply the vector concepts of vector calculus in engineering disciplines   | K3 |
| C110.2   | Apply the knowledge of mathematics in solving higher order differential equations with constant coefficients.                                       | K3 |
| C110.3   | To have the basic knowledge of differential equation in typical mechanical fields.  | K2 |
| C110.4   | Understand and apply the knowledge of Laplace transform in solving  | K2 |
| C110.5   | Understand the standard techniques of complex variable theory and use them to solve core engineering problems.                                      | K2 |
| C110.6   | Evaluate real integrals by applying concept of complex integration.   | K2 |
| <b>C111 / PH8253/PHYSICS FOR ELECTRONICS ENGINEERING</b>             |   |    |
| C111.1   | Gain knowledge on classical and quantum electron theories, and energy band structures,  | K2 |
| C111.2   | Acquire knowledge on basics of semiconductor physics and its applications in various devices,   | K2 |
| C111.3   | Get knowledge on magnetic and dielectric properties of materials,   | K2 |
| C111.4   | Have the necessary understanding on the functioning of optical materials for optoelectronics,   | K2 |
| C111.5   | Understand the basics of quantum structures and their applications in spintronics and carbon electronics.   | K2 |
| <b>C112/ BE8254/BASIC ELECTRICAL AND INSTRUMENTATION ENGINEERING</b> |   |    |
| C112.1   | Fundamentals of semiconductor and basic theorems used in Electrical   | K1 |

  
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|   |   |    |
|---|---|----|
|   | circuits  |    |
| C112.2  | Design amplifier circuits under CB, CE, CC Configurations.  | K2 |
| C112.3  | Design the Adders – Flip-Flops – Registers and Counters with logic gates.                                 | K2 |
| C112.4  | Discuss the Principles of Amplitude and Frequency Modulations and various blocks Communication Systems    | K2 |
| C112.5  | Demonstrate the working of Television systems, FAX machines and micro wave systems.                       | K2 |
| <b>C113 /EC8251/CIRCUIT ANALYSIS</b>                |   |    |
| C113.1  | Develop the capacity to analyze electrical circuits, apply the circuit theorems in real time              | K3 |
| C113.2  | Design and understand and evaluate the AC and DC circuits.  | K2 |
| C113.3  | Practical implications of the fundamentals of Ohm's law, Kirchhoff's current and voltage laws             | K3 |
| C113.4  | Accurate measurement of voltage, current, power and impedance of any circuit                              | K2 |
| C113.5  | DC analysis, Transient analysis and Frequency analysis of a given circuit depending on types of elements  | K2 |
| C113.6  | Practical implementation of the fundamental electrical theorems and modeling of simple electrical systems | K3 |
| <b>C114/ EC8252/ELECTRONIC DEVICES</b>              |   |    |
| C114.1  | Describe the principle and characteristics of semiconductor diode   | K1 |
| C114.2  | Analyze various transistor configurations   | K2 |
| C114.3  | Construct large signal modeling and small signal modeling of a transistor                                 | K2 |
| C114.4  | Describe the principle of operation and characteristics of special Semiconductor diodes                   | K2 |
| C114.5  | Discuss the operation of various semiconductor photo devices and power electronic devices                 | K2 |
| C114.6  | Implement real time applications using electronic devices   | K3 |
| <b>C115/ EC8261/CIRCUITS AND DEVICES LABORATORY</b> |   |    |
| C115.1  | Identify the basic devices and its configurations   | K2 |
| C115.2  | Analyze the resistive circuits with different sources   | K2 |
| C115.3  | Obtain the resonance for different configurations of RLC  | K2 |
| C115.4  | Explain the response of RLC circuit with different inputs   | K2 |
| C115.5  | Understand the operation of basic solid state devices   | K2 |
| C115.6  | Plot the response of wave shaping circuits  | K2 |

  
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| <b>C116 / GE8261/ ENGINEERING PRACTICES LABORATORY</b> |  |    |
|--|--|----|
| C116.1   | Gets exposure regarding Joining operations in engineering materials. | K3 |
| C116.2   | Carry out the basic machining operations in engineering materials.   | K2 |
| C116.3   | Carry out basic home electrical works and appliances                 | K3 |
| C116.4   | Measure the electrical quantities                                    | K2 |
| C116.5   | Understand basic electronic components.                              | K2 |
| C116.6   | Integrate the components and gates using soldering practices.        | K2 |

| S.No                                | CO-PO MAPPING                 |     |     |     |     |     |     |     |     |      |      |      |
|-------------------------------------|-------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
|                                     | HS8151- COMMUNICATIVE ENGLISH |     |     |     |     |     |     |     |     |      |      |      |
|                                     | PO1                           | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| C101.1                              | 2                             | -   | -   | -   | -   | 2   | 2   | -   | 2   | 3    | -    | 2    |
| C101.2                              | -                             | -   | -   | -   | -   | 2   | 2   | -   | 2   | 3    | -    | 2    |
| C101.3                              | -                             | 2   | -   | 2   | 2   | 2   | 2   | -   | 2   | 3    | -    | 2    |
| C101.4                              | 2                             | -   | -   | -   | -   | 2   | 2   | -   | 2   | 3    | -    | 2    |
| C101.5                              | 2                             | -   | -   | -   | -   | 2   | 2   | -   | 2   | 3    | -    | 2    |
| C101.6                              | 2                             | -   | -   | -   | 3   | 2   | 2   | -   | 2   | 3    | -    | 2    |
| MA8151- ENGINEERING MATHEMATICS - I |                               |     |     |     |     |     |     |     |     |      |      |      |
| C102.1                              | 3                             | 2   | 2   | -   | -   | 2   | -   | -   | -   | 3    | -    | 2    |
| C102.2                              | 2                             | 3   | 2   | -   | -   | -   | -   | -   | -   | -    | -    | -    |
| C102.3                              | 3                             | 2   | 2   | -   | -   | -   | -   | -   | -   | 2    | -    | -    |
| C102.4                              | 3                             | 2   | 3   | 2   | 2   | -   | -   | 2   | -   | 2    | -    | -    |
| C102.5                              | 3                             | 3   | 2   | 2   | -   | 2   | -   | -   | -   | -    | -    | 2    |
| C102.6                              | 3                             | 2   | 2   | 2   | 2   | 2   | -   | 2   | -   | -    | 2    | 2    |
| PH8151- ENGINEERING PHYSICS         |                               |     |     |     |     |     |     |     |     |      |      |      |
| C103.1                              | 3                             | 2   | 2   | 3   | 2   | 2   | -   | -   | -   | -    | -    | 3    |
| C103.2                              | 3                             | 3   | 3   | 2   | -   | 2   | -   | -   | -   | -    | -    | 3    |
| C103.3                              | 3                             | 2   | -   | -   | -   | -   | -   | -   | -   | -    | -    | 3    |
| C103.4                              | 3                             | 3   | 3   | 3   | 2   | 2   | -   | -   | -   | -    | -    | 2    |

  
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|  |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|
| C103.5   | 3 | 2 | 3 | 3 | 2 | 3 | 2 | - | - | - | - | 2 |
| C103.6   | 3 | 2 | 3 | 3 | 2 | 3 | 2 | - | - | - | - | 2 |
| <b>CY8151- ENGINEERING CHEMISTRY</b>                             |   |   |   |   |   |   |   |   |   |   |   |   |
| C104.1   | 2 | 2 | 2 | 2 | 2 | - | 3 | - | 2 | - | 2 | 3 |
| C104.2   | 2 | 2 | 2 | 2 | 2 | - | - | - | 2 | - | 2 | 2 |
| C104.3   | 2 | 2 | 2 | 2 | 2 | - | 2 | - | 2 | - | 2 | 2 |
| C104.4   | 2 | 2 | 2 | 2 | 2 | - | 2 | - | 2 | - | 2 | 2 |
| C104.5   | 2 | 2 | 2 | 2 | 2 | - | 2 | 2 | 2 | - | 2 | 2 |
| C104.6   | 2 | 2 | 2 | 2 | 2 | - | 2 | 2 | 2 | - | 2 | 2 |
| <b>GE8151- PROBLEM SOLVING AND PYTHON PROGRAMMING</b>            |   |   |   |   |   |   |   |   |   |   |   |   |
| C105.1   | 3 | 2 | - | - | - | - | - | - | - | - | - | - |
| C105.2   | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - |
| C105.3   | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - |
| C105.4   | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | - | - |
| C105.5   | 3 | 2 | 2 | 2 | 2 | 2 | - | 2 | - | - | - | - |
| C105.6   | 3 | 2 | 2 | 2 | 2 | 2 | - | 2 | - | - | - | - |
| <b>GE8152- ENGINEERING GRAPHICS</b>                              |   |   |   |   |   |   |   |   |   |   |   |   |
| C106.1   | 3 | 3 | 3 | 2 | 2 | - | - | - | - | 2 | 3 | 2 |
| C106.2   | 3 | 3 | 3 | 2 | 2 | - | - | - | - | 3 | 2 | 2 |
| C106.3   | 3 | 3 | 3 | 2 | 2 | - | - | - | - | 2 | 2 | 2 |
| C106.4   | 3 | 3 | 3 | 2 | 3 | - | - | - | - | 2 | 2 | 2 |
| C106.5   | 3 | 3 | 3 | 2 | 2 | - | - | - | - | 3 | 2 | 2 |
| C106.6   | 3 | 3 | 3 | 2 | 3 | - | - | - | - | 2 | 2 | 2 |
| <b>GE8161- PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY</b> |   |   |   |   |   |   |   |   |   |   |   |   |
| C107.1   | 3 | - | - | - | - | - | - | - | - | - | - | - |
| C107.2   | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - |
| C107.3   | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - |
| C107.4   | 3 | 2 | 3 | 2 | - | - | - | - | - | - | - | - |
| C107.5   | 3 | 2 | 3 | 2 | - | - | - | - | - | - | - | - |

  
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|  |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|
| C107.6   | 3 | 2 | 3 | 2 | - | - | - | - | - | - | - | - |
| <b>BS8161- PHYSICS AND CHEMISTRY LABORATORY</b>    |   |   |   |   |   |   |   |   |   |   |   |   |
| C108.1   | 3 | 2 | 3 | - | - | - | - | - | 3 | 2 | 2 | 2 |
| C108.2   | 3 | 2 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |
| C108.3   | 3 | 3 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |
| C108.4   | 3 | 2 | 2 | - | - | - | - | - | 3 | 2 | 2 | 2 |
| C108.5   | 3 | 3 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |
| C108.6   | 3 | 2 | 2 | - | - | - | - | - | 3 | 2 | 2 | 2 |
| <b>HS8251- TECHNICAL ENGLISH</b>                   |   |   |   |   |   |   |   |   |   |   |   |   |
| C109.1   | 2 | 2 | - | - | - | 2 | 2 | - | 2 | 3 | - | 2 |
| C109.2   | 2 | 3 | - | - | - | 2 | 2 | - | 2 | 3 | - | 2 |
| C109.3   | 2 | 2 | - | - | - | 2 | 2 | - | 2 | 3 | - | 2 |
| C109.4   | 2 | 2 | - | - | - | 2 | 2 | - | 2 | 3 | - | 2 |
| C109.5   | 2 | 3 | - | - | - | 2 | 2 | - | 2 | 3 | - | 2 |
| C109.6   | 2 | 3 | - | - | - | 2 | 2 | - | 2 | 3 | - | 2 |
| <b>MA8251- ENGINEERING MATHEMATICS – II</b>        |   |   |   |   |   |   |   |   |   |   |   |   |
| C110.1   | 3 | 3 | 3 | 3 | 2 | 2 | - | - | - | 2 | - | - |
| C110.2   | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | - |
| C110.3   | 3 | 3 | 3 | - | - | 2 | - | 2 | - | 2 | - | 2 |
| C110.4   | 3 | 2 | 2 | - | 2 | - | - | - | - | - | - | - |
| C110.5   | 3 | 3 | 3 | 2 | 2 | - | - | - | - | 2 | 2 | - |
| C110.6   | 2 | 2 | 3 | 2 | 2 | 2 | - | - | - | 2 | - | 2 |
| <b>PH8253- PHYSICS FOR ELECTRONICS ENGINEERING</b> |   |   |   |   |   |   |   |   |   |   |   |   |
| C111.1   | 2 | 2 | - | - | - | - | - | - | - | - | - | - |
| C111.2   | 3 | 2 | 3 | - | - | 2 | 2 | - | - | 3 | - | 2 |
| C111.3   | 3 | 3 | 3 | 3 | - | 2 | 2 | - | - | 3 | - | 2 |
| C111.4   | 3 | 3 | 3 | 3 | - | 2 | 2 | - | - | 3 | - | 2 |
| C111.5   | 3 | 2 | 2 | - | 2 | 2 | 2 | - | 2 | 3 | - | 3 |
| C111.6   | 3 | 2 | 2 | - | 2 | 3 | 2 | - | 2 | 3 | - | 3 |

  
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| <b>BE8254- BASIC ELECTRICAL AND INSTRUMENTATION</b> |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| <b>ENGINEERING</b>                                  |   |   |   |   |   |   |   |   |   |   |   |   |
| C112.1  | 2 | 2 | 2 | - | 2 | - | - | - | - | - | 2 | 2 |
| C112.2  | 2 | 2 | 2 | - | 2 | - | - | - | - | - | 2 | 2 |
| C112.3  | 2 | 2 | 2 | 2 | 2 | 2 | - | - | - | - | 2 | 2 |
| C112.4  | 2 | 2 | 2 | - | 2 | 2 | - | - | - | - | 2 | 2 |
| C112.5  | 2 | 2 | 2 | - | 2 | 2 | 2 | - | 2 | - | 2 | 2 |
| C112.6  | 2 | 2 | 2 | 2 | 2 | 2 | 2 | - | 2 | - | 2 | 2 |
| <b>EC8251- CIRCUIT ANALYSIS</b>                     |   |   |   |   |   |   |   |   |   |   |   |   |
| C113.1  | 3 | 2 | 2 | - | 2 | - | - | - | - | - | - | 2 |
| C113.2  | 3 | 2 | 2 | - | 2 | - | - | - | - | - | - | 2 |
| C113.3  | 3 | 2 | 2 | - | 2 | - | - | - | - | - | - | 2 |
| C113.4  | 3 | 2 | 2 | - | 2 | - | - | - | - | - | - | 2 |
| C113.5  | 3 | 2 | 2 | - | 2 | - | - | - | - | - | - | 2 |
| C113.6  | 3 | 2 | 2 | - | 2 | - | - | - | - | - | - | 2 |
| <b>EC8252- ELECTRONIC DEVICES</b>                   |   |   |   |   |   |   |   |   |   |   |   |   |
| C114.1  | 3 | 3 | 3 | 2 | 2 | 2 | - | 2 | 2 | 2 | 3 | 2 |
| C114.2  | 3 | 3 | 3 | 2 | 2 | - | - | - | - | 3 | 2 | 2 |
| C114.3  | 3 | 3 | 3 | 2 | 2 | - | - | - | - | 2 | 2 | 2 |
| C114.4  | 3 | 3 | 3 | 2 | 3 | - | 2 | - | - | 2 | 2 | 2 |
| C114.5  | 3 | 3 | 3 | 2 | 2 | - | - | - | - | 3 | 2 | 2 |
| C114.6  | 3 | 3 | 3 | 2 | 3 | - | - | 2 | - | 2 | 2 | 2 |
| <b>EC8261- CIRCUITS AND DEVICES LABORATORY</b>      |   |   |   |   |   |   |   |   |   |   |   |   |
| C115.1  | 2 | - | 2 | 2 | 3 | - | 2 | 2 | 3 | 2 | 3 | 2 |
| C115.2  | 2 | - | 2 | 3 | 3 | - | 2 | 2 | 2 | 2 | 3 | 2 |
| C115.3  | 2 | - | 2 | 2 | 2 | - | 2 | 2 | 2 | 2 | 3 | 2 |
| C115.4  | 2 | - | 2 | 2 | 3 | - | 2 | 2 | 3 | 2 | 3 | 2 |
| C115.5  | 2 | - | 2 | 3 | 3 | - | 2 | 2 | 2 | 2 | 3 | 2 |
| C115.6  | 2 | - | 2 | 2 | 2 | - | 2 | 2 | 2 | 2 | 3 | 2 |

  
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| GE8261- ENGINEERING PRACTICES LABORATORY |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|
| C116.1                                   | 3 | - | - | - | - | - | - | - | - | - | - | - |
| C116.2                                   | 3 | 3 | 3 | - | - | - | - | 2 | - | - | - | - |
| C116.3                                   | 3 | 3 | 3 | - | - | - | - | 2 | - | - | - | - |
| C116.4                                   | 3 | 2 | 3 | - | - | - | - | 2 | - | - | - | - |
| C116.5                                   | 3 | 2 | 3 | - | - | - | - | 2 | - | - | - | - |
| C116.6                                   | 3 | 2 | 3 | 2 | - | - | - | 2 | - | - | - | - |
| C116.6                                   | 3 | 3 | 3 | 2 | - | - | - | 2 | - | 2 | - | 2 |

  
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# CIVIL ENGINEERING



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## REGULATION – 2017 - UG

| S.No  | COURSE OUTCOME   | BT LEVEL |
|---|--|----------|
| <b>SEMESTER-III</b>   |  |          |
| <b>C301- MA8353 TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS</b> |  |          |
| C301.1  | To introduce the basic concepts of PDE for solving standard partial differential equations.  | K2       |
| C301.2  | To introduce Fourier series analysis which is central to many applications in engineering apart from its use in solving boundary value problems  | K3       |
| C301.3  | To acquaint the student with Fourier series techniques in solving heat flow problems used in various situations.   | K3       |
| C301.4  | To acquaint the student with Fourier transform techniques used in wide variety of Situations.  | K2       |
| C301.5  | To introduce the effective mathematical tools for the solutions of partial differential Equations that model several physical processes and to develop Z transform techniques for discrete time systems. | K3       |
| C301.6  | After successful completion of the course, the students will have ability to solve, analyze and obtain solutions for the transforms and differential related applications in Civil Engineering           | K3       |
| <b>C302-CE8301 STRENGTH OF MATERIALS I</b>                        |  |          |
| C302.1  | Understand the concepts of stress and strain, principal stresses and principal planes.   | K2       |
| C302.2  | Determine Shear force and bending moment in beams and understand concept of theory of simple bending.  | K3       |
| C302.3  | Calculate the deflection of beams by different methods and selection of method for determining slope or deflection.  | K3       |
| C302.4  | Apply basic equation of torsion in design of circular shafts and helical springs.  | K3       |
| C302.5  | Analyze the pin jointed plane and space trusses  | K3       |
| C302.6  | After successful completion of the course, the students will have adequate knowledge on materials strength and its behavior under external loading.  | K3       |
| <b>C303-CE8302 FLUID MECHANICS</b>                                |  |          |
| C303.1  | Get a basic knowledge of fluids in static, kinematic and dynamic equilibrium.  | K1       |
| C303.2  | Understand and solve the problems related to equation of motion.   | K3       |
| C303.3  | Gain knowledge about dimensional and model analysis.   | K2       |
| C303.4  | Learn types of flow and losses of flow in pipes.   | K2       |
| C303.5  | Understand and solve the boundary layer problems.  | K3       |
| C303.6  | After successful completion of the course, the students will have  | K2       |

  
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|  | adequate knowledge on property of fluid and behavior fluid under external loading.   |    |
| <b>C304 - CE8351 SURVEYING</b>                         |  |    |
| C304.1   | The use of various surveying instruments and mapping   | K2 |
| C304.2   | Measuring Horizontal angle and vertical angle using different instruments  | K3 |
| C304.3   | Methods of Leveling and setting Levels with different instruments  | K2 |
| C304.4   | Concepts of astronomical surveying and methods to determine time, longitude, latitude and azimuth  | K3 |
| C304.5   | Concept and principle of modern surveying.   | K2 |
| C304.6   | After successful completion of the course, the students will have adequate knowledge and understanding on various techniques available in basic surveying and they will be aware of modern surveying techniques available.                                   | K2 |
| <b>C305 - CE8391 CONSTRUCTION MATERIALS</b>            |  |    |
| C305.1   | Compare the properties of most common and advanced building materials.   | K2 |
| C305.2   | Understand the typical and potential applications of lime, cement and aggregates   | K2 |
| C305.3   | Know the production of concrete and also the method of placing and making of concrete Elements.  | K2 |
| C305.4   | Understand the applications of timbers and other materials   | K2 |
| C305.5   | Understand the importance of modern material for construction.   | K2 |
| C305.6   | After successful completion of the course, the students will have adequate knowledge and understanding on the materials used in the construction industry and will have an idea on creating innovative building materials for the well-being of the society. | K2 |
| <b>C306-CE8392 ENGINEERING GEOLOGY</b>                 |  |    |
| C306.1   | Will be able to understand the importance of geological knowledge such as earth, Earthquake, volcanism and the action of various geological agencies.  | K2 |
| C306.2   | Will get basics knowledge on properties of minerals.   | K1 |
| C306.3   | Gain knowledge about types of rocks, their distribution and uses.  | K2 |
| C306.4   | Will understand the methods of study on geological structure.  | K2 |
| C306.5   | Will understand the application of geological investigation in projects such as dams, tunnels, bridges, roads, airport and harbor  | K2 |
| C306.6   | After successful completion of the course, the students will have understood the importance of knowing the geology of a particular location before starting a construction activity.   | K2 |
| <b>C307 - CE8311 CONSTRUCTION MATERIALS LABORATORY</b> |  |    |
| C307.1   | Conduct Quality Control tests on Fine Aggregates   | K3 |
| C307.2   | Conduct Quality Control tests on Coarse Aggregates   | K3 |
| C307.3   | Conduct Quality Control tests on fresh concrete  | K3 |
| C307.4   | Determine the strength properties of hardened concrete   | K3 |

  
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| C307.5  | Perform Quality Control tests on Bricks, blocks and tiles  | K3 |
| C307.6  | After successful completion of the laboratory course, the students will have understood the various kinds of material testing prevailing in the construction and manufacturing industries. | K3 |
| <b>C308-CE8361 SURVEYING LABORATORY</b>                           |  |    |
| C308.1  | Gain practical knowledge on handling basic survey instruments  | K3 |
| C308.2  | Gain practical knowledge on handling Theodolite, Tacheometry   | K3 |
| C308.3  | Gain practical knowledge on handling Total Station and GPS   | K3 |
| C308.4  | Gain adequate knowledge to carryout Triangulation and Astronomical surveying   | K3 |
| C308.5  | Gain adequate knowledge on general field marking for various engineering projects and Location of site   | K3 |
| C308.6  | After successful completion of the laboratory course, the students will have understood the usage of various surveying equipment and their applications in current practice.               | K3 |
| <b>C309 - HS8381- INTERPERSONAL SKILLS/LISTENING AND SPEAKING</b> |  |    |
| C309.1  | Listen and respond appropriately.  | K2 |
| C309.2  | Participate in group discussions   | K3 |
| C309.3  | Make effective presentations   | K3 |
| C309.4  | Participate confidently and appropriately in conversations both formal and informal  | K2 |
| C309.5  | Improve general and academic listening skills  | K2 |
| C309.6  | After successful completion of the laboratory course, the students will have ability to communicate with confidence.   | K2 |
| <b>SEMESTER-IV</b>  |  |    |
| <b>C401 - MA8491 NUMERICAL METHODS</b>                            |  |    |
| C401.1  | Understand the basic concepts and techniques of solving algebraic and transcendental equations   | K2 |
| C401.2  | Appreciate the numerical techniques of interpolation and error approximations in various intervals in real life situations.  | K2 |
| C401.3  | Apply the numerical techniques of differentiation and integration for engineering problems.  | K3 |
| C401.4  | Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations  | K3 |
| C401.5  | Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications                                       | K3 |
| C401.6  | After successful completion of the laboratory course, the students will have adequate knowledge on applying these mathematical formulations in civil engineering applications              | K3 |

  
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| <b>C402 - CE8401 CONSTRUCTION TECHNIQUES AND PRACTICES</b> |   |    |
|--|---|----|
| C402.1   | Know the different construction techniques and structural systems   | K2 |
| C402.2   | Understand various techniques and practices on masonry construction, flooring, and roofing.   | K2 |
| C402.3   | Plan the requirements for substructure construction.  | K2 |
| C402.4   | Know the methods and techniques involved in the construction of various types of super structures   | K2 |
| C402.5   | Select, maintain and operate hand and power tools and equipment used in the building construction sites.  | K2 |
| C402.6   | After successful completion of the course, the students will have understood the different construction techniques practices being followed in the construction industry.                     | K2 |
| <b>C403 - CE8402 STRENGTH OF MATERIALS II</b>              |   |    |
| C403.1   | Determine the strain energy and compute the deflection of determinate beams, frames and trusses using energy principles.  | K3 |
| C403.2   | Analyze propped cantilever, fixed beams and continuous beams using theorem of three moment equation for external loadings and support settlements.  | K3 |
| C403.3   | Find the load carrying capacity of columns and stresses induced in columns and cylinders  | K3 |
| C403.4   | Determine principal stresses and planes for an element in three dimensional state of stress and study various theories of failure   | K3 |
| C403.5   | Determine the stresses due to Unsymmetrical bending of beams, locate the shear center, and find the stresses in curved beams.   | K3 |
| C403.6   | After successful completion of the course, the students will have adequate knowledge and understanding on the behavior of different types of structural elements used in the day to day life. | K2 |
| <b>C404 - CE 8403 APPLIED HYDRAULIC ENGINEERING</b>        |   |    |
| C404.1   | Apply their knowledge of fluid mechanics in addressing problems in open channels.   | K3 |
| C404.2   | Able to identify an effective section for flow in different cross sections.   | K2 |
| C404.3   | To solve problems in uniform, gradually and rapidly varied flows in steady state conditions.  | K3 |
| C404.4   | Understand the principles, working and application of turbines.   | K2 |
| C404.5   | Understand the principles, working and application of pumps.  | K2 |
| C404.6   | After successful completion of the course, the students will have understanding on properties of fluid flow and machines propelled by the fluid flow  | K2 |
| <b>C405 - CE8404 CONCRETE TECHNOLOGY</b>                   |   |    |
| C405.1   | The various requirements of cement, aggregates and water for making concrete  | K2 |
| C405.2   | The effect of admixtures on properties of concrete  | K2 |



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| C405.3  | The concept and procedure of mix design as per IS method   | K2 |
| C405.4  | The properties of concrete at fresh and hardened state   | K2 |
| C405.5  | The importance and application of special concretes.   | K2 |
| C405.6  | After successful completion of the course, the students will have understanding on properties of concrete and its applications.  | K2 |
| <b>C406 - CE8491 SOIL MECHANICS</b>                   |  |    |
| C406.1  | Classify the soil and assess the engineering properties and index properties   | K2 |
| C406.2  | Understand the stress concepts in soils  | K2 |
| C406.3  | Understand and identify the settlement in soils  | K2 |
| C406.4  | Determine the shear strength of soil   | K2 |
| C406.5  | Analyze both finite and infinite slopes  | K3 |
| C406.6  | After successful completion of the course, the students will have understanding on basic properties of soil, its strength and its resistance to the external force.                          | K1 |
| <b>C407 - CE8481 STRENGTH OF MATERIALS LABORATORY</b> |  |    |
| C407.1  | Acquire required knowledge in the area of testing steel rod  | K3 |
| C407.2  | Acquire required knowledge in the area of testing wood   | K3 |
| C407.3  | Acquire required knowledge in the area of testing metal  | K3 |
| C407.4  | Acquire required knowledge in the area of testing components of structural elements  | K3 |
| C407.5  | Learn deflection and compression test  | K3 |
| C407.6  | After successful completion of the laboratory course, the students will have adequate knowledge on testing of wood and metals and will have idea on various testing methodologies available. | K3 |
| <b>C408 - CE8461 HYDRAULIC ENGINEERING LABORATORY</b> |  |    |
| C408.1  | The students will be able to study the Characteristics of pumps  | K3 |
| C408.2  | The students will be able to study the Characteristics of turbine  | K3 |
| C408.3  | The students will be able to measure flow in pipes and determine frictional losses.  | K3 |
| C408.4  | The students will be able to develop characteristics of pumps and turbines   | K3 |
| C408.5  | The students will be able to verify the principles studied in theory by performing the experiments in lab.   | K3 |
| C408.6  | After successful completion of the laboratory course, the students will have adequate knowledge on various hydraulic equipment used in the industry.   |    |
| <b>C409 - HS8461 ADVANCED READING AND WRITING</b>     |  |    |
| C409.1  | Write different types of essays  | K2 |
| C409.2  | Write winning job applications.  | K2 |
| C409.3  | Read and evaluate texts critically.  | K2 |
| C409.4  | Display critical thinking in various professional contexts.  | K2 |

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| C409.5  | Ability to write manuscripts and testimonials   | K2 |
| C409.6  | After successful completion of the laboratory course, the students will have ability to read and write like a professional.                                   | K2 |
| <b>SEMESTER-V</b>   |   |    |
| <b>C501- CE8501 DESIGN OF REINFORCED CEMENT CONCRETE ELEMENTS</b> |   |    |
| C501.1  | Understand the various design methodologies for the design of RC elements.  | K3 |
| C501.2  | Know the analysis and design of flanged beams by limit state method and sign of beams for shear, bond and torsion.  | K3 |
| C501.3  | Design the various types of slabs and staircase by limit state method.  | K3 |
| C501.4  | Design columns for axial, uniaxial and biaxial eccentric loadings.  | K3 |
| C501.5  | Design of footing by limit state method.  | K3 |
| C501.6  | After successful completion of the course, the students will have adequate knowledge on design of beam, column and footing by Limit State Method.             | K3 |
| <b>C502-CE8502 STRUCTURAL ANALYSIS I</b>                          |   |    |
| C502.1  | Analyze continuous beams, pin-jointed indeterminate plane frames and rigid plane frames by strain energy method   | K3 |
| C502.2  | Analyse the continuous beams and rigid frames by slope deflection method.   | K3 |
| C502.3  | Understand the concept of moment distribution and analysis of continuous beams and rigid frames with and without sway.  | K3 |
| C502.4  | Analyse the indeterminate pin jointed plane frames continuous beams and rigid frames using matrix flexibility method.   | K3 |
| C502.5  | Understand the concept of matrix stiffness method and analysis of continuous beams, pin jointed trusses and rigid plane frames.                               | K3 |
| C502.6  | After successful completion of the course, the students will have adequate knowledge on analysis of different structural elements.                            | K3 |
| <b>C503 - EN8491 WATER SUPPLY ENGINEERING</b>                     |   |    |
| C503.1  | An insight into the structure of drinking water supply systems, including water transport, treatment and distribution   | K2 |
| C503.2  | The knowledge in various unit operations and processes in water treatment   | K2 |
| C503.3  | An ability to design the various functional units in water treatment  | K3 |
| C503.4  | An understanding of water quality criteria and standards, and their relation to public health   | K2 |
| C503.5  | The ability to design and evaluate water supply project alternatives on basis of chosen   | K3 |
| C503.6  | After successful completion of the course, the students will have ability to design various treatment plants and other water supply projects in their future. | K2 |

  
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| <b>C504-CE8591 FOUNDATION ENGINEERING</b>                      |   |    |
|--|---|----|
| C504.1   | Understand the site investigation, methods and sampling.  | K2 |
| C504.2   | Get knowledge on bearing capacity and testing methods.  | K2 |
| C504.3   | Design shallow footings.  | K3 |
| C504.4   | Determine the load carrying capacity, settlement of pile foundation.  | K3 |
| C504.5   | Determine the earth pressure on retaining walls and analysis for stability.   | K3 |
| C504.6   | After successful completion of the course, the students will have acquired knowledge site testing, and will be able to design various types of foundations for structures.                                    | K2 |
| <b>C505 -GI8013 ADVANCED SURVEYING</b>                         |   |    |
| C505.1   | Know the astronomical surveying   | K2 |
| C505.2   | Do the photogrammetric surveying and interpretation   | K2 |
| C505.3   | Solve the field problems with Total station   | K3 |
| C505.4   | Know the GPS surveying and the data processing  | K2 |
| C505.5   | Understand the route surveys and tunnel alignments  | K2 |
| C505.6   | After successful completion of the course, the students will have acquired knowledge about handling advanced surveying equipment like Total Station.  | K2 |
| <b>C506 - ORO551 RENEWABLE ENERGY SOURCES</b>                  |   |    |
| C506.1   | Understanding the physics of solar radiation.   | K2 |
| C506.2   | Ability to classify the solar energy collectors and methodologies of storing solar energy.  | K2 |
| C506.3   | Knowledge in applying solar energy in a useful way.   | K2 |
| C506.4   | Knowledge in wind energy and biomass with its economic aspects.   | K2 |
| C506.5   | Knowledge in capturing and applying other forms of energy sources like wind, biogas and geothermal energies.  | K2 |
| C506.6   | After successful completion of the course, the students will have acquired knowledge about possible ways of utilization or harvesting of passive and active form of renewable energy for the day to day life. | K2 |
| <b>C507 - CE8511 SOIL MECHANICS LABORATORY</b>                 |   |    |
| C507.1   | Classifying soil based on index properties of soils (coarse and fine).  | K3 |
| C507.2   | Classifying soil based on consistency limit of fine grained soils   | K3 |
| C507.3   | Interpreting the shear strength of all types of soils by conducting lab tests   | K3 |
| C507.4   | Interpreting the shear strength of all types of soils by conducting lab tests   | K3 |
| C507.5   | Understanding the engineering properties of soils by conducting field tests   | K3 |
| C507.6   | After successful completion of the laboratory course, the students will be able to do various in-situ and ex-situ soil testing.   | K3 |
| <b>C508 - CE8512 WATER AND WASTE WATER ANALYSIS LABORATORY</b> |   |    |
| C508.1   | Quantify the pollutant concentration in water and wastewater  | K3 |
| C508.2   | Suggest the type of treatment required and amount of dosage required  | K3 |

  
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|  | for the treatment  |    |
| C508.3   | Examine the conditions for the growth of micro-organisms   | K3 |
| C508.4   | Suggest the type of treatment required to reduce e-coli in water   | K3 |
| C508.5   | Compare the analysis of treated water among different treatments   | K3 |
| C508.6   | After successful completion of the laboratory course, the students will have acquired knowledge on conducting different water treatment ways.  | K3 |
| <b>C509 - CE8513 SURVEY CAMP</b>                         |  |    |
| C509.1   | To use all surveying equipment, prepare LS &CS   | K3 |
| C509.2   | To prepare contour maps by triangulation method  | K3 |
| C509.3   | To prepare maps and grids by Trilateration method  | K3 |
| C509.4   | To prepare contour maps by rectangulation method   | K3 |
| C509.5   | To carryout surveying works related to land and civil engineering projects   | K3 |
| C509.6   | After successful completion of the survey camp, the students will have the ability to handle land surveying equipment and acquired adequate knowledge on different types of surveying. | K3 |
| <b>SEMESTER-VI</b>                                       |  |    |
| <b>C601 - CE8601 DESIGN OF STEEL STRUCTURAL ELEMENTS</b> |  |    |
| C601.1   | Understand the concepts of various design philosophies   | K3 |
| C601.2   | Design common bolted and welded connections for steel structures   | K3 |
| C601.3   | Design tension members and understand the effect of shear lag.   | K3 |
| C601.4   | Understand the design concept of axially loaded columns and column base connections.   | K3 |
| C601.5   | Understand specific problems related to the design of laterally restrained and unrestrained steel beams.   | K3 |
| C601.6   | After successful completion of the course the student will acquire knowledge on design of steel structures and able to understand advanced researches in this field.                   | K3 |
| <b>C602 - CE8602 STRUCTURAL ANALYSIS II</b>              |  |    |
| C602.1   | Draw influence lines for statically determinate structures and calculate critical stress resultants.   | K3 |
| C602.2   | Understand Muller Breslau principle and draw the influence lines for statically indeterminate beams.   | K3 |
| C602.3   | Analyse of three hinged, two hinged and fixed arches.  | K3 |
| C602.4   | Analyse the suspension bridges with stiffening girders   | K3 |
| C602.5   | Understand the concept of Plastic analysis and the method of analyzing beams and rigid frames.   | K3 |
| C602.6   | After successful completion of the course the student will be capable of analyzing various types of structural problems.   | K3 |
| <b>C603 - CE8603 IRRIGATION ENGINEERING</b>              |  |    |
| C603.1   | Have knowledge and skills on crop water requirements.  | K2 |
| C603.2   | Understand the methods and management of irrigation  | K2 |

  
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|   |  |    |
|---|--|----|
| C603.3  | Gain knowledge on types of Impounding structures   | K2 |
| C603.4  | Understand methods of irrigation including canal irrigation.   | K2 |
| C603.5  | Get knowledge on water management on optimization of water use.  | K2 |
| C603.6  | After successful completion of the course the student will have the ability to understand knowledge on design of various irrigation structures.                    | K2 |
| <b>C604 - CE8604 HIGHWAY ENGINEERING</b>                              |  |    |
| C604.1  | Get knowledge on planning and aligning of highway  | K2 |
| C604.2  | Geometric design of highways   | K3 |
| C604.3  | Design flexible and rigid pavements.   | K3 |
| C604.4  | Gain knowledge on Highway construction materials, properties, testing methods  | K3 |
| C604.5  | Understand the concept of pavement management system, evaluation of distress and maintenance of pavements.   | K3 |
| C604.6  | After successful completion of this course, the students will be able understand better on types of pavements and its construction methods and management methods. | K2 |
| <b>C605 - EN8592 WASTEWATER ENGINEERING</b>                           |  |    |
| C605.1  | An ability to estimate sewage generation and design sewer system including sewage pumping stations   | K2 |
| C605.2  | The required understanding on the characteristics and composition of sewage, self-purification of streams  | K2 |
| C605.3  | An ability to perform basic design of the unit operations and processes that are used in sewage treatment  | K3 |
| C605.4  | Understand the standard methods for disposal of sewage   | K2 |
| C605.5  | Gain knowledge on sludge treatment and disposal  | K2 |
| C605.6  | After successful completion of the course students will be able to design sewer systems and gain knowledge on solid waste management, the need of the hour.        | K2 |
| <b>C606 - CE8004 URBAN PLANNING AND DEVELOPMENT</b>                   |  |    |
| C606.1  | Describe basic issues in urban planning  | K2 |
| C606.2  | Formulate plans for urban and rural development and  | K2 |
| C606.3  | Plan and analyse socio economic aspects of urban and rural planning  | K3 |
| C606.4  | Design of urban development projects   | K3 |
| C606.5  | Manage urban development projects.   | K2 |
| C606.6  | After successful completion of this course, students will have understanding on urban and rural planning strategies for our country.                               | K2 |
| <b>C607 - CE8612 IRRIGATION AND ENVIRONMENTAL ENGINEERING DRAWING</b> |  |    |
| C607.1  | Acquire knowledge on design of tank and its components   | K2 |
| C607.2  | Gain knowledge on Design of Earth dam – Profile of Gravity Dam   | K3 |
| C607.3  | Acquire knowledge about cross drainage works   | K2 |

  
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|--|--|----|
| C607.4   | Acquire knowledge about canal regulation structures  | K2 |
| C607.5   | Design water supply and sewage treatment structures  | K3 |
| C607.6   | After successful completion of the students will be able to design and draw various units of Municipal water treatment plants and sewage treatment plants. | K3 |
| <b>C608 - CE8611 HIGHWAY ENGINEERING LABORATORY</b>                    |  |    |
| C608.1   | Student knows the techniques to characterize various pavement materials through relevant tests.  | K3 |
| C608.2   | Understanding the test on aggregates   | K3 |
| C608.3   | Gain knowledge on test on bitumen  | K3 |
| C608.4   | Know about tests on bituminous mixes   | K3 |
| C608.5   | Practice to utilize skid resistance tester/ benkel man beam  | K3 |
| C608.6   | After successful completion of the laboratory course the students acquire knowledge on various bitumen tests   | K3 |
| <b>C609 - HS8581 PROFESSIONAL COMMUNICATION</b>                        |  |    |
| C609.1   | Make effective presentations   | K3 |
| C609.2   | Participate confidently in Group Discussions.  | K3 |
| C609.3   | Attend job interviews and be successful in them.   | K3 |
| C609.4   | Develop adequate Soft Skills required for the workplace  | K3 |
| C609.5   | Develop work culture while studying  | K3 |
| C609.6   | After successful completion of the course the student will be in a state to get easily adapted to the industry/corporate environment.                      | K2 |
| <b>SEMESTER-VII</b>  |  |    |
| <b>C701 - CE8701 ESTIMATION, COSTING AND VALUATION ENGINEERING</b>     |  |    |
| C701.1   | Estimate the quantities for buildings  | K3 |
| C701.2   | Rate Analysis for all Building works, canals, and Roads and Cost Estimate  | K3 |
| C701.3   | Understand types of specifications, principles for report preparation, tender notices types  | K3 |
| C701.4   | Gain knowledge on types of contracts   | K3 |
| C701.5   | Evaluate valuation for building and land.  | K3 |
| C701.6   | After successful completion of the course the student will be able to do cost estimation for various projects.   | K3 |
| <b>C702 - CE8702 RAILWAYS, AIRPORTS, DOCKS AND HARBOUR ENGINEERING</b> |  |    |
| C702.1   | Understand the methods of route alignment and design elements in Railway Planning and Constructions.   | K3 |
| C702.2   | Understand the Construction techniques and Maintenance of Track laying and Railway stations.   | K2 |
| C702.3   | Gain an insight on the planning and site selection of Airport Planning and design.   | K2 |
| C702.4   | Analyze and design the elements for orientation of runways and passenger facility systems.   | K3 |
| C702.5   | Understand the various features in Harbours and Ports, their construction, coastal protection works and coastal Regulations to be                          | K2 |

  
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|   | adopted   |     |
| C702.6  | After successful completion of the course the students gain knowledge on planning design of airport, harbour and docks  | KK3 |
| <b>C 703 -EN8591 MUNICIPAL SOLID WASTE MANAGEMENT</b> |   |     |
| C703.1  | Understanding of the nature and characteristics of municipal solid wastes and the regulatory requirements regarding municipal solid waste management.                       | K2  |
| C703.2  | Reduction, reuse and recycling of waste.  | K2  |
| C703.3  | Ability to plan and design systems for storage, collection, transport, processing and disposal of municipal solid waste.  | K2  |
| C703.4  | Knowledge on the issues on solid waste management from an integrated and holistic perspective, as well as in the local and international context.                           | K2  |
| C703.5  | Design and operation of sanitary landfill   | K3  |
| C703.6  | After successful completion of the course the student would have acquired knowledge on solid waste management and will be able to find new solutions to the waste disposal. | K2  |
| <b>C704 -OEN751 GREEN BUILDING DESIGN</b>             |   |     |
| C704.1  | Understand about Embodied Energy in Building Materials  | K2  |
| C704.2  | Understand about Recycling and biomass resources.   | K2  |
| C704.3  | Acquire knowledge on providing comforts in building   | K2  |
| C704.4  | Acquire knowledge on utility of solar energy in buildings   | K2  |
| C704.5  | Understand about Urban Environment and Green Buildings  | K2  |
| C704.6  | After successful completion of the course the student will be able to design green buildings in their future endeavor.  | K2  |
| <b>C705 CE8703 STRUCTURAL DESIGN AND DRAWING</b>      |   |     |
| C705.1  | Design and draw reinforced concrete Cantilever and Counterfort Retaining Walls  | K3  |
| C705.2  | Design and draw flat slab as per code provisions  | K3  |
| C705.3  | Design and draw reinforced concrete and steel bridges   | K3  |
| C705.4  | Design and draw reinforced concrete and steel water tanks   | K3  |
| C705.5  | Design and detail the various steel trusses and gantry girders  | K3  |
| C705.6  | After successful completion of the course the student will be capable to design and detail the RCC and steel structures   | K3  |
| <b>C706 CE8711 CREATIVE AND INNOVATIVE PROJECT</b>    |   |     |
| C706.1  | Acquire knowledge on current social problems  | K3  |
| C706.2  | Ability to analyse the research articles  | K3  |
| C706.3  | Develop skills in project writing   | K3  |
| C706.4  | Develop skills in project presentation  | K3  |
| C706.5  | Finding a research gap in the field   | K3  |
| C706.6  | On Completion of the mini project students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology.         | K3  |

  
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| <b>C707 CE8712 INDUSTRIAL TRAINING</b>                                    |   |    |
|---|---|----|
| C707.1  | To train the students in field work so as to have a first-hand knowledge of practical problems in carrying out engineering tasks.   | K3 |
| C707.2  | To develop skills in facing and solving the field problems.   | K3 |
| C707.3  | The student will be able to understand the intricacies of implementation textbook knowledge into practice   | K3 |
| C707.4  | The student will be able to understand the concepts of developments and implementation of new techniques  | K3 |
| C707.5  | To train them to present in the viva voce examination   | K3 |
| C707.6  | On Completion of the industrial training the students will be aware how the text book knowledge is been applied in industry or in corporate society.  | K3 |
| <b>SEMESTER-VIII</b>  |   |    |
| <b>C801 - GE8076 PROFESSIONAL ETHICS IN ENGINEERING</b>                   |   |    |
| C801.1  | Gain insight on human values  | K2 |
| C801.2  | Acquire knowledge on engineering ethics   | K2 |
| C801.3  | Get familiar with Codes of Ethics   | K2 |
| C801.4  | Acquire knowledge on Professional Rights, Employee Rights . Intellectual Property Rights (IPR)  | K2 |
| C801.5  | Overcome unawareness on global issues due to ethical misuses  | K2 |
| C801.6  | Upon completion of the course, the student should be able to apply ethics in society, discuss the ethical issues related to engineering and realize the responsibilities and rights in the society.   | K2 |
| <b>C802 - CE8020 MAINTENANCE, REPAIR AND REHABILITATION OF STRUCTURES</b> |   |    |
| C802.1  | Understand the importance of maintenance and assessment method of distressed structures.  | K2 |
| C802.2  | Understand the strength and durability properties, their effects due to climate and temperature.  | K2 |
| C802.3  | Understand recent development in concrete   | K2 |
| C802.4  | Understand the techniques for repair and protection methods   | K2 |
| C802.5  | Understand repair, rehabilitation and retrofitting of structures and demolition methods   | K2 |
| C802.6  | After successful completion of the course the student will be having adequate knowledge on repair and rehabilitation techniques available for concrete building, this will help them to research on possible ways of repair, rehabilitation and strengthening techniques. | K2 |
| <b>C803 CE8811 PROJECT WORK</b>   |   |    |
| C803.1  | To develop the ability to solve a specific problem right from its identification  | K3 |
| C803.2  | To develop ability to criticize and prepare review about the literatures.   | K3 |
| C803.3  | To encourage students to find a research gap and complete their project in a successful way   | K3 |
| C803.4  | To train the students in preparing project reports.   | K3 |

  
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|        |   |    |
|--------|---|----|
| C803.5 | To train the students to face reviews and viva voce examination.  | K3 |
| C803.6 | On Completion of the project work students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology. | K3 |



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| S.No   | CO-PO MAPPING |     |     |     |     |     |     |     |     |      |      |      |      |      |
|--|---------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|
| C301- MA8353 TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS |               |     |     |     |     |     |     |     |     |      |      |      |      |      |
|  | PO1           | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
| C301.1   | 3             | -   | -   | -   | -   | -   | -   | -   | -   | -    | -    | 2    | 2    | 3    |
| C301.2   | -             | 2   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 3    | 2    |
| C301.3   | -             | -   | -   | -   | -   | -   | -   | -   | -   | -    | -    | 2    | 2    | 3    |
| C301.4   | -             | 2   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 2    | 3    |
| C301.5   | 2             | -   | -   | -   | -   | -   | -   | -   | -   | 2    | -    | -    | 2    | 3    |
| C301.6   | 2             | 2   | -   | -   | -   | -   | -   | -   | -   | -    | 3    | -    | 2    | 3    |
| C302-CE8301 STRENGTH OF MATERIALS I                        |               |     |     |     |     |     |     |     |     |      |      |      |      |      |
| C302.1   | 2             | 1   | 2   | 1   | -   | 2   | 2   | 2   | 3   | 3    | 3    | 3    | 2    | 3    |
| C302.2   | 2             | -   | 2   | 2   | 2   | 1   | -   | 2   | 3   | 3    | 2    | 2    | 3    | 2    |
| C302.3   | 2             | 2   | 2   | 2   | 2   | 2   | -   | 2   | 2   | 3    | 2    | 2    | 2    | 2    |
| C302.4   | 2             | -   | 2   | -   | 2   | 1   | -   | 2   | 2   | 2    | 2    | 2    | 2    | 2    |
| C302.5   | 2             | 2   | 2   | 1   | 2   | 2   | -   | 2   | 3   | 3    | 2    | 2    | 2    | 2    |
| C302.6   | 2             | 1   | 2   | 1   | 2   | 2   | -   | 2   | 3   | 3    | 2    | 2    | 2    | 3    |
| C303-CE8302 FLUID MECHANICS                                |               |     |     |     |     |     |     |     |     |      |      |      |      |      |
| C303.1   | 3             | -   | -   | -   | -   | -   | 2   | -   | -   | -    | -    | 2    | 2    | 2    |
| C303.2   | -             | 3   | 2   | -   | -   | -   | -   | -   | -   | -    | -    | 2    | 3    | 2    |
| C303.3   | -             | 3   | 2   | -   | -   | 2   | -   | -   | -   | -    | -    | -    | 2    | 3    |
| C303.4   | 3             | -   | -   | 2   | 3   | -   | -   | -   | -   | -    | -    | -    | 2    | 3    |
| C303.5   | -             | -   | -   | -   | 3   | -   | -   | -   | 2   | -    | -    | 3    | 2    | 3    |
| C303.6   | -             | -   | -   | -   | -   | 3   | -   | -   | 2   | -    | 2    | -    | 2    | 2    |
| C304 - CE8351 SURVEYING                                    |               |     |     |     |     |     |     |     |     |      |      |      |      |      |
| C304.1   | 2             | 3   | 2   | 2   | 2   | 2   | -   | -   | 2   | -    | -    | 2    | 2    | 2    |
| C304.2   | 3             | 2   | 3   | 2   | 2   | 2   | -   | -   | 2   | -    | -    | 3    | 3    | 2    |
| C304.3   | 2             | 3   | 2   | 2   | 2   | 3   | -   | -   | 2   | -    | -    | 2    | 2    | 3    |
| C304.4   | 3             | 3   | 3   | 2   | 2   | 2   | -   | -   | 2   | -    | -    | 3    | 2    | 3    |

  
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|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C304.5   | 2 | 3 | 2 | 2 | 2 | 3 | - | - | 2 | - | - | 2 | 2 | 2 |
| C304.6   | 3 | 2 | 2 | 2 | 2 | 3 | - | - | 2 | - | - | 3 | 2 | 3 |
| <b>C305 - CE8391 CONSTRUCTION MATERIALS</b>            |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C305.1   | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 2 |
| C305.2   | 3 | 2 | - | 2 | - | - | - | - | - | - | - | - | 2 | 2 |
| C305.3   | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 2 |
| C305.4   | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - | 2 | 2 |
| C305.5   | 3 | 2 | 2 | 2 | - | - | - | - | - | - | - | - | 2 | 2 |
| C305.6   | 3 | 2 | 2 | 2 | - | - | - | - | - | - | - | - | 2 | 2 |
| <b>C306-CE8392 ENGINEERING GEOLOGY</b>                 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C306.1   | 3 | 1 | - | - | - | - | - | - | 2 | - | - | 2 | 2 | 2 |
| C306.2   | 3 | 3 | - | - | - | - | - | - | 2 | - | - | 1 | 3 | 2 |
| C306.3   | 3 | 3 | - | - | - | - | - | - | 2 | - | - | - | 2 | 2 |
| C306.4   | 2 | 1 | 1 | - | - | - | - | - | 2 | - | - | - | 2 | 3 |
| C306.5   | 3 | 1 | - | - | - | - | - | - | 2 | - | - | 2 | 2 | 2 |
| C306.6   | 3 | 3 | - | - | - | - | - | - | 2 | - | - | 1 | 2 | 3 |
| <b>C307 - CE8311 CONSTRUCTION MATERIALS LABORATORY</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C307.1   | 3 | - | 2 | - | - | - | - | - | - | - | 2 | 2 | 2 | 2 |
| C307.2   | 3 | - | 2 | - | - | - | - | - | 2 | - | 2 | 2 | 3 | 2 |
| C307.3   | 3 | 2 | 2 | 2 | - | - | 2 | - | 2 | - | 2 | 2 | 2 | 2 |
| C307.4   | 3 | 2 | 2 | 2 | - | - | 2 | - | 2 | - | 2 | 2 | 2 | 3 |
| C307.5   | 3 | - | 2 | 2 | - | - | 2 | - | 2 | - | 2 | 2 | 2 | 2 |
| C307.6   | 3 | - | 2 | 2 | - | 2 | 2 | - | 2 | - | 2 | 2 | 2 | 3 |
| <b>C308-CE8361 SURVEYING LABORATORY</b>                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C308.1   | - | - | - | - | 3 | - | - | - | - | 3 | - | 2 | 2 | 2 |
| C308.2   | - | - | - | - | 3 | - | - | - | - | 3 | - | 2 | 2 | 2 |
| C308.3   | - | - | - | - | 3 | - | - | - | - | 3 | - | 2 | 2 | 3 |
| C308.4   | - | - | - | - | 3 | - | - | - | - | 3 | - | 2 | 2 | 3 |

  
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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C308.5  | - | - | - | - | 3 | - | - | - | - | 3 | - | 2 | 2 | 2 |
| C308.6  | - | - | - | - | 3 | - | - | - | - | 3 | - | 2 | 2 | 2 |
| <b>C309 - HS8381- INTERPERSONAL SKILLS/LISTENING AND SPEAKING</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C309.1  | 2 | 2 | 2 | - | 2 | - | 2 | - | - | - | 1 | - | 2 | 3 |
| C309.2  | 2 | - | 2 | - | 2 | - | 2 | - | - | - | 1 | - | 2 | 2 |
| C309.3  | - | - | 2 | 2 | 2 | - | - | - | - | 2 | 1 | - | 2 | 2 |
| C309.4  | - | 2 | 2 | - | 2 | - | 2 | - | - | 2 | - | - | 2 | 2 |
| C309.5  | 1 | 2 | - | - | 2 | 1 | - | - | - | 2 | - | - | 2 | 2 |
| C309.6  | - | 2 | - | - | 2 | - | 2 | - | - | 2 | 2 | - | 2 | 3 |
| <b>C401 - MA8491 NUMERICAL METHODS</b>                            |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C401.1  | 3 | 3 | - | 2 | 2 | - | - | - | - | - | - | 1 | 2 | 3 |
| C401.2  | 3 | 2 | - | 2 | 2 | - | - | - | - | - | - | 1 | 3 | 2 |
| C401.3  | 3 | 3 | - | 3 | 2 | - | - | - | - | - | - | 1 | 3 | 2 |
| C401.4  | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 2 | 2 | 2 |
| C401.5  | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 2 | 2 | 2 |
| C401.6  | 2 | 2 | 1 | - | - | - | - | - | - | - | - | 2 | 2 | 3 |
| <b>C402 - CE8401 CONSTRUCTION TECHNIQUES AND PRACTICES</b>        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C402.1  | 2 | - | - | - | - | - | - | - | - | 1 | 1 | 2 | 2 | 2 |
| C402.2  | 2 | 2 | 3 | - | 3 | - | - | - | - | 1 | 2 | 2 | 3 | 2 |
| C402.3  | - | - | - | - | 3 | - | 2 | - | - | 1 | 1 | 2 | 2 | 2 |
| C402.4  | 2 | 2 | - | - | - | - | 2 | - | - | 1 | 2 | 2 | 2 | 2 |
| C402.5  | 2 | - | 3 | - | - | - | 2 | - | - | 1 | 2 | 2 | 2 | 2 |
| C402.6  | - | - | - | - | - | 3 | 2 | - | - | 1 | 1 | 2 | 2 | 2 |
| <b>C403 - CE8402 STRENGTH OF MATERIALS II</b>                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C403.1  | 3 | 3 | 2 | - | - | - | 1 | - | - | - | - | 3 | 2 | 2 |
| C403.2  | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 2 | 2 |
| C403.3  | 3 | 3 | 2 | - | - | - | 1 | - | - | - | - | 3 | 2 | 2 |
| C403.4  | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 2 | 3 |

  
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|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C403.5   | 3 | 3 | 2 | - | - | - | 1 | - | - | - | - | 3 | 2 | 2 |
| C403.6   | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 2 | 2 |
| <b>C404 - CE 8403 APPLIED HYDRAULIC ENGINEERING</b>  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C404.1   | 2 | 2 | 2 | 2 | - | - | - | - | 2 | - | 2 | - | 2 | 2 |
| C404.2   | 2 | 2 | 2 | 2 | - | - | - | - | 2 | - | 2 | - | 2 | 2 |
| C404.3   | 2 | 2 | 2 | 2 | - | - | - | - | 2 | - | 2 | - | 2 | 2 |
| C404.4   | 2 | 2 | 2 | - | - | - | - | - | 2 | - | 2 | - | 2 | 2 |
| C404.5   | 2 | 2 | 2 | - | - | - | - | - | 2 | - | 2 | - | 2 | 2 |
| C404.6   | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 2 | 2 |
| <b>C405 - CE8404 CONCRETE TECHNOLOGY</b>             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C405.1   | 3 | 2 | 2 | - | 2 | - | 2 | - | - |   | 2 | - | 2 | 2 |
| C405.2   | 3 | - | 2 | - | 2 | - | 2 | - | - |   | 2 | - | 2 | 2 |
| C405.3   | 3 | - | 2 | 2 | 2 | - |   | - | - | 2 | 2 | - | 2 | 2 |
| C405.4   | 3 | 2 | 2 | - | 2 | - | 2 | - | - | 2 |   | - | 2 | 2 |
| C405.5   | 3 | 2 | - | - | 2 | 2 |   | - | - | 2 |   | - | 2 | 2 |
| C405.6   | 3 | 2 | - | - | 2 | - | 2 | - | - | 2 | 2 | - | 2 | 2 |
| <b>C406 -CE8491 SOIL MECHANICS</b>                   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C406.1   | 2 | 2 | - | 2 | 2 | - | 2 | - | 2 | - | 2 | 2 | 2 | 2 |
| C406.2   | 2 | 2 | - | - | - | - | - | - | - | - | - | 2 | 2 | 2 |
| C406.3   | 2 | 2 | - | 2 | - | - | - | - | 2 | - | - | - | 2 | 2 |
| C406.4   | 2 | 2 | - | 2 | - | - | - | - | - | - | - | - | 2 | 2 |
| C406.5   | 2 | 2 | 2 | 2 | 2 | - | - | - | 2 | - | - | - | 2 | 2 |
| C406.6   | 2 | - | - | 2 | - | - | - | - | - | - | - | - | 2 | 2 |
| <b>C407 -CE8481 STRENGTH OF MATERIALS LABORATORY</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C407.1   | 2 | 3 | 2 | 3 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C407.2   | 2 | 2 | 2 | 2 | 2 | 3 | - | - | - | - | - | 3 | 2 | 2 |
| C407.3   | 2 | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C407.4   | 2 | 2 | 2 | 2 | 2 | 3 | - | - | - | - | - | 3 | 2 | 3 |
| C407.5   | 2 | 2 | 2 | 3 | 3 | 2 | - | - | - | - | - | 2 | 2 | 2 |

  
PRINCIPAL

M.I.E.T. ENGINEERING COLLEGE  
GUNDUR, TIRUCHIRAPALLI - 620 007.

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C407.6  | 2 | 3 | 2 | 2 | 2 | 3 | - | - | - | - | - | 2 | 2 | 2 |
| <b>C408 - CE8461 HYDRAULIC ENGINEERING LABORATORY</b>             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C408.1  | 1 | - | 1 | 2 | 2 | - | - | 2 | - | 2 | 3 | - | 2 | 2 |
| C408.2  | 1 | 1 | 1 | - | 2 | - | 3 | 3 | - | - | 1 | - | 2 | 2 |
| C408.3  | 1 | 1 | - | 2 | 2 | - | - | - | 3 | - | 1 | - | 2 | 2 |
| C408.4  | 1 | 1 | - | - | 2 | - | 3 | - | - | 2 | 1 | - | 2 | 2 |
| C408.5  | 2 | - | 2 | 2 | 2 | - | - | - | - | - | 1 | - | 2 | 2 |
| C408.6  | 1 | - | 1 | 2 | 2 | - | - | 2 | - | 2 | 3 | - | 2 | 3 |
| <b>C409 - HS8461 ADVANCED READING AND WRITING</b>                 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C409.1  | 2 | 2 | 2 | - | 2 | - | 2 | - | - | - | 1 | - | 2 | 2 |
| C409.2  | 2 | - | 2 | - | 2 | - | 2 | - | - | - | 1 | - | 2 | 2 |
| C409.3  | - | - | 2 | 2 | 2 | - | - | - | - | 2 | 1 | - | 2 | 2 |
| C409.4  | - | 2 | 2 | - | 2 | - | 2 | - | - | 2 | - | - | 2 | 2 |
| C409.5  | 1 | 2 | - | - | 2 | 1 | - | - | - | 2 | - | - | 2 | 2 |
| C409.6  | - | 2 | - | - | 2 | - | 2 | - | - | 2 | 2 | - | 2 | 2 |
| <b>C501- CE8501 DESIGN OF REINFORCED CEMENT CONCRETE ELEMENTS</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C501.1  | 3 | 2 | - | - | - | 2 | - | - | - | - | - | - | 2 | 2 |
| C501.2  | 2 | 3 | - | - | - | 2 | - | - | - | - | - | - | 3 | 2 |
| C501.3  | 3 | 2 | - | - | - | 2 | - | - | - | - | - | - | 3 | 2 |
| C501.4  | 3 | 3 | - | - | - | 2 | - | - | - | - | - | - | 2 | 3 |
| C501.5  | 3 | 2 | - | - | - | 2 | - | - | - | - | - | - | 3 | 2 |
| C501.6  | 3 | 3 | 1 | - | - | - | - | - | - | - | - | - | 2 | 3 |
| <b>C502-CE8502 STRUCTURAL ANALYSIS I</b>                          |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C502.1  | 3 | 3 | - | - | 2 | - | - | - | - | 2 | - | 2 | 2 | 2 |
| C502.2  | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 2 | 3 | 2 |
| C502.3  | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 2 | 3 | 3 |
| C502.4  | 3 | 3 | 2 | - | - | - | - | - | - | 3 | 2 | 2 | 2 | 3 |
| C502.5  | 3 | 3 | - | - | - | - | - | - | - | - | - | - | 3 | 3 |

  
**PRINCIPAL**  
 M.I.E.T. ENGINEERING COLLEGE  
 GUNDUR, TIRUCHIRAPALLI - 620 007.



|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C502.6  | 3 |   | - | - | 2 | 2 | - | - | - | 2 | 2 | 2 | 2 | 3 |
| <b>C503 - EN8491 WATER SUPPLY ENGINEERING</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C503.1  | 3 | 1 | - | - | - | 1 | 1 | - | - | - | - | - | 2 | 2 |
| C503.2  | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | - | 2 | 2 |
| C503.3  | 3 | 2 | 2 | 2 | - | 2 | 2 | - | - | - | - | - | 2 | 2 |
| C503.4  | 3 | 1 | - | - | - | 1 | - | - | - | - | - | - | 2 | 2 |
| C503.5  | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | - | 2 | 2 |
| C503.6  | 3 | 2 | 2 | - | - | 2 | 2 | - | - | - | - | - | 2 | 3 |
| <b>C504-CE8591 FOUNDATION ENGINEERING</b>     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C504.1  | 3 | - | 2 | - | 2 | 3 | - | 2 | - | - | - | 1 | 2 | 2 |
| C504.2  | - | 2 | 3 | - | - | 2 | - | - | - | 2 | - | 2 | 2 | 3 |
| C504.3  | 2 | - | 2 | - | - | 2 | - | - | - | 2 | - | 1 | 2 | 2 |
| C504.4  | - | 2 |   | - | - | 2 | - | - | - | 2 | - | 1 | 3 | 2 |
| C504.5  | - | 2 | 2 | - | 2 |   | - | 2 | - | - | - | - | 2 | 2 |
| C504.6  | - | 2 | 2 | 2 | - | - | - | 2 | - | - | - | 1 | 2 | 3 |
| <b>C505 -GI8013 ADVANCED SURVEYING</b>        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C505.1  | 2 | 3 | 3 | 2 | 2 | - | 2 | - | - | - | 3 | - | 2 | 2 |
| C505.2  | 2 | 2 | 3 | 2 | 2 | 3 | - | 2 | - | 3 | 2 | 2 | 2 | 2 |
| C505.3  | 2 | 2 | 2 | 2 | 2 | - | - | - | 2 | - | 2 | - | 2 | 2 |
| C505.4  | 3 | 3 | 2 | 2 | 3 | - | 3 | - | - | - | 2 | 2 | 2 | 2 |
| C505.5  | 3 | 3 | 3 | 2 | 2 | - | - | - | 3 | - | 2 | - | 2 | 2 |
| C505.6  | 2 | 2 | 3 | 2 | 3 | - | - | - | - | 2 | 2 | 2 | 2 | 3 |
| <b>C506 - ORO551 RENEWABLE ENERGY SOURCES</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C506.1  | 3 | - | 2 | - | - | - | - | - | - | - | - | 2 | 2 | 2 |
| C506.2  | 3 | - | 2 | - | - | - | - | - | - | - | - | 2 | 3 | 2 |
| C506.3  | 2 | - | 2 | - | - | - | - | - | - | - | - | 2 | 2 | 2 |
| C506.4  | 2 | - | 2 | - | - | - | - | - | - | - | - | 2 | 2 | 2 |
| C506.5  | 3 | - | 2 | - | - | - | - | - | - | - | - | 2 | 2 | 2 |
| C506.6  | - | - | - | - | - | 2 | - | - | - | - | - | 2 | 2 | 2 |

  
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| <b>C507 - CE8511 SOIL MECHANICS LABORATORY</b>                 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C507.1   | 1 | - | - | - | - | - | 3 | - | 2 | 3 | - | - | 2 | 2 |
| C507.2   | - | - | 1 | 2 | - | 3 | - | 2 | - | 3 | - | - | 2 | 2 |
| C507.3   | - | - | - | - | 3 | - | 3 | - | - | 3 | 2 | - | 2 | 2 |
| C507.4   | - | 1 | - | - | 1 | - | 3 | - | - | - | 2 | - | 2 | 2 |
| C507.5   | - | - | - | 2 | - | 3 | 3 | 1 | - | - | - | 1 | 2 | 2 |
| C507.6   | 1 | - | - | - | - | 3 | 2 |   | 2 | 1 | - | 2 | 3 | 3 |
| <b>C508 - CE8512 WATER AND WASTE WATER ANALYSIS LABORATORY</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C508.1   | - | - | 2 | - | 2 | - | - | - | - | 1 | - | 3 | 2 | 2 |
| C508.2   | - | - | - | - | 2 | 2 | - | - | - | - | 2 | 2 | 2 | 2 |
| C508.3   | 2 | - | 2 | - | - | - | - | - | - | - | 3 | - | 2 | 2 |
| C508.4   | - | - | 3 | - | - | - | - | - | - | - | 1 | - | 2 | 3 |
| C508.5   | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 2 | 2 |
| C508.6   | - | - | 2 | - | - | - | - | - | - | - | - | 2 | 2 | 2 |
| <b>C509 - CE8513 SURVEY CAMP</b>                               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C509.1   | 3 |   | - | - | - | - | - | - | - | - | - | 1 | 2 | 2 |
| C509.2   | 3 | 2 | - | - | - | - | - | - | 3 | - | - | 2 | 2 | 2 |
| C509.3   | 2 | 2 | - | - | - | - | - | - | 3 | - | - | 2 | 2 | 2 |
| C509.4   | 3 | 2 | - | - | - | - | - | - | 3 | - | - | 1 | 2 | 2 |
| C509.5   | 3 | 1 | - | - | - | - | - | - | 2 | - | - | 1 | 2 | 2 |
| C509.6   | 3 | 2 | - | - | 3 | - | - | - | 3 | - | - | 2 | 2 | 2 |
| <b>C601 - CE8601 DESIGN OF STEEL STRUCTURAL ELEMENTS</b>       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C601.1   | 2 | 2 | 2 | - | - | - | - | 1 | - | - | - | 1 | 2 | 2 |
| C601.2   | 2 | 2 | 2 | - | - | - | - | 1 | - | - | - | 1 | 2 | 2 |
| C601.3   | 2 | 2 | 2 | - | - | - | - | 1 | - | - | - | 1 | 2 | 2 |
| C601.4   | 2 | 2 | 2 | - | - | - | - | 1 | - | - | - | 1 | 2 | 2 |
| C601.5   | 2 | 2 | 2 | - | - | - | - | 1 | - | - | - | 1 | 2 | 2 |
| C601.6   | 2 | 2 | 2 | - | - | - | - | 1 | - | - | - | 1 | 2 | 2 |
| <b>C602 - CE8602 STRUCTURAL ANALYSIS II</b>                    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

  
**PRINCIPAL**  
 M.I.E.T. ENGINEERING COLLEGE  
 GUNDUR, TIRUCHIRAPALLI - 620 007.

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C602.1                                      | 3 | 3 | 2 | 2 | - | 1 | 1 | - | - | - | 1 | 2 | 2 | 2 |
| C602.2                                      | 3 | 3 | 2 | 2 | - | 1 | 1 | - | - | - | 1 | 2 | 3 | 2 |
| C602.3                                      | 3 | 3 | 2 | 2 | - | - | 1 | - | - | - | - | 1 | 2 | 2 |
| C602.4                                      | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | 1 | 2 | 3 |
| C602.5                                      | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | 1 | 2 | 2 |
| C602.6                                      | 3 | 3 | 2 | 2 | - | 2 | 1 | - | - | - | 2 | 2 | 2 | 3 |
| <b>C603 - CE8603 IRRIGATION ENGINEERING</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C603.1                                      | 2 | 2 | 3 | 2 | 2 | 2 | - | - | 2 | - | - | 2 | 2 | 2 |
| C603.2                                      | 3 | 2 | 3 | 2 | 2 | 2 | - | - | 2 | - | - | 3 | 2 | 2 |
| C603.3                                      | 2 | 3 | 3 | 2 | 2 | 2 | - | - | 2 | - | - | 2 | 2 | 2 |
| C603.4                                      | 2 | 3 | 3 | 2 | 2 | 2 | - | - | 2 | - | - | 3 | 2 | 3 |
| C603.5                                      | 3 | 2 | 3 | 2 | 2 | 2 | - | - | 2 | - | - | 3 | 2 | 2 |
| C603.6                                      | 3 | 2 | 3 | 2 | 3 | 2 | - | - | 2 | - | - | 2 | 2 | 2 |
| <b>C604 - CE8604 HIGHWAY ENGINEERING</b>    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C604.1                                      | 2 | 2 | - | - | - | 2 | 1 | - | 3 | 2 | - | 2 | 2 | 2 |
| C604.2                                      | - | 3 | 2 | - | 3 | - | - | - | 2 | - | - | - | 2 | 2 |
| C604.3                                      | - | 2 | - | - | - | - | 2 | - | - | - | - | 1 | 2 | 2 |
| C604.4                                      | - | 2 | 2 | - | - | - | - | - | - | 2 | - | 2 | 3 | 3 |
| C604.5                                      | 1 | 2 | - | - | - | 2 | 1 | - | 2 | - | 2 | 2 | 2 | 2 |
| C604.6                                      | - | - | - | - | - | 1 | 2 | - | 2 | 2 | - | 2 | 2 | 2 |
| <b>C605 - EN8592 WASTEWATER ENGINEERING</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C605.1                                      | 3 | 2 | 1 | - | - | 3 | 3 | - | - | - | - | 3 | 2 | 2 |
| C605.2                                      | 2 | 3 | 2 | - | - | - | 2 | - | - | - | - | - | 2 | 2 |
| C605.3                                      | 2 | 1 | - | - | - | - | - | - | - | - | - | - | 2 | 2 |
| C605.4                                      | 3 | 2 | 3 | - | - | - | 2 | - | - | - | - | - | 2 | 3 |
| C605.5                                      | 2 | - | 3 | - | - | 3 | 2 | - | 2 | - | - | 3 | 2 | 2 |
| C605.6                                      | 3 | 2 | - | - | - | 2 | 2 | - | - | - | - | 3 | 2 | 3 |

  
**PRINCIPAL**  
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GUNDUR, TIRUCHIRAPALLI - 620 007.

| <b>C606 - CE8004 URBAN PLANNING AND DEVELOPMENT</b>                   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C606.1  | - | 2 | 2 | 2 | - | 2 | 1 | - | 3 | - | - | 2 | 2 | 3 |
| C606.2  | - | - | - | - | - | 2 | - | - | - | - | - | 2 | 3 | 3 |
| C606.3  | - | - | - | 2 | - | 3 | - | - | - | - | - | 3 | 2 | 2 |
| C606.4  | - | - | 2 | 3 | - | - | - | - | 3 | - | - | 3 | 2 | 3 |
| C606.5  | 3 | - | 3 | 1 | 2 | 2 | 3 | - | - | - | - | 3 | 2 | 2 |
| C606.6  | 3 | - | 3 | 1 | 2 | 2 | 2 | - | - | - | - | 3 | 2 | 3 |
| <b>C607 - CE8612 IRRIGATION AND ENVIRONMENTAL ENGINEERING DRAWING</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C607.1  | 3 | 3 | 3 | 2 | - | - | - | 2 | - | - | 3 | 2 | 2 | 2 |
| C607.2  | 3 | 2 | 3 | 2 | - | - | - | 2 | - | - | 2 | 2 | 3 | 2 |
| C607.3  | 3 | 2 | 2 | 2 | - | - | - | 2 | - | - | 2 | 2 | 2 | 2 |
| C607.4  | 3 | 3 | 2 | 2 | - | - | - | 2 | - | - | 2 | 2 | 2 | 3 |
| C607.5  | 3 | 3 | 3 | 2 | - | - | - | 2 | - | - | 2 | 2 | 2 | 2 |
| C607.6  | 3 | 3 | 3 | 2 | - | - | - | 2 | - | - | 2 | 2 | 2 | 3 |
| <b>C608 - CE8611 HIGHWAY ENGINEERING LABORATORY</b>                   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C608.1  | 2 | - | 1 | - | - | - | - | 2 | - | - | 2 | - | 2 | 3 |
| C608.2  | 2 | 1 | 1 | - | - | - | 3 | 1 | - | - | 1 | - | 2 | 2 |
| C608.3  | 2 | 1 | - | - | - | - | - | - | 1 | - | 1 | - | 2 | 2 |
| C608.4  | 2 | 1 | - | - | - | - | 3 | - | - | - | 1 | - | 2 | 3 |
| C608.5  | 2 | - | 2 | - | - | - | - | - | - | - | 1 | - | 2 | 2 |
| C608.6  | 2 | - | 1 | - | - | - | - | 2 | - | - | 2 | - | 2 | 3 |
| <b>C609 - HS8581 PROFESSIONAL COMMUNICATION</b>                       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C609.1  | 2 | 2 | 2 | - | 2 | - | 2 | - | - | - | 1 | - | 2 | 2 |
| C609.2  | 2 | - | 2 | - | 2 | - | 2 | - | - | - | 1 | - | 3 | 2 |
| C609.3  | - | - | 2 | 2 | 2 | - | - | - | - | 2 | 1 | - | 2 | 2 |
| C609.4  | - | 2 | 2 | - | 2 | - | 2 | - | - | 2 | - | - | 2 | 3 |
| C609.5  | 1 | 2 | - | - | 2 | 1 | - | - | - | 2 | - | - | 2 | 2 |
| C609.6  | - | 2 | - | - | 2 | - | 2 | - | - | 2 | 2 | - | 2 | 2 |

  
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M.I.E.T. ENGINEERING COLLEGE  
GUNDUR, TIRUCHIRAPALLI - 620 007.



| <b>C701 - CE8701 ESTIMATION, COSTING AND VALUATION ENGINEERING</b>     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C701.1   | 3 | 2 | 2 | - | - | 2 | 2 | - | - | - | - | 3 | 2 | 2 |
| C701.2   | 3 | 2 | 2 | - | - | 2 | 2 | - | - | - | - | 3 | 3 | 2 |
| C701.3   | 2 | - | - | - | - | - | 2 | - | - | - | - | 3 | 2 | 2 |
| C701.4   | 2 | - | - | - | - | - | 2 | - | - | - | - | 3 | 2 | 2 |
| C701.5   | 2 | - | - | - | - | - | 2 | - | - | - | - | 3 | 2 | 2 |
| C701.6   | 3 | 2 | 2 | - | - | 2 | 2 | - | - | - | - | 3 | 2 | 3 |
| <b>C702 - CE8702 RAILWAYS, AIRPORTS, DOCKS AND HARBOUR ENGINEERING</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C702.1   | 2 | 2 | 2 | - | - | - | 2 | - | 2 | - | - | - | 2 | 2 |
| C702.2   | 3 | 2 | - | - | - | - | - | - | 2 | - | - | - | 2 | 2 |
| C702.3   | 3 | 2 | - | - | - | - | - | - | 2 | - | - | - | 2 | 2 |
| C702.4   | 3 | 2 | - | - | - | - | - | - | 2 | - | - | - | 2 | 3 |
| C702.5   | 2 | 2 | - | - | - | - | - | - | 2 | - | - | - | 2 | 2 |
| C702.6   | - | - | 2 | - | - | - | 2 | - | - | - | - | - | 2 | 2 |
| <b>C 703 -EN8591 MUNICIPAL SOLID WASTE MANAGEMENT</b>                  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C703.1   | - | - | 3 | - | - | 2 | 3 | - | - | - | - | 3 | 2 | 2 |
| C703.2   | - | - | 2 | - | 2 | 2 | 3 | 2 | - | - | 2 | 3 | 2 | 2 |
| C703.3   | 3 | - | 2 | - | 2 | - | 3 | - | 2 | - | 2 | 3 | 2 | 2 |
| C703.4   | 2 | - | - | 2 | - | 3 | - | - | - | - | - | 3 | 2 | 2 |
| C703.5   | - | - | - | - | - | - | 2 | - | 2 | - | - | - | 2 | 2 |
| C703.6   | 2 | - | - | - | - | - | 3 | 2 | 3 | - | - | - | 2 | 2 |
| <b>C704 -OEN751 GREEN BUILDING DESIGN</b>                              |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C704.1   | 2 | 2 | - | - | - | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C704.2   | 2 | 2 | - | - | - | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C704.3   | 2 | 2 | - | - | - | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C704.4   | 2 | 2 | - | - | - | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C704.5   | 2 | 2 | - | - | - | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C704.6   | 2 | 2 | - | - | - | 2 | - | - | - | - | - | 2 | 2 | 2 |
| <b>C705 CE8703 STRUCTURAL DESIGN AND DRAWING</b>                       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

  
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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C705.1  | 2 | - | 2 | - | - | - | 2 | - | - | - | 2 | - | 2 | 2 |
| C705.2  | 2 | - | 2 | - | - | - | 2 | - | - | - | - | - | 2 | 2 |
| C705.3  | 2 | - | - | - | - | - | 2 | - | - | - | - | - | 2 | 2 |
| C705.4  | 2 | - | - | - | - | - | 2 | 2 | - | - | - | - | 2 | 2 |
| C705.5  | 2 | - | - | - | - | 2 | 2 | - | - | - | 2 | - | 2 | 2 |
| C705.6  | 2 | - | - | - | - | - | 2 | - | - | - | - | - | 2 | 2 |
| <b>C706 CE8711 CREATIVE AND INNOVATIVE PROJECT</b>                        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C706.1  | 2 | - | 2 | - | - | - | - | 2 | - | - | 1 | 1 | 2 | 2 |
| C706.2  | 2 | - | 2 | - | - | 2 | - | - | - | - | - | - | 2 | 2 |
| C706.3  | 2 | 2 | 2 | 2 |   | 1 | 1 | - | - | - | - | 1 | 2 | 2 |
| C706.4  | 3 | 2 | 2 | 3 | 1 |   | 1 | - | - | - | - | 1 | 2 | 3 |
| C706.5  | 3 |   | 2 | - | 1 | 2 | 2 | 1 | - | - | 1 | 1 | 2 | 2 |
| C706.6  | 2 | 1 |   | - | - |   | 3 |   | 2 | - | - | - | 2 | 3 |
| <b>C707 CE8712 INDUSTRIAL TRAINING</b>                                    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C707.1  | 3 | 3 | 3 | 2 | 2 | 2 | - | 2 | 2 | 2 | 3 | - | 2 | 2 |
| C707.2  | 3 | 2 | 3 | 2 | 2 | - | - | - | - | 3 | 2 | 2 | 3 | 3 |
| C707.3  | 3 | 2 | 2 | 2 | 2 | - | - | - | - | 2 | 2 | - | 3 | 2 |
| C707.4  | 3 | 3 | 2 | 2 | 3 | - | 2 | - | - | 2 | 2 | - | 2 | 3 |
| C707.5  | 3 | 3 | 3 | 2 | 2 | - | - | - | - | 3 | 2 | - | 3 | 2 |
| C707.6  | 2 | 2 | 3 | 2 | 3 | - | - | 2 | - | 2 | 2 | - | 2 | 3 |
| <b>C801 - GE8076 PROFESSIONAL ETHICS IN ENGINEERING</b>                   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C801.1  | - | - | - | - | - | - | 2 | - | 2 | - | 3 | - | 2 | 3 |
| C801.2  | 3 | - | - | - | - | - | 2 | - | 2 | 2 | 3 | - | 3 | 2 |
| C801.3  | 2 | - | - | - | - | - | - | 2 | - | - | - | 3 | 2 | 2 |
| C801.4  | 3 | - | - | - | - | - | - | 3 | 2 | - | - | 1 | 2 | 3 |
| C801.5  | 1 | - | - | - | - | - | - | - | 3 | - | 3 | - | 2 | 2 |
| C801.6  | 1 | - | - | - | - | - | - | - | 2 | 3 | 2 | 1 | 2 | 3 |
| <b>C802 - CE8020 MAINTENANCE, REPAIR AND REHABILITATION OF STRUCTURES</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C802.1  | 3 | 2 | 2 | - | - | 1 | 1 | - | 1 | - | - | - | 3 | 3 |

  
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|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C802.2                            | 3 | 2 | 3 | - | - | 1 | 1 | - | 1 | - | - | - | 3 | 2 |
| C802.3                            | 3 | 2 | 2 | - | - | 1 | - | - | 1 | - | - | - | 2 | 2 |
| C802.4                            | 3 | 2 | 2 | - | - | 1 | - | - | 1 | - | - | - | 2 | 3 |
| C802.5                            | 3 | 2 | 2 | - | - | 1 | - | - | 1 | - | - | - | 2 | 2 |
| C802.6                            | 3 | 2 | 2 | - | - | 1 | - | - | 1 | - | - | - | 2 | 3 |
| <b>C803 - CE8811 PROJECT WORK</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C803.1                            | 1 | 1 | - | 1 | - | 2 | 1 | 1 | - | - | - | 1 | 2 | 2 |
| C803.2                            | 1 | 2 | - | 1 | - | 1 | 2 | 1 | - | - | - | 1 | 3 | 2 |
| C803.3                            | 1 | 1 | - | 1 | - | 1 | 1 | 1 | - | - | - | 1 | 2 | 2 |
| C803.4                            | 1 | 2 | - | 2 | - | 1 | 1 | 2 | - | - | - | 1 | 2 | 2 |
| C803.5                            | 2 | 1 | - | 1 | - | 2 | 1 | 1 | - | - | - | 1 | 2 | 2 |
| C803.6                            | 2 | 1 | - | 1 | - | 1 | 1 | 1 | - | - | - | 1 | 2 | 3 |

  
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**REGULATION – 2017 – PG**  
**M.E. STRUCTURAL ENGINEERING**

| S.No  | COURSE OUTCOME   | BT LEVEL |
|---|--|----------|
| <b>S101- MA5151 - ADVANCED MATHEMATICAL METHODS</b> |  |          |
| <b>S101.1</b>                                       | To familiarize the students in the field of differential equations.  | K3       |
| <b>S101.2</b>                                       | To enable them to solve boundary value problems associated with engineering applications using transform methods.          | K3       |
| <b>S101.3</b>                                       | To expose the students to the concepts of calculus of variations.  | K3       |
| <b>S101.4</b>                                       | To introduce conformal mappings and their applications to fluid flows and heat flows.                                      | K3       |
| <b>S101.5</b>                                       | To give the students a complete picture of tensor analysis.  | K3       |
| <b>S102 – ST5101 – ADVANCED CONCRETE STRUCTURES</b> |  |          |
| <b>S102.1</b>                                       | Explain structural behaviour of flexural members and columns   | K3       |
| <b>S102.2</b>                                       | Design compression members and construct interaction diagrams  | K3       |
| <b>S102.3</b>                                       | Design the special elements like corbels, deep beams and grid floors   | K3       |
| <b>S102.4</b>                                       | Design flat slab and spandrel beams  | K3       |
| <b>S102.5</b>                                       | Predict the moment curvature behavior and design and detail concrete elements based on ductility                           | K3       |
| <b>S103 – ST5102 –DYNAMICS OF STRUCTURES</b>        |  |          |
| <b>S103.1</b>                                       | Do vibration analysis of system/structures with single degree of freedom and can explain the method of damping the systems | K3       |
| <b>S103.2</b>                                       | Do dynamic analysis of system/structures with Two degrees of freedom under free and forced vibration                       | K3       |
| <b>S103.3</b>                                       | Do dynamic analysis of system/structures with Multi degrees of freedom under free and forced vibration                     | K3       |
| <b>S103.4</b>                                       | Explains the responses of the dynamics   | K3       |
| <b>S103.5</b>                                       | Derive a mathematical model of continuous system and do a dynamic analysis under free and forced vibration                 | K3       |

  
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| <b>S104 – ST5103 - THEORY OF ELASTICITY AND PLASTICITY</b>         |   |    |
|--|---|----|
| <b>S104.1</b>  | Derive and write the fundamental equations of elasticity describing the linear behavior of element and develop constitutive models based on material behavior | K3 |
| <b>S104.2</b>  | Demonstrate the application of plane stress and plane strain in a given situation in both cartesian and polar coordinate systems                              | K3 |
| <b>S104.3</b>  | Solve torsion problems in circular and non-circular cross-sections  | K3 |
| <b>S104.4</b>  | Analyse beams resting on elastic foundations  | K3 |
| <b>S104.5</b>  | Solve analytically the simple boundary value problems with elasto-plastic and strain hardening properties   | K3 |
| <b>S105 –ST5001 – MAINTENANCE AND REHABILITATION OF STRUCTURES</b> |   |    |
| <b>S105.1</b>  | Explain the importance of maintenance assessment of distressed structures   | K2 |
| <b>S105.2</b>  | Apply the knowledge on Quality assurance for concrete based on Strength and Durability  | K2 |
| <b>S105.3</b>  | Identify various repair materials and advancements in concrete  | K2 |
| <b>S105.4</b>  | Explain the knowledge on Concrete protection methods Structural health monitoring   | K2 |
| <b>S105.5</b>  | Select Various strengthening and repair methods for different cases   | K2 |
| <b>S106 – ST5002 –PRE FABRICATE STRUCTURES</b>                     |   |    |
| <b>S106.1</b>  | Explain the design principles involved in prefabrication  | K2 |
| <b>S106.2</b>  | Detail the different types of connection  | K3 |
| <b>S106.3</b>  | Design for stripping forces during manufacture  | K3 |
| <b>S106.4</b>  | Determine the forces in shear walls   | K3 |
| <b>S106.5</b>  | Identify the different roof trusses used in industrial buildings  | K2 |
| <b>S201 – ST5201 – ADVANCED STEEL STRUCTURES</b>                   |   |    |
| <b>S201.1</b>  | Design the steel members such as purlins, gable wind girders, base plates subjected to combined forces  | K3 |
| <b>S201.2</b>  | Explain and design the different types of steel connections such as welded, bolted and moment resisting connections   | K3 |
| <b>S201.3</b>  | Analyse and design the industrial structures such as trusses, portal frames subjected to seismic forces   | K3 |
| <b>S201.4</b>  | Explain the effect of axial force and shear force on steel structures   | K3 |

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|  | and analyse the continuous beams, frames using plastic theory   |           |
| <b>S201.5</b>                                  | Evaluate the behaviour and design of compression and flexural members   | <b>K3</b> |
| <b>S202 – ST5202 – STABILITY OF STRUCTURES</b> |   |           |
| <b>S202.1</b>                                  | Explain the phenomenon of buckling of columns and calculate the buckling load on column by various approaches | <b>K3</b> |
| <b>S202.2</b>                                  | Estimate the buckling load of beam – columns and frames   | <b>K3</b> |
| <b>S202.3</b>                                  | Explore the concepts of torsional and lateral buckling of thin walled members                                 | <b>K3</b> |
| <b>S202.4</b>                                  | Explain the phenomenon of buckling of plates  | <b>K2</b> |
| <b>S202.5</b>                                  | Analyze the inelastic buckling of columns and plates  | <b>K3</b> |
| <b>S203 – ST5203 - EXPERIMENTAL TECHNIQUES</b> |   |           |
| <b>S203.1</b>                                  | Do the mix proportion using IS and ACI codal provisions.  | <b>K2</b> |
| <b>S203.2</b>                                  | Prepare the self-compacting concrete and study the flow characteristics of SCC                                | <b>K2</b> |
| <b>S203.3</b>                                  | Identify the proper portion of mineral and chemical admixture for concrete.                                   | <b>K2</b> |
| <b>S203.4</b>                                  | Test the concrete in a non-destructive manner using rebound hammer.   | <b>K2</b> |
| <b>S203.5</b>                                  | Know the permeability characteristics of concrete.  | <b>K2</b> |
| <b>S204 – ST5204 - FINITE ELEMENT ANALYSIS</b> |   |           |
| <b>S204.1</b>                                  | Formulate a finite element problem using basic mathematical principles  | <b>K3</b> |
| <b>S204.2</b>                                  | Explain the various types of elements and Select the appropriate element for modelling                        | <b>K3</b> |
| <b>S204.3</b>                                  | Analyze a frame using truss element   | <b>K3</b> |
| <b>S204.4</b>                                  | Formulate and analyze two and three dimensional solid finite element problems                                 | <b>K3</b> |
| <b>S204.5</b>                                  | Analyze a shells, thick and thin plate and explain dynamic analysis in FEM                                    | <b>K3</b> |
| <b>S205- ST5008 – INDUSTRIAL STRUCTURES</b>    |   |           |
| <b>S205.1</b>                                  | Develop the concept of planning & functional requirement of industrial standards.                             | <b>K2</b> |
| <b>S205.2</b>                                  | Analyse and design of Steel Gantry girders & Crane girders and RCC design of corbels, nibs and staircase.     | <b>K3</b> |



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| <b>S205.3</b>  | Analyse & design of cooling towers, bunker, silos and pipe supporting structures.  | K3 |
| <b>S205.4</b>  | Analyse and design of Steel transmission line towers and chimneys.   | K3 |
| <b>S205.5</b>  | Design foundations for cooling tower, chimneys and turbo generator.  | K3 |
| <b>S206 – ST5009 – PRE STRESSED CONCRETE</b>                       |  |    |
| <b>S206.1</b>  | Identify the various methods of prestressing   | K2 |
| <b>S206.2</b>  | Design the beams for shear, bond and torsion   | K3 |
| <b>S206.3</b>  | Design the continuous beams  | K3 |
| <b>S206.4</b>  | Design the water tank, piles and masts   | K3 |
| <b>S206.5</b>  | Analyze and design the composite beams   | K3 |
| <b>S207 – ST5211 - ADVANCED STRUCTURAL ENGINEERING LABORATORY</b>  |  |    |
| <b>S207.1</b>  | Do the mix proportion using IS and ACI codal provisions.   | K3 |
| <b>S207.2</b>  | Prepare the self-compacting concrete and study the flow characteristics of SCC   | K3 |
| <b>S207.3</b>  | Identify the proper portion of mineral and chemical admixture for concrete.  | K3 |
| <b>S207.4</b>  | Test the concrete in a non-destructive manner using rebound hammer.  | K3 |
| <b>S207.5</b>  | Know the permeability characteristics of concrete.   | K3 |
| <b>S208 –ST5212 - PRACTICAL TRAINING - I</b>                       |  |    |
| <b>S208.1</b>  | On completion of the course, the student is expected to be able to develop skills in facing the problems experiencing in the Structural Engineering field.             | K3 |
| <b>S208.2</b>  | On completion of the course, the student is expected to be able to develop skills in solving the problems experiencing in the Structural Engineering field.            | K3 |
| <b>S208.3</b>  | To train the Students in the field work so as to have a firsthand Knowledge of practical problems related to structural Engineering in carrying out engineering tasks. | K3 |
| <b>S208.4</b>  | To development skills in facing and solving the field problems.  | K3 |
| <b>S208.5</b>  | They are trained in tracking a practical field/ industry oriented problem related to structural Engineering  | K3 |
| <b>S301 – ST5301- EARTHQUAKE ANALYSIS AND DESIGN OF STRUCTURES</b> |  |    |
| <b>S301.1</b>  | Explain the effects of earthquake  | K2 |
| <b>S301.2</b>  | Explain the Earthquake resistant Masonry Structures  | K2 |

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| <b>S301.3</b>  | Explain the Earthquake resistant RCC Structures  | K2 |
| <b>S301.4</b>  | The end of this course the students will be able to understand the causes and effect of earthquake.  | K2 |
| <b>S301.5</b>  | They will able to design masonry and RC structures to the earthquake forces as per the recommendations of IS codes of practice.  | K3 |
| <b>S302 – ST5014 – DESIGN OF STEEL CONCRETE COMPOSITE STRUCTURES</b> |  |    |
| <b>S302.1</b>  | Explain composite action   | K3 |
| <b>S302.2</b>  | Design composite elements  | K3 |
| <b>S302.3</b>  | Design connections   | K3 |
| <b>S302.4</b>  | Explain the concept of design of composite box girder bridges  | K3 |
| <b>S302.5</b>  | Study and evaluate case studies  | K2 |
| <b>S303 – ST5015 – DESIGN OF SUB STRUCTURES</b>                      |  |    |
| <b>S303.1</b>  | To gain familiarity with different types of foundation.  | K2 |
| <b>S303.2</b>  | To expose the students to the design of shallow foundations and deep foundations.  | K3 |
| <b>S303.3</b>  | To understand the concepts of designing well, machine and special foundations.   | K2 |
| <b>S303.4</b>  | They will be in a position to determine the load carrying capacity of each type of foundation.   | K2 |
| <b>S303.5</b>  | On completion of this course students will be able to select appropriate foundation type based on available soil conditions.   | K2 |
| <b>S304 –ST5211 - PRACTICAL TRAINING - II</b>                        |  |    |
| <b>S304.1</b>  | On completion of the course, the student is expected to be able to develop skills in facing the problems experiencing in the Structural Engineering field.             | K4 |
| <b>S304.2</b>  | On completion of the course, the student is expected to be able to develop skills in solving the problems experiencing in the Structural Engineering field.            | K4 |
| <b>S304.3</b>  | To train the Students in the field work so as to have a firsthand Knowledge of practical problems related to structural Engineering in carrying out engineering tasks. | K4 |
| <b>S304.4</b>  | To development skills in facing and solving the field problems.  | K4 |
| <b>S304.5</b>  | They are trained in tracking a practical field/ industry oriented problem related to structural Engineering  | K4 |
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| <b>S305 – ST5212 – STRUCTURAL SEMINAR</b>       |   |    |
|---|---|----|
| <b>S305.1</b>                                   | On completion of the course, the student is expected to be able to acquire the skills of oral presentation and to acquire technical writing abilities for seminars.           | K4 |
| <b>S305.2</b>                                   | To be able to acquire the skills of oral presentation and to acquire technical writing abilities for conferences.   | K4 |
| <b>S305.3</b>                                   | To work on a specific technical topic in Structural Engineering and acquire the skills of written and oral presentation.  | K4 |
| <b>S305.4</b>                                   | To acquire writing abilities for seminars and conferences.  | K4 |
| <b>S305.5</b>                                   | The students will be trained to face an audience and to tackle any problem during group discussion in the Interviews.   | K4 |
| <b>S306 – ST5313 - PROJECT WORK (PHASE – I)</b> |   |    |
| <b>S306.1</b>                                   | To identify a specific problem for the current need of the society  | K4 |
| <b>S306.2</b>                                   | To collecting information related to the same through detailed review of literature.  | K4 |
| <b>S306.3</b>                                   | To develop the methodology to solve the identified problem.   | K4 |
| <b>S306.4</b>                                   | To train the students in preparing project reports and to face reviews and viva-voce examination.   | K4 |
| <b>S306.5</b>                                   | At the end of the course the students will have a clear idea of his/her area of work and they are in a position to carry out the remaining phase II work in a systematic way. | K4 |
| <b>S401- ST5411 - PRACTICAL TRAINING - III</b>  |   |    |
| <b>S401.1</b>                                   | On completion of the course, the student is expected to be able to develop skills in facing the problems experiencing in the Structural Engineering field.                    | K4 |
| <b>S401.2</b>                                   | On completion of the course, the student is expected to be able to develop skills in solving the problems experiencing in the Structural Engineering field.                   | K4 |
| <b>S401.3</b>                                   | To train the Students in the field work so as to have a firsthand Knowledge of practical problems related to structural Engineering in carrying out engineering tasks.        | K4 |
| <b>S401.4</b>                                   | To development skills in facing and solving the field problems.   | K4 |
| <b>S401.5</b>                                   | They are trained in tracking a practical field/ industry oriented problem related to structural Engineering   | K4 |
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| <b>S402 – ST5412 – Project Work ( Phase – II)</b> |  |    |
|---|--|----|
| <b>S401.1</b>                                     | To solve the identified problem based on the formulated methodology.                 | K4 |
| <b>S401.2</b>                                     | To develop skills to analyze and discuss the test results, and make conclusions.     | K4 |
| <b>S401.3</b>                                     | On completion of the project work students will be in a position                     | K4 |
| <b>S401.4</b>                                     | To take up any challenging practical problem and find better solutions.              | K4 |
| <b>S401.5</b>                                     | At the end of the course the students will have a clear idea of his/her area of work | K4 |



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|---|---------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|
| S101- MA5151 - ADVANCED MATHEMATICAL METHODS        |               |     |     |     |     |     |     |     |     |      |      |      |      |      |
|   | PO1           | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
| S101.1  | 3             | -   | -   | -   | -   | -   | -   | -   | -   | -    | -    | 2    | 2    | 2    |
| S101.2  | -             | 2   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 2    | 2    |
| S101.3  | -             | -   | -   | -   | -   | -   | -   | -   | -   | -    | -    | 2    | 2    | 2    |
| S101.4  | -             | 2   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 2    | 2    |
| S101.5  | 2             | -   | -   | -   | -   | -   | -   | -   | -   | 2    | -    | -    | 2    | 2    |
| S102 – ST5101 – ADVANCED CONCRETE STRUCTURES        |               |     |     |     |     |     |     |     |     |      |      |      |      |      |
| S102.1  | 2             | 1   | 2   | 1   | -   | 2   | 2   | 2   | 3   | 3    | 3    | 3    | 2    | 2    |
| S102.2  | 2             | -   | 2   | 2   | 2   | 1   | -   | 2   | 3   | 3    | 2    | 2    | 2    | 2    |
| S102.3  | 2             | 2   | 2   | 2   | 2   | 2   | -   | 2   | 2   | 3    | 2    | 2    | 2    | 2    |
| S102.4  | 2             | -   | 2   | -   | 2   | 1   | -   | 2   | 2   | 2    | 2    | 2    | 2    | 2    |
| S102.5  | 2             | 2   | 2   | 1   | 2   | 2   | -   | 2   | 3   | 3    | 2    | 2    | 2    | 2    |
| S103 – ST5102 –DYNAMICS OF STRUCTURES               |               |     |     |     |     |     |     |     |     |      |      |      |      |      |
| S103.1  | 3             | -   | -   | -   | -   | -   | 2   | -   | -   | -    | -    | 2    | 2    | 2    |
| S103.2  | -             | 3   | 2   | -   | -   | -   | -   | -   | -   | -    | -    | 2    | 2    | 2    |
| S103.3  | -             | 3   | 2   | -   | -   | 2   | -   | -   | -   | -    | -    | -    | 2    | 2    |
| S103.4  | 3             | -   | -   | 2   | 3   | -   | -   | -   | -   | -    | -    | -    | 2    | 2    |
| S103.5  | -             | -   | -   | -   | 3   | -   | -   | -   | 2   | -    | -    | 3    | 2    | 2    |
| S104 – ST5103 - THEORY OF ELASTICITY AND PLASTICITY |               |     |     |     |     |     |     |     |     |      |      |      |      |      |
| S104.1  | 2             | 3   | 2   | 2   | 2   | 2   | -   | -   | 2   | -    | -    | 2    | 3    | 2    |
| S104.2  | 3             | 2   | 3   | 2   | 2   | 2   | -   | -   | 2   | -    | -    | 3    | 2    | 2    |

  
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| S104.3  | 2 | 3 | 2 | 2 | 2 | 3 | - | - | 2 | - | - | 2 | 2 | 2 |
| S104.4  | 3 | 3 | 3 | 2 | 2 | 2 | - | - | 2 | - | - | 3 | 2 | 2 |
| S104.5  | 2 | 3 | 2 | 2 | 2 | 3 | - | - | 2 | - | - | 2 | 2 | 2 |
| <b>S105 – ST5001 – MAINTENANCE AND REHABILITATION OF STRUCTURES</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| S105.1  | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| S105.2  | 3 | 2 | - | 2 | - | - | - | - | - | - | - | - | 2 | 2 |
| S105.3  | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 2 |
| S105.4  | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - | 2 | 2 |
| S105.5  | 3 | 2 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| <b>S106 – ST5002 – PRE FABRICATE STRUCTURES</b>                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| S106.1  | 3 | 1 | - | - | - | - | - | - | 2 | - | - | 2 | 3 | 2 |
| S106.2  | 3 | 3 | - | - | - | - | - | - | 2 | - | - | 1 | 2 | 2 |
| S106.3  | 3 | 3 | - | - | - | - | - | - | 2 | - | - | - | 2 | 3 |
| S106.4  | 2 | 1 | 1 | - | - | - | - | - | 2 | - | - | - | 2 | 2 |
| S106.5  | 3 | 1 | - | - | - | - | - | - | 2 | - | - | 2 | 3 | 2 |
| <b>S201 – ST5201 – ADVANCED STEEL STRUCTURES</b>                    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| S201.1  | 3 | - | 2 | - | - | - | - | - | - | - | 2 | 2 | 3 | 2 |
| S201.2  | 3 | - | 2 | - | - | - | - | - | 2 | - | 2 | 2 | 3 | 2 |
| S201.3  | 3 | 2 | 2 | 2 | - | - | 2 | - | 2 | - | 2 | 2 | 2 | 3 |
| S201.4  | 3 | 2 | 2 | 2 | - | - | 2 | - | 2 | - | 2 | 2 | 3 | 2 |
| S201.5  | 3 | - | 2 | 2 | - | - | 2 | - | 2 | - | 2 | 2 | 3 | 2 |
| <b>S202 – ST5202 – STABILITY OF STRUCTURES</b>                      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| S202.1  | - | - | - | - | 3 | - | - | - | - | 3 | - | 2 | 3 | 2 |

  
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|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S202.2   | - | - | - | - | 3 | - | - | - | - | 3 | - | 2 | 3 | 2 |
| S202.3   | - | - | - | - | 3 | - | - | - | - | 3 | - | 2 | 3 | 3 |
| S202.4   | - | - | - | - | 3 | - | - | - | - | 3 | - | 2 | 3 | 2 |
| S202.5   | - | - | - | - | 3 | - | - | - | - | 3 | - | 2 | 3 | 2 |
| <b>S203 – ST5203 - EXPERIMENTAL TECHNIQUES</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| S203.1   | 3 | 3 | - | 2 | 2 | - | - | - | - | - | - | 1 | 3 | 2 |
| S203.2   | 3 | 2 | - | 2 | 2 | - | - | - | - | - | - | 1 | 3 | 3 |
| S203.3   | 3 | 3 | - | 3 | 2 | - | - | - | - | - | - | 1 | 2 | 3 |
| S203.4   | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 2 | 2 | 2 |
| S203.5   | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 2 | 2 | 2 |
| <b>S204 – ST5204 - FINITE ELEMENT ANALYSIS</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| S204.1   | 2 | - | - | - | - | - | - | - | - | 1 | 1 | 2 | 2 | 2 |
| S204.2   | 2 | 2 | 3 |   | 3 | - | - | - | - | 1 | 2 | 2 | 3 | 2 |
| S204.3   | - | - | - | - | 3 | - | 2 | - | - | 1 | 1 | 2 | 2 | 3 |
| S204.4   | 2 | 2 | - | - | - | - | 2 | - | - | 1 | 2 | 2 | 3 | 2 |
| S204.5   | 2 | - | 3 | - | - | - | 2 | - | - | 1 | 2 | 2 | 2 | 2 |
| <b>S205- ST5008 – INDUSTRIAL STRUCTURES</b>    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| S205.1   | 3 | 3 | 2 | - | - | - | 1 | - | - | - | - | 3 | 3 | 2 |
| S205.2   | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 2 | 2 |
| S205.3   | 3 | 3 | 2 | - | - | - | 1 | - | - | - | - | 3 | 2 | 3 |
| S205.4   | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 2 | 2 |
| S205.5   | 3 | 3 | 2 | - | - | - | 1 | - | - | - | - | 3 | 3 | 2 |

  
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| <b>S206 – ST5009 – PRE STRESSED CONCRETE</b>                       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S206.1   | 2 | 2 | 2 | 2 | - | - | - | - | 2 | - | 2 | - | 2 | 2 |
| S206.2   | 2 | 2 | 2 | 2 | - | - | - | - | 2 | - | 2 | - | 3 | 2 |
| S206.3   | 2 | 2 | 2 | 2 | - | - | - | - | 2 | - | 2 | - | 2 | 3 |
| S206.4   | 2 | 2 | 2 | - | - | - | - | - | 2 | - | 2 | - | 2 | 2 |
| S206.5   | 2 | 2 | 2 | - | - | - | - | - | 2 | - | 2 | - | 2 | 2 |
| <b>S207 – ST5211 - ADVANCED STRUCTURAL ENGINEERING LABORATORY</b>  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| S207.1   | 3 | 2 | 2 | - | 2 | - | 2 | - | - |   | 2 | - | 3 | 2 |
| S207.2   | 3 | - | 2 | - | 2 | - | 2 | - | - |   | 2 | - | 2 | 2 |
| S207.3   | 3 | - | 2 | 2 | 2 | - |   | - | - | 2 | 2 | - | 3 | 2 |
| S207.4   | 3 | 2 | 2 | - | 2 | - | 2 | - | - | 2 |   | - | 2 | 3 |
| S207.5   | 3 | 2 | - | - | 2 | 2 |   | - | - | 2 |   | - | 3 | 2 |
| <b>S208 –ST5212 - PRACTICAL TRAINING - I</b>                       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| S208.1   | 3 | 1 | - | - | - | 1 | 1 | - | - | - | - | - | 2 | 2 |
| S208.2   | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | - | 2 | 2 |
| S208.3   | 3 | 2 | 2 | 2 | - | 2 | 2 | - | - | - | - | - | 3 | 2 |
| S208.4   | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | - | 2 | 3 |
| S208.5   | 3 | 2 | 2 | 2 | - | 2 | 2 | - | - | - | - | - | 2 | 2 |
| <b>S301 – ST5301- EARTHQUAKE ANALYSIS AND DESIGN OF STRUCTURES</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| S301.1   | 2 | 2 | - | 2 | 2 | - | 2 | - | 2 | - | 2 | 2 | 2 | 2 |
| S301.2   | 2 | 2 | - | - | - | - | - | - | - | - | - | 2 | 2 | 2 |
| S301.3   | 2 | 2 | - | 2 | - | - | - | - | 2 | - | - | - | 3 | 2 |
| S301.4   | 2 | 2 | - | 2 | - | - | - | - | - | - | - | - | 2 | 3 |

  
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|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S301.5   | 2 | 2 | 2 | 2 | 2 | - | - | - | 2 | - | - | - | 2 | 2 |
| <b>S302 – ST5014 – DESIGN OF STEEL CONCRETE COMPOSITE STRUCTURES</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| S302.1   | 2 | 3 | 2 | 3 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| S302.2   | 2 | 2 | 2 | 2 | 2 | 3 | - | - | - | - | - | 3 | 2 | 2 |
| S302.3   | 2 | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | 2 | 3 | 2 |
| S302.4   | 2 | 2 | 2 | 2 | 2 | 3 | - | - | - | - | - | 3 | 2 | 3 |
| S302.5   | 2 | 2 | 2 | 3 | 3 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| <b>S303 – ST5015 – DESIGN OF SUB STRUCTURES</b>                      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| S303.1   | 1 | - | 1 | 2 | 2 | - | - | 2 | - | 2 | 3 | - | 2 | 2 |
| S303.2   | 1 | 1 | 1 | - | 2 | - | 3 | 3 | - | - | 1 | - | 2 | 2 |
| S303.3   | 1 | 1 | - | 2 | 2 | - | - | - | 3 | - | 1 | - | 3 | 2 |
| S303.4   | 1 | 1 | - | - | 2 | - | 3 | - | - | 2 | 1 | - | 2 | 3 |
| S303.5   | 2 | - | 2 | 2 | 2 | - | - | - | - | - | 1 | - | 2 | 2 |
| <b>S304 – ST5211 - PRACTICAL TRAINING - II</b>                       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| S304.1   | 3 | 1 | - | - | - | 1 | 1 | - | - | - | - | - | 2 | 2 |
| S304.2   | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | - | 2 | 2 |
| S304.3   | 3 | 2 | 2 | 2 | - | 2 | 2 | - | - | - | - | - | 3 | 2 |
| S304.4   | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | - | 2 | 3 |
| S304.5   | 3 | 2 | 2 | 2 | - | 2 | 2 | - | - | - | - | - | 2 | 2 |
| <b>S305 – ST5212 – STRUCTURAL SEMINAR</b>                            |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| S305.1   | 3 | 2 | - | - | - | 2 | - | - | - | - | - | - | 2 | 2 |
| S305.2   | 2 | 3 | - | - | - | 2 | - | - | - | - | - | - | 2 | 2 |
| S305.3   | 3 | 2 | - | - | - | 2 | - | - | - | - | - | - | 3 | 2 |

  
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|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S305.4  | 3 | 3 | - | - | - | 2 | - | - | - | - | - | - | 2 | 3 |
| S305.5  | 3 | 3 | - | - | - | 2 | - | - | - | - | - | - | 2 | 2 |
| <b>S306 – ST5313 - PROJECT WORK (PHASE – I)</b>   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| S306.1  | 3 | 3 | - | - | 2 | - | - | - | - | 2 | - | 2 | 2 | 2 |
| S306.2  | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 2 | 2 | 2 |
| S306.3  | 3 | 3 | - | - | 2 | - | - | - | - | 2 | - | 2 | 3 | 2 |
| S306.4  | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 2 | 2 | 3 |
| S306.5  | 3 | 3 | - | - | 2 | - | - | - | - | 2 | - | 2 | 3 | 2 |
| <b>S401- ST5411 - PRACTICAL TRAINING - III</b>    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| S401.1  | 3 | 1 | - | - | - | 1 | 1 | - | - | - | - | - | 2 | 2 |
| S401.2  | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | - | 2 | 2 |
| S401.3  | 3 | 2 | 2 | 2 | - | 2 | 2 | - | - | - | - | - | 3 | 2 |
| S401.4  | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | - | 2 | 2 |
| S401.5  | 3 | 2 | 2 | 2 | - | 2 | 2 | - | - | - | - | - | 3 | 2 |
| <b>S402 – ST5412 – PROJECT WORK ( PHASE – II)</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| S402.1  | 3 | 3 | - | - | 2 | - | - | - | - | 2 | - | 2 | 2 | 2 |
| S402.2  | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 2 | 2 | 2 |
| S402.3  | 3 | 3 | - | - | 2 | - | - | - | - | 2 | - | 2 | 3 | 2 |
| S402.5  | 3 | 3 | - | - | 2 | - | - | - | - | 2 | - | 2 | 2 | 3 |
| S402.5  | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 2 | 3 | 2 |

  
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**COMPUTER SCIENCE  
AND  
ENGINEERING**



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| <b>REGULATION - 2017 - UG</b>                           |   |                 |
|---|---|-----------------|
| <b>S.NO</b>   | <b>COURSE OUTCOME</b>   | <b>BT LEVEL</b> |
| <b>SEMESTER III</b>                                     |   |                 |
| <b>C301-MA8351/DISCRETE MATHEMATICS</b>                 |   |                 |
| <b>C301.1</b>   | Reformulating and applying statements from common language to formal logic                    | K3              |
| <b>C301.2</b>   | Identify the structures at various levels in combinatorial                                    | K3              |
| <b>C301.3</b>   | Compare various groups and its algorithms in computer programming                             | K3              |
| <b>C301.4</b>   | Demonstrate the concept of groups & subgroups   | K3              |
| <b>C301.5</b>   | Exposed the concepts and properties of lattices and Boolean algebra in mathematical manner    | K3              |
| <b>C302-CS8351/DIGITAL PRINCIPLES AND SYSTEM DESIGN</b> |   |                 |
| <b>C302.1</b>   | Simplify Boolean functions using K map and tabulation method.                                 | K3              |
| <b>C302.2</b>   | Design and Analyze Combinational Circuits   | K4              |
| <b>C302.3</b>   | Design and Analyze Sequential Circuits  | K4              |
| <b>C302.4</b>   | Implement designs using Programmable Logic Devices  | K3              |
| <b>C302.5</b>   | Interpret HDL code for combinational and Sequential Circuits                                  | K2              |
| <b>C303-CS8391/DATA STRUCTURES</b>                      |   |                 |
| <b>C303.1</b>   | Implement the operations of List ADT for problem solving.                                     | K1              |
| <b>C303.2</b>   | Apply the different linear data structures (Stack and Queue) to problem solutions.            | K3              |
| <b>C303.3</b>   | Implement the tree data structures for solving the given problems.                            | K3              |
| <b>C303.4</b>   | Apply the graph data structures to solve the given problems.                                  | K3              |
| <b>C303.5</b>   | Implement the various sorting and searching algorithms.                                       | K2              |
| <b>C303.6</b>   | Understand the hashing Techniques to solve the collision problems.                            | K2              |
| <b>C304-CS8392/OBJECT ORIENTED PROGRAMMING</b>          |   |                 |
| <b>C304.1</b>   | Classify the difference between object oriented programming and procedural oriented language. | K2              |
| <b>C304.2</b>   | Identify the members of a class and its relationship for a particular problem.                | K3              |
| <b>C304.3</b>   | Demonstrate the concepts of polymorphism and inheritance                                      | K3              |

  
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|---|--|----|
| C304.4  | Identify how to overcome the disrupts of normal flow with the sequence of data.  | K2 |
| C304.5  | Illustrate the importance of concurrency and able to apply the classes and interfaces as parameter.  | K3 |
| C304.6  | Analyze platform independent application runtime environment and choose appropriate run time environment to create GUI and web application using java. | K4 |
| <b>C305-EC8395/COMMUNICATION ENGINEERING</b>                |  |    |
| C305.1  | Illustrate analog communication techniques   | K2 |
| C305.2  | Explain digital communication techniques   | K2 |
| C305.3  | Illustrate data and pulse communication techniques   | K2 |
| C305.4  | Make use of various error control coding techniques to identify/correct errors   | K2 |
| C305.5  | Outline multi-user radio communication   | K2 |
| C305.6  | Illustrate different types of noise and its calculation.   | K3 |
| <b>C306-CS8381/DATA STRUCTURES LABORATORY</b>               |  |    |
| C306.1  | Develop programs to implement linear Data Structures operations  | K2 |
| C306.2  | Design programs to apply list, stack & queue operations  | K3 |
| C306.3  | Build programs to implement non linear Data Structures operations  | K2 |
| C306.4  | Apply non linear Data Structures for solving problems.   | K3 |
| C306.5  | Develop programs to implement sorting & searching algorithms.  | K2 |
| C306.6  | Design programs to implement various collision resolution techniques in hashing.   | K2 |
| <b>C307- CS8383/ OBJECT ORIENTED PROGRAMMING LABORATORY</b> |  |    |
| C307.1  | Classify the difference between object oriented programming and procedural oriented language.  | K2 |
| C307.2  | Identify the members of a class and its relationship for a particular problem.   | K2 |
| C307.3  | Demonstrate the concepts of polymorphism and inheritance.  | K3 |
| C307.4  | Identify how to overcome the disrupts of normal flow with the sequence of data.  | K2 |
| C307.5  | Summarize the importance of concurrency and able to apply the classes and interfaces as parameter.   | K2 |

  
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| <b>C307.6</b>  | Analyze platform independent application runtime environment and choose appropriate run time environment to create GUI and web application using java. | K3 |
| <b>C308-CS8382/DIGITAL SYSTEMS LABORATORY</b>                    |  |    |
| <b>C308.1</b>  | Construct Sequential logic circuits to perform Count & Shift   | K3 |
| <b>C308.2</b>  | Build combinational logic circuits to perform arithmetic operations.   | K3 |
| <b>C308.3</b>  | Construct Sequential logic circuits to perform Count   | K3 |
| <b>C308.4</b>  | Implement sequential circuits like registers and counters.   | K3 |
| <b>C308.5</b>  | Construct Sequential logic circuits to perform Shift Operations  | K3 |
| <b>C309-HS8381/INTERPERSONAL SKILLS/LISTENING &amp; SPEAKING</b> |  |    |
| <b>C309.1</b>  | Adeptly use the spoken word in interpersonal communication, small group interactions and public speaking.  | K3 |
| <b>C309.2</b>  | Use the written word for informational, persuasive and creative poses.   | K3 |
| <b>C309.3</b>  | Use language in ways appropriate of the communicative contexts they find themselves in both during and after the education.                            | K2 |
| <b>C309.4</b>  | Analyze communication context in terms of varieties of language.   | K4 |
| <b>C309.5</b>  | Develop a global awareness of political, social and corporate issues influenced by communication sensitivity and skills.                               | K3 |
| <b>SEMESTER IV</b>   |  |    |
| <b>C401-MA8402/PROBABILITY AND QUEUEING THEORY</b>               |  |    |
| <b>C401.1</b>  | Analyze the fundamental knowledge of the concept of probability in real life phenomenon  | K4 |
| <b>C401.2</b>  | Apply the concept of two dimensional random variable in engineering discipline   | K3 |
| <b>C401.3</b>  | Make use of Stochastic process to solve real life application  | K2 |
| <b>C401.4</b>  | Analyze the queuing models   | K4 |
| <b>C401.5</b>  | Identify solutions for probabilistic models  | K2 |
| <b>C402- CS8491/COMPUTER ARCHITECTURE</b>                        |  |    |
| <b>C304.1</b>  | Identify the hardware blocks, instructions set & addressing mode   | K2 |
| <b>C304.2</b>  | Solving the architecture related problems using arithmetic operations  | K3 |
| <b>C304.3</b>  | Use various matrix to calculate the performance of a computer system   | K3 |

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| C304.4  | Detect pipeline hazards and identify possible solutions to those hazards.                      | K2 |
| C304.5  | Overcome the challenges of parallelism and its classifications.                                | K2 |
| C304.6  | Demonstrate the basic concepts of memory and I/O Systems                                       | K2 |
| <b>C403- CS8492/DATABASE MANAGEMENT SYSTEMS</b>   |  |    |
| C403.1  | Illustrate the database design for applications.   | K2 |
| C403.2  | Make use of ER diagram and normalization techniques in database application                    | K3 |
| C403.3  | Apply concurrency control & recovery mechanism for database problems.                          | K2 |
| C403.4  | Apply the various concepts in query processing.  | K2 |
| C403.5  | Compare various storage techniques in database.  | K2 |
| C403.6  | Apply security concepts to databases   | K2 |
| <b>C404- CS8451/DESIGN ANALYSIS OF ALGORITHMS</b> |  |    |
| C404.1  | Interpret the fundamental needs of algorithms in problem solving.                              | K3 |
| C404.2  | Classify the different algorithm design techniques for problem solving.                        | K2 |
| C404.3  | Develop algorithms for various computing problems.   | K3 |
| C404.4  | Analyze the time and space complexity of various algorithms.                                   | K3 |
| C404.5  | Identify the limitations of algorithms in problem solving.                                     | K2 |
| C404.6  | To identify the types of problem, formulate, analyze and compare the efficiency of algorithms. | K2 |
| <b>C405- CS8493/OPERATING SYSTEMS</b>             |  |    |
| C405.1  | Summarize the basic concepts and functions of Operating Systems                                | K2 |
| C405.2  | Outline various threading models, process synchronization and deadlocks                        | K2 |
| C405.3  | Compare the performance of various CPU scheduling algorithms                                   | K3 |
| C405.4  | Outline the basic concept of various memory management schemes                                 | K2 |
| C405.5  | Expound I/O management and file systems  | K2 |
| C405.6  | Identified the model Linux multifunction server and utilize local network services             | K2 |

  
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| <b>C406- CS8494/SOFTWARE ENGINEERING</b>                  |  |    |
|---|--|----|
| <b>C406.1</b>   | Explain the software engineering process and project management  | K2 |
| <b>C406.2</b>   | Demonstrate software requirements and analysis   | K2 |
| <b>C406.3</b>   | Outline the software design process and user interface   | K2 |
| <b>C406.4</b>   | Compare and contrast various software testing  | K2 |
| <b>C406.5</b>   | Discuss about the software integration and project management  | K2 |
| <b>C407-CS8481/DATABASE MANAGEMENT SYSTEMS LABORATORY</b> |  |    |
| <b>C407.1</b>   | Infer database language commands to create simple database   | K2 |
| <b>C407.2</b>   | Analyze the database using queries to retrieve records   | K2 |
| <b>C407.3</b>   | Applying PL/SQL for processing database  | K2 |
| <b>C407.4</b>   | Analyze front end tools to design forms, reports and menus   | K3 |
| <b>C407.5</b>   | Develop solutions using database concepts for real time requirements.  | K2 |
| <b>C407.6</b>   | Develop database modeling for a problem.   | K3 |
| <b>C408-CS8461/OPERATING SYSTEMS LABORATORY</b>           |  |    |
| <b>C408.1</b>   | Illustrate about the Unix command, shell programming and to compare the performance of various CPU scheduling algorithm. | K3 |
| <b>C408.2</b>   | Implement dead lock avoidance, detection algorithm.  | K2 |
| <b>C408.3</b>   | Implement semaphore.   | K2 |
| <b>C408.4</b>   | Create process and implement IPC.  | K2 |
| <b>C408.5</b>   | Analyze the performance of the various page replacement algorithms   | K3 |
| <b>C408.6</b>   | Implement file organization and file allocation strategies.  | K2 |
| <b>C409-3S8461/ADVANCED READING AND WRITING</b>           |  |    |
| <b>C409.1</b>   | Take international examination such as IELTS and TOEFL   | K3 |
| <b>C409.2</b>   | Participate in Group Discussion  | K2 |
| <b>C409.3</b>   | Successfully answer questions in Interviews.   | K3 |
| <b>C409.4</b>   | Make effective Presentations.  | K3 |
| <b>C409.5</b>   | Participate confidently and appropriately in conversations both formal and informal                                      | K3 |

  
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| <b>SEMESTER /V</b>                                      |   |    |
|---|---|----|
| <b>C501-MA8551/ALGEBRA AND NUMBER THEORY</b>            |   |    |
| <b>C501.1</b>   | Reformulate statements from common language to formal logic and apply the method of proofs to propositional and predicate calculus. | K2 |
| <b>C501.2</b>   | Identify the structures on various levels in combinatorial analysis and generating functions  | K2 |
| <b>C501.3</b>   | Discuss various graph and its algorithms in computer programming.   | K2 |
| <b>C501.4</b>   | Demonstrate the examples of subgroups and normal subgroup and use the concepts of isomorphism and homomorphism for groups, rings.   | K3 |
| <b>C501.5</b>   | Exposed the concepts and properties of lattices and Boolean algebra in mathematical manner.   | K3 |
| <b>C502-CS8591/COMPUTER NETWORKS</b>                    |   |    |
| <b>C502.1</b>   | Understand the basic layers and its function in computer networks.  | K2 |
| <b>C502.2</b>   | Evaluate the performance of a network.  | K3 |
| <b>C502.3</b>   | Evaluate the basis of how data flows one node to another  | K3 |
| <b>C502.4</b>   | Analyze and design routing algorithms   | K3 |
| <b>C502.5</b>   | Design protocols for various functions in the network   | K2 |
| <b>C502.6</b>   | Understand the working of various application layer protocols.  | K2 |
| <b>C503-EC8691/MICROPROCESSORS AND MICROCONTROLLERS</b> |   |    |
| <b>C503.1</b>   | Design & implement program on 8086 microprocessor.  | K3 |
| <b>C503.2</b>   | Design and interface I/O circuits.  | K3 |
| <b>C503.3</b>   | Design Memory Interfacing circuit   | K3 |
| <b>C503.4</b>   | Design and implement 8051 microcontroller based systems.  | K3 |
| <b>C503.5</b>   | Understand the Bus Structure and advanced processor   | K3 |
| <b>C504-CS8501/THEORY OF COMPUTATION</b>                |   |    |
| <b>C504.1</b>   | Design automata and prove a statement   | K3 |
| <b>C504.2</b>   | Construct regular expression for a pattern  | K3 |
| <b>C504.3</b>   | Correlate different types of automata to real world applications  | K3 |
| <b>C504.4</b>   | Design a turing machine to solve problem on mathematical foundations  | K3 |
| <b>C504.5</b>   | Decide whether a problems is decidable or not   | K3 |

  
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|--|---|----|
| C504.6   | Identify different computational complexities   | K3 |
| <b>C505-CS8592/OBJECT ORIENTED ANALYSIS AND DESIGN</b>             |   |    |
| C505.1   | Understand the difference between object oriented programming and procedural oriented language  | K2 |
| C505.2   | Identify members of a class and its relationships for a particular problem  | K2 |
| C505.3   | Demonstrate the concepts of polymorphism and inheritance  | K2 |
| C505.4   | Identify how to overcome the disrupts of normal flow with the sequence of data  | K2 |
| C505.5   | Understand the importance of concurrency and able to apply the classes and interfaces as parameters   | K2 |
| C505.6   | Analyze platform independent application runtime environment and choose appropriate runtime environment to create GUI and Web applications using Java language. | K3 |
| <b>C506-OCE552/GEOGRAPHICAL INFORMATION SYSTEMS</b>                |   |    |
| C506.1   | Analyze the basic components of GIS.  | K4 |
| C506.2   | Classify the data models, coordinate systems and data quality.  | K2 |
| C506.3   | Process spatial and attribute data inputs and prepare the data linking and mapping.   | K3 |
| C506.4   | Identify the data analysis tools and rectify mapping inaccuracies.  | K4 |
| C506.5   | Formulate and solve geospatial problems.  | K3 |
| <b>C507-EC8681/MICROPROCESSORS AND MICROCONTROLLERS LABORATORY</b> |   |    |
| C507.1   | Design & implement program on 8086 microprocessor.  | K3 |
| C507.2   | Design and interface I/O circuits.  | K3 |
| C507.3   | Design Memory Interfacing circuit   | K3 |
| C507.4   | Design and implement 8051 microcontroller based systems.  | K3 |
| C507.5   | Understand the Bus Structure and advanced processor   | K3 |
| <b>C508-CS8582/OBJECT ORIENTED ANALYSIS AND DESIGN LABORATORY</b>  |   |    |
| C508.1   | Analyze, design, document the requirements through use case driven approach   | K3 |
| C508.2   | Identity, analyze and model structural and behavioral concepts of the   | K3 |

  
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|   | system   |    |
| <b>C508.3</b>                               | Develop explore the conceptual model into various scenarios and applications     | K3 |
| <b>C508.4</b>                               | Apply the concepts of architectural design for deploying the code for software.  | K3 |
| <b>C509-CS8581/NETWORKS LABORATORY</b>      |  |    |
| <b>C509.1</b>                               | Implement various protocol using TCP and UDP                                     | K3 |
| <b>C509.2</b>                               | Compare the performance of different transport layer protocols                   | K3 |
| <b>C509.3</b>                               | Use simulation tools to analyze the performance of various network protocols     | K3 |
| <b>C509.4</b>                               | Analyze various routing algorithms   | K3 |
| <b>C509.5</b>                               | Implement error correction codes   | K3 |
| <b>YEAR / SEMESTER : III/VI</b>             |  |    |
| <b>C601-CS8651/INTERNET PROGRAMMING</b>     |  |    |
| <b>C601.1</b>                               | Implement various protocol using TCP and UDP                                     | K3 |
| <b>C601.2</b>                               | Compare the performance of different transport layer protocols                   | K2 |
| <b>C601.3</b>                               | Use simulation tools to analyze the performance of various network protocols     | K4 |
| <b>C601.4</b>                               | Analyze various routing algorithms   | K4 |
| <b>C601.5</b>                               | Implement error correction codes   | K3 |
| <b>C602-CS8691/ ARTIFICIAL INTELLIGENCE</b> |  |    |
| <b>C602.1</b>                               | Identify problems that are able to solution by AI methods.                       | K2 |
| <b>C602.2</b>                               | Recognize appropriate AI methods to solve a given problem.                       | K2 |
| <b>C602.3</b>                               | Able to interpret the problem in the given logic.                                | K3 |
| <b>C602.4</b>                               | Implement basic AI algorithms.   | K3 |
| <b>C602.5</b>                               | Assess critically the techniques presented and apply them to real world problems | K3 |
| <b>C603-CS8601/MOBILE COMPUTING</b>         |  |    |
| <b>C603.1</b>                               | Comprehend the basics of Mobile Computing  | K2 |
| <b>C603.2</b>                               | Express the functionality of Mobile IP and Transport Layer                       | K2 |
| <b>C603.3</b>                               | Classify different types of mobile telecommunication systems                     | K2 |

  
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|--|--|----|
| <b>C603.4</b>                          | Implement Adhoc networks with routing protocols  | K3 |
| <b>C603.5</b>                          | Use mobile operating systems in developing mobile applications   | K2 |
| <b>C603.6</b>                          | Synthesize new knowledge in the area of mobile computing by using appropriate techniques.  | K2 |
| <b>C604-CS8602/COMPILER DESIGN</b>     |  |    |
| <b>C604.1</b>                          | Design and implement a prototype compiler to correct code.   | K3 |
| <b>C604.2</b>                          | Diagnose the data flow anomalies.  | K3 |
| <b>C604.3</b>                          | Work with debugger.  | K3 |
| <b>C604.4</b>                          | Relate parallel processing and architecture interface at runtime by customizing compilation process to application.                    | K3 |
| <b>C604.5</b>                          | Apply the various code optimization techniques.  | K3 |
| <b>C604.6</b>                          | Utilize the different compiler construction tools for optimization of machine language.  | K2 |
| <b>C605-CS8603/DISTRIBUTED SYSTEMS</b> |  |    |
| <b>C605.1</b>                          | Know the issues of designing Distributed systems and understand the fundamentals of Distributed systems                                | K2 |
| <b>C605.2</b>                          | Make use of Message ordering paradigms and snapshot recording algorithm  | K2 |
| <b>C605.3</b>                          | Apply the Distributed Mutual Exclusion algorithm and to detect deadlock in Distributed systems   | K3 |
| <b>C605.4</b>                          | Apply Check Pointing algorithm for recovering from failure   | K3 |
| <b>C605.5</b>                          | Use Agreement in failure in Distributed systems  | K2 |
| <b>C605.6</b>                          | Implement Peer to Peer computing & Distributed shared memory   | K3 |
| <b>C606-IT8076/SOFTWARE TESTING</b>    |  |    |
| <b>C606.1</b>                          | Formulate problem by following Software Testing Life Cycle   | K2 |
| <b>C606.2</b>                          | Design Manual Test cases for Software Project.   | K2 |
| <b>C606.3</b>                          | Identify the realistic problem for different category of software  | K2 |
| <b>C606.4</b>                          | Use automation testing tool students will be able test the software.   | K3 |
| <b>C606.5</b>                          | Follow the process related activity and testing techniques to work as team member  | K3 |
| <b>C606.6</b>                          | Use practical knowledge of a variety of ways to test software and an understanding of some of the tradeoffs between testing techniques | K3 |

  
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| <b>C607-CS8661/INTERNET PROGRAMMING LABORATORY</b>           |   |    |
|--|---|----|
| <b>C607.1</b>  | Understand, analyze and apply the role of languages like HTML, XML, and JavaScript.           | K3 |
| <b>C607.2</b>  | Analyze a web page and identify its elements and attributes                                   | K4 |
| <b>C607.3</b>  | Develop java program based on protocols like HTTP, SMTP, POP3 and FTP.                        | K3 |
| <b>C607.4</b>  | Create dynamic web pages using Servlet and JSP.   | K3 |
| <b>C607.5</b>  | Obtain the knowledge on data manipulation in a web.   | K3 |
| <b>C608-CS8662/MOBILE APPLICATION DEVELOPMENT LABORATORY</b> |   |    |
| <b>C608.1</b>  | Build a native application using GUI components and Mobile application development frame work | K3 |
| <b>C608.2</b>  | Develop an application using basic graphical primitives and databases                         | K3 |
| <b>C608.3</b>  | Construct an application using multi threading and RSS feed                                   | K3 |
| <b>C608.4</b>  | Make use of location identification using GPS in an application                               | K3 |
| <b>C608.5</b>  | Design and Implement various mobile applications using emulators.                             | K3 |
| <b>C609-CS8611/MINI PROJECT</b>                              |   |    |
| <b>C609.1</b>  | Choose problems with technical importance and societal contribution                           | K3 |
| <b>C609.2</b>  | Identify and survey the relevant literature for getting exposed to related solutions          | K3 |
| <b>C609.3</b>  | Build project plans with feasible requirements  | K3 |
| <b>C609.4</b>  | Analyze, design and develop adaptable and reusable solutions                                  | K4 |
| <b>C609.5</b>  | Implement and test solutions to trace against the user requirements                           | K3 |
| <b>C609.6</b>  | Deploy the solutions for better manageability and provide scope for improvability             | K3 |
| <b>C610-HS8581/PROFESSIONAL COMMUNICATION</b>                |   |    |
| <b>C610.1</b>  | Apply appropriate communication skills across settings, purposes and audiences.               | K3 |
| <b>C610.2</b>  | Demonstrate knowledge of communication theory and applications.                               | K3 |
| <b>C610.3</b>  | Practice critical thinking to develop innovative and well-founded                             | K3 |

  
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|  | perspectives related to the students emphasis. Build and maintain healthy and effective relationships.                   |    |
| <b>C610.4</b>  | Use technology to communicate effectively in various settings and contexts.  | K2 |
| <b>C610.5</b>  | Demonstrate appropriate and professional ethical behavior.   | K3 |
| <b>SEMESTER VII</b>                                  |  |    |
| <b>C701-MG8591/PRINCIPLES OF MANAGEMENT</b>          |  |    |
| <b>C701.1</b>  | Evaluate the global context for taking managerial actions of planning, organizing and controlling.                       | K2 |
| <b>C701.2</b>  | Assess global situation, including opportunities and threats that will impact management of an organization.             | K3 |
| <b>C701.3</b>  | Integrate management principles into management practices.   | K2 |
| <b>C701.4</b>  | Assess managerial practices and choices relative to ethical principles and standards.                                    | K3 |
| <b>C701.5</b>  | Specify how the managerial tasks of planning, organizing, and controlling can be executed in a variety of circumstances. | K2 |
| <b>C702-CS8792/CRYPTOGRAPHY AND NETWORK SECURITY</b> |  |    |
| <b>C702.1</b>  | To explain the basics of number theory and compare the encryption techniques   | K2 |
| <b>C702.2</b>  | To Summarize the functionality of public key cryptography  | K2 |
| <b>C702.3</b>  | To apply the message authentication functions and secure algorithms for secure transactions                              | K3 |
| <b>C702.4</b>  | To demonstrate and apply the security systems  | K3 |
| <b>C702.5</b>  | To discuss the different levels of security and services   | K2 |
| <b>C702.6</b>  | To transact and keep the information in a secured manner   | K2 |
| <b>C703-CS8791/CLOUD COMPUTING</b>                   |  |    |
| <b>C703.1</b>  | Understand the concept of distributed computing.   | K2 |
| <b>C703.2</b>  | Apply grid computing techniques.   | K3 |
| <b>C703.3</b>  | Understand the concept of virtualization.  | K2 |
| <b>C703.4</b>  | Use grid and cloud tool kits to develop the applications.  | K2 |
| <b>C703.5</b>  | Apply the security models in the grid and cloud environment  | K3 |

  
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| C703.6  | Design and develop a private cloud environment with security enhanced.  | K2 |
| <b>C704- OBM772/HOSPITAL MANAGEMENT</b>           |   |    |
| C704.1  | Explain the principles of hospital administration.  | K2 |
| C704.2  | Identify the importance of human resource management  | K2 |
| C704.3  | List various marketing research techniques.   | K2 |
| C704.4  | Identify Information management systems and its uses.   | K2 |
| C704.5  | Understand safety procedures followed in hospitals  | K2 |
| <b>C705- IT8074/SERVICE ORIENTED ARCHITECTURE</b> |   |    |
| C705.1  | Infer the XML Schema, Name Space and Document Structure.  | K2 |
| C705.2  | Build Applications based on XML.  | K3 |
| C705.3  | Outline the SOA ethics and Service levels.  | K2 |
| C705.4  | Develop web service using technology elements.  | K3 |
| C705.5  | Build SOA based applications for intra and inter-enterprise applications.   | K3 |
| C705.6  | Elucidate the security issues in XML.   | K2 |
| <b>C706- CS8079/HUMAN COMPUTER INTERACTION</b>    |   |    |
| C706.1  | Competent to design effective dialog for HCI  | K2 |
| C706.2  | Apply an interactive design process and universal design principles in designing HCI systems  | K3 |
| C706.3  | Able to discuss HCI issues in groupware, ubiquitous computing, virtual reality, multimedia, and Word Wide Web-related environments                  | K2 |
| C706.4  | Design mock ups and carry out user and expert evaluation of interfaces  | K3 |
| C706.5  | Develop meaningful user interface   | K2 |
| C706.6  | How cognition and perception, which encompass attention, memory, thought, the“senses” play a role in affecting the experience of interactive design | K2 |
| <b>C707-CS8711/CLOUD COMPUTING LABORATORY</b>     |   |    |
| C707.1  | Make use of the grid toolkit.   | K2 |
| C707.2  | Design and implement new grid applications on the grid.   | K3 |
| C707.3  | Make use of the cloud toolkit.  | K2 |

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|--|--|----|
| C707.4                                 | Build cloud applications on cloud.   | K3 |
| C707.5                                 | Construct the applications according to the services.  | K2 |
| C707.6                                 | Develop a grid and cloud portal  | K3 |
| <b>C708-IT8761/SECURITY LABORATORY</b> |  |    |
| C708.1                                 | To apply the cryptographic algorithm for the secured data communication.   | K3 |
| C708.2                                 | Apply the knowledge of symmetric cryptography to implement simple ciphers  | K3 |
| C708.3                                 | Analyze and implement public key algorithms like RSA   | K4 |
| C708.4                                 | To utilize the open source tools for analyzing the network and to provide the security for the date.                     | K3 |
| C708.5                                 | Apply and set up firewalls and intrusion detection systems using open source technologies and to explore email security. | K3 |
| <b>SEMESTER VIII</b>                   |  |    |
| <b>C801-CS8074/CYBER FORENSICS</b>     |  |    |
| C801.1                                 | Identify the process in taking digital evidence.   | K2 |
| C801.2                                 | Describe how to conduct an investigation using methods of memory, network and email forensics.                           | K2 |
| C801.3                                 | Analyze various data acquisition tools for collecting digital evidence.  | K4 |
| C801.4                                 | Outline a range of situations where digital forensics may be applicable  | K2 |
| C801.5                                 | Identify issues in the practice of digital forensic investigations.  | K3 |
| C801.6                                 | Identify and apply various computer forensics tools to solve the computer forensic cases.                                | K3 |
| <b>C802-CS8078/GREEN COMPUTING</b>     |  |    |
| C802.1                                 | Acquire knowledge to adopt green computing practices to minimize negative impacts on the environment.                    | K2 |
| C802.2                                 | Enhance the skill in energy saving practices in their use of hardware.   | K2 |
| C802.3                                 | Evaluate technology tools that can reduce paper waste and carbon footprint by the stakeholders.                          | K3 |
| C802.4                                 | Understand the ways to minimize equipment disposal requirements.   | K2 |
| C802.5                                 | Identify and apply various Computing tools to solve the Environment cases.   | K3 |

| C803-CS8811/PROJECT WORK |   |    |
|--------------------------|---|----|
| C803.1                   | Identify and finalize problem statement by surveying variety of domains                   | K2 |
| C803.2                   | Perform requirement analysis and identify design methodologies                            | K3 |
| C803.3                   | Apply advanced programming techniques   | K3 |
| C803.4                   | Present technical report by applying different visualization tools and Evaluation metrics | K3 |

| CO-PO MAPPING                                    |     |     |     |     |     |     |     |     |                 |      |      |      |      |      |
|--|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|------|------|------|------|------|
| C301-MA8351/DISCRETE MATHEMATICS                 |     |     |     |     |     |     |     |     |                 |      |      |      |      |      |
|  | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO <sub>9</sub> | PO10 | PO11 | PO12 | PSO1 | PSO2 |
| C301.1   | 3   | 3   | 2   | 2   | -   | -   | -   | -   | -               | -    | -    | 2    | -    | 2    |
| C301.2   | 3   | 3   | 2   | 2   | 2   | -   | -   | -   | -               | -    | -    | 2    | 2    | 2    |
| C301.3   | 3   | 2   | 2   | 3   | 3   | -   | -   | -   | -               | -    | -    | 2    | 3    | 3    |
| C301.4   | 2   | 2   | 2   | -   | -   | -   | -   | -   | -               | -    | -    | -    | -    | 2    |
| C301.5   | 3   | 3   | 2   | -   | 2   | -   | -   | -   | -               | -    | -    | 2    | 2    | 2    |
| C302-CS8351/DIGITAL PRINCIPLES AND SYSTEM DESIGN |     |     |     |     |     |     |     |     |                 |      |      |      |      |      |
| C302.1   | 3   | 3   | 2   | 2   | -   | -   | 2   | -   | -               | -    | -    | -    | 2    | 2    |
| C302.2   | 3   | 3   | 2   | 2   | -   | -   | 2   | -   | -               | -    | -    | -    | 2    | 2    |
| C302.3   | 3   | 3   | 2   | 2   | -   | -   | 2   | -   | -               | -    | -    | -    | 2    | 2    |
| C302.4   | 3   | 3   | 2   | 2   | -   | -   | 2   | -   | -               | -    | -    | -    | 2    | 2    |
| C302.5   | 3   | 3   | 2   | 2   | -   | -   | 2   | -   | -               | -    | -    | -    | 2    | 2    |
| C302.6   | 3   | 3   | 2   | 2   | -   | -   | 2   | -   | -               | -    | -    | -    | 2    | 2    |
| C303-CS8391/DATA STRUCTURES                      |     |     |     |     |     |     |     |     |                 |      |      |      |      |      |
| C303.1   | 3   | 3   | 1   | 1   | 2   | -   | -   | -   | -               | -    | -    | 1    | 3    | 1    |
| C303.2   | 3   | 3   | 2   | 2   | 2   | -   | -   | -   | -               | -    | -    | 1    | 3    | 2    |
| C303.3   | 3   | 3   | 2   | 2   | 2   | -   | -   | -   | -               | -    | -    | 1    | 3    | 2    |
| C303.4   | 3   | 1   | -   | -   | -   | -   | -   | -   | -               | -    | -    | -    | 3    | 1    |
| C303.5   | 3   | 3   | 2   | 2   | 2   | -   | -   | -   | -               | -    | -    | 1    | 3    | 2    |

  
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| <b>C304-CS8392/OBJECT ORIENTED PROGRAMMING</b>             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C304.1   | 3 | 3 | - | 3 | 2 | - | - | - | - | - | - | - | 3 | - |
| C304.2   | 3 | 3 | - | 3 | 2 | - | - | - | - | - | - | - | 3 | - |
| C304.3   | 3 | 3 | - | 2 | 2 | - | - | - | - | - | - | 3 | 3 | 2 |
| C304.4   | 3 | 3 | - | 2 | 2 | - | - | - | - | - | - | - | 3 | - |
| C304.5   | 3 | 3 | 2 | 2 | 2 | - | - | - | - | - | - | 3 | 3 | 2 |
| C304.6   | 3 | 3 | - | 3 | 2 | - | - | - | - | - | - | - | 3 | - |
| <b>C305-EC8395/COMMUNICATION ENGINEERING</b>               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C305.1   | 3 | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | 2 | 2 |
| C305.2   | 3 | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | 2 | 2 |
| C305.3   | 3 | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | 2 | 2 |
| C305.4   | 3 | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | 2 | 2 |
| C305.5   | 3 | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | 2 | 2 |
| C305.6   | 3 | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | 2 | 2 |
| <b>C306-CS8381/DATA STRUCTURES LABORATORY</b>              |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C306.1   | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - | 3 | - |
| C306.2   | 3 | 2 | 3 | - | - | - | - | - | - | - | - | - | 3 | - |
| C306.3   | 3 | 3 | 3 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C306.4   | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C306.5   | 3 | 3 | 3 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C306.6   | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| <b>C307- CS8383/OBJECT ORIENTED PROGRAMMING LABORATORY</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C307.1   | 3 | 3 | - | 3 | 2 | - | - | - | - | - | - | - | 3 | - |
| C307.2   | 3 | 3 | - | 3 | 2 | - | - | - | - | - | - | - | 3 | - |
| C307.3   | 3 | 3 | - | 2 | 2 | - | - | - | - | - | - | 3 | 3 | 2 |
| C307.4   | 3 | 3 | - | 2 | 2 | - | - | - | - | - | - | - | 3 | - |
| C307.5   | 3 | 3 | 2 | 2 | 2 | - | - | - | - | - | - | 3 | 3 | 2 |

  
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GUNDUR, TIRUCHIRAPALLI - 620 007.

|  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C307.6   | 3 | 3 | - | 3 | 2 | - | - | - | - | - | - | - | 3 | - |
| <b>C308- CS8382/ DIGITAL SYSTEMS LABORATORY</b>                  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C308.1   | 3 | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | 2 | 2 |
| C308.2   | 3 | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | 2 | 2 |
| C308.3   | 3 | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | 2 | 2 |
| C308.4   | 3 | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | 2 | 2 |
| <b>C309-3S8381/INTERPERSONAL SKILLS/LISTENING &amp; SPEAKING</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C309.1   | 3 | 3 | - | 2 | 2 | - | - | - | - | - | - | 2 | - | 2 |
| C309.2   | 3 | 2 | - | 2 | 2 | - | - | - | - | - | - | 2 | - | - |
| C309.3   | 3 | 3 | - | 3 | 2 | - | - | - | - | - | - | 2 | - | - |
| C309.4   | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 2 | - | - |
| C309.5   | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 2 | - | - |
| <b>C401-MA8402/ PROBABILITY AND QUEUEING THEORY</b>              |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C401.1   | 2 | 3 | 2 | 2 | 1 | - | - | - | - | - | - | - | 2 | 1 |
| C401.2   | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 1 |
| C401.3   | 3 | 3 | - | - | - | - | - | - | - | - | - | - | 2 | 3 |
| C401.4   | 3 | 3 | 2 | - | - | - | - | - | - | - | - | - | 2 | 2 |
| C401.5   | - | - | 3 | 3 | - | - | - | - | - | - | - | - | 3 | - |
| <b>C402-CS8491/ COMPUTER ARCHITECTURE</b>                        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C402.1   | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - | - | - |
| C402.2   | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - | 3 | - |
| C402.3   | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - | 2 |
| C402.4   | 3 | 2 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 3 |
| C402.5   | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 3 |
| C402.6   | 3 | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 | 3 |
| <b>C403-CS8492/ DATABASE MANAGEMENT SYSTEMS</b>                  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C403.1   | 3 | 3 | - | - | - | - | - | - | - | - | - | - | 3 | 3 |
| C403.2   | 3 | 3 | - | 2 | - | 2 | - | - | - | - | - | - | 3 | 2 |

  
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|  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C403.3   | 3 | 3 | - | - | - | 2 | - | - | - | - | - | - | 3 | 2 |
| C403.4   | 3 | 3 | - | - | - | - | - | - | - | - | - | - | 3 | 1 |
| C403.5   | 3 | 3 | - | 2 | - | 2 | 2 | - | - | - | - | - | 3 | 2 |
| C403.6   | 3 | 3 | - | 2 | - | 2 | 2 | - | - | - | - | - | 3 | 2 |
| <b>C404-CS8451/ DESIGN AND ANALYSIS OF ALGORITHMS</b>      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C404.1   | 3 | 2 | - | - | - | - | - | - | - | 3 | - | - | 3 | - |
| C404.2   | 3 | 2 | - | 2 | - | - | - | - | - | - | - | 2 | 3 | 2 |
| C404.3   | 3 | 2 | 2 | 2 | - | 2 | 2 | - | - | - | - | - | 3 | 3 |
| C404.4   | 3 | 2 | 2 | 2 | - | 2 | 2 | - | - | - | - | - | 3 | 2 |
| C404.5   | 3 | 2 | - | 2 | - | - | - | - | - | - | - | - | 3 | 3 |
| C404.6   | 2 | 2 | - | 2 | - | - | - | - | - | - | - | - | 3 | - |
| <b>C405-CS8493/OPERATING SYSTEMS</b>                       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C405.1   | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 | - | 3 |
| C405.2   | 3 | 3 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C405.3   | 2 | 3 | 2 | 2 | - | - | - | 2 | - | - | - | 3 | 3 | 3 |
| C405.4   | 2 | 2 | 2 | 2 | - | - | - | - | - | - | - | 3 | 3 | 3 |
| C405.5   | 2 | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C405.6   | 2 | 2 | 2 | 2 | - | - | - | - | - | - | - | 2 | 2 | 2 |
| <b>C406-CS8494/ SOFTWARE ENGINEERING</b>                   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C406.1   | 3 | 3 | - | - | - | - | - | - | - | - | - | 2 | 3 | 2 |
| C406.2   | 3 | 3 | 2 | - | - | 2 | 3 | 2 | - | - | - | - | 3 | 2 |
| C406.3   | 3 | 3 | 2 | 2 | - | 2 | 3 | 2 | - | - | 2 | - | 3 | 2 |
| C406.4   | 3 | 3 | 3 | 3 | - | - | 3 | 3 | 3 | 3 | 2 | 2 | 3 | 3 |
| C406.5   | 3 | 3 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| C406.6   | 3 | 3 | 2 | 1 | - | 2 | 3 | 2 | - | - | 2 | 2 | 3 | 2 |
| <b>C407-CS8481/ DATABASE MANAGEMENT SYSTEMS LABORATORY</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C407.1   | 3 | 3 | - | - | 2 | - | - | - | - | - | - | - | 3 | 2 |
| C407.2   | 3 | 3 | - | 2 | 2 | 2 | - | - | - | - | - | - | 3 | 2 |

  
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|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C407.3  | 3 | 3 | - | 2 | 2 | 2 | - | 2 | - | - | - | - | 3 | 2 |
| C407.4  | 3 | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | - | 3 | 2 |
| C407.5  | 3 | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | - | 3 | 2 |
| C407.6  | 3 | 3 | 2 | 2 | 2 | 2 | - | 2 | - | - | - | - | 3 | 2 |
| <b>C408-CS8461/ OPERATING SYSTEMS LABORATORY</b>            |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C408.1  | 3 | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 | - |
| C408.2  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C408.3  | 3 | 3 | 3 | 3 | - | - | - | - | - | - | - | - | 3 | 3 |
| C408.4  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C408.5  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| <b>C409-3S8461/ ADVANCED READING AND WRITING LABORATORY</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C409.1  | 3 | 2 | 3 | - | - | - | - | - | 3 | 2 | 2 | 2 | - | - |
| C409.2  | 3 | 2 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 | - | - |
| C409.3  | 3 | 3 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 | - | - |
| C409.4  | 3 | 2 | 2 | - | - | - | - | - | 3 | 2 | 2 | 2 | - | - |
| C409.5  | 3 | 3 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 | - | - |
| <b>C501-MA8551/ ALGEBRA AND NUMBER THEORY</b>               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C501.1  | 3 | 3 | - | 2 | - | - | - | 2 | - | 3 | - | - | 2 | 2 |
| C501.2  | 2 | 2 | 2 | - | - | - | - | 2 | - | 3 | - | - | 2 | - |
| C501.3  | 2 | 2 | - | 2 | - | - | - | 2 | - | 3 | - | - | 2 | - |
| C501.4  | 2 | 2 | - | 2 | - | - | - | 2 | - | 3 | - | - | - | - |
| C501.5  | 3 | 2 | 2 | 2 | - | - | - | 2 | - | - | - | - | - | 2 |
| <b>C502-CS8591/COMPUTER NETWORKS</b>                        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C502.1  | 3 | 3 | 3 | - | - | - | - | - | - | - | - | - | 2 | 2 |
| C502.2  | 3 | 3 | 3 | - | - | - | - | - | - | - | - | - | 2 | 2 |
| C502.3  | 3 | 3 | 3 | - | - | - | - | - | - | - | - | - | 2 | 3 |
| C502.4  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 3 |
| C502.5  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 3 |

  
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|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C502.6  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| <b>C503-EC8691/MICROPROCESSORS AND MICROCONTROLLERS</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C503.1  | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C503.2  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 3 |
| C503.3  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 3 |
| C503.4  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 3 |
| C503.5  | 2 | 2 | 3 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C503.6  | 3 | 3 | 3 | 3 | 3 | 3 | - | - | - | - | 3 | 3 | 3 | 3 |
| <b>C504-CS8501/ THEORY OF COMPUTATION</b>               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C504.1  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 2 | 3 | 2 |
| C504.2  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 2 | 3 | 2 |
| C504.3  | 2 | 3 | - | 2 | - | - | - | - | - | - | - | 2 | 2 | 2 |
| C504.4  | 3 | 3 | 3 | 3 | - | 2 | 2 | - | - | - | - | 2 | 3 | 2 |
| C504.5  | 3 | 3 | - | 3 | - | 2 | - | - | - | - | - | 2 | 3 | 3 |
| C504.6  | 3 | 3 | 2 | 3 | - | 2 | - | - | - | - | - | 2 | 3 | 2 |
| <b>C505-CS8592/ OBJECT ORIENTED ANALYSIS AND DESIGN</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C505.1  | 3 | 3 | 3 | 3 | 3 | - | - | - | - | - | - | - | 3 | 3 |
| C505.2  | 3 | - | - | 2 | - | 2 | 2 | - | - | 3 | 2 | 2 | - | 2 |
| C505.3  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | - |
| C505.4  | 3 | 3 | 2 | - | - | 2 | - | - | - | - | - | - | 3 | 3 |
| C505.5  | 2 | - | 3 | 2 | - | 3 | - | - | - | - | - | - | 3 | 2 |
| <b>C506- OCE552/GEOGRAPHICAL INFORMATION SYSTEMS</b>    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C506.1  | - | - | 3 | - | 2 | - | - | - | - | - | - | - | 2 | 2 |
| C506.2  | 3 | 2 | 2 | - | 1 | - | - | - | - | - | - | - | 2 | 2 |
| C506.3  | 3 | 2 | 2 | - | 1 | 2 | - | - | - | - | - | - | 3 | 3 |
| C506.4  | 2 | 2 | 1 | - | - | 1 | - | - | - | - | - | - | 2 | 2 |
| C506.5  | 3 | 2 | 2 | 2 | - | - | - | - | - | - | - | - | 2 | 2 |
| C506.6  | 3 | 2 | 2 | 2 | - | - | - | - | - | - | - | - | 2 | 2 |

  
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| <b>C507-EC8681/ MICROPROCESSOR AND MICROCONTROLLER LABORATORY</b>  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C507.1   | 3 | 2 | 2 | 2 | 2 | - | - | 2 | 2 | 2 | - | - | 2 | 2 |   |
| C507.2   | 3 | 2 | 2 | 2 | - | - | - | 2 | 2 | 2 | - | - | 2 | 2 |   |
| C507.3   | 3 | 2 | 2 | 2 | - | - | - | 2 | 2 | 2 | - | - | 2 | 2 |   |
| C507.4   | 3 | 2 | 2 | 2 | - | - | - | 2 | 2 | 2 | - | - | 2 | 2 |   |
| C507.5   | 3 | 2 | 2 | 2 | 2 | 2 | - | 2 | 2 | 2 | 2 | - | 2 | 2 |   |
| <b>C508-CS8582/ OBJECT ORIENTED ANALYSIS AND DESIGN LABORATORY</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C508.1   | 3 | 3 | 2 | 2 | 2 | - | - | 2 | 2 | 2 | - | - | 3 | 2 |   |
| C508.2   | 3 | 2 | 2 | 2 | - | - | - | - | 2 | 2 | - | - | 3 | 2 |   |
| C508.3   | 3 | 2 | 3 | - | - | - | - | - | - | - | - | - | 3 | 2 |   |
| C508.4   | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - | 3 | 2 |   |
| C508.5   | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - | - | - |   |
| <b>C509-CS8581/NETWORKS LABORATORY</b>                             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C509.1   | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - | 3 | 2 | 2 |
| C509.2   | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - | 3 | 2 | 2 |
| C509.3   | 3 | 3 | 2 | - | - | - | - | - | - | - | - | - | - | - | 2 |
| C509.4   | 3 | 3 | 2 | - | - | - | - | - | - | - | - | - | - | - | 2 |
| C509.5   | 3 | 3 | 3 | - | - | - | - | - | - | - | - | - | - | - | 2 |
| C509.6   | 3 | 3 | 3 | - | - | - | - | - | - | - | - | - | 3 | 2 | 2 |
| <b>C601-CS8651/ INTERNET PROGRAMMING</b>                           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C601.1   | 3 | 2 | 3 | - | - | 2 | - | - | 2 | - | 3 | 3 | 2 | 2 |   |
| C601.2   | 3 | 2 | 3 | - | - | - | - | - | - | - | - | 3 | - | - |   |
| C601.3   | 3 | 2 | 3 | 3 | - | - | - | - | 2 | - | - | - | 2 | 2 |   |
| C601.4   | 3 | 2 | 3 | 3 | - | - | - | - | 2 | - | - | - | 2 | 2 |   |
| C601.5   | 3 | 3 | 3 | 3 | - | - | - | - | 2 | - | 3 | 2 | 2 | 2 |   |
| C601.6   | 3 | 3 | 3 | - | - | 2 | - | - | 2 | - | 3 | 3 | 3 | 3 |   |

  
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| <b>C602-CS8691/ ARTIFICIAL INTELLIGENCE</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C602.1                                      | 3 | 3 | 3 | 2 | - | 2 | - | - | - | - | - | 3 | - | 2 |
| C602.2                                      | 3 | 3 | 3 | 2 | - | - | 2 | - | - | - | - | 3 | 2 | 2 |
| C602.3                                      | 3 | 3 | 3 | 2 | - | 2 | - | - | - | - | - | 2 | 3 | 2 |
| C602.4                                      | 3 | 3 | 3 | - | - | - | - | - | - | - | - | - | 3 | - |
| C602.5                                      | 3 | 3 | 3 | 2 | - | - | - | 2 | - | - | - | 3 | 2 | 3 |
| <b>C603-CS8601/MOBILE COMPUTING</b>         |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C603.1                                      | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| C603.2                                      | 3 | 2 | - | - | - | - | - | - | - | - | - | - | - | - |
| C603.3                                      | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 2 | - | 2 |
| C603.4                                      | 3 | 3 | 2 | 2 | - | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C603.5                                      | 3 | 3 | 3 | 3 | 3 | 3 | - | 2 | 2 | - | - | 3 | 2 | 3 |
| C603.6                                      | 3 | 3 | 3 | 3 | 2 | 2 | 2 | - | - | - | - | 2 | 3 | 3 |
| <b>C604-CS8602/ COMPILER DESIGN</b>         |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C604.1                                      | 3 | 3 | 3 | 2 | - | - | - | - | 2 | - | - | - | 3 | 2 |
| C604.2                                      | - | 3 | 3 | 3 | 3 | - | - | - | - | - | - | - | 3 | 3 |
| C604.3                                      | 3 | 3 | 3 | 3 | 2 | - | - | - | 2 | - | 2 | - | 3 | 3 |
| C604.4                                      | 3 | 3 | 3 | - | 2 | - | - | - | 2 | - | 2 | - | 3 | 3 |
| C604.5                                      | 3 | - | - | 2 | - | - | - | - | - | - | - | 3 | 3 | 2 |
| C604.6                                      | - | 3 | - | 2 | 3 | - | - | - | - | - | - | - | 2 | 3 |
| <b>C605-CS8603/DISTRIBUTED SYSTEMS</b>      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C605.1                                      | 2 | 2 | 2 | 2 | - | - | - | - | - | - | - | - | - | - |
| C605.2                                      | 3 | 3 | 3 | 3 | 2 | - | - | - | - | - | - | 2 | 2 | 3 |
| C605.3                                      | 2 | 2 | 2 | 2 | - | - | - | - | - | - | - | 2 | - | 2 |
| C605.4                                      | 3 | 2 | 3 | 2 | 2 | - | - | - | - | - | - | 2 | 2 | 3 |
| C605.5                                      | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | - | 2 | 2 | 2 |
| <b>C606-II8076/SOFTWARE TESTING</b>         |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C606.1                                      | - | - | - | 3 | - | - | - | - | - | - | - | - | 3 | - |

  
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|  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C606.2   | - | - | 3 |   | - | - | - | - | - | - | - | - | 3 | - |
| C606.3   | - | - | 2 |   | - | - | - | - | - | - | - | - | 3 | - |
| C606.4   | - | - | - |   | - | - | - | - | - | 3 | 3 | - | 2 | - |
| C606.5   | - | - | - |   | - | - | - | - | - | 2 | 2 | - | 2 | - |
| C606.6   | - | - | 2 | 2 | - | - | - | - | - | - | - | 2 | 2 | 2 |
| <b>C607-CS8661/ INTERNET PROGRAMMING LABORATORY</b>          |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C607.1   | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 2 |
| C607.2   | 2 | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 2 |
| C607.3   | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - | 2 | - |
| C607.4   | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | - | 2 |
| C607.5   | 2 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 2 | 3 |
| C607.6   | 2 | 3 | 3 | 3 | - | - | - | - | - | - | - | - | 2 | 3 |
| <b>C608-CS8662/MOBILE APPLICATION DEVELOPMENT LABORATORY</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C608.1   | 3 | 3 | 2 | - | 3 | - | - | - | - | - | - | - | 3 | 2 |
| C608.2   | 3 | 3 | 2 | - | 2 | - | - | - | - | - | - | - | 3 | 2 |
| C608.3   | 3 | 3 | 2 | - | 2 | - | - | - | - | - | - | - | 2 | 3 |
| C608.4   | 3 | 3 | 2 | - | 3 | - | - | - | - | - | - | - | 3 | 2 |
| C608.5   | 3 | 3 | 2 | - | 2 | - | - | - | - | - | - | - | 3 | 3 |
| <b>C609-CS8611/MINI PROJECT</b>                              |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C609.1   | 3 | 3 | - | 3 | 2 | - | - | - | - | - | - | - | 3 | - |
| C609.2   | 3 | 3 | - | 3 | 2 | - | - | - | - | - | - | - | 3 | - |
| C609.3   | 3 | 3 | - | 2 | 2 | - | - | - | - | - | - | 3 | 3 | 2 |
| C609.4   | 3 | 3 | - | 2 | 2 | - | - | - | - | - | - | - | 3 | - |
| C609.5   | 2 | 2 | 2 | 2 | 2 | - | - | - | - | - | - | 3 | 3 | 2 |
| C609.6   | 2 | 2 | - | 2 | - | - | - | - | - | - | - | - | - | - |
| <b>C610-HS8581/PROFESSIONAL COMMUNICATION</b>                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C610.1   | 3 | 2 | 3 | - | - | - | - | - | 3 | 2 | 2 | 2 | - | - |
| C610.2   | 3 | 2 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 | - | - |

  
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|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C610.3  | 3 | 3 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 | - | - |
| C610.4  | 3 | 2 | 2 | - | - | - | - | - | 3 | 2 | 2 | 2 | - | - |
| C610.5  | 3 | 3 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 | - | - |
| <b>C701-MG8591/PRINCIPLES OF MANAGEMENT</b>           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C701.1  | 2 | - | - | - | - | 2 | 2 | - | 2 | 3 | - | 2 | - | - |
| C701.2  | 2 | - | - | - | - | 2 | 2 | - | 2 | 3 | - | 2 | - | - |
| C701.3  | 3 | - | - | - | - | 3 | 2 | - | 2 | 3 | - | 2 | - | - |
| C701.4  | 3 | - | - | - | - | 3 | 2 | - | 2 | 3 | - | 2 | - | - |
| C701.5  | 2 | - | - | - | - | 2 | 3 | - | 2 | 3 | - | 2 | - | - |
| C701.6  | 2 | - | - | - | - | 2 | 3 | - | 2 | 3 | - | 2 | - | - |
| <b>C702-CS8792/ CRYPTOGRAPHY AND NETWORK SECURITY</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C702.1  | 3 | 3 | 2 | 2 | 2 | - | - | - | - | - | - | 2 | 3 | 2 |
| C702.2  | 3 | 3 | 2 | 2 | 2 | - | 2 | - | - | - | - | 2 | 3 | 2 |
| C702.3  | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 3 | 3 | - | 3 | 2 | 3 | 2 |
| C702.4  | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 3 | 3 |
| C702.5  | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | - | - | - | 2 | 3 | 3 |
| C702.6  | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 |
| <b>C703-CS8791/CLOUD COMPUTING</b>                    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C703.1  | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| C703.2  | 3 | 2 | 2 | 2 | - | 2 | - | - | - | - | - | - | 3 | 2 |
| C703.3  | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| C703.4  | 3 | 3 | 3 | 3 | 3 | 3 | 2 | - | - | - | - | 3 | 3 | 2 |
| C703.5  | 3 | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | 2 | 2 |
| C703.6  | 3 | 3 | 2 | 2 | 3 | - | - | 3 | - | - | - | 3 | 3 | 3 |
| <b>C704/OBM752/ HOSPITAL MANAGEMENT</b>               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C704.1  | 3 | 3 | - | 3 | 2 | - | - | - | - | - | - | - | 3 | - |
| C704.2  | 3 | 3 | - | 3 | 2 | - | - | - | - | - | - | - | 3 | - |
| C704.3  | 3 | 3 | - | 2 | 2 | - | - | - | - | - | - | 3 | 3 | 2 |

  
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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C704.4  | 3 | 3 | - | 2 | 2 | - | - | - | - | - | - | - | 3 | - |
| C704.5  | 3 | 3 | 2 | 2 | 2 | - | - | - | - | - | - | 3 | 3 | 2 |
| C704.6  | 3 | 3 | - | 2 |   | - | - | - | - | - | - | - | - | - |
| <b>C705- IT8074/SERVICE ORIENTED ARCHITECTURE</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C705.1  | 2 | 2 | 3 | - | 2 | - |   | - | - | - | - | - | - | 3 |
| C705.2  | 2 | 2 | 3 | - | 3 | - | - | - | - | - | - | - | - | 3 |
| C705.3  | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | - |
| C705.4  | 2 | 2 | 3 | - | - | - | - | - | - | - | - | - | 2 | - |
| C705.5  | 2 | 2 | 3 | - | 3 | - | - | 2 | - | - | 2 | - | - | 3 |
| C705.6  | 2 | 2 | 3 | - | 3 | - | - | 2 | - | - | 2 | - | - | - |
| <b>C706- CS8079/HUMAN COMPUTER INTERACTION</b>    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C706.1  | 3 | 3 | 2 | - | 2 | - | - | - | - | - | - | - | 1 | 2 |
| C706.2  | 2 | 3 | 3 | 1 | 2 | 3 | - | - | - | - | - | - | 3 | 2 |
| C706.3  | 1 | 2 | - | 2 | - | 2 | - | 1 | - | 1 | - | - | 2 | 2 |
| C706.4  | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 1 | - | - | - | - | 2 | 2 |
| C706.5  | 3 | 3 | 3 | 2 | 2 | 2 | - | - | 1 | - | 2 | - | 1 | 2 |
| C706.6  | 3 | 3 | 2 | 1 | 2 | 2 | 1 | - | - | - | - | - | 3 | 2 |
| <b>C707-CS8711/ CLOUD COMPUTING LABORATORY</b>    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C707.1  | 3 | 3 | 3 | - | 3 | - | - | - | - | - | - | 3 | 3 | 2 |
| C707.2  | 3 | 3 | 3 | 2 | 3 | - | - | - | - | - | - | 3 | 3 | 2 |
| C707.3  | 3 | 3 | 3 | - | 3 | - | - | - | - | - | - | 3 | 2 | 3 |
| C707.4  | 3 | 3 | 3 | 3 | 3 | - | - | - | - | - | - | 3 | 3 | 2 |
| C707.5  | 3 | 3 | 3 | - | 3 | - | - | - | - | - | - | 3 | 3 | 3 |
| C707.6  | 3 | 3 | 3 | - | 3 | - | - | - | - | - | - | 3 | 3 | 2 |
| <b>C708-IT8761/SECURITY LABORATORY</b>            |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C708.1  | 3 | 3 | 3 | 2 | 2 | 2 | - | 2 | 2 | 2 | - | 3 | 3 | 2 |
| C708.2  | 3 | 3 | 3 | 3 | 2 | 3 | - | 2 | 2 | 2 | - | 3 | 3 | 3 |

  
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|                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|-------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C708.3                              | 3 | 3 | 3 | 3 | 2 | 3 | - | 3 | 2 | 2 | - | 3 | 2 | 3 |
| C708.4                              | 3 | 3 | 3 | 3 | 3 | 3 | - | 3 | 3 | 2 | - | 3 | 2 | 3 |
| C708.5                              | 3 | 3 | 2 | - | 3 | 3 | - | 2 | 2 | - | - | 3 | 2 | 2 |
| <b>C801- CS8074/CYBER FROENSICS</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C801.1                              | 3 | 3 | - | - | - | 2 | - | - | - | - | - | 2 | 2 | - |
| C801.2                              | 3 | 3 | - | - | 2 | - | - | - | - | 2 | - | - | 2 | - |
| C801.3                              | 3 | - | - | 2 | 2 | 2 | - | - | - | 2 | - | 2 | - | 2 |
| C801.4                              | 2 | - | - | - | - | 2 | - | - | - | - | - | 2 | - | 2 |
| C801.5                              | 3 | 2 | - | - | - | 2 | - | - | - | - | - | 2 | 2 | - |
| C801.6                              | 3 | - | - | 2 | - | 2 | - | - | - | - | - | 2 | - | 2 |
| <b>C802-CS8078/GREEN COMPUTING</b>  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C802.1                              | - | 3 | - | - |   | 3 | - | - | - | - | - | 2 | 2 | - |
| C802.2                              | 3 | 3 | - | - |   |   | - | - | - | - | - | - | - | - |
| C802.3                              | 3 | - | - | - | 2 | 2 | - | - | - | 2 | - | 2 | - | 2 |
| C802.4                              | 2 | - | - | - |   |   | - | - | - | - | - | 2 | - | - |
| C802.5                              | 3 | 3 | - | - |   | 2 | - | - | - | - | - | 2 | 2 | - |
| <b>C804-CS8811/ PROJECT WORK</b>    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C804.1                              | 2 | - | - | 3 | - | - | - | - | 3 | 2 | 3 | 2 | - | 2 |
| C804.2                              | - | 3 | 3 | - | - | - | - | - | 3 | 3 | 3 | - | 3 | 3 |
| C804.3                              | - | - | - | 3 | 2 | - | - | 3 | 3 | - | 3 | - | 3 | 3 |
| C804.4                              | - | - | - | - | 2 | 3 | - | - | 3 | - | 3 | - | - | 3 |

  
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## REGULATION - 2017 - PG

### M.E. COMPUTER SCIENCE AND ENGINEERING

| S.No   | COURSE OUTCOME  | BT LEVEL |
|--|---|----------|
| <b>SEMESTER I</b>  |   |          |
| <b>C101/MA5160/ APPLIED PROBABILITY AND STATISTICS</b>     |   |          |
| <b>C101.1</b>  | Apply the concept to find moments and moment generating functions of distributions using the definition of a random variable.   | K3       |
| <b>C101.2</b>  | Find marginal, conditional distribution, statistical average for the standard probability function.   | K3       |
| <b>C101.3</b>  | For the standard probability function, find the marginal, conditional distribution, statistical average.  | K3       |
| <b>C101.4</b>  | Find the M.L.E. and fit curves and regression lines using the least squares principle.  | K3       |
| <b>C101.5</b>  | Small and large samples should be identified, and hypothesis testing should be used.  | K3       |
| <b>C101.6</b>  | The students should have the ability to use the appropriate and relevant, fundamental and applied mathematical and statistical knowledge, methodologies and modern computational tools. | K3       |
| <b>C102/CP5151/ADVANCED DATA STRUCTURES AND ALGORITHMS</b> |   |          |
| <b>C102.1</b>  | Understand Asymptotic notations and use recurrences methods.  | K2       |
| <b>C102.2</b>  | Design programs for implementing trees and hierarchical data structures.  | K3       |
| <b>C102.3</b>  | Implement various algorithms using graph structures   | K3       |
| <b>C102.4</b>  | Develop programs for dynamic programming problems.  | K3       |
| <b>C102.5</b>  | Design programs to implement greedy algorithms.   | K3       |
| <b>C102.6</b>  | Understand and prove NP Completeness  | K2       |
| <b>C103/CP5152/ADVANCED COMPUTER ARCHITECTURE</b>          |   |          |
| <b>C103.1</b>  | Understands the concepts of parallel computing and hardware technologies.   | K2       |
| <b>C103.2</b>  | Analyze linear and non-linear pipeline processors.  | K4       |
| <b>C103.3</b>  | Compare and contrast the parallel architectures.  | K3       |
| <b>C103.4</b>  | Illustrate parallel programming concepts.   | K3       |
| <b>C103.5</b>  | Measure the performance of the architecture in terms of right parameters.   | K3       |

  
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|--|--|----|
| <b>C103.6</b>                                      | Summarize parallel architecture and software used for them.  | K2 |
| <b>C104/ CP5153/ OPERATING SYSTEM INTERNALS</b>    |  |    |
| <b>C104.1</b>                                      | Identify basic components of UNIX operating system.  | K2 |
| <b>C104.2</b>                                      | Conceptualize synchronization amongst various components of a typical operating System.  | K2 |
| <b>C104.3</b>                                      | Understand and simulate activities of various File System.   | K2 |
| <b>C104.4</b>                                      | Describe the memory management system  | K2 |
| <b>C104.5</b>                                      | Illustrate Process communication and program Execution.  | K3 |
| <b>C104.6</b>                                      | Correlate basic concepts of operating system with an existing operating system.  | K3 |
| <b>C105/ CP5154/ ADVANCED SOFTWARE ENGINEERING</b> |  |    |
| <b>C105.1</b>                                      | Understand the advantages of various Software Development Lifecycle Models.  | K2 |
| <b>C105.2</b>                                      | Gain knowledge on project management approaches as well as cost and schedule estimation strategies   | K2 |
| <b>C105.3</b>                                      | Perform formal analysis on specifications  | K4 |
| <b>C105.4</b>                                      | Use UML diagrams for analysis and design   | K4 |
| <b>C105.5</b>                                      | Architect and design using architectural styles and design patterns  | K3 |
| <b>C106/CP5191/MACHINE LEARNING TECHNIQUES</b>     |  |    |
| <b>C106.1</b>                                      | Differentiate various learning approaches, and to interpret the concepts of supervised learning.   | K2 |
| <b>C106.2</b>                                      | Compare the different dimensionality reduction techniques.   | K2 |
| <b>C106.3</b>                                      | Apply theoretical foundations of decision trees to identify best split and Bayesian classifier to label data points.                           | K3 |
| <b>C106.4</b>                                      | Illustrate the working of classifier models like SVM, Neural Networks and identify classifier model for typical machine learning applications. | K3 |
| <b>C106.5</b>                                      | Identify the state sequence and evaluate a sequence emission probability from a given HMM.   | K3 |
| <b>C106.6</b>                                      | Illustrate and apply clustering algorithms and identify its applicability in real life problems.   | K3 |
| <b>C107/ CP5161/DATA STRUCTURES LABORATORY</b>     |  |    |
| <b>C107.1</b>                                      | Create programs for various sorting algorithms.  | K3 |
| <b>C107.2</b>                                      | Design programs for implementing trees structures.   | K3 |
| <b>C107.3</b>                                      | Develop programs for implementing heap structures  | K3 |

|   |  |    |
|---|--|----|
| C107.4  | Implement various programs for application of graphs.  | K3 |
| C107.5  | Develop programs for solving dynamic programming problems.   | K3 |
| C107.6  | Write programs for implementing greedy algorithms.   | K3 |
| <b>SEMESTER II</b>                                  |  |    |
| <b>C108/CP5201/ NETWORK DESIGN AND TECHNOLOGIES</b> |  |    |
| C108.1  | Identify the components required for designing a network   | K2 |
| C108.2  | Design a network at a high-level using different networking technologies                           | K3 |
| C108.3  | Analyze the various protocols of wireless and cellular networks                                    | K4 |
| C108.4  | Discuss the features of 4G and 5G networks   | K2 |
| C108.5  | Experiment with software defined networks  | K3 |
| <b>C109/CP5291/ SECURITY PRACTICES</b>              |  |    |
| C109.1  | Identify with the core fundamental concepts of system security                                     | K2 |
| C109.2  | Apply the security concepts related to wired and wireless scenario                                 | K3 |
| C109.3  | Implement and deal with the security essentials in IT Sector                                       | K3 |
| C109.4  | Competent to explain the concepts of Cyber Security and encryption Concepts                        | K2 |
| C109.5  | Able to attain a through knowledge in the area of privacy and storage security and related issues. | K3 |
| <b>C110/CP5292/ INTERNET OF THINGS</b>              |  |    |
| C110.1  | Analyze various protocols for IoT  | K4 |
| C110.2  | Develop web services to access/control IoT devices.  | K3 |
| C110.3  | Design a portable IoT using Raspberry Pi   | K3 |
| C110.4  | Deploy an IoT application and connect to the cloud.  | K3 |
| C110.5  | Analyze applications of IoT in real time scenario  | K4 |
| <b>C111/ CP5293/ BIG DATA ANALYTICS</b>             |  |    |
| C111.1  | Understand the impact of data analytics for business decisions and strategy                        | K2 |
| C111.2  | Carry out data analysis/statistical analysis   | K3 |
| C111.3  | To carry out standard data visualization and formal inference procedures                           | K3 |
| C111.4  | Design Data Architecture   | K3 |
| C111.5  | Understand various Data Sources  | K2 |
| C111.6  | Collect, manage, store, query, and analyze various form of big data                                | K3 |

| <b>C112/ CP5093MOBILE AND PERVASIVE COMPUTING</b>  |  |    |
|--|--|----|
| <b>C112.1</b>                                      | Obtain a thorough understanding of Basic Mobile computing architecture and concepts  | K2 |
| <b>C112.2</b>                                      | Explain the latest 4G Telecommunications systems   | K2 |
| <b>C112.3</b>                                      | Express the knowledge of basic concepts of pervasive computing   | K2 |
| <b>C112.4</b>                                      | Implement the Human Computer Interaction in Pervasive computing  | K2 |
| <b>C112.5</b>                                      | Work on the pervasive concepts in Mobile Environment   | K3 |
| <b>C113/CP5071/IMAGE PROCESSING AND ANALYSIS</b>   |  |    |
| <b>C113.1</b>                                      | Demonstrate how digital images are acquired, stored and relationship between pixels  | K2 |
| <b>C113.2</b>                                      | Apply image transformation, and image enhancement techniques.  | K3 |
| <b>C113.3</b>                                      | Remove noise from real-world imagery using a variety of filtering techniques in spatial and frequency domain                   | K2 |
| <b>C113.4</b>                                      | Illustrate image compression, and image segmentation techniques.   | K3 |
| <b>C113.5</b>                                      | Represent features of images.  | K2 |
| <b>C114/ CS5261/DATA ANALYTICS LABORATORY</b>      |  |    |
| <b>C114.1</b>                                      | Process big data using Hadoop framework  | K3 |
| <b>C114.2</b>                                      | Build linear and logistic regression models  | K3 |
| <b>C114.3</b>                                      | Apply linear and logistic regression models  | K3 |
| <b>C114.4</b>                                      | Perform data analysis with machine learning methods  | K3 |
| <b>C114.5</b>                                      | Perform graphical data analysis  | K3 |
| <b>C115/CP5281/ TERM PAPER WRITING AND SEMINAR</b> |  |    |
| <b>C115.1</b>                                      | Collection of Journal papers in the topic in the context of the objective – collect 20 & then filter                           | K3 |
| <b>C115.2</b>                                      | To Develop the Reading and notes for first 5 papers.   | K3 |
| <b>C115.3</b>                                      | Write the sections of your paper based on the classification / categorization diagram in keeping with the goals of your survey | K3 |
| <b>C115.4</b>                                      | Illustrate the Collecting the relevant bibliography  | K3 |
| <b>C115.5</b>                                      | Studying the papers and understanding the author's contributions and critically analyzing each paper.                          | K3 |
| <b>C115.6</b>                                      | Illustrate and Writing the Final Paper and giving the final Presentation.  | K3 |



| <b>SEMESTER III</b>                                       |   |    |
|---|---|----|
| <b>C201/CP5005/SOFTWARE QUALITY ASSURANCE AND TESTING</b> |   |    |
| <b>C201.1</b>   | Perform functional and nonfunctional tests in the life cycle of the software product.     | K2 |
| <b>C201.2</b>   | Understand system testing and test execution process.                                     | K2 |
| <b>C201.3</b>   | Identify defect prevention techniques and software quality assurance metrics.             | K2 |
| <b>C201.4</b>   | Apply techniques of quality assurance for typical applications.                           | K3 |
| <b>C201.5</b>   | To build design concepts for system testing and execution                                 | K3 |
| <b>C202/ CP5074/SOCIAL NETWORK ANALYSIS</b>               |   |    |
| <b>C202.1</b>   | Work on the internals components of the social network.                                   | K2 |
| <b>C202.2</b>   | Model and visualize the social network.   | K2 |
| <b>C202.3</b>   | Mine the behavior of the users in the social network.                                     | K2 |
| <b>C202.4</b>   | Predict the possible next outcome of the social network.                                  | K2 |
| <b>C202.5</b>   | Apply social network in real time applications.   | K3 |
| <b>C203/CP5076/INFORMATION STORAGE MANAGEMENT</b>         |   |    |
| <b>C203.1</b>   | To Understand the Concept of Information Storage and Data center Environment.             | K2 |
| <b>C203.2</b>   | To understand about Data Protection.  | K2 |
| <b>C203.3</b>   | To Know and understand Intelligent Storage System.  | K2 |
| <b>C203.4</b>   | To Understand Fiber Channel SAN   | K2 |
| <b>C203.5</b>   | To Understand Network Attached Storage (NAS).   | K2 |
| <b>C203.6</b>   | To Know the Backup and Archive Technologies.  | K3 |
| <b>C204/CP5311/ PROJECT WORK PHASE – I</b>                |   |    |
| <b>C204.1</b>   | Identify and finalize problem statement by surveying variety of domains                   | K2 |
| <b>C204.2</b>   | Perform requirement analysis and identify design methodologies                            | K2 |
| <b>C204.3</b>   | Apply advanced programming techniques   | K3 |
| <b>C204.4</b>   | Present technical report by applying different visualization tools and Evaluation metrics | K2 |
| <b>C204.5</b>   | Able to know the importance of collection framework in developing effective programs      | K3 |

| SEMESTER IV                    |   |    |
|--------------------------------|---|----|
| C206/CP5411-PROJECT PHASE - II |   |    |
| C206.1                         | Plan and construct improved methods for an identified problem by applying acquired knowledge  | K3 |
| C206.2                         | Experiment and Develop effective solutions through proper designing   | K3 |
| C206.3                         | Analyze and categorize the outcomes of the implementation and derive inferences. Assess the acquired outcomes based on evaluation metrics | K4 |
| C206.4                         | Examine the completed task and compile the project report   | K3 |
| C206.5                         | Identify the problem by applying acquired knowledge   | K3 |
| C206.6                         | Plan and construct improved methods for an identified problem by applying acquired knowledge  | K3 |

| S.NO   | CO-PO MAPPING |     |     |     |     |     |     |     |     |      |      |      |      |      |
|--|---------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|
|  | PO1           | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
| <b>C101/MA5160/ APPLIED PROBABILITY AND STATISTICS</b>     |               |     |     |     |     |     |     |     |     |      |      |      |      |      |
| C101.1   | 3             | 2   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 2    | 2    |
| C101.2   | 3             | 2   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 2    | 2    |
| C101.3   | 3             | 2   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 2    | 2    |
| C101.4   | 3             | 2   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 2    | 2    |
| C101.5   | 3             | 2   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 2    | 2    |
| C101.6   | 3             | 2   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 2    | 2    |
| <b>C102/CP5151/ADVANCED DATA STRUCTURES AND ALGORITHMS</b> |               |     |     |     |     |     |     |     |     |      |      |      |      |      |
| C102.1   | 3             | 3   | 3   | 2   | -   | -   | -   | -   | -   | -    | -    | -    | 3    | 2    |
| C102.2   | 3             | 3   | 3   | 2   | -   | -   | -   | -   | -   | -    | -    | -    | 3    | 2    |
| C102.3   | 3             | 3   | 3   | 2   | -   | -   | -   | -   | -   | -    | -    | -    | 3    | 2    |
| C102.4   | 3             | 3   | 3   | 2   | -   | -   | -   | -   | -   | -    | -    | -    | 3    | 2    |
| C102.5   | 3             | 3   | 3   | 2   | -   | -   | -   | -   | -   | -    | -    | -    | 3    | 2    |
| C102.6   | 3             | 3   | 3   | 2   | -   | -   | -   | -   | -   | -    | -    | -    | 3    | 2    |
| <b>C103/CP5152/ADVANCED COMPUTER ARCHITECTURE</b>          |               |     |     |     |     |     |     |     |     |      |      |      |      |      |

  
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|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C103.1  | 2 | 2 | - | - | - | 2 | - | - | - | - | - | 1 | 2 | - |
| C103.2  | 2 | 2 | - | - | 2 |   | - | - | - | 1 | - |   | 2 | - |
| C103.3  | 2 | - | - | 2 | 2 | 1 | - | - | - | 1 | - | 1 | - | 1 |
| C103.4  | 2 | - | - | - | - | 1 | - | - | - | - | - | 1 | - | 1 |
| C103.5  | 2 | 2 | - | - | - | 1 | - | - | - | - | - | 2 | 2 | - |
| C103.6  | 2 | - | - | 2 | - | 2 | - | - | - | - | - | 2 | - | 2 |
| <b>C104/ CP5153/OPERATING SYSTEM INTERNALS</b>    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C104.1  | 3 | 3 | 3 | 1 | - | - | - | - | 1 | - | - | 2 | 1 | 2 |
| C104.2  | 3 | 3 | 3 | 1 | - | - | - | - | 1 | - | - | 1 | 1 | 2 |
| C104.3  | 3 | 3 | 3 | 1 | - | - | - | - | 1 | - | - | 1 | 2 | 1 |
| C104.4  | 3 | 3 | 3 | 1 | - | - | - | - | 1 | - | - | 2 | 1 | 1 |
| C104.5  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 1 | 1 |
| C104.6  | 3 | 3 | 3 | 3 | - | - | - | - | - | - | - | - | 1 | 1 |
| <b>C105/ CP5154-ADVANCED SOFTWARE ENGINEERING</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C105.1  | 3 | 3 | - | 3 | 2 | - | - | - | - | - | - |   | 3 | - |
| C105.2  | 3 | 3 | - | 3 | 2 | - | - | - | - | - | - |   | 3 | - |
| C105.3  | 3 | 3 | - | 2 | 2 | - | - | - | - | - | - | 3 | 3 | 2 |
| C105.4  | 3 | 3 | - | 2 | 2 | - | - | - | - | - | - |   | 3 | - |
| C105.5  | 3 | 3 | 2 | 2 | 2 | - | - | - | - | - | - | 3 | 3 | 2 |
| C105.6  | 3 | 3 | - | 2 | - | - | - | - | - | - | - | - | - | - |
| <b>C106/ CP5191-MACHINE LEARNING TECHNIQUES</b>   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C106.1  | 3 | 3 | 3 | 1 | - | - | - | - | 1 | - | - | 2 | 1 | 2 |
| C106.2  | 3 | 3 | 3 | 1 | - | - | - | - | 1 | - | - | 1 | 1 | 2 |
| C106.3  | 3 | 3 | 3 | 1 | - | - | - | - | 1 | - | - | 1 | 2 | 1 |
| C106.4  | 3 | 3 | 3 | 1 | - | - | - | - | 1 | - | - | 2 | 1 | 1 |
| C106.5  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 1 | 1 |
| C106.6  | 3 | 3 | 3 | 3 | - | - | - | - | - | - | - | - | 1 | 1 |
| <b>C107/ CP5161- DATA STRUCTURES LABORATORY</b>   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

  
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|  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C107.1   | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C107.2   | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C107.3   | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C107.4   | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C107.5   | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C107.6   | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| <b>C108/CP5201/NETWORK DESIGN AND TECHNOLOGIES</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C108.1   | 3 | 3 | 2 | 2 | 3 | 2 | 2 | - | 2 | 2 | - | - | 3 | 2 |
| C108.2   | 3 | 2 | 3 | 2 | 3 | 2 | 2 | - | 2 | 2 | - | - | 3 | 2 |
| C108.3   | 3 | 2 | 2 | 2 | 3 | - | - | - | - | - | - | - | 3 | 2 |
| C108.4   | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | - | - | 3 | 2 |
| C108.5   | 3 | 3 | 2 | 2 | 2 | - | - | - | - | - | - | - | 3 | 2 |
| <b>C109/CP5291/SECURITY PRACTICES</b>              |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C109.1   | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - | 2 | 1 |
| C109.2   | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 2 | 1 |
| C109.3   | 3 | 2 | 3 | 2 | 2 | - | - | - | 2 | 1 | 2 | - | 1 | - |
| C109.4   | 3 | 3 | 3 | 2 | 2 | - | - | - | 2 | 1 | 2 | - | 2 | - |
| C109.5   | 3 | 2 | - | - | - | - | 2 | - | - | - | - | - | 1 | - |
| C109.6   | 3 | 3 | - | - | - | - | 2 | - | - | - | - | - | 2 | - |
| <b>C110/CP5292/INTERNET OF THINGS</b>              |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C110.1   | 3 | 3 | 2 | 2 | 3 | 2 | 2 | - | 2 | 2 | - | - | 3 | 2 |
| C110.2   | 3 | 2 | 3 | 2 | 3 | 2 | 2 | - | 2 | 2 | - | - | 3 | 2 |
| C110.3   | 3 | 2 | 2 | 2 | 3 | - | - | - | - | - | - | - | 3 | 2 |
| C110.4   | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | - | - | 3 | 2 |
| C110.5   | 3 | 3 | 2 | 2 | 2 | - | - | - | - | - | - | - | 3 | 2 |
| <b>C111/ CP5293/BIG DATA ANALYTICS</b>             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C111.1   | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | - |
| C111.2   | 3 | 3 | 2 | 2 | 2 | - | - | - | - | - | - | - | 3 | - |

  
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|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C111.3   | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | - | - | 3 | - |
| C111.4   | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | - | - | 2 | - |
| C111.5   | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | - | - | 2 | - |
| <b>C112/CP5071 /IMAGE PROCESSING AND ANALYSIS</b>  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C112.1   | 2 | 3 | 3 | 1 | 2 | 3 | - | - | - | - | - | - | 3 | 2 |
| C112.2   | 2 | 3 | 3 | 1 | 2 | 3 | - | - | - | - | - | - | 3 | 2 |
| C112.3   | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 1 | - | - | - | - | 2 | 2 |
| C112.4   | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 1 | - | - | - | - | 2 | 2 |
| C112.5   | 3 | 3 | 3 | 2 | 2 | 2 | - | - | 1 | - | 2 | - | 1 | 2 |
| <b>C113/ CP5093/MOBILE AND PERVASIVE COMPUTING</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C113.1   | 3 | 3 | 3 | 3 | - | 2 | 2 | - | - | - | - | 3 | 2 | 3 |
| C113.2   | 3 | 3 | 3 | 2 | - | 2 | 2 | - | - | - | - | 3 | 2 | 3 |
| C113.3   | 3 | 3 | - | - | - | - | - | - | - | - | - | - | - | - |
| C113.4   | 3 | 3 | - | - | - | - | - | - | - | - | - | - | - | - |
| C113.5   | 3 | 3 | - | - | - | - | - | - | - | - | - | - | - | - |
| <b>C114/CP5261/DATA ANALYTICS LABORATORY</b>       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C114.1   | 3 | 3 | 2 | 2 | 2 | - | - | - | - | - | - | - | 3 | 2 |
| C114.2   | 3 | 2 | 3 | 2 | 2 | - | - | - | - | - | - | - | 3 | 2 |
| C114.3   | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | - | - | 2 | 2 |
| C114.4   | 3 | - | - | 2 | 2 | - | - | - | - | - | - | - | 2 | 2 |
| C114.5   | 3 | - | - | 2 | 2 | - | - | - | - | - | - | - | 2 | - |
| <b>C115/CP5281/TERM PAPER WRITING AND SEMINAR</b>  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C115.1   | 3 | 2 | 2 | 1 | - | - | - | - | 1 | - | - | 2 | 1 | 2 |
| C115.2   | 3 | 2 | 2 | 1 | - | - | - | - | 1 | - | - | 1 | 1 | 2 |
| C115.3   | 3 | 2 | 3 | 1 | - | - | - | - | 1 | - | - | 1 | 2 | 1 |
| C115.4   | 3 | 2 | 2 | 1 | - | - | - | - | 1 | - | - | 2 | 1 | 1 |
| C115.5   | 3 | 2 | 2 | 2 | - | - | - | - | - | - | - | - | 1 | 1 |
| C115.6   | 2 | 2 | 2 | 3 | - | - | - | - | - | - | - | - | 1 | 1 |

  
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| <b>C201/CP5005/SOFTWARE QUALITY ASSURANCE AND TESTING</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C201.1  | 3 | 3 | - | 3 | 2 | - | - | - | - | - | - | - | 3 | - |
| C201.2  | 3 | 3 | - | 3 | 2 | - | - | - | - | - | - | - | 3 | - |
| C201.3  | 3 | 3 | - | 2 | 2 | - | - | - | - | - | - | 3 | 3 | 2 |
| C201.4  | 3 | 3 | - | 2 | 2 | - | - | - | - | - | - | - | 3 | - |
| C201.5  | 3 | 3 | 2 | 2 | 2 | - | - | - | - | - | - | 3 | 3 | 2 |
| <b>C202/CP5074/SOCIAL NETWORK ANALYSIS</b>                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C202.1  | 3 | 2 | 3 | 2 | - | - | - | - | 1 | - | - | 2 | 1 | 2 |
| C202.2  | 3 | 2 | 3 | 2 | - | - | - | - | 2 | - | - | 1 | 1 | 2 |
| C202.3  | 3 | 2 | 3 | 2 | - | - | - | - | 1 | - | - | 2 | 2 | 1 |
| C202.4  | 3 | 2 | 3 | 2 | - | - | - | - | 1 | - | - | 2 | 1 | 1 |
| C202.5  | 2 | 2 | 3 | 2 | - | - | - | - | - | - | - | - | 1 | 1 |
| <b>C203/ CP5076/INFORMATION STORAGE MANAGEMENT</b>        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C203.1  | 2 | 3 | 3 | 1 | 2 | 3 | - | 2 | 2 | 2 | - | - | 3 | 2 |
| C203.2  | 1 | 2 | - | 2 | - | 2 | - | 2 | 2 | 2 | - | - | 2 | 2 |
| C203.3  | 2 | 2 | - | 2 | - | 2 | - | 2 | 2 | 2 | - | - | 2 | 2 |
| C203.4  | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | - | - | 2 | 2 |
| C203.5  | 3 | 3 | 3 | 2 | 2 | 2 | - | 2 | 2 | 2 | 2 | - | 1 | 2 |
| C203.6  | 3 | 3 | 2 | 2 | 3 | - | - | 2 | 2 | 2 | 2 | 2 | 3 | 2 |
| <b>C204/ CP5311-PROJECT PHASE - I</b>                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C204.1  | 3 | 3 | - | - | - | 2 | - | - | - | - | - | 2 | 2 | - |
| C204.2  | 3 | 3 | - | - | 2 | - | - | - | - | 2 | - | - | 2 | - |
| C204.3  | 3 | - | - | 2 | 2 | 2 | - | - | - | 2 | - | 2 | - | 2 |
| C204.4  | 2 | - | - | - | - | 2 | - | - | - | - | - | 2 | - | 2 |
| C204.5  | 3 | 2 | - | - | - | 2 | - | - | - | - | - | 2 | 2 | - |
| <b>C205/CP5411-PROJECT P3ASE - II</b>                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C206.1  | 3 | 3 | - | - | - | 2 | - | - | - | - | - | 2 | 2 | - |
| C206.2  | 3 | 3 | - | - | 2 | - | - | - | - | 2 | - | - | 2 | - |

  
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|        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C206.3 | 3 | - | - | 2 | 2 | - | - | - | - | 2 | - | 2 | - | 2 |
| C206.4 | 2 | - | - | - | - | 2 | - | - | - | - | - | 2 | - | 2 |
| C206.5 | 3 | 2 | - | - | - | 2 | - | - | - | - | - | 2 | 2 | - |



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# **ELECTRICAL AND ELECTRONICS ENGINEERING**



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## REGULATION – 2017 - UG

| S.NO   | COURSE OUTCOME   | BT LEVEL |
|--|--|----------|
| <b>SEMESTER III</b>  |  |          |
| <b>C201-MA8353/TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS</b> |  |          |
| <b>C201.1</b>  | To understand the basic properties of Standard Partial Differential Equations. Apply the Fundamental concept of Partial Differential Equations.  | K2       |
| <b>C201.2</b>  | To develop Fourier Series for different types of functions.  | K3       |
| <b>C201.3</b>  | Find the solutions of the heat equation, wave equation and the Laplace equation subject to boundary conditions   | K3       |
| <b>C201.4</b>  | To solve the Problems using Fourier Transforms and its inverse Transforms.   | K3       |
| <b>C201.5</b>  | Have a knowledge in Z- transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients. | K2       |
| <b>C201.6</b>  | After successfully completing the course, the student will have a good understanding of the topics and their applications  | K2       |
| <b>C202-EE8351/DIGITAL LOGIC CIRCUITS</b>                        |  |          |
| <b>C202.1</b>  | Develop a digital logic and apply it to solve real life problems.  | K3       |
| <b>C202.2</b>  | Analyze, design and implement combinational logic circuits.  | K4       |
| <b>C202.3</b>  | Classify different semiconductor memories.   | K3       |
| <b>C202.4</b>  | Analyze, design and implement sequential logic circuits.   | K4       |
| <b>C202.5</b>  | Analyze digital system design using PLD.   | K4       |
| <b>C202.6</b>  | Simulate and implement combinational and sequential circuits using VHDL systems.   | K3       |
| <b>C203-EE8391/ELECTROMAGNETIC THEORY</b>                        |  |          |
| <b>C203.1</b>  | Ability to Illustrate the Sources and effects of electromagnetic fields and discuss about various Coordinate Systems,laws and theorems related to electromagnetic fields.              | K2       |
| <b>C203.2</b>  | Able to analyse,find the Electric field produced in free space, dielectrics and apply boundary conditions to find Capacitance, Energy density.   | K4       |
| <b>C203.3</b>  | Able to analyse the magnetic field intensity (H) and apply Biot-Savart's Law, Ampere's Circuit Law to find H due to straight conductors, circular loop, infinite                       | K4       |

  
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|  | sheet of current.  |    |
| <b>C203.4</b>                                    | Able to illustrate the concept of magnetic flux density (B) – B in free space, conductor and study the characteristics of magnetic materials.                                    | K2 |
| <b>C203.5</b>                                    | Capable to analyse the magnetic Circuits ,apply Faraday's law solve problems related to Displacement current   | K4 |
| <b>C203.6</b>                                    | To describe and derive the Maxwell's equations and apply it in solving Electromagnetic wave generating equations.  | K3 |
| <b>C204-EE8301/ ELECTRICAL MACHINES – I</b>      |  |    |
| <b>C204.1</b>                                    | Obtain the knowledge about the fundamental of Magnetic circuits and Magnetic Materials.  | K2 |
| <b>C204.2</b>                                    | Secure the idea about the various construction details and erection of Transformer   | K3 |
| <b>C204.3</b>                                    | Assured the working principles of electrical machines and classify the various generator and its mathematical models   | K2 |
| <b>C204.4</b>                                    | Establish the working principles of electrical machines and classify the various motor and its speed control techniques  | K3 |
| <b>C204.5</b>                                    | Expertise in testing methods to obtain the performance of DC Machines.   | K4 |
| <b>C204.6</b>                                    | Analyze the realtime recent applications of DC Machines and Transformers.  | K4 |
| <b>C205-EC8353/ELECTRON DEVICES AND CIRCUITS</b> |  |    |
| <b>C205.1</b>                                    | Understand the construction and modeling of semiconductor diodes and rectifiers.   | K2 |
| <b>C205.2</b>                                    | Discuss the methods of transistors and its characteristics.  | K2 |
| <b>C205.3</b>                                    | Interpret the midband analysis of amplifier circuits with gain and impedance values.   | K3 |
| <b>C205.4</b>                                    | Analyze the frequency response of differential amplifier and tuned circuits.   | K4 |
| <b>C205.5</b>                                    | Examine the methods of feedback and generation of oscillator conditions.   | K2 |
| <b>C205.6</b>                                    | Understand characteristics of electron devices towards its applications.   | K2 |
| <b>C206-ME8792/ POWER PLANT ENGINEERING</b>      |  |    |
| <b>C206.1</b>                                    | Draw the layout of modern coal power plant and list the various components used in thermal power plant.  | K1 |
| <b>C206.2</b>                                    | Identify the components of diesel and gas turbine power plants and construct the integrated gasifier based combined cycle systems.   | K2 |
| <b>C206.3</b>                                    | Describe the layout of subsystems of various nuclear power plants and express safety measures for nuclear power plants.  | K1 |
| <b>C206.4</b>                                    | Distinguish different hydroelectric power plants and construct various renewable energy power plants such as wind, tidal, PV, solar, thermal, geo thermal, biogas and fuel cell. | K3 |

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| C206.5  | Calculate the per unit cost of electrical energy based on Power tariff, load factor, demand factor, diversity factor and plant safety factor. | K3 |
| C206.6  | Draw the layout of modern coal power plant and list the various components used in thermal power plant.                                       | K2 |
| <b>C207- EC8311/ELECTRONICS LABORATORY</b>              |   |    |
| C207.1  | Analyse various types of diodes and its v-i characteristics.  | K4 |
| C207.2  | Construct the various types of transistors and draw its v-i characteristics.  | K3 |
| C207.3  | Demonstrate the various types of amplifiers.  | K2 |
| C207.4  | Categorize about filter circuits and multivibrators.  | K3 |
| C207.5  | Design and analyze the feedback amplifiers and oscillator circuits.   | K4 |
| C207.6  | Ability to perform different types of electronic circuits and its characteristics.  | K2 |
| <b>C208- EE8311/ ELECTRICAL MACHINES LABORATORY – I</b> |   |    |
| C208.1  | Analyze the characteristics of DC shunt generator DC compound generator and calculate critical resistance and critical speed                  | K4 |
| C208.2  | Examine load characteristics of DC shunt, series and compound motor and identify its maximum efficiency operating point                       | K3 |
| C208.3  | Predict the efficiency of DC shunt machine in different methods   | K3 |
| C208.4  | Explain the load characteristics of single phase and three phase transformer , separate the different losses and to find the efficiency       | K2 |
| C208.5  | Predetermine the equivalent circuit parameters of single phase transformer in two different methods and compare the results                   | K3 |
| C208.6  | Explore the DC starters.  | K2 |
| <b>SEMESTER IV</b>                                      |   |    |
| <b>C209-MA8491/ NUMERICAL METHODS</b>                   |   |    |
| C209.1  | Able to solve the system of equations by using different methods and find Eigen values and Eigen vectors of a given matrix by power method.   | K3 |
| C209.2  | To make effective use of the interpolation formulas to find the missing data using the given data.  | K3 |
| C209.3  | Apply the techniques of solving any algebraic, transcendental equations   | K3 |
| C209.4  | Distinguish among the criteria of selection and procedures of various Numerical integration as well as Numerical differentiation rules.       | K3 |
| C209.5  | Apply various numerical methods in solving an initial value problem involving an ordinary differential equation.                              | K3 |



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| C209.6   | Estimate the best fit polynomial for the given tabulated data using the methods of Newton's interpolation and Lagrange's interpolation.        | K3 |
| <b>C210-EE8401/ ELECTRICAL MACHINES – II</b>                           |  |    |
| C210.1   | Draw the constructional details and explain the performance of salient and non – salient type synchronous generators.                          | K2 |
| C210.2   | Draw and explain the Principle of operation and performance of synchronous motor.  | K2 |
| C210.3   | Draw and describe the construction, principle of operation and performance of induction machines.  | K2 |
| C210.4   | Describe the starting and speed control of three-phase induction motors.   | K2 |
| C210.5   | Explain the construction, principle of operation and performance of single phase induction motors and special machines.                        | K2 |
| C210.6   | Ability to model and analyze electrical apparatus and their application to power system.   | K4 |
| <b>C211-EE8402/ TRANSMISSION AND DISTRIBUTION</b>                      |  |    |
| C211.1   | Identify the basic elements of the electric power system, generation, transmission, distribution and describe the role played by each element. | K2 |
| C211.2   | Compute the losses, efficiency and parameters of the Transmission line.  | K3 |
| C211.3   | Analyze the Performance of Transmission Lines.   | K4 |
| C211.4   | Solve the voltage distribution in insulator strings, cables and methods to improve the same.   | K3 |
| C211.5   | Design overhead lines both Mechanical and electrical aspects using Sag calculation..   | K4 |
| C211.6   | Ability to understand and analyze power system operation, stability, control and protection.   | K1 |
| <b>C211- EE8403/ MEASUREMENTS AND INSTRUMENTATION</b>                  |  |    |
| C212.1   | To introduce the basic functional elements of instrumentation.   | K2 |
| C212.2   | To introduce the fundamentals of electrical and electronic instruments.  | K2 |
| C212.3   | To construct a suitable bridges for measurement of particular parameters.  | K3 |
| C212.4   | To introduce various storage and display devices.  | K2 |
| C212.5   | To introduce various transducers and the data acquisition systems.   | K2 |
| <b>C213- EE8451/ LINEAR AND DIGITAL INTEGRATED CIRCUITS LABORATORY</b> |  |    |
| C213.1   | Explain the procedure for the fabrication of IC  | K2 |

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| C213.2   | Summarize the DC & AC characteristics of Operational amplifier.  | K2 |
| C213.3   | Discuss the applications of Operational amplifier  | K2 |
| C213.4   | Describe the internal functional blocks of special ICs like Timer and PLL  | K2 |
| C213.5   | Classify types of voltage regulators and describe the special ICs  | K3 |
| C213.6   | Ability to understand and analyse, linear and digital electronic circuits.   | K2 |
| <b>C214- IC8451/ CONTROL SYSTEMS</b>                                   |  |    |
| C214.1   | Develop electrical models/ mechanical models to design a physical system for a specific operation.   | K3 |
| C214.2   | Understand, define different time domain specification parameters and thus can apply that knowledge to conclude dynamic performance of a system. | K2 |
| C214.3   | Use the basic knowledge in obtaining the open loop and closed-loop frequency responses of systems  | K2 |
| C214.4   | Able to explain the stability analysis and types of compensators.  | K2 |
| C214.5   | To describe the state variable representation of physical systems and the effect of state feedback   | K2 |
| C214.6   | Able to explain and use all the control techniques and to determine stability of all systems   | K2 |
| <b>C215-EE8411/ ELECTRICAL MACHINES LABORATORY - II</b>                |  |    |
| C215.1   | Determine the voltage regulation of three phase alternator in different methods and compare the results.   | K3 |
| C215.2   | Determine the voltage regulation of salient pole synchronous machine and find negative & zero sequence components.                               | K3 |
| C215.3   | Explain the V and inverted V characteristics of three phase synchronous machine at different load condition.                                     | K2 |
| C215.4   | Determine and pre determine performance characteristics of three phase induction Motor.  | K3 |
| C215.5   | Determine and pre determine performance characteristics of single phase induction Motor.   | K3 |
| C315.6   | Ability to model and analyze electrical apparatus and their application to power system.   | K4 |
| <b>C216- EE8461/ LINEAR AND DIGITAL INTEGRATED CIRCUITS LABORATORY</b> |  |    |
| C216.1   | Apply Boolean functions to implement adder, subtractor circuits and convert Excess 3 to BCD, Binary to Gray code and vice versa.                 | K3 |



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| C216.2   | Test Parity generator and checker and Design encoder decoder circuits  | K3 |
| C216.3   | Demonstrate 4 bit synchronous, asynchronous counter and Shift registers  | K3 |
| C216.4   | Illustrate multiplexer demultiplexer circuit and apply 555 timer in Monostable and Astable operation.  | K3 |
| C216.5   | Apply OP-AMP to construct Adder, comparator, differentiator, Integrator and Describe VCO, PLL characteristics.   | K3 |
| C216.6   | Ability to understand and analyse, linear and digital electronic circuits.   | K4 |
| <b>C217- EE8412/TECHNICAL SEMINAR</b>                    |  |    |
| C217.1   | Present seminar in the field of electrical and electronics engineering subjects studied.   | K2 |
| C217.2   | Solve objective type questions in the field of electrical and electronics engineering.   | K3 |
| C217.3   | Communicate effectively, the subjects learned in the form of seminar presentation.   | K2 |
| C217.4   | Communicate effectively, the modern trends in the field of electrical and electronics engineering.   | K2 |
| C217.5   | Answer effectively during technical interviews.  | K2 |
| <b>SEMESTER V</b>  |  |    |
| <b>C301- EE8501/POWER SYSTEM ANALYSIS</b>                |  |    |
| C301.1   | Discuss Various components of Power System, their characteristics and Modelling.   | K2 |
| C301.2   | Draw equivalent single line reactance and impedance diagrams and per unit representation of a power system   | K2 |
| C301.3   | Explain significance of load flow problem and apply numerical techniques to obtain Load flow solution..  | K2 |
| C301.4   | Interpret the effect of symmetrical fault conditions and select suitable rating for various protective devices in a. power system                            | K3 |
| C301.5   | Apply symmetrical components and solve unsymmetrical faults.in a power system.   | K3 |
| C301.6   | Discuss stability classifications and calculate stability limits using equal area criterion and numerical methods.   | K2 |
| <b>C302- EE8551/MICROPROCESSORS AND MICROCONTROLLERS</b> |  |    |
| C302.1   | Describe the basic Architecture of 8085 Microprocessor and working of all blocks of the processor, IO and memory interfacing with necessary timing diagrams. | K2 |
| C302.2   | Classify the instructions with the help of Addressing modes of 8085 with necessary programs.   | K3 |

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| C302.3   | Explain the basic Architecture of 8051 Microcontroller with working of various blocks of the controller like Interrupts, Timer, IO ports etc. with necessary timing diagram and compare the programming concepts with 8085. | K2 |
| C302.4   | Analyze the architecture of various Interfacing Devices like 8255 PPI, 8259 PIC, 8251 USART, 8279, 8253   | K4 |
| C302.5   | Analyze the architecture of various Interfacing Devices like ADC and DAC and Programming of all the Interfacing IC's.   | K4 |
| C302.6   | Apply the knowledge of programming concepts of 8051 Microcontroller for various applications like keyboard display interface, servo motor etc.,   | K3 |
| <b>C303- EE8552/POWER ELECTRONICS</b>            |   |    |
| C303.1   | Explain the significance of switching devices and its application to power Converters and demonstrate the triggering circuit and snubber circuits.  | K2 |
| C303.2   | Compare the operation of two, three Pulse Converters and draw output Waveforms with and without source and load inductance.   | K2 |
| C303.3   | Classify the operation of Choppers and outline the application of SMPS.   | K3 |
| C303.4   | Analyze the operation of single phase and three phase Inverters with and without.   | K4 |
| C303.5   | Illustrate the operation of cycloconverter and its application.   | K3 |
| C303.6   | Illustrate the operation of AC voltage controller and its application.  | K3 |
| <b>C304- EE8591/DIGITAL SIGNAL PROCESSING</b>    |   |    |
| C304.1   | Classify the different types of signals and systems and Explain the sampling process of continuous time signal.   | K3 |
| C304.2   | Apply z-transform and inverse Z transform and analyze discrete time systems.  | K3 |
| C304.3   | Apply Radix-2 Decimation in Time (DIT) and Decimation in Frequency (DIF) FFT Algorithm to Compute Discrete Fourier Transform  | K3 |
| C304.4   | Explain different types of Infinite Impulse Response (IIR) filters and Finite Impulse Response (FIR) filters  | K2 |
| C304.5   | An understanding of sampling conversion technique in signal processing and its applications.  | K2 |
| C304.6   | Explain various architectures of Digital signal processors.   | K2 |
| <b>C305-CS8392/OBJECTED ORIENTED PROGRAMMING</b> |   |    |
| C305.1   | Gain the basic knowledge on object oriented concepts  | K3 |
| C305.2   | Ability to implement features of object oriented programming to solve real world problems.  | K3 |



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| C305.3   | Analyze the suitable test to validate the programs with exception handling mechanism.   | K4 |
| C305.4   | Analyze and apply to evaluate the concept of overloading.   | K4 |
| C305.5   | Develop the concept of java in creating classes, objects using arrays and control statements.   | K3 |
| C305.6   | Create packages, handle exceptions and develop multi-threaded programs.   | K4 |
| <b>C306- OCE551/AIR POLLUTION AND CONTROL ENGINEERING</b>  |   |    |
| C306.1   | An understanding of the nature and characteristics of air pollutants, noise pollution and basic concepts of air quality management  | K2 |
| C306.2   | Ability to identify, formulate and solve air and noise pollution problems   | K2 |
| C306.3   | Ability to design stacks and particulate air pollution control devices to meet applicable standards.  | K3 |
| C306.4   | Ability to select control equipments.   | K3 |
| C306.5   | Ability to ensure quality, control and preventive measures.   | K3 |
| C306.6   | To impart knowledge on the principle and design of control of Indoor/ particulate/ gaseous air pollutant and its emerging trends.   | K3 |
| <b>C307- EE8511/CONTROL AND INSTRUMENTATION LABORATORY</b> |   |    |
| C307.1   | Determine the characteristics of P, PI and PID controllers experimentally and analyze the stability of the control system by (i) Bode plot (ii) Root Locus Plot and (iii) Nyquist plot using MATLAB                                   | K3 |
| C307.2   | Compute the transfer function of a Field controlled DC motor experimentally and Design the Lag, Lead and Lag-Lead Compensators for the given specifications and hook up it using RC networks  | K3 |
| C307.3   | Draw the transient response of Position Control system experimentally, Determine the Characteristics of Synchro-Transmitter- Receiver and Use the MATLAB for the Simulation of Control Systems  | K3 |
| C307.4   | Calculate the unknown Capacitance, Inductance and Resistance using AC and DC Bridges experimentally and Analyze the Dynamics of Sensors/Transducers (a) Temperature (b) Pressure (c) Displacement (d) Optical (e) Strain and (f) Flow | K3 |
| C307.5   | Measure the Power and Energy experimentally   | K3 |
| C307.6   | Analyze the Signal Conditioning units (a) Instrumentation Amplifier (b) ADC and DACs and Use the MATLAB for Process Simulation  | K4 |
| <b>C308- HS8581/PROFESSIONAL COMMUNICATION</b>             |   |    |
| C308.1   | Apply appropriate communication skills across settings, purposes and audiences.   | K3 |



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| C308.2   | Demonstrate knowledge of communication theory and applications.   | K3 |
| C308.3   | Practice critical thinking to develop innovative and well-founded perspectives related to the students emphasis. Build and maintain healthy and effective relationships.  | K3 |
| C308.4   | Use technology to communicate effectively in various settings and contexts.   | K3 |
| C308.5   | Demonstrate appropriate and professional ethical behavior.  | K3 |
| <b>C309-CS8383/ OBJECT ORIENTED PROGRAMMING LABORATORY</b> |   |    |
| C309.1   | Design C++ programs using functions, classes with objects, member functions and constructors.   | K3 |
| C309.2   | Develop operator and function overloading and run time polymorphism using C++.  | K3 |
| C309.3   | Develop file handling techniques in C++ for sequential and random access also use Java code for strings.  | K3 |
| C309.4   | Construct packages and interfaces in Java.  | K3 |
| C309.5   | Create threads in Java and handle predefined and user defined exceptions.   | K4 |
| C309.6   | Ability to model and analyze electrical apparatus and their application to power system.  | K4 |
| <b>SEMESTER VI</b>   |   |    |
| <b>C310- EE8601/ SOLID STATE DRIVES</b>                    |   |    |
| C310.1   | Classify the various types of drives and load torque characteristics and Apply the multi quadrant dynamics in hoist load system.  | K3 |
| C310.2   | Analyze the operation of steady state analysis of single phase and three phase fully controlled converter and Chopper fed separately excited dc motor drives and discuss the various control strategies of converter. | K4 |
| C310.3   | Explain the operation and characteristics of various methods of solid state speed control of induction motor.   | K2 |
| C310.4   | Describe the operation of various modes of V/f control of synchronous motor drives and different types of permanent magnet synchronous motor drives.  | K2 |
| C310.5   | Design a current and speed controller and develop the transfer function for DC motor, load and converter, closed loop control with current and speed feedback.  | K3 |
| C310.6   | Ability to understand and apply basic science, circuit theory, and Electro-magnetic field theory control theory and apply them to electrical engineering problems.  | K2 |
| <b>C311-EE8602/ PROTECTION AND SWITCH GEAR</b>             |   |    |
| C311.1   | Summarize the causes and effects of faults in power system and explain the  | K3 |

  
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|   | necessity of protection in power system.  |    |
| <b>C311.2</b>                                     | Describe the operation of various relays and summarize the various protective schemes   | K2 |
| <b>C311.3</b>                                     | List out the various faults that can occur on alternator, transformer, busbar and transmission line and select the suitable protection schemes.   | K2 |
| <b>C311.4</b>                                     | Synthesize the static relays using comparators and explain numerical relays.  | K3 |
| <b>C311.5</b>                                     | Derive the expression for RRRV, critical resistance value   | K3 |
| <b>C311.6</b>                                     | Express the various types of circuit breakers and its application.  | K2 |
| <b>C312-EE8691/EMBEDDED SYSTEMS</b>               |   |    |
| <b>C312.1</b>                                     | Analyze the basic build process of embedded systems, structural units in embedded, processor and selection of processor and memory devices depending upon the applications.   | K4 |
| <b>C312.2</b>                                     | Classify the types of I/O device ports and buses and different interfaces for data transfer.  | K3 |
| <b>C312.3</b>                                     | Model the Embedded Product Development Life Cycle (EDLC) by using different techniques like state machine model, sequential program model and concurrent model  | K4 |
| <b>C312.4</b>                                     | Analyze the basic concept of Real Time Operating Systems and plan to scheduling of different task and compare the features of different types of Real Time Operating Systems  | K4 |
| <b>C312.5</b>                                     | Apply the knowledge of programming concepts of Embedded Systems for various applications like Washing Machine automotive and Smart Card System applications   | K3 |
| <b>C313- GE8075/ INTELLECTUAL PROPERTY RIGHTS</b> |   |    |
| <b>C313.1</b>                                     | Identify different types of Intellectual Properties (IPs), the right of ownership, scope of protection as well as the ways to create and to extract value from IP.  | K3 |
| <b>C313.2</b>                                     | Recognize the crucial role of IP in organizations of different industrial sectors for the purposes of product and technology development.   | K3 |
| <b>C313.3</b>                                     | Identify activities and constitute IP infringements and the remedies available to the IP owner and describe the precautions steps to be taken to prevent infringement of proprietary rights in products and technology development. | K3 |
| <b>C313.4</b>                                     | Be familiar with the processes of Intellectual Property Management (IPM) and various approaches for IPM and conducting IP and IPM auditing and explain how IP can be managed as a strategic resource and suggest IPM strategy.      | K2 |



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| C313.5   | Be able to anticipate and subject to critical analysis arguments relating to the development and reform of intellectual property right institutions and their likely impact on creativity and innovation.         | K3 |
| C313.6   | Be able to demonstrate a capacity to identify, apply and assess ownership rights and marketing protection under intellectual property law as applicable to information, ideas, new products and product marketing | K3 |
| <b>C314- EI8073/BIOMEDICAL INSTRUMENTATION</b>                       |   |    |
| C314.1   | Ability to understand the philosophy of the heart, lung, blood circulation and expiration system.   | K2 |
| C314.2   | Ability to provide latest ideas on devices of non-electrical devices.   | K2 |
| C314.3   | Ability to gain knowledge on various sensing and measurement devices of electrical origin.  | K3 |
| C314.4   | Ability to understand the analysis systems of various organ types.  | K2 |
| C314.5   | Ability to bring out the important and modern methods of imaging techniques and their analysis.   | K3 |
| C314.6   | Ability to explain the medical assistance/techniques, robotic and therapeutic equipments.   | K2 |
| <b>C315-EE8661/ POWER ELECTRONICS AND DRIVES LABORATORY</b>          |   |    |
| C315.1   | Draw the VI characteristics of SCR and generate the Gate Pulse using R, RC and UJT  | K2 |
| C315.2   | Plot the characteristics of MOSFET and IGBT   | K2 |
| C315.3   | Simulate a single phase AC to DC half and fully controlled converter  | K3 |
| C315.4   | Draw the output response of step up and step down MOSFET based chopper and Simulate a single phase IGBT based PWM inverter.   | K2 |
| C315.5   | Plot the output response of AC voltage controller and Simulate the Power Electronic Circuits  | K2 |
| C315.6   | Ability to understand and analyze, linear and digital electronic circuits.  | K4 |
| <b>C316- EE8681/ MICROPROCESSORS AND MICROCONTROLLERS LABORATORY</b> |   |    |
| C316.1   | Demonstrate and apply working of programs in microprocessor 8085 and 8051 microcontroller.  | K3 |
| C316.2   | Explain various assembly language programs  | K2 |
| C316.3   | Develop the basic knowledge of microprocessor and microcontroller interfacing and their application   | K3 |



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| C316.4   | Design the system using capabilities of stack program counter and status register and show how these are used to execute a machine code program | K3 |
| C316.5   | Justify the programming proficiency using various addressing modes and data transfer instruction of target microprocessor                       | K2 |
| C316.6   | Develop mini-projects using 8085 processor  | K3 |
| <b>C317- EE8611/MINI PROJECT</b>                       |   |    |
| C317.1   | Able to develop their own innovative prototype of ideas.  | K3 |
| C317.2   | Able to frame and use right principles.   | K3 |
| C317.3   | Able to implement proper methodology.   | K3 |
| C317.4   | Able to take up their final year project work.  | K3 |
| C317.5   | Able to prepare mini project reports and examination.   | K3 |
| C317.6   | Able to find solution for real time applications.   | K3 |
| <b>SEMESTER VII</b>                                    |   |    |
| <b>C401-EE8701/HIGH VOLTAGE ENGINEERING</b>            |   |    |
| C401.1   | Identify the causes of over voltage and its effects in power system.  | K3 |
| C401.2   | Classify the breakdown Mechanisms in Solid, Liquid, gases and Composite dielectrics   | K3 |
| C401.3   | Design different type of Generating circuit for high voltage D.C and high voltage A.C   | K4 |
| C401.4   | Measure A.C and D.C high voltage and current using appropriate method   | K3 |
| C401.5   | Test the transformer ,insulator , circuit breakers, surge diverters and cables also discuss the insulation coordination                         | K3 |
| C401.6   | Ability to understand and analyze power system operation, stability, control and protection.  | K4 |
| <b>C402-EE8702/ POWER SYSTEM OPERATION AND CONTROL</b> |   |    |
| C402.1   | Explain the concept of transients and Compute the solution of transient current equation for RL and RLC system.                                 | K2 |
| C402.2   | Illustrate the importance of switching transients; Explain the concept of resistance switching, load switching and capacitance switching.       | K2 |
| C402.3   | Explain the concept of lightning mechanism, Describe the interaction between lightning and power system   | K2 |
| C402.4   | Apply the concept of reflection and refraction, Draw the Bewley Lattice diagram for different systems.  | K3 |

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| C402.5   | Analyze the concept of short line (or) Kilometric fault and justify the EMTP for transient computation.   | K3 |
| C402.6   | Ability to understand and analyze power system operation, stability, control and protection.  | K1 |
| <b>C403-EE8703/RENEWABLE ENERGY SYSTEMS</b>                                  |   |    |
| C403.1   | Examine the various types of renewable energy sources   | K1 |
| C403.2   | Acquiring the knowledge about the performance of IG, PMSG, SCIG and DFIG  | K3 |
| C403.3   | Ability to fabricate different power converters namely AC to DC , DC to DC and AC to AC converters for renewable energy sources   | K3 |
| C403.4   | Analyze various operating modes of wind electrical generators and solar energy system   | K4 |
| C403.5   | Strengthen the knowledge about maximum power point tracking algorithms  | K3 |
| C403.6   | Gain the knowledge about various grid integrated systems  | K3 |
| <b>C404- EE8005/ SPECIAL ELECTRICAL MACHINES</b>                             |   |    |
| C404.1   | Explain the construction, operating principle and performance characteristics of synchronous reluctance motors and its applications.  | K2 |
| C404.2   | Discuss the constructional features, modes of excitation for different configuration and derive the torque equations, closed control operation and applications of stepper motor. | K2 |
| C404.3   | Describe the constructional features, principle of operation, performance analysis and applications of SRMs and develop control circuits for power converters.                    | K2 |
| C404.4   | Describe the constructional features, principle of operation, performance analysis and applications of PMBLDC motor and discuss the power converter and controller circuits.      | K2 |
| C404.5   | Explain the principle and operational characteristics of ideal PMSM.  | K2 |
| C404.6   | Explain the principle and operational characteristics, VA requirements and power converter for PMSM.  | K2 |
| <b>C405- EE8015/ELECTRIC ENERGY GENERATION, UTILIZATION AND CONSERVATION</b> |   |    |
| C405.1   | To understand the main aspects of generation, utilization and conservation.   | K2 |
| C405.2   | To identify an appropriate method of heating for any particular industrial application  | K3 |
| C405.3   | To evaluate domestic wiring connection and debug any faults occurred.   | K4 |
| C405.4   | To construct an electric connection for any domestic appliance like refrigerator as well as to design a battery charging circuit for a specific household application.            | K3 |
| C405.5   | To realize the appropriate type of electric supply system as well as to evaluate  | K3 |

  
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|  | the performance of a traction unit   |    |
| <b>C405.6</b>  | To understand the main aspects of Traction.  | K2 |
| <b>C406- OBT751/ANALYTICAL METHODS AND INSTRUMENTATION</b> |  |    |
| <b>C406.1</b>  | Able to understand the properties of electromagnetic radiation.  | K2 |
| <b>C406.2</b>  | Able to understand the molecular absorption spectrometry.  | K2 |
| <b>C406.3</b>  | Able to get the knowledge of NMR and Mass spectrometry.  | K2 |
| <b>C406.4</b>  | Able to understand the various chromatographies.   | K2 |
| <b>C406.5</b>  | Able to analyze the electro and surface microscopy.  | K4 |
| <b>C406.6</b>  | Able to find the various scanning probe microscopes.   | K3 |
| <b>C407- EE8711/POWER SYSTEM SIMULATION LABORATORY</b>     |  |    |
| <b>C407.1</b>  | Determine the bus impedance and admittance matrices using C and MATLAB   | K3 |
| <b>C407.2</b>  | Apply numerical methods for solving load flow problems and verify using C and MATLAB   | K3 |
| <b>C407.3</b>  | Analyze various faults occurring in power system and simulate the faults using PSCAD.  | K4 |
| <b>C407.4</b>  | Analyze small signal stability of Single Machine Infinite Bus (SMIB) system and draw the swing curve using AUPOWER Lab and MATLAB. | K4 |
| <b>C407.5</b>  | Generate the coding for economic dispatch problems and load frequency dynamics problems using MATLAB.                              | K3 |
| <b>C408- EE8712/RENEWABLE ENERGY SYSTEMS LABORATORY</b>    |  |    |
| <b>C408.1</b>  | Ability to understand and analyze Renewable energy systems   | K2 |
| <b>C408.2</b>  | Ability to train the students in Renewable Energy Sources and technologies.  | K3 |
| <b>C408.3</b>  | Ability to provide adequate inputs on a variety of issues in harnessing Renewable Energy.  | K2 |
| <b>C408.4</b>  | Ability to simulate the various Renewable energy sources.  | K3 |
| <b>C408.5</b>  | Ability to recognize current and possible future role of Renewable energy sources.   | K3 |
| <b>C408.6</b>  | Ability to understand basics of Intelligent Controllers.   | K2 |
| <b>SEMESTER VIII</b>                                       |  |    |
| <b>C409- GE8074 /HUMAN RIGHTS</b>                          |  |    |
| <b>C409.1</b>  | Able to understand the classifications of rights.  | K2 |
| <b>C409.2</b>  | Able to understand the Evolution of the concept of Human Rights.   | K2 |



|   |  |    |
|---|--|----|
| <b>C409.3</b>                               | Able to understand the theories and perspectives of UN laws.   | K2 |
| <b>C409.4</b>                               | Able to identify the human rights in India.  | K3 |
| <b>C409.5</b>                               | Able to acquire the basic knowledge of human rights.   | K2 |
| <b>C409.6</b>                               | Able to understand the role of NGO's in human rights.  | K2 |
| <b>C410- EE8010/POWER SYSTEM TRANSIENTS</b> |  |    |
| <b>C410.1</b>                               | Ability to understand and analyze switching and lightning transients.  | K2 |
| <b>C410.2</b>                               | Ability to acquire knowledge on generation of switching transients and their control.  | K2 |
| <b>C410.3</b>                               | Ability to analyze the mechanism of lighting strokes.  | K4 |
| <b>C410.4</b>                               | Ability to understand the importance of propagation, reflection and refraction of travelling waves.  | K2 |
| <b>C410.5</b>                               | Ability to find the voltage transients caused by faults.   | K3 |
| <b>C410.6</b>                               | Ability to understand the concept of circuit breaker action, load rejection on integrated power system.  | K2 |
| <b>C411- EE8811 / PROJECT WORK</b>          |  |    |
| <b>C411.1</b>                               | Apply the fundamentals of mathematics, science and engineering knowledge to identify , formulate , design and investigate complex engineering problems of electrical and electronics engineering and allied applications .   | K3 |
| <b>C411.2</b>                               | Apply appropriate techniques and modern engineering hardware and software tools in electrical and electronics engineering and allied applications.   | K3 |
| <b>C411.3</b>                               | Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues with societal and environmental context , applying ethical principles in the field of electrical and electronics engineering and allied applications. | K3 |
| <b>C411.4</b>                               | Function effectively as an individual and as a member or leader in diverse teams in multidisciplinary settings and make effective presentation, and communicate effectively.   | K3 |
| <b>C411.5</b>                               | Demonstrate the understanding of the engineering and management principles in multidisciplinary environments to engage in lifelong learning in the broadest context of technological change.   | K3 |

| CO-PO MAPPING  |     |     |     |     |     |     |     |     |     |      |      |      |
|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
|  | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| <b>C201-MA8353/TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS</b> |     |     |     |     |     |     |     |     |     |      |      |      |
| C201.1   | 3   | 2   | 2   | -   | -   | 2   | -   | -   | -   | 3    | -    | 2    |
| C201.2   | 2   | 3   | 2   | -   | -   | -   | -   | -   | -   | -    | -    | -    |
| C201.3   | 3   | 2   | 2   | -   | -   | -   | -   | -   | -   | 2    | -    | -    |
| C201.4   | 3   | 2   | 3   | 2   | 2   | -   | -   | 2   | -   | 2    | -    | -    |
| C201.5   | 3   | 3   | 2   | 2   | -   | 2   | -   | -   | -   | -    | -    | 2    |
| C201.6   | 3   | 2   | 2   | 2   | 2   | 2   | -   | 2   | -   | -    | 2    | 2    |
| <b>C202-EE8351/DIGITAL LOGIC CIRCUITS</b>                        |     |     |     |     |     |     |     |     |     |      |      |      |
| C202.1   | 3   | 2   | 2   | 2   | -   | -   | -   | -   | -   | 2    | 2    | 2    |
| C202.2   | 3   | 2   | 2   | 2   | 2   | -   | -   | -   | -   | 2    | 2    | 2    |
| C202.3   | 3   | 2   | 2   | 2   | -   | -   | -   | -   | -   | 2    | 2    | 2    |
| C202.4   | 3   | 2   | 2   | 2   | -   | -   | -   | -   | -   | 2    | 2    | 2    |
| C202.5   | 3   | 2   | 2   | 2   | 2   | -   | -   | -   | -   | 2    | 2    | 2    |
| C202.6   | 3   | 2   | 2   | 2   | 3   | -   | -   | -   | -   | 2    | 2    | 2    |
| <b>C203-EE8391/ELECTROMAGNETIC THEORY</b>                        |     |     |     |     |     |     |     |     |     |      |      |      |
| C203.1   | 3   | 3   | 3   | 2   | 2   | 2   | -   | 2   | 2   | 2    | 3    | 2    |
| C203.2   | 3   | 2   | 3   | 2   | 2   | -   | -   | -   | -   | 3    | 2    | 2    |
| C203.3   | 3   | 2   | 2   | 2   | 2   | -   | -   | -   | -   | 2    | 2    | 2    |
| C203.4   | 3   | 3   | 2   | 2   | 3   | -   | 2   | -   | -   | 2    | 2    | 2    |
| C203.5   | 3   | 3   | 3   | 2   | 2   | -   | -   | -   | -   | 3    | 2    | 2    |
| C203.6   | 2   | 2   | 3   | 2   | 3   | -   | -   | 2   | -   | 2    | 2    | 2    |
| <b>C204-EE8301/ ELECTRICAL MACHINES - I</b>                      |     |     |     |     |     |     |     |     |     |      |      |      |
| C204.1   | 3   | 3   | 2   | 2   | -   | -   | -   | -   | -   | -    | -    | 2    |
| C204.2   | 3   | 3   | 3   | 2   | -   | -   | -   | -   | -   | -    | -    | 2    |
| C204.3   | 3   | 3   | 3   | 2   | -   | -   | -   | -   | -   | -    | -    | 2    |
| C204.4   | 3   | 3   | 2   | 2   | -   | -   | -   | -   | -   | -    | -    | 2    |
| C204.5   | 3   | 3   | 3   | 2   | -   | -   | -   | -   | -   | -    | -    | 2    |

  
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|   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C204.6  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 2 |
| <b>C205-EC8353/ELECTRON DEVICES AND CIRCUITS</b>        |   |   |   |   |   |   |   |   |   |   |   |   |
| C205.1  | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | - | 2 |
| C205.2  | 3 | 3 | 3 | 3 | 3 | - | - | - | - | - | - | 2 |
| C205.3  | 3 | 3 | 2 | 3 | 2 | - | - | - | - | - | - | 2 |
| C205.4  | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | - | 2 |
| C205.5  | 3 | 2 | 2 | 2 | 3 | - | - | - | - | - | - | 2 |
| C205.6  | 3 | 3 | 3 | 3 | 3 | - | - | - | - | - | - | 2 |
| <b>C206-ME8792/POWER PLANT ENGINEERING</b>              |   |   |   |   |   |   |   |   |   |   |   |   |
| C206.1  | 3 | 2 | 3 | 2 | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 2 |
| C206.2  | 3 | 2 | 3 | 2 | 3 | 3 | - | 3 | 2 | - | - | 2 |
| C206.3  | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | - |
| C206.4  | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | - | 2 | 2 | 2 |
| C206.5  | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | - | 2 |
| C206.6  | 3 | 2 | 2 | 2 | 2 | 2 | 2 | - | 2 | 2 | 2 | 2 |
| <b>C207- EC8311/ELECTRONICS LABORATORY</b>              |   |   |   |   |   |   |   |   |   |   |   |   |
| C207.1  | 3 | 2 | 2 | 3 | 2 | - | - | - | - | - | 2 | 2 |
| C207.2  | 3 | 2 | 2 | 3 | 2 | - | - | - | - | - | 2 | 2 |
| C207.3  | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 |
| C207.4  | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 |
| C207.5  | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 |
| C207.6  | 3 | 2 | 2 | 3 | 3 | - | - | - | - | - | 2 | 2 |
| <b>C208- EE8311/ ELECTRICAL MACHINES LABORATORY - I</b> |   |   |   |   |   |   |   |   |   |   |   |   |
| C208.1  | 3 | 3 | - | - | - | 2 | - | - | - | - | 2 | 2 |
| C208.2  | 3 | 3 | - | - | - | 2 | - | - | - | - | 2 | 2 |
| C208.3  | 3 | 2 | - | - | - | 2 | - | - | - | - | 2 | 2 |
| C208.4  | 3 | 2 | - | - | - | 2 | - | - | - | - | 2 | 2 |
| C208.5  | 3 | 2 | - | - | - | 2 | - | - | - | - | 2 | 2 |
| C208.6  | 3 | 2 | - | - | - | 2 | - | - | - | - | 2 | 2 |

  
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| <b>C209-MA8491/ NUMERICAL METHODS</b>                           |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C209.1  | 3 | 3 | - | 2 | 2 | - | - | - | - | - | - | 2 |
| C209.2  | 3 | 2 | - | 2 | 2 | - | - | - | - | - | - | 2 |
| C209.3  | 3 | 3 | - | 3 | 2 | - | - | - | - | - | - | 2 |
| C209.4  | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 2 |
| C209.5  | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 2 |
| C209.6  | 2 | 2 | 2 | - | - | - | - | - | - | - | - | 2 |
| <b>C210-EE8401/ ELECTRICAL MACHINES - II</b>                    |   |   |   |   |   |   |   |   |   |   |   |   |
| C210.1  | 2 | 3 | 3 | 2 | 2 | - | 2 | - | - | - | 3 | - |
| C210.2  | 2 | 2 | 3 | 2 | 2 | 3 | - | 2 | - | 3 | 2 | 2 |
| C210.3  | 2 | 2 | 2 | 2 | 2 | - | - | - | 2 | - | 2 | - |
| C210.4  | 3 | 3 | 2 | 2 | 3 | - | 3 | - | - | - | 2 | 2 |
| C210.5  | 3 | 3 | 3 | 2 | 2 | - | - | - | 3 | - | 2 | - |
| C210.6  | 2 | 2 | 3 | 2 | 3 | - | - | - | - | 2 | 2 | 2 |
| <b>C211-EE8402/ TRANSMISSION AND DISTRIBUTION</b>               |   |   |   |   |   |   |   |   |   |   |   |   |
| C211.1  | 2 | 2 | 2 | 2 | 2 | - | - | 3 | - | - | 3 | - |
| C211.2  | 3 | 2 | 3 | 2 | 2 | - | - | - | - | - | 2 | - |
| C211.3  | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 |
| C211.4  | 3 | 3 | 2 | 2 | 3 | 2 | - | - | 2 | - | 2 | - |
| C211.5  | 3 | 3 | 3 | 2 | 2 | - | - | 3 | - | - | 2 | 3 |
| <b>C212- EE8403/ MEASUREMENTS AND INSTRUMENTATION</b>           |   |   |   |   |   |   |   |   |   |   |   |   |
| C212.1  | 3 | 3 | 2 | 2 | 2 | - | - | - | - | - | - | 3 |
| C212.2  | 3 | 3 | 3 | 3 | 3 | - | - | - | - | - | - | 3 |
| C212.3  | 3 | 2 | 3 | 2 | 3 | - | - | - | - | - | - | 2 |
| C212.4  | 3 | 3 | 2 | 2 | 2 | - | - | - | - | - | - | 2 |
| C212.5  | 3 | 3 | 2 | 2 | 3 | - | - | - | - | - | - | 3 |
| C212.6  | 3 | 2 | 2 | 2 | 3 | - | - | - | - | - | - | 3 |
| <b>C213- EE8451/LINEAR INTEGRATED CIRCUITS AND APPLICATIONS</b> |   |   |   |   |   |   |   |   |   |   |   |   |
| C213.1  | 3 | - | 2 | - | - | - | - | - | - | - | 2 | 2 |

  
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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C213.2  | 3 | - | 2 | - | - | - | - | - | 2 | - | 2 | 2 |
| C213.3  | 3 | 2 | 2 | 2 | - | - | 2 | - | 2 | - | 2 | 2 |
| C213.4  | 3 | 2 | 2 | 2 | - | - | 2 | - | 2 | - | 2 | 2 |
| C213.5  | 3 | - | 2 | 2 | - | - | 2 | - | 2 | - | 2 | 2 |
| C213.6  | 3 | - | 2 | 2 | - | 2 | 2 | - | 2 | - | 2 | 2 |
| <b>C214- IC8451/CONTROL SYSTEMS</b>                                   |   |   |   |   |   |   |   |   |   |   |   |   |
| C214.1  | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | 2 |
| C214.2  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 2 |
| C214.3  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 2 |
| C214.4  | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | 2 |
| C214.5  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 2 |
| C214.6  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 2 |
| <b>C215-EE8411/ELECTRICAL MACHINES LABORATORY - II</b>                |   |   |   |   |   |   |   |   |   |   |   |   |
| C215.1  | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | 3 | - |
| C215.2  | 3 | 2 | 3 | 2 | 2 | - | - | - | - | - | 2 | - |
| C215.3  | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | 2 | - |
| C215.4  | 3 | 3 | 2 | 2 | 3 | - | - | - | - | - | 2 | - |
| C215.5  | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | 2 | - |
| C215.6  | 2 | 2 | 3 | 2 | 3 | - | - | - | - | - | 2 | - |
| <b>C216- EE8461/LINEAR AND DIGITAL INTEGRATED CIRCUITS LABORATORY</b> |   |   |   |   |   |   |   |   |   |   |   |   |
| C216.1  | 3 | 3 | - | - | - | 2 | - | - | - | - | 2 | 2 |
| C216.2  | 3 | 3 | - | - | - | 2 | - | - | - | - | 2 | 2 |
| C216.3  | 3 | 2 | - | - | - | 2 | - | - | - | - | 2 | 2 |
| C216.4  | 3 | 2 | - | - | - | 2 | - | - | - | - | 2 | 2 |
| C216.5  | 3 | 2 | - | - | - | 2 | - | - | - | - | 2 | 2 |
| C216.6  | 3 | 2 | - | - | - | 2 | - | - | - | - | 2 | 2 |
| <b>C301- EE8412/TECHNICAL SEMINAR</b>                                 |   |   |   |   |   |   |   |   |   |   |   |   |
| C217.1  | 3 | 2 | 3 | - | - | - | - | - | 3 | 2 | 2 | 2 |
| C217.2  | 3 | 2 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |

  
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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C217.3  | 3 | 3 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |
| C217.4  | 3 | 2 | 2 | - | - | - | - | - | 3 | 2 | 2 | 2 |
| C217.5  | 3 | 3 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |
| <b>C301- EE8501/POWER SYSTEM ANALYSIS</b>                 |   |   |   |   |   |   |   |   |   |   |   |   |
| C301.1  | 3 | 2 | 2 | 2 | - | 2 | - | - | - | 2 | - | 2 |
| C301.2  | 3 | 3 | 2 | 2 | - | 2 | - | - | - | 2 | - | 2 |
| C301.3  | 3 | 2 | 3 | 2 | - | 2 | - | - | - | 2 | - | 2 |
| C301.4  | 3 | 2 | 2 | 2 | - | 2 | - | - | - | 2 | - | 2 |
| C301.5  | 3 | 2 | 3 | 2 | - | 2 | - | - | - | 2 | - | 2 |
| C301.6  | 3 | 2 | 2 | 2 | - | 2 | - | - | - | 2 | - | 2 |
| <b>C302- EE8551/ MICROPROCESSORS AND MICROCONTROLLERS</b> |   |   |   |   |   |   |   |   |   |   |   |   |
| C302.1  | 3 | 3 | 2 | 2 | 2 | - | - | - | - | - | - | 3 |
| C302.2  | 3 | 3 | 3 | 3 | 3 | - | - | - | - | - | - | 3 |
| C302.3  | 3 | 2 | 3 | 2 | 3 | - | - | - | - | - | - | 2 |
| C302.4  | 3 | 3 | 2 | 2 | 2 | - | - | - | - | - | - | 2 |
| C302.5  | 3 | 3 | 2 | 2 | 3 | - | - | - | - | - | - | 3 |
| C302.6  | 3 | 2 | 2 | 2 | 3 | - | - | - | - | - | - | 3 |
| <b>C303- EE8552/POWER ELECTRONICS</b>                     |   |   |   |   |   |   |   |   |   |   |   |   |
| C303.1  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C303.2  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C303.3  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C303.4  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C303.5  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C303.6  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| <b>C304-EE8591/DIGITAL SIGNAL PROCESSING</b>              |   |   |   |   |   |   |   |   |   |   |   |   |
| C304.1  | 3 | 2 | 2 | - | 1 | - | - | - | - | - | - | 1 |
| C304.2  | 3 | 2 | 2 | - | 1 | - | - | - | - | - | - | 1 |
| C304.3  | 3 | 2 | 2 | - | 1 | - | - | - | - | - | - | 1 |
| C304.4  | 3 | 2 | 2 | - | 1 | - | - | - | - | - | - | 1 |

  
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|   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C304.5  | 3 | 2 | 2 | - | 1 | - | - | - | - | - | - | 1 |
| C304.6  | 3 | 2 | 2 | - | 1 | - | - | - | - | - | - | 1 |
| <b>C305- CS8392/ OBJECT ORIENTED PROGRAMMING</b>            |   |   |   |   |   |   |   |   |   |   |   |   |
| C305.1  | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 2 |
| C305.2  | 2 | 2 | 2 | - | - | - | - | - | - | - | - | 2 |
| C305.3  | 2 | 2 | 2 | - | - | - | - | - | - | - | - | - |
| C305.4  | 3 | 3 | - | - | - | - | - | - | - | - | - | 3 |
| C305.5  | 2 | 3 | - | - | - | - | - | - | - | - | - | 3 |
| C305.6  | 2 | - | 2 | - | - | - | - | - | - | - | - | 2 |
| <b>C306- OCE551/AIR POLLUTION AND CONTROL ENGINEERING</b>   |   |   |   |   |   |   |   |   |   |   |   |   |
| C306.1  | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | 2 |
| C306.2  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 2 |
| C306.3  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 2 |
| C306.4  | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | 2 |
| C306.5  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 2 |
| C306.6  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 2 |
| <b>C307- EE8511/ CONTROL AND INSTRUMENTATION LABORATORY</b> |   |   |   |   |   |   |   |   |   |   |   |   |
| C307.1  | 3 | 3 | 3 | - | 2 | 2 | - | 2 | 2 | - | - | 2 |
| C307.2  | 3 | 2 | 3 | - | 2 | - | - | - | - | - | - | 3 |
| C307.3  | 3 | 2 | 2 | - | 2 | - | - | - | - | 2 | - | 2 |
| C307.4  | 3 | 3 | 2 | - | 3 | - | 2 | - | - | - | - | 3 |
| C307.5  | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | 2 | 2 |
| C307.6  | 2 | 2 | 3 | - | 3 | - | - | 2 | - | - | - | 2 |
| <b>C308- HS8581/ PROFESSIONAL COMMUNICATION</b>             |   |   |   |   |   |   |   |   |   |   |   |   |
| C308.1  | 3 | 2 | 3 | - | - | - | - | - | 3 | 2 | 2 | 2 |
| C308.2  | 3 | 2 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |
| C308.3  | 3 | 3 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |
| C308.4  | 3 | 2 | 2 | - | - | - | - | - | 3 | 2 | 2 | 2 |
| C308.5  | 3 | 3 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |

  
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| <b>C309- CS8383/ OBJECT ORIENTED PROGRAMMING LABORATORY</b> |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C309.1  | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 2 |
| C309.2  | 2 | 2 | 2 | - | - | - | - | - | - | - | - | 2 |
| C309.3  | 2 | 2 | 2 | - | - | - | - | - | - | - | - | 2 |
| C309.4  | 3 | 3 | 3 | - | - | - | - | - | - | - | - | 3 |
| C309.5  | 2 | 3 | 3 | - | - | - | - | - | - | - | - | 3 |
| <b>C310-EE8601/SOLID STATE DRIVES</b>                       |   |   |   |   |   |   |   |   |   |   |   |   |
| C310.1  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C310.2  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C310.3  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C310.4  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C310.5  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C310.6  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| <b>C311-EE8602/ PROTECTION AND SWITCH GEAR</b>              |   |   |   |   |   |   |   |   |   |   |   |   |
| C311.1  | 3 | 2 | 2 | 2 | - | 2 | - | - | - | 2 | - | 2 |
| C311.2  | 3 | 3 | 2 | 2 | - | 2 | - | - | - | 2 | - | 2 |
| C311.3  | 3 | 2 | 3 | 2 | - | 2 | - | - | - | 2 | - | 2 |
| C311.4  | 3 | 2 | 2 | 2 | - | 2 | - | - | - | 2 | - | 2 |
| C311.5  | 3 | 2 | 3 | 2 | - | 2 | - | - | - | 2 | - | 2 |
| C311.6  | 3 | 2 | 2 | 2 | - | 2 | - | - | - | 2 | - | 2 |
| <b>C312-EE8691/ EMBEDDED SYSTEMS</b>                        |   |   |   |   |   |   |   |   |   |   |   |   |
| C312.1  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C312.2  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C312.3  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C312.4  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C312.5  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C312.6  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |

  
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| <b>C313- GE8075/INTELLECTUAL PROPERTY RIGHTS</b>                    |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C313.1  | 3 | 2 | 3 | - | - | - | - | - | 3 | 2 | 2 | 2 |
| C313.2  | 3 | 2 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |
| C313.3  | 3 | 3 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |
| C313.4  | 3 | 2 | 2 | - | - | - | - | - | 3 | 2 | 2 | 2 |
| C313.5  | 3 | 3 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |
| C313.6  | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 2 |
| <b>C314- EI8073/BIOMEDICAL INSTRUMENTATION</b>                      |   |   |   |   |   |   |   |   |   |   |   |   |
| C314.1  | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 2 |
| C314.2  | 2 | 2 | 2 | - | - | - | - | - | - | - | - | 2 |
| C314.3  | 2 | 2 | 2 | - | - | - | - | - | - | - | - | 2 |
| C314.4  | 3 | 3 | 3 | - | - | - | - | - | - | - | - | 3 |
| C314.5  | 2 | 3 | 3 | - | - | - | - | - | - | - | - | 3 |
| C314.6  | 2 | 2 | 2 | - | - | - | - | 2 | - | 2 | - | - |
| <b>C315- EE8661/POWER ELECTRONICS AND DRIVES LABORATORY</b>         |   |   |   |   |   |   |   |   |   |   |   |   |
| C315.1  | 3 | 3 | 3 | 2 | - | - | - | 2 | - | - | 3 | 2 |
| C315.2  | 3 | 2 | 3 | 2 | - | - | - | 2 | - | - | 2 | 2 |
| C315.3  | 3 | 2 | 2 | 2 | - | - | - | 2 | - | - | 2 | 2 |
| C315.4  | 3 | 3 | 2 | 2 | - | - | - | 2 | - | - | 2 | 2 |
| C315.5  | 3 | 3 | 3 | 2 | - | - | - | 2 | - | - | 2 | 2 |
| C315.6  | 3 | 3 | 3 | 2 | - | - | - | 2 | - | - | 2 | 2 |
| <b>C316- EE8681/MICROPROCESSORS AND MICROCONTROLLERS LABORATORY</b> |   |   |   |   |   |   |   |   |   |   |   |   |
| C316.1  | 3 | 3 | 2 | 2 | 2 | - | - | - | - | - | - | 3 |
| C316.2  | 3 | 3 | 3 | 3 | 3 | - | - | - | - | - | - | 3 |
| C316.3  | 3 | 2 | 3 | 2 | 3 | - | - | - | - | - | - | 2 |
| C316.4  | 3 | 3 | 2 | 2 | 2 | - | - | - | - | - | - | 2 |
| C316.5  | 3 | 3 | 2 | 2 | 3 | - | - | - | - | - | - | 3 |
| C316.6  | 3 | 2 | 2 | 2 | 3 | - | - | - | - | - | - | 3 |

  
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| C317- MINI PROJECT                              |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C317.1  | 3 | 2 | 3 | - | - | - | - | - | 3 | 2 | 2 | 2 |
| C317.2  | 3 | 2 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |
| C317.3  | 3 | 3 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |
| C317.4  | 3 | 2 | 2 | - | - | - | - | - | 3 | 2 | 2 | 2 |
| C317.5  | 3 | 3 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |
| C317.6  | 3 | 2 | 2 | - | - | - | - | - | 3 | 2 | 2 | 2 |
| 401-EE8701/HIGH VOLTAGE ENGINEERING             |   |   |   |   |   |   |   |   |   |   |   |   |
| C401.1  | 3 | 3 | 3 | 2 | 2 | 2 | - | - | - | - | 3 | - |
| C401.2  | 3 | 2 | 3 | 2 | 2 | - | 3 | - | 2 | - | 2 | - |
| C401.3  | 3 | 2 | 2 | 2 | 2 | 3 | - | - | - | 3 | 2 | - |
| C401.4  | 3 | 3 | 2 | 2 | 3 | - | 2 | - | - | - | 2 | - |
| C401.5  | 3 | 3 | 3 | 2 | 2 | - | - | 3 | - | 2 | 2 | - |
| C401.6  | 2 | 2 | 3 | 2 | 3 | - | - | - | - | - | 2 | - |
| C402-EE8702/ POWER SYSTEM OPERATION AND CONTROL |   |   |   |   |   |   |   |   |   |   |   |   |
| C402.1  | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | 3 | - |
| C402.2  | 3 | 2 | 3 | 2 | 2 | - | - | - | - | - | 2 | - |
| C402.3  | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | 2 | - |
| C402.4  | 3 | 3 | 2 | 2 | 3 | - | - | - | - | - | 2 | - |
| C402.5  | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | 2 | - |
| C402.6  | 2 | 2 | 3 | 2 | 3 | - | - | - | - | - | 2 | - |
| C403-EE8703/RENEWABLE ENERGY SYSTEMS            |   |   |   |   |   |   |   |   |   |   |   |   |
| C403.1  | 2 | 2 | - | - | - | 2 | 2 | - | - | - | - | 2 |
| C403.2  | 2 | 3 | - | - | - | 2 | 2 | 2 | - | - | - | 2 |
| C403.3  | 2 | 3 | - | - | - | 2 | 2 | 2 | - | - | 2 | 2 |
| C403.4  | 2 | 3 | 2 | - | - | 2 | 2 | 2 | - | - | 2 | 2 |
| C403.5  | 2 | 3 | 2 | - | - | 2 | 2 | 3 | - | - | 2 | 2 |
| C403.6  | 2 | 3 | - | - | - | 2 | 2 | 2 | - | - | 2 | 2 |

  
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| <b>C404- EE8005/SPECIAL ELECTRICAL MACHINES</b>                              |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|
| C404.1   | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | 3 | - |
| C404.2   | 3 | 2 | 3 | 2 | 2 | - | - | - | - | - | 2 | - |
| C404.3   | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | 2 | - |
| C404.4   | 3 | 3 | 2 | 2 | 3 | - | - | - | - | - | 2 | - |
| C404.5   | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | 2 | - |
| C404.6   | 2 | 2 | 3 | 2 | 3 | - | - | - | - | - | 2 | - |
| <b>C405- EE8015/ELECTRIC ENERGY GENERATION, UTILIZATION AND CONSERVATION</b> |   |   |   |   |   |   |   |   |   |   |   |   |
| C405.1   | 2 | 2 | - | - | - | 2 | 2 | - | - | - | - | 2 |
| C405.2   | 2 | 3 | - | - | - | 2 | 2 | 2 | - | - | - | 2 |
| C405.3   | 2 | 3 | - | - | - | 2 | - | 2 | - | - | 2 | - |
| C405.4   | 2 | 3 | 2 | - | - | 2 | - | 2 | - | - | - | 2 |
| C405.5   | 2 | 3 | 2 | - | - | 2 | - | 3 | - | - | - | - |
| C405.6   | 2 | 3 | - | - | - | 2 | - | 2 | - | - | 2 | 2 |
| <b>C406- OBT751 ANALYTICAL METHODS AND INSTRUMENTATION</b>                   |   |   |   |   |   |   |   |   |   |   |   |   |
| C406.1   | 3 | 2 | 3 | - | - | - | - | - | 3 | 2 | 2 | 2 |
| C406.2   | 3 | 2 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |
| C406.3   | 3 | 3 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |
| C406.4   | 3 | 2 | 2 | - | - | - | - | - | 3 | 2 | 2 | 2 |
| C406.5   | 3 | 3 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |
| C406.6   | 3 | 2 | 2 | - | - | - | - | - | 3 | 2 | 2 | 2 |
| <b>C407- EE8711/POWER SYSTEM SIMULATION LABORATORY</b>                       |   |   |   |   |   |   |   |   |   |   |   |   |
| C407.1   | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | 3 | 3 |
| C407.2   | 3 | 2 | 3 | 2 | 2 | - | - | - | - | - | 2 | 3 |
| C407.3   | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 |
| C407.4   | 3 | 3 | 2 | 2 | 3 | - | - | - | - | - | 2 | 2 |
| C407.5   | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | 2 | 3 |
| C407.6   | 2 | 2 | 3 | 2 | 3 | - | - | - | - | - | 2 | 3 |

  
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| <b>C408- EE8712/RENEWABLE ENERGY SYSTEMS LABORATORY</b> |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C408.1  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | 3 | 2 |
| C408.2  | 3 | 2 | 3 | 2 | - | - | - | - | - | - | 2 | 2 |
| C408.3  | 3 | 2 | 2 | 2 | - | - | - | - | - | - | 3 | - |
| C408.4  | 3 | 3 | 2 | 2 | - | - | - | 2 | - | - | - | - |
| C408.5  | 3 | 3 | 3 | 2 | - | - | - | 2 | - | - | - | 2 |
| C408.6  | 3 | 3 | 3 | 2 | - | - | - | 2 | - | - | 2 | 2 |
| <b>C409- GE8074/HUMAN RIGHTS</b>                        |   |   |   |   |   |   |   |   |   |   |   |   |
| C409.1  | 3 | 2 | 3 | - | - | - | - | - | 3 | 2 | 2 | 2 |
| C409.2  | 3 | 2 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |
| C409.3  | 3 | - | - | - | - | - | - | - | 3 | 2 | 2 | 3 |
| C409.4  | 3 | 2 | - | - | - | - | - | - | 3 | 2 | 2 | 2 |
| C409.5  | 3 | 3 | - | - | - | - | - | - | 3 | 2 | 2 | 3 |
| C409.6  | 2 | 2 | 2 | - | - | - | - | 2 | 2 | 2 | - | - |
| <b>C410- EE8010/POWER SYSTEM TRANSIENTS</b>             |   |   |   |   |   |   |   |   |   |   |   |   |
| C410.1  | 3 | 2 | 3 | 2 | - | - | - | - | - | - | 3 | - |
| C410.2  | 3 | 2 | 3 | 2 | - | - | - | - | - | - | 2 | 2 |
| C410.3  | 2 | 2 | 2 | 2 | - | - | - | - | - | - | - | - |
| C410.4  | 3 | 2 | 2 | - | - | - | - | 2 | - | - | - | 2 |
| C410.5  | 3 | 3 | 3 | - | - | - | - | 2 | - | - | - | 2 |
| C410.6  | 2 | 3 | - | - | - | 2 | 2 | 2 | - | - | 2 | 2 |
| <b>C411- EE8811 / PROJECT WORK</b>                      |   |   |   |   |   |   |   |   |   |   |   |   |
| C411.1  | 3 | 3 | 3 | 2 | 3 | 3 | 2 | - | 2 | 2 | 2 | 2 |
| C411.2  | 3 | 2 | 3 | 2 | 3 | 2 | 2 | - | 2 | - | 2 | 2 |
| C411.3  | 2 | 3 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | - | 2 |
| C411.4  | 2 | 2 | 2 | 2 | 2 | 2 | - | - | - | - | - | 2 |
| C411.5  | 3 | 3 | 2 | 2 | 2 | 2 | 2 | - | 2 | - | - | 2 |

  
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## REGULATION – 2017 - PG

### M.E POWER ELECTRONICS AND DRIVES

| S.No  | COURSE OUTCOME  | BT LEVEL |
|---|---|----------|
| <b>SEMESTER I</b>   |   |          |
| <b>C101-MA5155/APPLIED MATHEMATICS FOR ELECTRICAL ENGINEERS</b> |   |          |
| C101.1  | Ability to apply the concepts of Linear programming in Electrical Engineering problems.   | K3       |
| C101.2  | Ability to achieve an understanding of the basic concepts of one dimensional random variables and apply in electrical engineering problems.         | K3       |
| C101.3  | Ability to familiarize the students in calculus of variations and solve problems using Fourier transforms associated with engineering applications. | K2       |
| C101.4  | Ability to understand the matrix theory in electrical engineering problems.   | K2       |
| C101.5  | Ability to apply the concept of Fourier series in electrical engineering problems.  | K3       |
| C101.6  | Ability to analyze the power spectrum in electrical engineering problems.   | K4       |
| <b>C102-PX5101/POWER SEMICONDUCTOR DEVICES</b>                  |   |          |
| C102.1  | Able to improve power semiconductor device structures for adjustable speed motor control applications.  | K3       |
| C102.2  | Able to understand the static and dynamic characteristics of current controlled power semiconductor devices   | K2       |
| C102.3  | Able to understand the static and dynamic characteristics of voltage controlled power semiconductor devices   | K2       |
| C102.4  | Enable the students for the selection of devices for different power electronics applications   | K3       |
| C102.5  | Able to understand the control and firing circuit for different devices.  | K2       |
| C102.6  | Able to understand the thermal protection in power semiconductor devices.   | K2       |
| <b>C103-PX5151/ANALYSIS OF ELECTRICAL MACHINES</b>              |   |          |
| C103.1  | Ability to have knowledge about the fundamentals of magnetic circuits, energy, force and torque of multi-excited systems.                           | K2       |
| C103.2  | Ability to analyze the steady state and dynamic state operation of DC machine through mathematical modeling and simulation in digital computer.     | K4       |

  
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|--|--|----|
| <b>C103.3</b>  | Ability to understand the theory of transformation of three phase variables to two phase variables.  | K2 |
| <b>C103.4</b>  | Ability to analyze the steady state and dynamic state operation of three-phase induction machines using transformation theory based mathematical modeling.       | K4 |
| <b>C103.5</b>  | Ability to analyze the steady state and dynamic state operation of three-phase synchronous machines using transformation theory based mathematical modeling      | K4 |
| <b>C103.6</b>  | Ability to apply digital computer simulation for PMSM and D.C shunt motor.   | K3 |
| <b>C104-PX5152/ANALYSIS AND DESIGN OF POWER CONVERTERS</b> |  |    |
| <b>C104.1</b>  | Able to understand the electrical circuit concepts behind the different working modes of power converters so as to enable deep understanding of their operation. | K2 |
| <b>C104.2</b>  | Able to acquire skills to derive the criteria for the design of power converters starting from basic fundamentals.   | K3 |
| <b>C104.3</b>  | Able to analyze and comprehend the various operating modes of different configurations of power converters.  | K4 |
| <b>C104.4</b>  | Able to design different power converters namely AC to DC, DC to DC and AC to AC converters.   | K3 |
| <b>C104.5</b>  | Ability to analyze the voltage controllers with R and R-L loads.   | K4 |
| <b>C104.6</b>  | Able to understand the difference between single phase and three phase cyclo converters.   | K2 |
| <b>C105-IN5152/SYSTEM THEORY</b>                           |  |    |
| <b>C105.1</b>  | Able to understand the fundamentals of physical systems in terms of its linear and nonlinear models.   | K2 |
| <b>C105.2</b>  | Able to find solution on representing systems in state variable form.  | K3 |
| <b>C105.3</b>  | Able to analysis on solving linear and non-linear state equations.   | K3 |
| <b>C105.4</b>  | Able to estimate the properties of linear systems such as controllability and observability.   | K3 |
| <b>C105.5</b>  | Able to study the stability analysis of systems using Lyapunov's theory.   | K2 |
| <b>C105.6</b>  | Able to understand the model concepts and design of state and output feedback controllers and estimators.  | K2 |
| <b>C106-IN5091/SOFT COMPUTING TECHNIQUES</b>               |  |    |
| <b>C106.1</b>  | Able to expose the concepts of feed forward neural networks.   | K3 |

|  |  |    |
|--|--|----|
| <b>C106.2</b>  | Able to provide adequate knowledge about feedback neural networks.   | K2 |
| <b>C106.3</b>  | Able to teach about the concept of fuzziness involved in various systems.  | K3 |
| <b>C106.4</b>  | Able to expose the ideas about genetic algorithm.  | K3 |
| <b>C106.5</b>  | Able to provide adequate knowledge about of FLC and NN toolbox.  | K2 |
| <b>C106.6</b>  | Able to implement fuzzy logic controller in stability analysis.  | K3 |
| <b>C107-PX5111/POWER ELECTRONICS CIRCUITS LABORATORY</b> |  |    |
| <b>C107.1</b>  | Able to familiar with the digital tools used in generation of gate pulses for the power electronic switches.                           | K2 |
| <b>C107.2</b>  | Able to implementing analog interfacing as well as control circuits used in a closed-loop control for power electronic system.         | K3 |
| <b>C107.3</b>  | Able to acquire knowledge on mathematical modeling of power electronic circuits and implementing the same using simulation tools.      | K3 |
| <b>C107.4</b>  | Able to design and fabricate a power converter circuits at appreciable voltage/power levels.   | K3 |
| <b>C107.5</b>  | Able to develop skills on PCB design and fabrication.  | K3 |
| <b>C107.6</b>  | Able to get an insight on the switching behaviours of power electronic switches.   | K2 |
| <b>SEMESTER II</b>                                       |  |    |
| <b>C108- PX5201/ANALYSIS AND DESIGN OF INVERTERS</b>     |  |    |
| <b>C108.1</b>  | Able to understand the concepts behind the different working modes of inverters so as to enable deep understanding of their operation. | K2 |
| <b>C108.2</b>  | Able to acquire skills to derive the criteria for the design of power converters for UPS, Drives etc.,                                 | K3 |
| <b>C108.3</b>  | Able to analyze and comprehend the various operating modes of different configurations of power converters.                            | K4 |
| <b>C108.4</b>  | Able to design different single phase and three phase inverters.   | K3 |
| <b>C108.5</b>  | Able to understand series and parallel resonant inverters.   | K2 |
| <b>C108.6</b>  | Able to analyze PWM techniques for MLI.  | K4 |
|  |  |    |



| <b>C109- PX5202/SOLID STATE DRIVES</b>          |   |    |
|---|---|----|
| <b>C109.1</b>                                   | Able to understand various operating regions of the induction motor drives.   | K2 |
| <b>C109.2</b>                                   | Able to study and analyze the operation of VSI & CSI fed induction motor control.   | K4 |
| <b>C109.3</b>                                   | Able to understand the speed control of induction motor drive from the rotor side.  | K2 |
| <b>C109.4</b>                                   | Able to understand the field oriented control of induction machine.   | K2 |
| <b>C109.5</b>                                   | Able to understand the control of synchronous motor drives.   | K2 |
| <b>C109.6</b>                                   | Able to apply DTC control strategy in three phase induction motor.  | K3 |
| <b>C110- PX5251/SPECIAL ELECTRICAL MACHINES</b> |   |    |
| <b>C110.1</b>                                   | Able to review the fundamental concepts of permanent magnets and the operation of permanent magnet brushless DC motors.     | K2 |
| <b>C110.2</b>                                   | Able to introduce the concepts of permanent magnet brushless synchronous motors and synchronous reluctance motors.          | K2 |
| <b>C110.3</b>                                   | Able to develop the control methods and operating principles of switched reluctance motors.                                 | K3 |
| <b>C110.4</b>                                   | Able to introduce the concepts of stepper motors and its applications.  | K2 |
| <b>C110.5</b>                                   | Able to understand the basic concepts of other special machines.  | K2 |
| <b>C110.6</b>                                   | Able to understand the torque speed characteristics of synchronous reluctance motor.  | K2 |
| <b>C111-PX5252/POWER QUALITY</b>                |   |    |
| <b>C111.1</b>                                   | Able to understand the various power quality issues.  | K2 |
| <b>C111.2</b>                                   | Able to understand the concept of power and power factor in single phase and three phase systems supplying non linear loads | K2 |
| <b>C111.3</b>                                   | Able to understand the conventional compensation techniques used for power factor correction and load voltage regulation.   | K2 |
| <b>C111.4</b>                                   | Able to understand the active compensation techniques used for power factor correction.                                     | K2 |
| <b>C111.5</b>                                   | Able to understand the active compensation techniques used for load voltage regulation.                                     | K2 |

|   |   |    |
|---|---|----|
| <b>C111.6</b>   | Able to realize and control of DSTATCOM in voltage control.                               | K3 |
| <b>C112-PX5003/FLEXIBLE AC TRANSMISSION SYSTEMS</b>     |   |    |
| <b>C112.1</b>   | Able to expose the concepts of feed forward neural networks.                              | K2 |
| <b>C112.2</b>   | Able to provide adequate knowledge about feedback neural networks.                        | K2 |
| <b>C112.3</b>   | Able to teach about the concept of fuzziness involved in various systems.                 | K2 |
| <b>C112.4</b>   | Able to expose the ideas about genetic algorithm.   | K2 |
| <b>C112.5</b>   | Able to provide adequate knowledge about of FLC and NN toolbox.                           | K2 |
| <b>C112.6</b>   | Able to implement fuzzy logic controller in stability analysis.                           | K3 |
| <b>C113-PS5071/DISTRIBUTED GENERATION AND MICROGRID</b> |   |    |
| <b>C113.1</b>   | Able to illustrate the concept of distributed generation.                                 | K3 |
| <b>C113.2</b>   | Able to analyze the impact of grid integration.   | K4 |
| <b>C113.3</b>   | Able to understand the concept of Micro grid and its configuration.                       | K2 |
| <b>C113.4</b>   | Able to know the power electronics interfaces in DC and AC microgrids.                    | K2 |
| <b>C113.5</b>   | Able to study the power quality issues in micogrids.                                      | K2 |
| <b>C113.6</b>   | Able to find non conventional energy resources.   | K3 |
| <b>C114-PX5211/ELECTRICAL DRIVES LABORATORY</b>         |   |    |
| <b>C114.1</b>   | Able to design and analyze the various DC and AC drives.                                  | K3 |
| <b>C114.2</b>   | Able to generate the firing pulses for converters and inverters using digital processors. | K3 |
| <b>C114.3</b>   | Able to design of controllers for linear and nonlinear systems.                           | K3 |
| <b>C114.4</b>   | Able to implement of closed loop system using hardware simulation.                        | K3 |
| <b>C114.5</b>   | Able to design Cyclo-converter fed Induction motor drives.                                | K3 |
| <b>C114.6</b>   | Able to design Single phase Multi Level Inverter based induction motor drive.             | K3 |

| <b>C115-PX5212/MINI PROJECT</b>                     |  |    |
|---|--|----|
| <b>C115.1</b>                                       | Able to solve a specific problem right from its identification and literature review till the successful solution of the same. | K3 |
| <b>C115.2</b>                                       | Able to acquire practical knowledge within the chosen area of technology for project development.                              | K3 |
| <b>C115.3</b>                                       | Able to Identify, analyze, formulate and handle programming projects with a comprehensive and systematic approach.             | K3 |
| <b>C115.4</b>                                       | Able to contribute as an individual or in a team in development of technical projects.   | K3 |
| <b>C115.5</b>                                       | Able to develop effective communication skills for presentation of project related activities.                                 | K3 |
| <b>C115.6</b>                                       | Able to prepare a project reports and to face reviews and viva voce examination.   | K3 |
| <b>SEMESTER III</b>                                 |  |    |
| <b>C201-PS5092/SOLAR AND ENERGY STORAGE SYSTEMS</b> |  |    |
| <b>C201.1</b>                                       | Able to know the characteristics of sunlight and their properties.   | K2 |
| <b>C201.2</b>                                       | Able to Study about solar modules and PV system design and their applications.   | K2 |
| <b>C201.3</b>                                       | Able to Deal with grid connected PV systems.   | K2 |
| <b>C201.4</b>                                       | Able to discuss about different energy storage systems.  | K2 |
| <b>C201.5</b>                                       | Able to find out the applications in water pumping, battery chargers and other solar cars etc.,                                | K3 |
| <b>C201.6</b>                                       | Able to know the international PV programs.  | K2 |
| <b>C202- PX5071/WIND ENERGY CONVERSION SYSTEMS</b>  |  |    |
| <b>C202.1</b>                                       | Able to learn the design and control principles of Wind turbine.   | K2 |
| <b>C202.2</b>                                       | Able to understand the concepts of fixed speed and variable speed, wind energy conversion systems.                             | K2 |
| <b>C202.3</b>                                       | Able to analyze the grid integration issues.   | K4 |
| <b>C202.4</b>                                       | Able to understand the concept of variable speed systems.  | K2 |
| <b>C202.5</b>                                       | Able to know grid connected systems.   | K2 |
| <b>C202.6</b>                                       | Able to analyze the steady state and dynamic performance of power system.  | K4 |



| <b>C203-PX5072/POWER ELECTRONICS FOR RENEWABLE ENERGY SYSTEMS</b> |   |    |
|---|---|----|
| <b>C203.1</b>   | Able to Provide knowledge about the stand alone and grid connected renewable energy systems.                                    | K2 |
| <b>C203.2</b>   | Able to equip with required skills to derive the criteria for the design of power converters for renewable energy applications. | K3 |
| <b>C203.3</b>   | Able to analyze and comprehend the various operating modes of wind electrical generators and solar energy systems.              | K4 |
| <b>C203.4</b>   | Able to design different power converters namely AC to DC, DC to DC and AC to AC converters for renewable energy systems.       | K3 |
| <b>C203.5</b>   | Able to develop maximum power point tracking algorithms.  | K3 |
| <b>C203.6</b>   | Able to analyze the grid integrated PMSG and SCIG based WECS.   | K4 |

| <b>CO-PO MAPPING</b>   |            |            |            |            |            |            |            |            |            |             |             |             |
|--|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|-------------|-------------|
|  | <b>PO1</b> | <b>PO2</b> | <b>PO3</b> | <b>PO4</b> | <b>PO5</b> | <b>PO6</b> | <b>PO7</b> | <b>PO8</b> | <b>PO9</b> | <b>PO10</b> | <b>PO11</b> | <b>PO12</b> |
| <b>C101- MA5155/APPLIED MATHEMATICS FOR ELECTRICAL ENGINEERS</b> |            |            |            |            |            |            |            |            |            |             |             |             |
| <b>C101.1</b>  | 2          | -          | -          | -          | -          | 2          | 2          | -          | 2          | 3           | -           | 2           |
| <b>C101.2</b>  | 2          | -          | -          | -          | -          | 2          | 2          | -          | 2          | 3           | -           | 2           |
| <b>C101.3</b>  | 3          | -          | -          | -          | -          | 3          | 2          | -          | 2          | 3           | -           | 2           |
| <b>C101.4</b>  | 3          | -          | -          | -          | -          | 3          | 2          | -          | 2          | 3           | -           | 2           |
| <b>C101.5</b>  | 2          | -          | -          | -          | -          | 2          | 3          | -          | 2          | 3           | -           | 2           |
| <b>C101.6</b>  | 2          | -          | -          | -          | -          | 2          | 3          | -          | 2          | 3           | -           | 2           |
| <b>C102- PX5101/POWER SEMICONDUCTOR DEVICES</b>                  |            |            |            |            |            |            |            |            |            |             |             |             |
| <b>C102.1</b>  | 3          | 2          | 2          | 2          | -          | -          | -          | -          | -          | 2           | 2           | 2           |
| <b>C102.2</b>  | 3          | 2          | 2          | 2          | -          | -          | -          | -          | -          | 2           | 2           | 2           |
| <b>C102.3</b>  | 3          | 2          | 2          | 2          | -          | -          | -          | -          | -          | 2           | 2           | 2           |
| <b>C102.4</b>  | 3          | 2          | 2          | 2          | -          | -          | -          | -          | -          | 2           | 2           | 2           |
| <b>C102.5</b>  | 3          | 2          | 2          | 2          | -          | -          | -          | -          | -          | 2           | 2           | 2           |
| <b>C102.6</b>  | 3          | 2          | 2          | 2          | -          | -          | -          | -          | -          | 2           | 2           | 2           |

  
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| <b>C103- PX5151/ANALYSIS OF ELECTRICAL MACHINES</b>         |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C103.1  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C103.2  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C103.3  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C103.4  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C103.5  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C103.6  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| <b>C104- PX5152/ANALYSIS AND DESIGN OF POWER CONVERTERS</b> |   |   |   |   |   |   |   |   |   |   |   |   |
| C104.1  | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | 3 | - |
| C104.2  | 3 | 2 | 3 | 2 | 2 | - | - | - | - | - | 2 | - |
| C104.3  | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | 2 | - |
| C104.4  | 3 | 3 | 2 | 2 | 3 | - | - | - | - | - | 2 | - |
| C104.5  | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | 2 | - |
| C104.6  | 2 | 2 | 3 | 2 | 3 | - | - | - | - | - | 2 | - |
| <b>C105-IN5152/SYSTEM THEORY</b>                            |   |   |   |   |   |   |   |   |   |   |   |   |
| C105.1  | 3 | 3 | 3 | 2 | 2 | 2 | - | 2 | 2 | 2 | 3 | - |
| C105.2  | 3 | 2 | 3 | 2 | 2 | - | - | - | - | 3 | 2 | 2 |
| C105.3  | 3 | 2 | 2 | 2 | 2 | - | - | - | - | 2 | 2 | - |
| C105.4  | 3 | 3 | 2 | 2 | 3 | - | 2 | - | - | 2 | 2 | - |
| C105.5  | 3 | 3 | 3 | 2 | 2 | - | - | - | - | 3 | 2 | - |
| C105.6  | 2 | 2 | 3 | 2 | 3 | - | - | 2 | - | 2 | 2 | - |
| <b>C106-IN5091/SOFT COMPUTING TECHNIQUES</b>                |   |   |   |   |   |   |   |   |   |   |   |   |
| C106.1  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C106.2  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C106.3  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C106.4  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C106.5  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C106.6  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |

  
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| <b>C107-PX5111/POWER ELECTRONICS CIRCUITS LABORATORY</b> |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|
| C107.1   | 3 | 3 | 3 | 2 | - | - | - | 2 | - | - | 3 | 2 |
| C107.2   | 3 | 2 | 3 | 2 | - | - | - | 2 | - | - | 2 | 2 |
| C107.3   | 3 | 2 | 2 | 2 | - | - | - | 2 | - | - | 2 | 2 |
| C107.4   | 3 | 3 | 2 | 2 | - | - | - | 2 | - | - | 2 | 2 |
| C107.5   | 3 | 3 | 3 | 2 | - | - | - | 2 | - | - | 2 | 2 |
| C107.6   | 3 | 3 | 3 | 2 | - | - | - | 2 | - | - | 2 | 2 |
| <b>C108-PX5201/ANALYSIS AND DESIGN OF INVERTERS</b>      |   |   |   |   |   |   |   |   |   |   |   |   |
| C108.1   | 3 | 3 | 2 | 2 | 2 | - | - | - | - | - | - | 3 |
| C108.2   | 3 | 3 | 3 | 3 | 3 | - | - | - | - | - | - | 3 |
| C108.3   | 3 | 2 | 3 | 2 | 3 | - | - | - | - | - | - | 2 |
| C108.4   | 3 | 3 | 2 | 2 | 2 | - | - | - | - | - | - | 2 |
| C108.5   | 3 | 3 | 2 | 2 | 3 | - | - | - | - | - | - | 3 |
| C108.6   | 3 | 2 | 2 | 2 | 3 | - | - | - | - | - | - | 3 |
| <b>C109-PX5202/SOLID STATE DRIVES</b>                    |   |   |   |   |   |   |   |   |   |   |   |   |
| C109.1   | 3 | 2 | 3 | - | - | - | - | - | 3 | 2 | 2 | 2 |
| C109.2   | 3 | 2 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |
| C109.3   | 3 | 3 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |
| C109.4   | 3 | 2 | 2 | - | - | - | - | - | 3 | 2 | 2 | 2 |
| C109.5   | 3 | 3 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |
| C109.6   | 3 | 2 | 2 | - | - | - | - | - | 3 | 2 | 2 | 2 |
| <b>C110-PX5251/SPECIAL ELECTRICAL MACHINES</b>           |   |   |   |   |   |   |   |   |   |   |   |   |
| C110.1   | 3 | 3 | 3 | 2 | 2 | 2 | - | - | - | - | 3 | - |
| C110.2   | 3 | 2 | 3 | 2 | 2 | - | 3 | - | 2 | - | 2 | - |
| C110.3   | 3 | 2 | 2 | 2 | 2 | 3 | - | - | - | 3 | 2 | - |
| C110.4   | 3 | 3 | 2 | 2 | 3 | - | 2 | - | - | - | 2 | - |
| C110.5   | 3 | 3 | 3 | 2 | 2 | - | - | 3 | - | 2 | 2 | - |
| C110.6   | 2 | 2 | 3 | 2 | 3 | - | - | - | - | - | 2 | - |

  
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| <b>C111-PX5252/POWER QUALITY</b>                        |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C111.1  | 3 | 2 | 2 | 2 | - | 2 | - | - | - | 2 | - | 2 |
| C111.2  | 3 | 3 | 2 | 2 | - | 2 | - | - | - | 2 | - | 2 |
| C111.3  | 3 | 2 | 3 | 2 | - | 2 | - | - | - | 2 | - | 2 |
| C111.4  | 3 | 2 | 2 | 2 | - | 2 | - | - | - | 2 | - | 2 |
| C111.5  | 3 | 2 | 3 | 2 | - | 2 | - | - | - | 2 | - | 2 |
| C111.6  | 3 | 2 | 2 | 2 | - | 2 | - | - | - | 2 | - | 2 |
| <b>C112-PX5003/FLEXIBLE AC TRANSMISSION SYSTEMS</b>     |   |   |   |   |   |   |   |   |   |   |   |   |
| C112.1  | 2 | 2 | 2 | 3 | - | - | - | - | - | 2 | 2 | 3 |
| C112.2  | 3 | 2 | 2 | 3 | - | - | - | - | - | 2 | 2 | 3 |
| C112.3  | 2 | 2 | 2 | 3 | - | - | - | - | - | 2 | 2 | 3 |
| C112.4  | 2 | 2 | 2 | 3 | - | - | - | - | - | 2 | 2 | 3 |
| C112.5  | 3 | 2 | 2 | 3 | - | - | - | - | - | 2 | 2 | 3 |
| C112.6  | 2 | 2 | 2 | 3 | - | - | - | - | - | 2 | 2 | 3 |
| <b>C113-PS5071/DISTRIBUTED GENERATION AND MICROGRID</b> |   |   |   |   |   |   |   |   |   |   |   |   |
| C113.1  | 2 | - | 2 | - | - | 3 | - | 3 | - | 2 | - | 2 |
| C113.2  | 2 | - | 2 | - | - | 3 | - | 3 | - | 2 | - | 2 |
| C113.3  | 2 | - | 2 | - | - | 3 | - | 3 | - | 2 | - | 2 |
| C113.4  | 2 | - | 2 | - | - | 3 | - | 3 | - | 2 | - | 2 |
| C113.5  | 2 | - | 2 | - | - | 3 | - | 3 | - | 2 | - | 2 |
| C113.6  | 2 | - | 2 | - | - | 3 | - | 3 | - | 2 | - | 2 |
| <b>C114-PX5211/ELECTRICAL DRIVES LABORATORY</b>         |   |   |   |   |   |   |   |   |   |   |   |   |
| C114.1  | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 |
| C114.2  | 3 | 2 | 3 | 2 | 3 | 2 | 2 |   | 2 |   | 2 | 2 |
| C114.3  | 2 | 3 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | - | - |
| C114.4  | 2 | 2 | 2 | 2 | 2 | 2 | - | - | - | - | - | 2 |
| C114.5  | 3 | 3 | 2 | 2 | 2 | 2 | 2 | - | 2 | - | 2 | 2 |
| C114.6  | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | - | 2 |
| <b>C115-PX5212/MINI PROJECT</b>                         |   |   |   |   |   |   |   |   |   |   |   |   |

  
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|   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C115.1  | 3 | 3 | 3 | 2 | 2 | 2 | - | 2 | 2 | 2 | 3 | - |
| C115.2  | 3 | 2 | 3 | 2 | 2 | - | - | - | - | 3 | 2 | 2 |
| C115.3  | 3 | 2 | 2 | 2 | 2 | - | - | - | - | 2 | 2 | - |
| C115.4  | 3 | 3 | 2 | 2 | 3 | - | 2 | - | - | 2 | 2 | - |
| C115.5  | 3 | 3 | 3 | 2 | 2 | - | - | - | - | 3 | 2 | - |
| C115.6  | 3 | 3 | 3 | - | - | - | - | - | - | 3 | 2 | 2 |
| <b>C201-PS5092/SOLAR AND ENERGY STORAGE SYSTEMS</b>               |   |   |   |   |   |   |   |   |   |   |   |   |
| C201.1  | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | 3 | 3 |
| C201.2  | 3 | 2 | 3 | 2 | 2 | - | - | - | - | - | 2 | 3 |
| C201.3  | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 |
| C201.4  | 3 | 3 | 2 | 2 | 3 | - | - | - | - | - | 2 | 2 |
| C201.5  | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | 2 | 3 |
| C201.6  | 2 | 2 | 3 | 2 | 3 | - | - | - | - | - | 2 | 3 |
| <b>C202-PX5071/WIND ENERGY CONVERSION SYSTEMS</b>                 |   |   |   |   |   |   |   |   |   |   |   |   |
| C202.1  | 2 | - | - | - | - | 2 | 2 | - | 2 | 3 | - | 2 |
| C202.2  | 2 | - | - | - | - | 2 | 2 | - | 2 | 3 | - | 2 |
| C202.3  | 3 | - | - | - | - | 3 | 2 | - | 2 | 3 | - | 2 |
| C202.4  | 3 | - | - | - | - | 3 | 2 | - | 2 | 3 | - | 2 |
| C202.5  | 2 | - | - | - | - | 2 | 3 | - | 2 | 3 | - | 2 |
| C202.6  | 2 | - | - | - | - | 2 | 3 | - | 2 | 3 | - | 2 |
| <b>C203-PX5072/POWER ELECTRONICS FOR RENEWABLE ENERGY SYSTEMS</b> |   |   |   |   |   |   |   |   |   |   |   |   |
| C203.1  | 3 | 3 | 2 | - | 2 | 2 | 2 | 2 | - | 2 | 2 | 2 |
| C203.2  | 3 | 2 | 3 | - | 2 | 2 | 2 | 2 | - | 2 | 2 | 2 |
| C203.3  | 2 | 2 | 2 | - | 2 | 2 | 2 | 2 | - | 2 | 2 | 2 |
| C203.4  | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | - | 2 | 2 | 2 |
| C203.5  | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | - | 2 | 2 | 2 |
| C203.6  | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | - | 2 | 2 | 2 |

  
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# **ELECTRONICS AND COMMUNICATION ENGINEERING**



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## REGULATION – 2017 - UG

| S.NO   | COURSE OUTCOME  | BT LEVEL |
|--|---|----------|
| <b>SEMESTER III</b>  |   |          |
| <b>C201 / MA8352/LINEAR ALGEBRA AND PARTIAL DIFFERENTIAL EQUATIONS</b> |   |          |
| <b>C201.1</b>  | Analyze Partial Differential Equations in various methods.  | K3       |
| <b>C201.2</b>  | Solving Fourier Series for different types of functions.  | K3       |
| <b>C201.3</b>  | Computing the solutions of the heat equation, wave equation and the Laplace equation subject to boundary conditions | K2       |
| <b>C201.4</b>  | Deduce the Gaussian function in Self reciprocal form using Fourier Transforms.                                      | K3       |
| <b>C201.5</b>  | Formation of finite difference method in Z-transforms.  | K2       |
| <b>C202/ EC8393/FUNDAMENTALS OF DATA STRUCTURES IN C</b>               |   |          |
| <b>C202.1</b>  | Do simple programs using basic concepts of C.   | K3       |
| <b>C202.2</b>  | Design programs with derived data type and files.   | K3       |
| <b>C202.3</b>  | Solve the problem by applying linear data structures.   | K3       |
| <b>C202.4</b>  | Finding solutions to various problems using FIFO& LIFO.   | K2       |
| <b>C202.5</b>  | Sort and search the data by applying various algorithms.  | K3       |
| <b>C202.6</b>  | Develop applications in C and Solve problems using various linear data structures algorithms.                       | K3       |
| <b>C203/ EC8351/ELECTRONIC CIRCUITS- I</b>                             |   |          |
| <b>C203.1</b>  | Acquire knowledge of Working principles, characteristics and applications of BJT and FET                            | K2       |
| <b>C203.2</b>  | Acquire knowledge of Frequency response characteristics of BJT and FET amplifiers                                   | K2       |
| <b>C203.3</b>  | Analyze the performance of small signal BJT and FET amplifiers -single stage and multi stage amplifiers             | K3       |
| <b>C203.4</b>  | Apply the knowledge gained in the design of Electronic circuits   | K3       |
| <b>C203.5</b>  | Analyze Amplifier frequency response  | K2       |
| <b>C203.6</b>  | Acquire knowledge Cascade, Cascade configurations   | K2       |
| <b>C204/ EC8352/SIGNALS AND SYSTEMS</b>                                |   |          |
| <b>C204.1</b>  | Categorize the signals based on their properties.   | K2       |
| <b>C204.2</b>  | Analyze the Continuous Time & Discrete Time systems.  | K2       |

  
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|---|--|----|
| C204.3  | Apply Laplace and Fourier Transform to Analyze Continuous Time signals.                                  | K3 |
| C204.4  | Apply Laplace Transform and convolution integral to Analyze Continuous Time LTI systems.                 | K3 |
| C204.5  | Apply Discrete Time Fourier Transform and Z-transform to Analyze Discrete Time LTI signals.              | K3 |
| C204.6  | Describe the mathematical modelling of DT systems.   | K2 |
| <b>C205 / EC8392/DIGITAL ELECTRONICS</b>                            |  |    |
| C205.1  | Apply the laws of Boolean algebra to simplify circuits and Boolean algebra expressions                   | K1 |
| C205.2  | analyze the different methods used for simplifications of Boolean expressions and digital logic families | K2 |
| C205.3  | Design and implement Combinational circuits.   | K3 |
| C205.4  | Design and implement Sequential circuits   | K3 |
| C205.5  | Study the various types of memory devices and understand the concept PLD's                               | K2 |
| C205.6  | Design and implement synchronous and asynchronous sequential circuits                                    | K3 |
| <b>C206 / EC8391/CONTROL SYSTEMS ENGINEERING</b>                    |  |    |
| C206.1  | Analyze various types of feedback amplifiers.  | K2 |
| C206.2  | Design of oscillators, tuned amplifiers, wave-shaping circuits and multivibrators.                       | K3 |
| C206.3  | Demonstrate the feedback amplifiers using SPICE Tool.  | K3 |
| C206.4  | Demonstrate the oscillators and tuned amplifiers using SPICE Tool.                                       | K3 |
| C206.5  | Demonstrate the wave-shaping circuits and multivibrators using SPICE Tool.                               | K3 |
| C206.6  | Demonstrate the voltage and current time base circuits using SPICE Tool.                                 | K3 |
| <b>C207/ EC8381/FUNDAMENTALS OF DATA STRUCTURES IN C LABORATORY</b> |  |    |
| C207.1  | Do simple programs using basic concepts of C.  | K2 |
| C207.2  | Design programs with derived data type and files.  | K3 |
| C207.3  | Solve the problem by applying linear data structures.  | K3 |
| C207.4  | Finding solutions to various problems using FIFO& LIFO.  | K3 |
| C207.5  | Sort and search the data by applying various algorithms.   | K2 |
| C207.6  | Develop applications in C and Solve problems using various linear data structures algorithms.            | K3 |
|   |  |    |

| <b>C208 / EC8361/ANALOG AND DIGITAL CIRCUITS LABORATORY</b>          |   |    |
|--|---|----|
| <b>C208.1</b>  | Design and test BJT/JFET Amplifiers   | K2 |
| <b>C208.2</b>  | Differentiate cascade and cascade amplifiers  | K2 |
| <b>C208.3</b>  | Analyze the limitation in bandwidth of single stage and multistage amplifier        | K3 |
| <b>C208.4</b>  | Simulate and analyze amplifiers circuits using pspice                               | K3 |
| <b>C208.5</b>  | Design and test the combinational digital logic circuits                            | K3 |
| <b>C208.6</b>  | Design and test the sequential digital logic circuits                               | K3 |
| <b>C209/ HS8381/ INTERPERSONAL SKILLS / LISTENING &amp; SPEAKING</b> |   |    |
| <b>C209.1</b>  | Take international examination such as IELTS and TOEFL                              | K3 |
| <b>C209.2</b>  | Participate in Group Discussion.  | K3 |
| <b>C209.3</b>  | Successfully answer questions in Interviews.  | K3 |
| <b>C209.4</b>  | Make effective Presentations.   | K2 |
| <b>C209.5</b>  | Participate confidently and appropriately in conversations both formal and informal | K2 |
| <b>SEMESTER IV</b>   |   |    |
| <b>C210 / MA8451/PROBABILITY AND RANDOM PROCESSES</b>                |   |    |
| <b>C210.1</b>  | The method of analyzing of feedback amplifiers                                      | K2 |
| <b>C210.2</b>  | Design LC and RC oscillators and analyze its performance                            | K3 |
| <b>C210.3</b>  | Analyze performance of tuned amplifiers.  | K3 |
| <b>C210.4</b>  | The concept and working of wave shaping circuits                                    | K2 |
| <b>C210.5</b>  | To design and analyze the functions of multivibrators                               | K3 |
| <b>C210.6</b>  | The fundamentals of blocking oscillators and time base generators                   | K2 |
| <b>C211/ EC8452/ELECTRONIC CIRCUITS II</b>                           |   |    |
| <b>C211.1</b>  | The method of analyzing of feedback amplifiers                                      | K2 |
| <b>C211.2</b>  | Design LC and RC oscillators and analyze its performance                            | K3 |
| <b>C211.3</b>  | Analyze performance of tuned amplifiers.  | K2 |
| <b>C211.4</b>  | The concept and working of wave shaping circuits                                    | K2 |
| <b>C211.5</b>  | To design and analyze the functions of multivibrators                               | K3 |
| <b>C211.6</b>  | The fundamentals of blocking oscillators and time base generators                   | K2 |



| <b>C212/ EC8491/COMMUNICATION THEORY</b>                    |  |    |
|---|--|----|
| <b>C212.1</b>   | Can be able to design different types of AM system                                     | K2 |
| <b>C212.2</b>   | Design angle modulated communication systems.  | K3 |
| <b>C212.3</b>   | Apply the concepts of Random Process to design a Communication systems                 | K3 |
| <b>C212.4</b>   | Analyze the noise performance of AM and FM systems                                     | K3 |
| <b>C212.5</b>   | Able to understand various source coding technique                                     | K2 |
| <b>C212.6</b>   | Could analyze the different types of receivers.  | K2 |
| <b>C213 / EC8451/ELECTROMAGNETIC FIELDS</b>                 |  |    |
| <b>C213.1</b>   | Analyze field potentials due to static electric fields                                 | K3 |
| <b>C213.2</b>   | Explain how materials affect electric fields   | K2 |
| <b>C213.3</b>   | Analyze field potentials due to static magnetic fields                                 | K3 |
| <b>C213.4</b>   | Explain how materials affect magnetic fields.  | K2 |
| <b>C213.5</b>   | Perform the relation between the fields under time varying Situations                  | K3 |
| <b>C213.6</b>   | Discuss the principles of propagation of uniform plane waves                           | K2 |
| <b>C214 / EC8453/LINEAR INTEGRATED CIRCUITS</b>             |  |    |
| <b>C214.1</b>   | Able to learn the basic building blocks of linear integrated circuits such as op-amps. | K2 |
| <b>C214.2</b>   | Design linear and non linear applications of operational amplifiers                    | K3 |
| <b>C214.3</b>   | Design applications using analog multiplier and PLL                                    | K3 |
| <b>C214.4</b>   | Design ADC and DAC using operational amplifiers  | K3 |
| <b>C214.5</b>   | Analyze special function ICs   | K2 |
| <b>C214.6</b>   | Generate waveforms using operational amplifiers Circuits                               | K3 |
| <b>C215 / GE8291/ ENVIRONMENTAL SCIENCE AND ENGINEERING</b> |  |    |
| <b>C215.1</b>   | Realize the importance of ecosystems and the importance of biodiversity.               | K2 |
| <b>C215.2</b>   | Describe about Environmental pollution and their effects.                              | K2 |
| <b>C215.3</b>   | Design the techniques which require optimum use of natural resources in future.        | K3 |
| <b>C215.4</b>   | Understand that Environmental Pollution / problems cannot be solved by mere laws.      | K2 |
| <b>C215.5</b>   | Explain importance of women and child education and HIV /AIDS.                         | K2 |

| <b>C216 / EC8461/CIRCUITS DESIGN AND SIMULATION LABORATORY</b> |   |    |
|--|---|----|
| <b>C216.1</b>  | Analyze various types of feedback amplifiers.   | K2 |
| <b>C216.2</b>  | Design of oscillators, tuned amplifiers, wave-shaping circuits and multivibrators.  | K3 |
| <b>C216.3</b>  | Demonstrate the feedback amplifiers using SPICE Tool.   | K3 |
| <b>C216.4</b>  | Demonstrate the oscillators and tuned amplifiers using SPICE Tool.  | K3 |
| <b>C216.5</b>  | Demonstrate the wave-shaping circuits and multivibrators using SPICE Tool.  | K3 |
| <b>C216.6</b>  | Demonstrate the voltage and current time base circuits using SPICE Tool.  | K3 |
| <b>C217 / EC8462/LINEAR INTEGRATED CIRCUITS LABORATORY</b>     |   |    |
| <b>C217.1</b>  | Design amplifiers, oscillators, D-A converters using operational amplifiers.  | K2 |
| <b>C217.2</b>  | Construct and design integrator and differentiator circuit using IC 741   | K3 |
| <b>C217.3</b>  | Design filters using op-amp and performs an experiment on frequency response.   | K3 |
| <b>C217.4</b>  | Analyze the working of PLL and describe its application as a frequency multiplier   | K3 |
| <b>C217.5</b>  | Design DC power supply using ICs.   | K3 |
| <b>C217.6</b>  | Analyze the performance of filters, multivibrators, A/D converter and analog multiplier using SPICE                         | K2 |
| <b>SEMESTER V</b>  |   |    |
| <b>C301 / EC8501/DIGITAL COMMUNICATION</b>                     |   |    |
| <b>C301.1</b>  | Understanding The Principles Of Sampling & Quantization   | K2 |
| <b>C301.2</b>  | Knowing about The Various Waveform Coding Schemes   | K2 |
| <b>C301.3</b>  | Learn and analyze The Various Baseband Transmission Schemes   | K2 |
| <b>C301.4</b>  | Analyzing Digital Modulation Schemes  | K3 |
| <b>C301.5</b>  | Understanding The Various Band Pass Signalling Schemes  | K3 |
| <b>C301.6</b>  | Remembering The Fundamentals Of Channel Coding  | K1 |
| <b>C302 / EC8553/DISCRETE-TIME SIGNAL PROCESSING</b>           |   |    |
| <b>C302.1</b>  | Apply DFT and FFT for the analysis of digital signals & systems.  | K3 |
| <b>C302.2</b>  | Design an analog to digital IIR filters and its realization.  | K2 |
| <b>C302.3</b>  | Design of digital FIR filters using the windowing techniques and frequency sampling method and to realize their structures. | K2 |
| <b>C302.4</b>  | Characterize finite Word length effect on filters.  | K2 |

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| C302.5  | Implement the Multirate Filters and Apply Adaptive Filters to equalization  | K3 |
| C302.6  | An understanding of sampling conversion technique in signal processing and its applications.  | K2 |
| <b>C303 / EC8552/COMPUTER ARCHITECTURE AND ORGANIZATION</b> |   |    |
| C303.1  | Use various metrics to calculate the performance of a computer system.  | K2 |
| C303.2  | Identify the addressing mode of instructions and to Determine which hardware blocks and control lines are used for specific instructions.                       | K2 |
| C303.3  | Demonstrate how to add and multiply integers and floating -point numbers using two's complement and IEEE floating point representation.                         | K3 |
| C303.4  | Analyze clock periods, performance, and instruction throughput of single-cycle, multi-cycle, and pipelined implementations of a simple instruction set.         | K3 |
| C303.5  | Detect pipeline hazards and identify possible solutions to those hazards  | K2 |
| C303.6  | Show how cache design parameters affect cache hit rate and to Map a virtual address into a physical address   | K2 |
| <b>C304/ EC8551/COMMUNICATION NETWORKS</b>                  |   |    |
| C304.1  | Explain the components requirement of networks and link layer service   | K2 |
| C304.2  | Classify the Media Access Control Protocols and different Internetworking   | K2 |
| C304.3  | Demonstrate various types of routing techniques   | K2 |
| C304.4  | Outline the mechanisms involved in transport layer  | K2 |
| C304.5  | Experiment with different application layer protocols   | K3 |
| C304.6  | Analyze various routing algorithms  | K2 |
| <b>C305 / GE8077/TOTAL QUALITY MANAGEMENT</b>               |   |    |
| C305.1  | Describe the dimensional barrier regarding Quality.   | K1 |
| C305.2  | Summarize the Total quality principles.   | K2 |
| C305.3  | Demonstrate the tools utilization for quality improvement.  | K2 |
| C305.4  | Discover the new decision of principle in real time projects.   | K2 |
| C305.5  | Analyze the various types of techniques are used to measure quality.  | K3 |
| C305.6  | Apply the various quality systems in implementation of Total quality management.  | K3 |
| <b>C306/ OMD551/BASIC OF BIOMEDICAL INSTRUMENTATION</b>     |   |    |
| C306.1  | Analyze and evaluate the effect of different diagnostic and therapeutic methods, their risk potential, physical principles, opportunities and possibilities for | K2 |



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|   | different medical procedures.   |    |
| <b>C306.2</b>   | Measure the various electrical signals from human system.   | K3 |
| <b>C306.3</b>   | Examine biochemical and various physiological information.  | K3 |
| <b>C306.4</b>   | Describe the working of units which will help to restore normal functioning.  | K2 |
| <b>C306.5</b>   | Understand the position of biomedical instrumentation in modern Hospital care   | K2 |
| <b>C306.6</b>   | Construct a system for telemedicine and electrical safety.  | K2 |
| <b>C307 / EC8562/DIGITAL SIGNAL PROCESSING LABORATORY</b> |   |    |
| <b>C307.1</b>   | Demonstrate the simulation of DSP systems.  | K2 |
| <b>C307.2</b>   | Demonstrate the abilities of digital signal processor based DSP systems implementation.   | K2 |
| <b>C307.3</b>   | Analyze the finite word length effect on DSP systems.   | K3 |
| <b>C307.4</b>   | Demonstrate the applications of FFT to DSP systems.   | K3 |
| <b>C307.5</b>   | Analyze the MAC operation using various addressing modes on DSP systems.  | K2 |
| <b>C307.6</b>   | Apply the adaptive filters for various applications of DSP systems.   | K3 |
| <b>C308 / EC8561/COMMUNICATION SYSTEMS LABORATORY</b>     |   |    |
| <b>C308.1</b>   | Simulate &validate the various functional modules of a communication system   | K3 |
| <b>C308.2</b>   | Demonstrate their knowledge in base band signaling schemes through implementation of digital modulation schemes                               | K2 |
| <b>C308.3</b>   | Apply various channel coding schemes &demonstrate their capabilities towards the improvement of the noise performance of communication system | K2 |
| <b>C308.4</b>   | Simulation of Convolutional coding scheme   | K3 |
| <b>C308.5</b>   | Simulation of ASK, FSK and BPSK detection schemes   | K3 |
| <b>C308.6</b>   | Simulate end-to-end communication Link  | K3 |
| <b>C309/ EC8563/COMMUNICATION NETWORKS LABORATORY</b>     |   |    |
| <b>C309.1</b>   | Explain the components requirement of networks and link layer service   | K2 |
| <b>C309.2</b>   | Classify the Media Access Control Protocols and different Internetworking   | K2 |
| <b>C309.3</b>   | Demonstrate various types of routing techniques   | K3 |
| <b>C309.4</b>   | Outline the mechanisms involved in transport layer  | K2 |
| <b>C309.5</b>   | Experiment with different application layer protocols   | K3 |
| <b>C309.6</b>   | Analyze various routing algorithms  | K2 |
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**PRINCIPAL**

M.I.E.T. ENGINEERING COLLEGE  
GUNDUR, TIRUCHIRAPALLI - 620 007.

**SEMESTER VI****C310 / EC8691/MICROPROCESSORS AND MICROCONTROLLERS**

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| <b>C310.1</b>                                | Understanding the Architecture of 8086 microprocessor  | K2 |
| <b>C310.2</b>                                | Realizing the design aspects of I/O and Memory Interfacing circuits.   | K3 |
| <b>C310.3</b>                                | Applying the knowledge about Interfacing of microprocessors with supporting chips.                                 | K3 |
| <b>C310.4</b>                                | Understanding the Architecture of 8051 microcontroller.  | K2 |
| <b>C310.5</b>                                | Apply and design a microcontroller based system  | K3 |
| <b>C310.6</b>                                | Analyze and learn Multiprocessor configurations, Introduction to advanced processors.                              | K3 |
| <b>C311/ EC8095/VLSI DESIGN</b>              |  |    |
| <b>C311.1</b>                                | Recollect all concepts of device characteristics of MOS and basic of Digital Electronics.                          | K1 |
| <b>C311.2</b>                                | Construct various types of digital circuits in different logic styles.   | K1 |
| <b>C311.3</b>                                | Enumerate the various issues which has to be taken care off while designing a combinational or sequential circuits | K2 |
| <b>C311.4</b>                                | Link simple logic circuit to complex block of a processor  | K3 |
| <b>C311.5</b>                                | Implementing strategies and basic architecture of leading FPGA and design steps.                                   | K2 |
| <b>C311.6</b>                                | Familiarized with the steps of fabrication and verification of layout of the circuit.                              | K2 |
| <b>C312 / EC8652/WIRELESS COMMUNICATION</b>  |  |    |
| <b>C312.1</b>                                | Explain the Characteristics of fading in wireless channels   | K1 |
| <b>C312.2</b>                                | Describe the fundamentals of Cellular Architecture   | K2 |
| <b>C312.3</b>                                | Use various signaling schemes for wireless communication channels  | K2 |
| <b>C312.4</b>                                | Compare the performance of channel using various propagation models  | K2 |
| <b>C312.5</b>                                | Analyze the various mitigation techniques to address fading and interference in multipath propagation.             | K3 |
| <b>C312.6</b>                                | Design MIMO Systems in fading and nonfading channels   | K2 |
| <b>C313/ MG8591/PRINCIPLES OF MANAGEMENT</b> |  |    |
| <b>C313.1</b>                                | Identifies the global context for taking managerial organization.  | K2 |
| <b>C313.2</b>                                | Predict the global opportunity that will impact the management of an organization.                                 | K2 |

  
**PRINCIPAL****M.I.E.T. ENGINEERING COLLEGE  
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| C313.3   | Prepare the management principles into management practices.  | K2 |
| C313.4   | Analyze the managerial problem with ethical practice standards.   | K3 |
| C313.5   | Breakdown the managerial task executed in the variety of circumstances.   | K2 |
| C313.6   | Identify the most effective Action to take in the specific situation of addressing issues.                          | K2 |
| <b>C314 / EC8651/TRANSMISSION LINES AND RF SYSTEMS</b>               |   |    |
| C314.1   | Explain the characteristics of transmission lines and its losses  | K1 |
| C314.2   | Write about the standing wave ratio and input impedance in high frequency transmission lines                        | K2 |
| C314.3   | Analyze impedance matching by stubs using smith charts  | K3 |
| C314.4   | Analyze the characteristics of TE and TM waves  | K3 |
| C314.5   | Design a RF transceiver system for wireless communication   | K2 |
| C314.6   | Explain the characteristics of transmission lines and its losses  | K1 |
| <b>C315 / EC8004/WIRELESS NETWORKS</b>                               |   |    |
| C315.1   | Conversant with the latest 3G/4G networks and its architecture  | K2 |
| C315.2   | Design and implement wireless network environment for any application using latest wireless protocols and standards | K2 |
| C315.3   | Ability to select the suitable network depending on the availability and requirement                                | K1 |
| C315.4   | Implement different type of applications for smart phones and mobile devices with latest network strategies         | K2 |
| C315.5   | Analyze the latest wireless protocols for the problems associated with Wireless Networks.                           | K3 |
| C315.6   | Interpret the latest 4G networks and its architecture.  | K2 |
| <b>C316 / EC8681/MICROPROCESSORS AND MICROCONTROLLERS LABORATORY</b> |   |    |
| C316.1   | Understanding the Architecture of 8086 microprocessor   | K2 |
| C316.2   | Realizing the design aspects of I/O and Memory Interfacing circuits.  | K2 |
| C316.3   | Applying the knowledge about Interfacing of microprocessors with supporting chips.                                  | K3 |
| C316.4   | Understanding the Architecture of 8051 microcontroller.   | K2 |
| C316.5   | Apply and design a microcontroller based system   | K3 |
| C316.1   | Analyze and learn Multiprocessor configurations, Introduction to advanced processors.                               | K2 |



| <b>C317 /EC8661/VLSI Design Laboratory</b>            |   |    |
|---|---|----|
| <b>C317.1</b>   | Recollect all concepts of device characteristics of MOS and basic of Digital Electronics.                       | K1 |
| <b>C317.2</b>   | Construct various types of digital circuits in different logic styles.  | K3 |
| <b>C317.3</b>   | Enumerate the various issues which has to be taken care off while design a combinational or sequential circuits | K3 |
| <b>C317.4</b>   | They can easily link simple logic circuit to complier block of a processor                                      | K3 |
| <b>C317.5</b>   | Implementing strategies and basic architecture of leading FPGA and design steps.                                | K3 |
| <b>C317.6</b>   | Familiarized with the steps of fabrication and verification of layout of the circuit.                           | K1 |
| <b>C318 /EC8611/Technical Seminar</b>                 |   |    |
| <b>C318.1</b>   | Enrich the communication skills of the student technical topics of interest                                     | K2 |
| <b>C318.2</b>   | Familiarize the preparation of content of technical writing   | K2 |
| <b>C318.3</b>   | Enrich the presentations skills of the student technical topics of interest                                     | K3 |
| <b>C318.4</b>   | Participate confidently and appropriately in conversations both formal and informal                             | K3 |
| <b>C318.5</b>   | Participate in technical group discussion.  | K3 |
| <b>C318.6</b>   | Participate in technical quiz programs  | K3 |
| <b>C319 /HS8581/PROFESSIONAL COMMUNICATION</b>        |   |    |
| <b>C319.1</b>   | Take international examination such as IELTS and TOEFL  | K3 |
| <b>C319.2</b>   | Participate in Group Discussion.  | K3 |
| <b>C319.3</b>   | Successfully answer questions in Interviews.  | K2 |
| <b>C319.4</b>   | Make effective Presentations.   | K2 |
| <b>C319.5</b>   | Participate confidently and appropriately in conversations both formal and informal                             | K3 |
| <b>C319.6</b>   | Take international examination such as IELTS and TOEFL  | K2 |
| <b>SEMESTER VII</b>                                   |   |    |
| <b>C401/EC8701/ANTENNAS AND MICROWAVE ENGINEERING</b> |   |    |
| <b>C401.1</b>   | Apply the basic principles and evaluate antenna parameters and link power budgets                               | K2 |
| <b>C401.2</b>   | Design and assess the performance of various antennas   | K3 |

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| C401.3   | Design a microwave system given the application specifications  | K3 |
| C401.4   | Design a microwave system   | K3 |
| C401.5   | Design a various antennas   | K3 |
| <b>C402/EC8751/OPTICAL COMMUNICATION</b>                 |   |    |
| C402.1   | Realize basic elements in optical fibers, different modes and configurations.                             | K1 |
| C402.2   | Analyze the transmission characteristics associated with dispersion and polarization techniques.          | K3 |
| C402.3   | Design optical sources and detectors with their use in optical communication system.                      | K3 |
| C402.4   | Construct fiber optic receiver systems, measurements and coupling techniques.                             | K3 |
| C402.5   | Design optical communication systems and its networks.  | K1 |
| C402.6   | Analyze Optical power measurement-attenuation measurement-dispersion measurement                          | K2 |
| <b>C403 / EC8791/EMBEDDED AND REAL TIME SYSTEMS</b>      |   |    |
| C403.1   | Describe the architecture and programming of ARM processor  | K2 |
| C403.2   | Outline the concepts of embedded systems  | K2 |
| C403.3   | Explain the basic concepts of real time operating system design   | K2 |
| C403.4   | Differentiate between the general purpose operating system and the real time operating system             | K2 |
| C403.5   | Explain the concept of design methodologies techniques for embedded system.                               | K3 |
| C403.6   | Model real-time applications using embedded-system concepts   | K3 |
| <b>C404 / EC8702/AD HOC AND WIRELESS SENSOR NETWORKS</b> |   |    |
| C404.1   | Know the basics of Ad hoc networks and Wireless Sensor Networks   | K2 |
| C404.2   | Apply this knowledge to identify the suitable routing algorithm based on the network and user requirement | K3 |
| C404.3   | Apply the knowledge to identify appropriate physical and MAC layer protocols                              | K3 |
| C404.4   | Understand the transport layer and security issues possible in Ad hoc and sensor networks                 | K2 |
| C404.5   | Be familiar with the OS used in Wireless Sensor Networks and build basic modules                          | K2 |
| C404.6   | Apply Layer wise attacks in wireless sensor networks  | K3 |

| <b>C405 / EC8092/ADVANCED WIRELESS COMMUNICATION</b>   |   |    |
|--|---|----|
| <b>C404.1</b>  | Discuss the cellular system design and technical challenges.  | K2 |
| <b>C404.2</b>  | Analyze the Mobile radio propagation, fading, diversity concepts and the channel modeling.                              | K2 |
| <b>C404.3</b>  | Analyze the design parameters, link design, smart antenna, beam forming and MIMO systems.                               | K3 |
| <b>C404.4</b>  | Analyze Multiuser Systems, CDMA, WCDMA network planning and OFDM Concepts.  | K3 |
| <b>C404.5</b>  | Summarize the principles and applications of wireless systems and standards   | K2 |
| <b>C404.6</b>  | Appreciate the various methods for improving the data rate of wireless communication system                             | K2 |
| <b>C406/ OIC751/TRANSDUCER ENGINEERING</b>             |   |    |
| <b>C406.1</b>  | Concept behind working of measurement systems and different types of sensors and transducers                            | K1 |
| <b>C406.2</b>  | Sensor to measure various physical parameters used in Industry and normal measurement applications                      | K2 |
| <b>C406.3</b>  | Sensor to measure various physical parameters used in Industry and normal measurement applications                      | K1 |
| <b>C406.4</b>  | Working principle of resistive, inductive and capacitive transducers and their applications                             | K3 |
| <b>C406.5</b>  | Understanding of thermocouples, piezoelectric and pyro-electric transducers and their applications                      | K2 |
| <b>C406.6</b>  | Understanding of acoustic, optical sensors and other sensors and their applications.                                    | K2 |
| <b>C407 / EC8711/EMBEDDED LABORATORY</b>               |   |    |
| <b>C407.1</b>  | Write programs in ARM for a specific Application  | K3 |
| <b>C407.2</b>  | Interface memory and Write programs related to memory operations  | K3 |
| <b>C407.3</b>  | Interface A/D and D/A convertors with ARM system  | K3 |
| <b>C407.4</b>  | Analyze the performance of interrupt  | K2 |
| <b>C407.5</b>  | Write programs for interfacing keyboard, display and motor  | K3 |
| <b>C407.6</b>  | Formulate a mini project using embedded system  | K3 |
| <b>C408 / EC8761/ADVANCED COMMUNICATION LABORATORY</b> |   |    |
| <b>C408.1</b>  | Analyze the performance of simple optical link by measurement of losses and Analyzing the mode characteristics of fiber | K2 |

  
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|   |   |    |
|---|---|----|
| <b>C408.2</b>                                 | Analyze the Eye Pattern, Pulse broadening of optical fiber and the impact on BER.   | K2 |
| <b>C408.3</b>                                 | Estimate the Wireless Channel Characteristics and Analyze the performance of Wireless Communication System                                    | K3 |
| <b>C408.4</b>                                 | Understand the intricacies in Microwave System design   | K2 |
| <b>SEMESTER VIII</b>                          |   |    |
| <b>C409 / EC8093/DIGITAL IMAGE PROCESSING</b> |   |    |
| <b>C409.1</b>                                 | Know and understand the basics and fundamentals of digital image processing, such as digitization, sampling, quantization, and 2D-transforms. | K2 |
| <b>C409.2</b>                                 | Operate on images using the techniques of smoothing, sharpening and enhancement.  | K3 |
| <b>C409.3</b>                                 | Understand the restoration concepts and filtering techniques.   | K2 |
| <b>C409.4</b>                                 | Learn the basics of segmentation, features extraction, compression and recognition methods for color models.                                  | K2 |
| <b>C409.5</b>                                 | Use various coding techniques for image compression.  | K3 |
| <b>C409.6</b>                                 | Analyze various image descriptors and features of image representation techniques.  | K2 |
| <b>C410 / EC8094/SATELLITE COMMUNICATION</b>  |   |    |
| <b>C410.1</b>                                 | Analyze the satellite orbits  | K2 |
| <b>C410.2</b>                                 | Analyze the earth segment   | K2 |
| <b>C410.3</b>                                 | Analyze the satellite Link design   | K2 |
| <b>C410.4</b>                                 | Design various satellite applications   | K3 |
| <b>C410.5</b>                                 | Analyze the space segment   | K2 |
| <b>C411 / EC8811/PROJECT WORK</b>             |   |    |
| <b>C411.1</b>                                 | Demonstrate profound technical knowledge of the project.  | K3 |
| <b>C411.2</b>                                 | Identify a real world problem, review literature and suggest its solution.  | K3 |
| <b>C411.3</b>                                 | Demonstrate solutions to complex engineering problems utilizing a systems approach  | K3 |
| <b>C411.4</b>                                 | Provide solutions to meet the specified needs of the society.   | K3 |
| <b>C411.5</b>                                 | Create a system and validate its conformance  | K3 |
| <b>C411.6</b>                                 | Perform data analysis, interpret and provide valid conclusions.   | K3 |

| CO-PO MAPPING   |     |     |     |     |     |     |     |     |     |      |      |      |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
|   | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| <b>C201/MA8352- LINEAR ALGEBRA AND PARTIAL DIFFERENTIAL EQUATIONS</b> |     |     |     |     |     |     |     |     |     |      |      |      |
| C201.1  | 3   | 2   | 2   | -   | -   | 2   | -   | -   | -   | 3    | -    | 2    |
| C201.2  | 2   | 3   | 2   | -   | -   | -   | -   | -   | -   | -    | -    | -    |
| C201.3  | 3   | 2   | 2   | -   | -   | -   | -   | -   | -   | 2    | -    | -    |
| C201.4  | 3   | 2   | 3   | 2   | 2   | -   | -   | 2   | -   | 2    | -    | -    |
| C201.5  | 3   | 3   | 2   | 2   | -   | 2   | -   | -   | -   | -    | -    | 2    |
| C201.6  | 3   | 2   | 2   | 2   | 2   | 2   | -   | 2   | -   | -    | 2    | 2    |
| <b>C202/EC8393- FUNDAMENTALS OF DATA STRUCTURES IN C</b>              |     |     |     |     |     |     |     |     |     |      |      |      |
| C202.1  | 3   | 2   | 2   | 2   | -   | -   | -   | -   | -   | 2    | 2    | 2    |
| C202.2  | 3   | 2   | 2   | 2   | 2   | -   | -   | -   | -   | 2    | 2    | 2    |
| C202.3  | 3   | 2   | 2   | 2   | -   | -   | -   | -   | -   | 2    | 2    | 2    |
| C202.4  | 3   | 2   | 2   | 2   | -   | -   | -   | -   | -   | 2    | 2    | 2    |
| C202.5  | 3   | 2   | 2   | 2   | 2   | -   | -   | -   | -   | 2    | 2    | 2    |
| C202.6  | 3   | 2   | 2   | 2   | 3   | -   | -   | -   | -   | 2    | 2    | 2    |
| <b>C203/EC8351- ELECTRONIC CIRCUITS- I</b>                            |     |     |     |     |     |     |     |     |     |      |      |      |
| C203.1  | 3   | 3   | 3   | 2   | 2   | 2   | -   | 2   | 2   | 2    | 3    | 2    |
| C203.2  | 3   | 2   | 3   | 2   | 2   | -   | -   | -   | -   | 3    | 2    | 2    |
| C203.3  | 3   | 2   | 2   | 2   | 2   | -   | -   | -   | -   | 2    | 2    | 2    |
| C203.4  | 3   | 3   | 2   | 2   | 3   | -   | 2   | -   | -   | 2    | 2    | 2    |
| C203.5  | 3   | 3   | 3   | 2   | 2   | -   | -   | -   | -   | 3    | 2    | 2    |
| C203.6  | 2   | 2   | 3   | 2   | 3   | -   | -   | 2   | -   | 2    | 2    | 2    |
| <b>C204/EC8352- SIGNALS AND SYSTEMS</b>                               |     |     |     |     |     |     |     |     |     |      |      |      |
| C204.1  | 2   | 2   | 2   | 2   | -   | 2   | 2   | 2   | 3   | 3    | 3    | 3    |
| C204.2  | 2   | -   | 2   | 2   | 2   | 2   | -   | 2   | 3   | 3    | 2    | 2    |
| C204.3  | 2   | 2   | 2   | 2   | 2   | 2   | -   | 2   | 2   | 3    | 2    | 2    |
| C204.4  | 2   | -   | 2   | -   | 2   | 2   | -   | 2   | 2   | 2    | 2    | 2    |
| C204.5  | 2   | 2   | 2   | 2   | 2   | 2   | -   | 2   | 3   | 3    | 2    | 2    |

  
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|   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C204.6  | 2 | 2 | 2 | 2 | 2 | 2 | - | 2 | 3 | 3 | 2 | 2 |
| <b>C205/EC8392- DIGITAL ELECTRONICS</b>                             |   |   |   |   |   |   |   |   |   |   |   |   |
| C205.1  | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | - | 2 |
| C205.2  | 3 | 3 | 3 | 3 | 3 | - | - | - | - | - | - | 2 |
| C205.3  | 3 | 3 | 2 | 3 | 2 | - | - | - | - | - | - | 2 |
| C205.4  | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | - | 2 |
| C205.5  | 3 | 2 | 2 | 2 | 3 | - | - | - | - | - | - | 2 |
| C205.6  | 3 | 3 | 3 | 3 | 3 | - | - | - | - | - | - | 2 |
| <b>C206/EC8391- CONTROL SYSTEMS ENGINEERING</b>                     |   |   |   |   |   |   |   |   |   |   |   |   |
| C206.1  | 3 | - | 2 | - | - | - | - | - | - | - | 2 | 2 |
| C206.2  | 3 | - | 2 | - | - | - | - | - | 2 | - | 2 | 2 |
| C206.3  | 3 | 2 | 2 | 2 | - | - | 2 | - | 2 | - | 2 | 2 |
| C206.4  | 3 | 2 | 2 | 2 | - | - | 2 | - | 2 | - | 2 | 2 |
| C206.5  | 3 | - | 2 | 2 | - | - | 2 | - | 2 | - | 2 | 2 |
| C206.6  | 3 | - | 2 | 2 | - | 2 | 2 | - | 2 | - | 2 | 2 |
| <b>C207/EC8381- FUNDAMENTALS OF DATA STRUCTURES IN C LABORATORY</b> |   |   |   |   |   |   |   |   |   |   |   |   |
| C207.1  | 3 | 2 | 2 | 3 | 2 | - | - | - | - | - | 2 | 2 |
| C207.2  | 3 | 2 | 2 | 3 | 2 | - | - | - | - | - | 2 | 2 |
| C207.3  | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 |
| C207.4  | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 |
| C207.5  | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 |
| C207.6  | 3 | 2 | 2 | 3 | 3 | - | - | - | - | - | 2 | 2 |
| <b>C208/EC8361- ANALOG AND DIGITAL CIRCUITS LABORATORY</b>          |   |   |   |   |   |   |   |   |   |   |   |   |
| C208.1  | 3 | 3 | - | - | - | 2 | - | - | - | - | 2 | 2 |
| C208.2  | 3 | 3 | - | - | - | 2 | - | - | - | - | 2 | 2 |
| C208.3  | 3 | 2 | - | - | - | 2 | - | - | - | - | 2 | 2 |
| C208.4  | 3 | 2 | - | - | - | 2 | - | - | - | - | 2 | 2 |
| C208.5  | 3 | 2 | - | - | - | 2 | - | - | - | - | 2 | 2 |
| C208.6  | 3 | 2 | - | - | - | 2 | - | - | - | - | 2 | 2 |

  
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| <b>C209/HS8381- INTERPERSONAL SKILLS/LISTENING &amp; SPEAKING</b> |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C209.1  | 3 | 3 | - | 2 | 2 | - | - | - | - | - | - | 2 |
| C209.2  | 3 | 2 | - | 2 | 2 | - | - | - | - | - | - | 2 |
| C209.3  | 3 | 3 | - | 3 | 2 | - | - | - | - | - | - | 2 |
| C209.4  | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 2 |
| C209.5  | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 2 |
| C209.6  | 2 | 2 | 2 | - | - | - | - | - | - | - | - | 2 |
| <b>C210/MA8451- PROBABILITY AND RANDOM PROCESSES</b>              |   |   |   |   |   |   |   |   |   |   |   |   |
| C210.1  | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | 2 |
| C210.2  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 2 |
| C210.3  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 2 |
| C210.4  | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | 2 |
| C210.5  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 2 |
| C210.6  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 2 |
| <b>C211/EC8452- ELECTRONIC CIRCUITS II</b>                        |   |   |   |   |   |   |   |   |   |   |   |   |
| C211.1  | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 2 |
| C211.2  | 2 | 2 | 2 | - | - | - | - | - | - | - | - | 2 |
| C211.3  | 2 | 2 | 2 | - | - | - | - | - | - | - | - | - |
| C211.4  | 3 | 3 | - | - | - | - | - | - | - | - | - | 3 |
| C211.5  | 2 | 3 | - | - | - | - | - | - | - | - | - | 3 |
| C211.6  | 2 | - | 2 | - | - | - | - | - | - | - | - | 2 |
| <b>C212/EC8491- COMMUNICATION THEORY</b>                          |   |   |   |   |   |   |   |   |   |   |   |   |
| C212.1  | 2 | 2 | 2 | 2 | 2 | - | - | 3 | - | - | 3 | - |
| C212.2  | 3 | 2 | 3 | 2 | 2 | - | - | - | - | - | 2 | - |
| C212.3  | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 |
| C212.4  | 3 | 3 | 2 | 2 | 3 | 2 | - | - | 2 | - | 2 | - |
| C212.5  | 3 | 3 | 3 | 2 | 2 | - | - | 3 | - | - | 2 | 3 |
| C212.6  | 2 | 2 | 2 | 2 | 3 | - | - | - | - | 2 | 2 | - |

  
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| <b>C2013/EC8451- ELECTROMAGNETIC FIELDS</b>                   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C213.1  | 3 | 2 | 2 | - | 2 | - | - | - | - | - | - | 2 |
| C213.2  | 3 | 2 | 2 | - | 2 | - | - | - | - | - | - | 2 |
| C213.3  | 3 | 2 | 2 | - | 2 | - | - | - | - | - | - | 2 |
| C213.4  | 3 | 2 | 2 | - | 2 | - | - | - | - | - | - | 2 |
| C213.5  | 3 | 2 | 2 | - | 2 | - | - | - | - | - | - | 2 |
| C213.6  | 3 | 2 | 2 | - | 2 | - | - | - | - | - | - | 2 |
| <b>C214/EC8453- LINEAR INTEGRATED CIRCUITS</b>                |   |   |   |   |   |   |   |   |   |   |   |   |
| C214.1  | 3 | 3 | 2 | 2 | 2 | - | - | - | - | - | - | 3 |
| C214.2  | 3 | 3 | 3 | 3 | 3 | - | - | - | - | - | - | 3 |
| C214.3  | 3 | 2 | 3 | 2 | 3 | - | - | - | - | - | - | 2 |
| C214.4  | 3 | 3 | 2 | 2 | 2 | - | - | - | - | - | - | 2 |
| C214.5  | 3 | 3 | 2 | 2 | 3 | - | - | - | - | - | - | 3 |
| C214.6  | 3 | 2 | 2 | 2 | 3 | - | - | - | - | - | - | 3 |
| <b>C215/GE8291- ENVIRONMENTAL SCIENCE AND ENGINEERING</b>     |   |   |   |   |   |   |   |   |   |   |   |   |
| C215.1  | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 2 |
| C215.2  | 2 | 2 | 2 | - | - | - | - | - | - | - | - | 2 |
| C215.3  | 2 | 2 | 2 | - | - | - | - | - | - | - | - | 2 |
| C215.4  | 3 | 3 | 3 | - | - | - | - | - | - | - | - | 3 |
| C215.5  | 2 | 3 | 3 | - | - | - | - | - | - | - | - | 3 |
| C215.6  | 2 | 2 | 2 | - | - | - | - | - | - | - | - | 2 |
| <b>C216/EC8461- CIRCUITS DESIGN AND SIMULATION LABORATORY</b> |   |   |   |   |   |   |   |   |   |   |   |   |
| C216.1  | 3 | 3 | 3 | - | 2 | 2 | - | 2 | 2 | - | - | 2 |
| C216.2  | 3 | 2 | 3 | - | 2 | - | - | - | - | - | - | 3 |
| C216.3  | 3 | 2 | 2 | - | 2 | - | - | - | - | 2 | - | 2 |
| C216.4  | 3 | 3 | 2 | - | 3 | - | 2 | - | - | - | - | 3 |
| C216.5  | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | 2 | 2 |
| C216.6  | 2 | 2 | 3 | - | 3 | - | - | 2 | - | - | - | 2 |

  
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| <b>C217/EC8462- LINEAR INTEGRATED CIRCUITS LABORATORY</b>   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C217.1  | 3 | 2 | 2 | 2 | - | 2 | - | - | - | 2 | - | 2 |
| C217.2  | 3 | 3 | 2 | 2 | - | 2 | - | - | - | 2 | - | 2 |
| C217.3  | 3 | 2 | 3 | 2 | - | 2 | - | - | - | 2 | - | 2 |
| C217.4  | 3 | 2 | 2 | 2 | - | 2 | - | - | - | 2 | - | 2 |
| C217.5  | 3 | 2 | 3 | 2 | - | 2 | - | - | - | 2 | - | 2 |
| C217.6  | 3 | 2 | 2 | 2 | - | 2 | - | - | - | 2 | - | 2 |
| <b>C301 / EC8501/DIGITAL COMMUNICATION</b>                  |   |   |   |   |   |   |   |   |   |   |   |   |
| C301.1  | 3 | 3 | 2 | 2 | 2 | - | - | - | - | - | - | 3 |
| C301.2  | 3 | 3 | 3 | 3 | 3 | - | - | - | - | - | - | 3 |
| C301.3  | 3 | 2 | 3 | 2 | 3 | - | - | - | - | - | - | 2 |
| C301.4  | 3 | 3 | 2 | 2 | 2 | - | - | - | - | - | - | 2 |
| C301.5  | 3 | 3 | 2 | 2 | 3 | - | - | - | - | - | - | 3 |
| C301.6  | 3 | 2 | 2 | 2 | 3 | - | - | - | - | - | - | 3 |
| <b>C302 / EC8553/DISCRETE-TIME SIGNAL PROCESSING</b>        |   |   |   |   |   |   |   |   |   |   |   |   |
| C302.1  | 3 | 2 | 3 | 2 | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 2 |
| C302.2  | 3 | 2 | 3 | 2 | 3 | 3 |   | 3 | 2 |   |   | 2 |
| C302.3  | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |   |
| C302.4  | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |   | 2 | 2 | 2 |
| C302.5  | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |   | 2 |
| C302.6  | 3 | 2 | 2 | 2 | 2 | 2 | 2 |   | 2 | 2 | 2 | 2 |
| <b>C303 / EC8552/COMPUTER ARCHITECTURE AND ORGANIZATION</b> |   |   |   |   |   |   |   |   |   |   |   |   |
| C303.1  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C303.2  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C303.3  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C303.4  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C303.5  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C303.6  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |

  
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| <b>C304/ EC8551/COMMUNICATION NETWORKS</b>                |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C304.1  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C304.2  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C304.3  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C304.4  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C304.5  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C304.6  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| <b>C305 / GE8077/TOTAL QUALITY MANAGEMENT</b>             |   |   |   |   |   |   |   |   |   |   |   |   |
| C305.1  | 3 | 3 | 3 | 2 | 3 | 3 | 2 | - | 2 | 2 | 2 | 2 |
| C305.2  | 3 | 2 | 3 | 2 | 3 | 2 | 2 | - | 2 | - | 2 | 2 |
| C305.3  | 2 | 3 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | - | 2 |
| C305.4  | 2 | 2 | 2 | 2 | 2 | 2 | - | - | - | - | - | 2 |
| C305.5  | 3 | 3 | 2 | 2 | 2 | 2 | 2 | - | 2 | - | - | 2 |
| C305.6  | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | - | 2 |
| <b>C306/ OMD551/BASIC OF BIOMEDICAL INSTRUMENTATION</b>   |   |   |   |   |   |   |   |   |   |   |   |   |
| C306.1  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C306.2  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C306.3  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C306.4  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C306.5  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C306.6  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| <b>C307 / EC8562/DIGITAL SIGNAL PROCESSING LABORATORY</b> |   |   |   |   |   |   |   |   |   |   |   |   |
| C307.1  | 3 | 3 | 3 | - | 2 | 2 | - | 2 | 2 | - | - | 2 |
| C307.2  | 3 | 2 | 3 | - | 2 | - | - | - | - | - | - | 3 |
| C307.3  | 3 | 2 | 2 | - | 2 | - | - | - | - | 2 | - | 2 |
| C307.4  | 3 | 3 | 2 | - | 3 | - | 2 | - | - | - | - | 3 |
| C307.5  | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | 2 | 2 |
| C307.6  | 2 | 2 | 3 | - | 3 | - | - | 2 | - | - | - | 2 |

  
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| <b>C308 / EC8561/COMMUNICATION SYSTEMS LABORATORY</b>     |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C308.1  | 3 | 2 | 3 | - | - | - | - | - | 3 | 2 | 2 | 2 |
| C308.2  | 3 | 2 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |
| C308.3  | 3 | 3 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |
| C308.4  | 3 | 2 | 2 | - | - | - | - | - | 3 | 2 | 2 | 2 |
| C308.5  | 3 | 3 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |
| C308.6  | 3 | 2 | 2 | - | - | - | - | - | 3 | 2 | 2 | 2 |
| <b>C309/ EC8563/COMMUNICATION NETWORKS LABORATORY</b>     |   |   |   |   |   |   |   |   |   |   |   |   |
| C309.1  | 3 | 3 | 3 | 2 | - | - | - | 2 | - | - | 3 | 2 |
| C309.2  | 3 | 2 | 3 | 2 | - | - | - | 2 | - | - | 2 | 2 |
| C309.3  | 3 | 2 | 2 | 2 | - | - | - | 2 | - | - | 2 | 2 |
| C309.4  | 3 | 3 | 2 | 2 | - | - | - | 2 | - | - | 2 | 2 |
| C309.5  | 3 | 3 | 3 | 2 | - | - | - | 2 | - | - | 2 | 2 |
| C309.6  | 3 | 3 | 3 | 2 | - | - | - | 2 | - | - | 2 | 2 |
| <b>C310 / EC8691/MICROPROCESSORS AND MICROCONTROLLERS</b> |   |   |   |   |   |   |   |   |   |   |   |   |
| C310.1  | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | 2 |
| C310.2  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 2 |
| C310.3  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 2 |
| C310.4  | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | 2 |
| C310.5  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 2 |
| C310.6  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 2 |
| <b>C311/ EC8095/VLSI DESIGN</b>                           |   |   |   |   |   |   |   |   |   |   |   |   |
| C311.1  | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | 3 | - |
| C311.2  | 3 | 2 | 3 | 2 | 2 | - | - | - | - | - | 2 | - |
| C311.3  | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | 2 | - |
| C311.4  | 3 | 3 | 2 | 2 | 3 | - | - | - | - | - | 2 | - |
| C311.5  | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | 2 | - |
| C311.6  | 2 | 2 | 3 | 2 | 3 | - | - | - | - | - | 2 | - |
| <b>C312 / EC8652/WIRELESS COMMUNICATION</b>               |   |   |   |   |   |   |   |   |   |   |   |   |
| C312.1  | 3 | 3 | 2 | - | 2 | 2 | 2 | 2 | - | 2 | 2 | 2 |

  
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|  |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|
| C312.2   | 3 | 2 | 3 | - | 2 | 2 | 2 | 2 | - | 2 | 2 | 2 |
| C312.3   | 2 | 2 | 2 | - | 2 | 2 | 2 | 2 | - | 2 | 2 | 2 |
| C312.4   | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | - | 2 | 2 | 2 |
| C312.5   | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | - | 2 | 2 | 2 |
| C312.6   | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | - | 2 | 2 | 2 |
| <b>C313/ MG8591/PRINCIPLES OF MANAGEMENT</b>                         |   |   |   |   |   |   |   |   |   |   |   |   |
| C313.1   | 2 | - | - | - | - | 2 | 2 | - | 2 | 3 | - | 2 |
| C313.2   | 2 | - | - | - | - | 2 | 2 | - | 2 | 3 | - | 2 |
| C313.3   | 3 | - | - | - | - | 3 | 2 | - | 2 | 3 | - | 2 |
| C313.4   | 3 | - | - | - | - | 3 | 2 | - | 2 | 3 | - | 2 |
| C313.5   | 2 | - | - | - | - | 2 | 3 | - | 2 | 3 | - | 2 |
| C313.6   | 2 | - | - | - | - | 2 | 3 | - | 2 | 3 | - | 2 |
| <b>C314 / EC8651/TRANSMISSION LINES AND RF SYSTEMS</b>               |   |   |   |   |   |   |   |   |   |   |   |   |
| C314.1   | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C314.2   | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C314.3   | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C314.4   | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C314.5   | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C314.6   | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| <b>C315 / EC8004/WIRELESS NETWORKS</b>                               |   |   |   |   |   |   |   |   |   |   |   |   |
| C315.1   | - | - | 2 | 2 | - | 3 | 3 | 3 | 3 | 3 | 2 | 2 |
| C315.2   | - | - | 2 | 2 | - | 2 | 3 | 3 | 3 | 3 | 2 | 2 |
| C315.3   | - | - | 3 | 2 | - | 3 | 3 | 3 | 3 | 2 | 2 | 2 |
| C315.4   | - | - | 2 | 2 | - | 2 | 3 | 3 | 3 | - | 2 | 2 |
| C315.5   | - | - | 3 | 2 | - | 3 | 3 | 3 | 3 | - | 2 | 2 |
| C315.6   | - | - | 2 | 2 | - | 2 | 3 | 3 | 3 | 2 | 2 | 2 |
| <b>C316 / EC8681/MICROPROCESSORS AND MICROCONTROLLERS LABORATORY</b> |   |   |   |   |   |   |   |   |   |   |   |   |
| C316.1   | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | 3 | - |

  
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|--|---|---|---|---|---|---|---|---|---|---|---|---|
| C316.2   | 3 | 2 | 3 | 2 | 2 | - | - | - | - | - | 2 | - |
| C316.3   | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | 2 | - |
| C316.4   | 3 | 3 | 2 | 2 | 3 | - | - | - | - | - | 2 | - |
| C316.5   | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | 2 | - |
| C316.6   | 2 | 2 | 3 | 2 | 3 | - | - | - | - | - | 2 | - |
| <b>C317 /EC8661/VLSI Design Laboratory</b>     |   |   |   |   |   |   |   |   |   |   |   |   |
| C317.1   | 3 | 3 | 2 | 2 | 2 | - | - | - | - | - | - | 3 |
| C317.2   | 3 | 3 | 3 | 3 | 3 | - | - | - | - | - | - | 3 |
| C317.3   | 3 | 2 | 3 | 2 | 3 | - | - | - | - | - | - | 2 |
| C317.4   | 3 | 3 | 2 | 2 | 2 | - | - | - | - | - | - | 2 |
| C317.5   | 3 | 3 | 2 | 2 | 3 | - | - | - | - | - | - | 3 |
| C317.6   | 3 | 2 | 2 | 2 | 3 | - | - | - | - | - | - | 3 |
| <b>C318 /EC8611/Technical Seminar</b>          |   |   |   |   |   |   |   |   |   |   |   |   |
| C318.1   | 3 | 3 | 2 | 2 | 3 | - | - | - | - | - | - | - |
| C318.2   | 3 | 3 | 2 | 2 | 3 | - | - | - | - | - | - | - |
| C318.3   | 3 | 3 | 2 | 2 | 3 | - | - | - | - | - | - | - |
| C318.4   | 3 | 3 | 2 | 2 | 3 | - | - | - | - | - | - | - |
| C318.5   | 3 | 3 | 2 | 2 | 3 | - | - | - | - | - | - | - |
| C318.6   | 3 | 3 | 2 | 2 | 3 | - | - | - | - | - | - | - |
| <b>C319 /HS8581/PROFESSIONAL COMMUNICATION</b> |   |   |   |   |   |   |   |   |   |   |   |   |
| C319.1   | 3 | 2 | 3 | - | - | - | - | - | 3 | 2 | 2 | 2 |
| C319.2   | 3 | 2 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |
| C319.3   | 3 | 3 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |
| C319.4   | 3 | 2 | 2 | - | - | - | - | - | 3 | 2 | 2 | 2 |
| C319.5   | 3 | 3 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |
| C319.6   | 3 | 2 | 2 | - | - | - | - | - | 3 | 2 | 2 | 2 |

  
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| <b>C401/EC8701/ANTENNAS AND MICROWAVE ENGINEERING</b>    |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|
| C401.1   | 3 | 3 | 3 | 2 | 2 | 2 | - | - | - | - | 3 | - |
| C401.2   | 3 | 2 | 3 | 2 | 2 | - | 3 | - | 2 | - | 2 | - |
| C401.3   | 3 | 2 | 2 | 2 | 2 | 3 | - | - | - | 3 | 2 | - |
| C401.4   | 3 | 3 | 2 | 2 | 3 | - | 2 | - | - | - | 2 | - |
| C401.5   | 3 | 3 | 3 | 2 | 2 | - | - | 3 | - | 2 | 2 | - |
| C401.6   | 2 | 2 | 3 | 2 | 3 | - | - | - | - | - | 2 | - |
| <b>C402/EC8751/OPTICAL COMMUNICATION</b>                 |   |   |   |   |   |   |   |   |   |   |   |   |
| C402.1   | 3 | 2 | 2 | 2 | - | 2 | - | - | - | 2 | - | 2 |
| C402.2   | 3 | 3 | 2 | 2 | - | 2 | - | - | - | 2 | - | 2 |
| C402.3   | 3 | 2 | 3 | 2 | - | 2 | - | - | - | 2 | - | 2 |
| C402.4   | 3 | 2 | 2 | 2 | - | 2 | - | - | - | 2 | - | 2 |
| C402.5   | 3 | 2 | 3 | 2 | - | 2 | - | - | - | 2 | - | 2 |
| C402.6   | 3 | 2 | 2 | 2 | - | 2 | - | - | - | 2 | - | 2 |
| <b>C403 / EC8791/EMBEDDED AND REAL TIME SYSTEMS</b>      |   |   |   |   |   |   |   |   |   |   |   |   |
| C403.1   | 2 | 2 | 2 | 3 | - | - | - | - | - | 2 | 2 | 3 |
| C403.2   | 3 | 2 | 2 | 3 | - | - | - | - | - | 2 | 2 | 3 |
| C403.3   | 2 | 2 | 2 | 3 | - | - | - | - | - | 2 | 2 | 3 |
| C403.4   | 2 | 2 | 2 | 3 | - | - | - | - | - | 2 | 2 | 3 |
| C403.5   | 3 | 2 | 2 | 3 | - | - | - | - | - | 2 | 2 | 3 |
| C403.6   | 2 | 2 | 2 | 3 | - | - | - | - | - | 2 | 2 | 3 |
| <b>C404 / EC8702/AD HOC AND WIRELESS SENSOR NETWORKS</b> |   |   |   |   |   |   |   |   |   |   |   |   |
| C404.1   | 2 | 2 | - | - | - | 2 | 2 | - | - | - | - | 2 |
| C404.2   | 2 | 3 | - | - | - | 2 | 2 | 2 | - | - | - | 2 |
| C404.3   | 2 | 3 | - | - | - | 2 | 2 | 2 | - | - | 2 | 2 |
| C404.4   | 2 | 3 | 2 | - | - | 2 | 2 | 2 | - | - | 2 | 2 |
| C404.5   | 2 | 3 | 2 | - | - | 2 | 2 | 3 | - | - | 2 | 2 |
| C404.6   | 2 | 3 | - | - | - | 2 | 2 | 2 | - | - | 2 | 2 |

  
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| <b>C405 / EC8092/ADVANCED WIRELESS COMMUNICATION</b>   |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|
| C405.1   | 3 | 3 | 2 | - | 2 | 2 | 2 | 2 | - | 2 | 2 | 2 |
| C405.2   | 3 | 2 | 3 | - | 2 | 2 | 2 | 2 | - | 2 | 2 | 2 |
| C405.3   | 2 | 2 | 2 | - | 2 | 2 | 2 | 2 | - | 2 | 2 | 2 |
| C405.4   | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | - | 2 | 2 | 2 |
| C405.5   | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | - | 2 | 2 | 2 |
| C405.6   | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | - | 2 | 2 | 2 |
| <b>C406/ OIC751/TRANSDUCER ENGINEERING</b>             |   |   |   |   |   |   |   |   |   |   |   |   |
| C406.1   | 3 | 3 | 3 | 2 | 2 | 2 | - | 2 | 2 | 2 | 3 | - |
| C406.2   | 3 | 2 | 3 | 2 | 2 | - | - | - | - | 3 | 2 | 2 |
| C406.3   | 3 | 2 | 2 | 2 | 2 | - | - | - | - | 2 | 2 | - |
| C406.4   | 3 | 3 | 2 | 2 | 3 | - | 2 | - | - | 2 | 2 | - |
| C406.5   | 3 | 3 | 3 | 2 | 2 | - | - | - | - | 3 | 2 | - |
| <b>C407 / EC8711/EMBEDDED LABORATORY</b>               |   |   |   |   |   |   |   |   |   |   |   |   |
| C407.1   | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | 3 | 3 |
| C407.2   | 3 | 2 | 3 | 2 | 2 | - | - | - | - | - | 2 | 3 |
| C407.3   | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 |
| C407.4   | 3 | 3 | 2 | 2 | 3 | - | - | - | - | - | 2 | 2 |
| C407.5   | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | 2 | 3 |
| C407.6   | 2 | 2 | 3 | 2 | 3 | - | - | - | - | - | 2 | 3 |
| <b>C408 / EC8761/ADVANCED COMMUNICATION LABORATORY</b> |   |   |   |   |   |   |   |   |   |   |   |   |
| C408.1   | 2 | - | - | - | - | 2 | 2 | - | 2 | 3 | - | 2 |
| C408.2   | 2 | - | - | - | - | 2 | 2 | - | 2 | 3 | - | 2 |
| C408.3   | 3 | - | - | - | - | 3 | 2 | - | 2 | 3 | - | 2 |
| C408.4   | 3 | - | - | - | - | 3 | 2 | - | 2 | 3 | - | 2 |
| C408.5   | 2 | - | - | - | - | 2 | 3 | - | 2 | 3 | - | 2 |
| C408.6   | 2 | - | - | - | - | 2 | 3 | - | 2 | 3 | - | 2 |
| <b>C409 / EC8093/DIGITAL IMAGE PROCESSING</b>          |   |   |   |   |   |   |   |   |   |   |   |   |
| C409.1   | 2 | - | 2 | - | - | 3 | - | 3 | - | 2 | - | 2 |
| C409.2   | 2 | - | 2 | - | - | 3 | - | 3 | - | 2 | - | 2 |

  
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|  |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|
| C409.3                                       | 2 | - | 2 | - | - | 3 | - | 3 | - | 2 | - | 2 |
| C409.4                                       | 2 | - | 2 | - | - | 3 | - | 3 | - | 2 | - | 2 |
| C409.5                                       | 2 | - | 2 | - | - | 3 | - | 3 | - | 2 | - | 2 |
| C409.6                                       | 2 | - | 2 | - | - | 3 | - | 3 | - | 2 | - | 2 |
| <b>C410 / EC8094/SATELLITE COMMUNICATION</b> |   |   |   |   |   |   |   |   |   |   |   |   |
| C410.1                                       | 2 | - | 2 | - | - | 3 | - | 3 | - | 2 | - | 2 |
| C410.2                                       | 2 | - | 2 | - | - | 3 | - | 3 | - | 2 | - | 2 |
| C410.3                                       | 2 | - | 2 | - | - | 3 | - | 3 | - | 2 | - | 2 |
| C410.4                                       | 2 | - | 2 | - | - | 3 | - | 3 | - | 2 | - | 2 |
| C410.5                                       | 2 | - | 2 | - | - | 3 | - | 3 | - | 2 | - | 2 |
| C410.6                                       | 2 | - | 2 | - | - | 3 | - | 3 | - | 2 | - | 2 |
| <b>C411 /EC8811/PROJECT WORK</b>             |   |   |   |   |   |   |   |   |   |   |   |   |
| C413.1                                       | 3 | 3 | 3 | 2 | 3 | 3 | 2 | - | 2 | 2 | 2 | 2 |
| C413.2                                       | 3 | 2 | 3 | 2 | 3 | 2 | 2 | - | 2 | - | 2 | 2 |
| C413.3                                       | 2 | 3 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | - | 2 |
| C413.4                                       | 2 | 2 | 2 | 2 | 2 | 2 | - | - | - | - | - | 2 |
| C413.5                                       | 3 | 3 | 2 | 2 | 2 | 2 | 2 | - | 2 | - | - | 2 |
| C413.6                                       | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | - | 2 |

## REGULATION - 2017

### M.E. - VLSI DESIGN

| S.No   | COURSE OUTCOME   | BT LEVEL |
|--|--|----------|
| <b>SEMESTER I</b>  |  |          |
| <b>C101/ MA5152/ APPLIED MATHEMATICS FOR ELECTRONICS ENGINEERS</b> |  |          |
| <b>C101.1</b>  | To develop efficient algorithms for solving dynamic programming problems, to acquire skills in handling situation involving random variable. | K2       |
| <b>C101.2</b>  | To learn the basics and gained the skill for specialized studies and research.   | K1       |
| <b>C101.3</b>  | To exposed the basic characteristic features of a queuing system and acquire   | K2       |

  
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|  | skills in analyzing queuing models.   |    |
| <b>C101.4</b>                                      | To understands the basic principles of fuzzy logic.   | K2 |
| <b>C101.5</b>                                      | Using discrete time Markov chains to model computer systems   | K2 |
| <b>C102/ AP5151/ADVANCED DIGITAL SYSTEM DESIGN</b> |   |    |
| <b>C102.1</b>                                      | Analysis and Design of Synchronous and Asynchronous sequential machines   | K2 |
| <b>C102.2</b>                                      | Draw a ASM chart for digital designs  | K2 |
| <b>C102.3</b>                                      | Detect and diagnosis different faults in digital circuits   | K2 |
| <b>C102.4</b>                                      | Have knowledge of PLD"s and architecture of FPGA"s  | K2 |
| <b>C102.5</b>                                      | Design the digital systems through VHDL programming.  | K3 |
| <b>C103/ VL5101/ CMOS DIGITAL VLSI DESIGN</b>      |   |    |
| <b>C103.1</b>                                      | Carry out transistor level design of the most important building blocks used in digital CMOS VLSI circuits.                         | K2 |
| <b>C103.2</b>                                      | Discuss design methodology of arithmetic building block   | K2 |
| <b>C103.3</b>                                      | Analyze tradeoffs of the various circuit choices for each of the building block   | K3 |
| <b>C103.4</b>                                      | Discuss design sequential logic circuits  | K2 |
| <b>C103.5</b>                                      | Arithmetic Building Blocks And Memory Architectures   | K2 |
| <b>C104/ VL5191/ DSP INTEGRATED CIRCUITS</b>       |   |    |
| <b>C104.1</b>                                      | Implement various signal processing algorithms.   | K2 |
| <b>C104.2</b>                                      | Diagnose the design and methodologies in hardware and software design. Identify new developments in Application specific processors | K2 |
| <b>C104.3</b>                                      | Implement various signal processing algorithms.   | K3 |
| <b>C104.4</b>                                      | Concept behind multi rate systems is understood   | K2 |
| <b>C104.5</b>                                      | Get familiar with the DSP processor architectures and how to perform synthesis of processing  | K2 |
| <b>C105 / VL5102 / CAD FOR VLSI CIRCUITS</b>       |   |    |
| <b>C105.1</b>                                      | Design advanced electronics systems   | K2 |
| <b>C105.2</b>                                      | Evaluate and analyze the systems in VLSI design environments.   | K2 |
| <b>C105.3</b>                                      | Apply advanced technical knowledge in multiple contexts   | K3 |
| <b>C105.4</b>                                      | Conduct an organized and systematic study on significant research topic within the field of VLSI and its allied field.              | K2 |

|   |  |    |
|---|--|----|
| C105.5  | Discuss the hardware models for high level synthesis   | K2 |
| <b>C106 / VL5103 / ANALOG IC DESIGN</b>         |  |    |
| C106.1  | Learn the basics of CMOS and BICMOS circuit techniques.  | K2 |
| C106.2  | Gain a well founded knowledge on filters and converters.   | K2 |
| C106.3  | Obtain knowledge on testability and VLSI interconnects.  | K2 |
| C106.4  | Grasp the concept of statistical modeling and simulation   | K2 |
| C106.5  | Gain knowledge analog filters and converters   | K2 |
| <b>C107 / VL5111 / VLSI DESIGN LABORATORY I</b> |  |    |
| C107.1  | Have knowledge about sequential & combinational digital system designs<br>CO3.Have knowledge of hardware implementation of digital signal processing circuits                            | K3 |
| C107.2  | Perform Transient ,DC analysis and Power analysis of transistor level designs  | K2 |
| C107.3  | Have knowledge of hardware implementation of digital signal processing circuits  | K2 |
| C107.4  | Design a microcontroller based systems   | K2 |
| C107.5  | Analyze Stability, frequency response, and Noise in MOS amplifiers   | K3 |
| <b>SEMESTER II</b>                              |  |    |
| <b>C108 / VL5201/ TESTING OF VLSI CIRCUITS</b>  |  |    |
| C108.1  | Prepare design for testability Discuss test algorithms   | K1 |
| C108.2  | Explain fault diagnosis  | K1 |
| C108.3  | Apply the concepts in testing which can help them design a better yield in IC design   | K3 |
| C108.4  | Understanding of the various fault diagnosis methods in logic systems  | K2 |
| C108.5  | Discuss algorithms for memory and logic circuits   | K2 |
| <b>C109 / VL5291/ VLSI SIGNAL PROCESSING</b>    |  |    |
| C109.1  | Ability to modify the existing or new DSP architectures suitable for VLSI.   | K1 |
| C109.2  | To learn performance optimization techniques in VLSI signal processing,  | K2 |
| C109.3  | Transformations for high speed and power reduction using pipelining, retiming, parallel processing techniques, supply voltage reduction as well as for strength or capacitance reduction | K3 |
| C109.4  | Area reduction using folding techniques, Strategies for arithmetic   | K2 |

  
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|   | implementation,   |    |
| <b>C109.5</b>   | Synchronous, wave, and asynchronous pipelining  | K1 |
| <b>C110 / VL5202/ LOW POWER VLSI DESIGN</b>                     |   |    |
| <b>C110.1</b>   | Understand the concepts of low power design and physics of power dissipation.                                     | K2 |
| <b>C110.2</b>   | Develop logical level and circuit level power optimization techniques.  | K2 |
| <b>C110.3</b>   | Apply advanced techniques and special techniques for reducing power   | K3 |
| <b>C110.4</b>   | Understanding of the synthesis and software design for low power  | K2 |
| <b>C110.5</b>   | Knowledge on low power design and power estimation techniques in CMOS   | K2 |
| <b>C111 /VL5001 /DEVICE MODELING – I</b>                        |   |    |
| <b>C111.1</b>   | Know about the basics of MOSFET device modeling and noise modeling.   | K2 |
| <b>C111.2</b>   | Understand and apply the concepts of noise modeling in system design  | K2 |
| <b>C111.3</b>   | Apply the mathematical techniques for device simulations  | K3 |
| <b>C111.4</b>   | Realize concepts about process variation and quality assurance  | K2 |
| <b>C111.5</b>   | To gain knowledge in arithmetic building blocks and memory architectures  | K3 |
| <b>C112/ DS5191/ DSP PROCESSOR ARCHITECTURE AND PROGRAMMING</b> |   |    |
| <b>C112.1</b>   | Become Digital Signal Processor specialized engineer  | K2 |
| <b>C112.2</b>   | DSP based System Developer  | K2 |
| <b>C112.3</b>   | Analyze and learn to implement the signal processing algorithms in DSPs.  | K3 |
| <b>C112.4</b>   | Recognize the fundamentals of fixed and floating point architectures of various DSPs                              | K2 |
| <b>C112.5</b>   | Learn the architecture details and instruction sets of fixed and floating point DSPs                              | K2 |
| <b>C113 / AP5191 /EMBEDDED SYSTEM DESIGN</b>                    |   |    |
| <b>C113.1</b>   | Know about various Requirements, Specification and Architectural Design for Embedded system design process.       | K2 |
| <b>C113.2</b>   | Understand and apply interfacing concepts of SHARC and ARM processors.  | K3 |
| <b>C113.3</b>   | Realize concepts about various Embedded Network using I2C, CAN Bus and SHARC bus for industry based applications. | K2 |
| <b>C113.4</b>   | Apply the programming skills for peripheral interfacing and real time applications..                              | K3 |
| <b>C113.5</b>   | Apply the concepts of RTOS for real-time systems design.  | K3 |
| <b>C114/ VL5211 /VLSI DESIGN LABORATORY II</b>                  |   |    |

|   |   |    |
|---|---|----|
| <b>C114.1</b>                                       | Have knowledge about digital system design and implementation in FPGAs                              | K1 |
| <b>C114.2</b>                                       | Have analysis knowledge of various parameters by T-SPICE tool                                       | K1 |
| <b>C114.3</b>                                       | Design and implement the Embedded systems. CO4. Have knowledge of layout level design entries       | K2 |
| <b>C114.4</b>                                       | Use EDA tools like Cadence, Xilinx and Quartus  | K3 |
| <b>C114.5</b>                                       | Ability to design using FPGA/CPLD devices   | K3 |
| <b>C115/ CP5281 /TERM PAPER WRITING AND SEMINAR</b> |   |    |
| <b>C115.1</b>                                       | Read and review the research articles and publish a technical Paper.                                | K4 |
| <b>C115.2</b>                                       | Acquire practical knowledge within the chosen area of technology for project development            | K2 |
| <b>C115.3</b>                                       | Identify, analyze, formulate and handle programming with a comprehensive and systematic approach    | K3 |
| <b>C115.4</b>                                       | Generate a high level analysis document based on requirement specification                          | K3 |
| <b>C115.5</b>                                       | Understand basics and importance of real time system  | K2 |
| <b>SEMESTER /III</b>                                |   |    |
| <b>C201/VL5301/ANALOG TO DIGITAL INTERFACES</b>     |   |    |
| <b>C201.1</b>                                       | Design Analog to Digital and Digital to Analog data converters based on data precision requirements | K2 |
| <b>C201.2</b>                                       | Calibration techniques for achieving precision during data  | K2 |
| <b>C201.3</b>                                       | Digitization and enabling circuit architectures   | K3 |
| <b>C201.4</b>                                       | Analyze analog circuits   | K3 |
| <b>C201.5</b>                                       | Understand basics and importance of digital interfaces  | K2 |
| <b>C202 / AP5292/DIGITAL IMAGE PROCESSING</b>       |   |    |
| <b>C202.1</b>                                       | Discuss image enhancement techniques  | K2 |
| <b>C202.2</b>                                       | Explain color image processing  | K2 |
| <b>C202.3</b>                                       | Compare image compression schemes   | K1 |
| <b>C202.4</b>                                       | Exposure to video processing  | K2 |
| <b>C202.5</b>                                       | Exposure to various image processing compression techniques   | K2 |

| <b>C203/ VL5091/MEMS AND NEMS</b>         |  |    |
|---|--|----|
| <b>C203.1</b>                             | Discuss micro sensors Explain micro actuators                                  | K2 |
| <b>C203.2</b>                             | Outline nanosystems and Quantum mechanics                                      | K2 |
| <b>C203.3</b>                             | Fabrication process of Microsystems.   | K2 |
| <b>C203.4</b>                             | Knowledge on electrical and mechanical concepts of MEMS and on various         | K2 |
| <b>C203.5</b>                             | Introduction to optical and MEMS and various case studies                      | K2 |
| <b>C204/VL5311/PROJECT WORK PHASE-I</b>   |  |    |
| <b>C204.1</b>                             | Demonstrate a sound technical knowledge of their selected project topic.       | K3 |
| <b>C204.2</b>                             | Undertake problem identification, formulation and solution.                    | K4 |
| <b>C204.3</b>                             | Design engineering solutions to complex problems utilising a systems           | K4 |
| <b>C204.4</b>                             | An understanding of technical dissertation presentation and writing.           | K3 |
| <b>C204.5</b>                             | Design engineering solutions to complex problems utilising a systems           | K4 |
| <b>SEMESTER IV</b>                        |  |    |
| <b>C205/ VL5411/PROJECT WORK PHASE-II</b> |  |    |
| <b>C205.1</b>                             | Demonstrate a sound technical knowledge of their selected project topic.       | K3 |
| <b>C205.2</b>                             | Undertake problem identification, formulation and solution.                    | K4 |
| <b>C205.3</b>                             | Design engineering solutions to complex problems utilizing a systems approach. | K4 |
| <b>C205.4</b>                             | Confidence to take up a project independently.                                 | K3 |
| <b>C205.5</b>                             | An understanding of technical dissertation presentation and writing            | K4 |

| <b>S.NO</b>  | <b>CO-PO MAPPING</b> |            |            |            |            |            |            |            |            |             |             |             |
|--|----------------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|-------------|-------------|
|  | <b>PO1</b>           | <b>PO2</b> | <b>PO3</b> | <b>PO4</b> | <b>PO5</b> | <b>PO6</b> | <b>PO7</b> | <b>PO8</b> | <b>PO9</b> | <b>PO10</b> | <b>PO11</b> | <b>PO12</b> |
| <b>C101/ MA5152/ APPLIED MATHEMATICS FOR ELECTRONICS ENGINEERS</b> |                      |            |            |            |            |            |            |            |            |             |             |             |
| <b>C101.1</b>  | 2                    | -          | 3          | -          | -          | 2          | 2          | -          | 2          | 2           | -           | 2           |
| <b>C101.2</b>  | -                    | -          | 3          | -          | -          | 2          | 2          | -          | 2          | 2           | -           | 2           |
| <b>C101.3</b>  | -                    | 2          | 3          | 2          | 2          | 2          | 2          | -          | 2          | 2           | -           | 2           |
| <b>C101.4</b>  | 2                    | 2          | 3          | -          | -          | 2          | 2          | -          | 2          | 2           | -           | 2           |
| <b>C101.5</b>  | -                    | -          | 3          | -          | -          | 2          | 2          | -          | 2          | 2           | -           | 2           |
| <b>C102/ AP5151/ ADVANCED DIGITAL SYSTEM DESIGN</b>                |                      |            |            |            |            |            |            |            |            |             |             |             |
| <b>C102.1</b>  | 2                    | 2          | 2          | -          | -          | 2          | -          | -          | -          | 3           | -           | 2           |
| <b>C102.2</b>  | 2                    | 3          | 2          | -          | -          | -          | -          | -          | -          | -           | -           | -           |
| <b>C102.3</b>  | 3                    | 2          | 2          | -          | -          | -          | -          | -          | -          | 2           | -           | -           |
| <b>C102.4</b>  | 3                    | 2          | 3          | 2          | 2          | -          | -          | 2          | -          | 2           | -           | -           |

  
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|   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C102.5  | 2 | 2 | 2 | 2 | - | 2 | - | - | - | - | - | 2 |
| <b>C103/ VL5101/ CMOS DIGITAL VLSI DESIGN</b>   |   |   |   |   |   |   |   |   |   |   |   |   |
| C103.1  | 3 | 2 | 2 | 3 | 2 | 2 | - | - | - | - | - | 3 |
| C103.2  | 3 | 3 | 3 | 2 | - | 2 | - | - | - | - | - | 3 |
| C103.3  | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 |
| C103.4  | 2 | 3 | 2 | - | - | - | - | - | - | - | - | - |
| C103.5  | 3 | 2 | 2 | - | - | - | - | - | - | 2 | - | - |
| <b>C104/ VL5191/ DSP INTEGRATED CIRCUITS</b>    |   |   |   |   |   |   |   |   |   |   |   |   |
| C104.1  | 2 | 2 | 2 | 2 | 2 | - | 3 | - | 2 | - | 2 | 3 |
| C104.2  | 2 | 2 | 2 | 2 | 2 | - | - | - | 2 | - | 2 | 2 |
| C104.3  | 2 | 2 | 2 | 2 | 2 | - | 2 | - | 2 | - | 2 | 2 |
| C104.4  | 2 | 2 | 2 | 2 | 2 | - | - | - | 2 | - | 2 | 2 |
| C104.5  | 2 | 2 | 2 | 2 | 2 | - | 2 | - | 2 | - | 2 | 2 |
| <b>C105 / VL5102 / CAD FOR VLSI CIRCUITS</b>    |   |   |   |   |   |   |   |   |   |   |   |   |
| C105.1  | 3 | 2 | - | - | - | - | - | - | - | - | - | - |
| C105.2  | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - |
| C105.3  | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - |
| C105.4  | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | - | - |
| C105.5  | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | - | - |
| <b>C106 / VL5103 / ANALOG IC DESIGN</b>         |   |   |   |   |   |   |   |   |   |   |   |   |
| C106.1  | 3 | 3 | 3 | 2 | 2 | - | - | - | - | 2 | 3 | 2 |
| C106.2  | 3 | 3 | 3 | 2 | 2 | - | - | - | - | 3 | 2 | 2 |
| C106.3  | 3 | 3 | 3 | 2 | 2 | - | - | - | - | 2 | 2 | 2 |
| C106.4  | 3 | 3 | 3 | 2 | 3 | - | - | - | - | 2 | 2 | 2 |
| C106.5  | 3 | 3 | 3 | 2 | 3 | - | - | - | - | 2 | 2 | 2 |
| <b>C107 / VL5111 / VLSI DESIGN LABORATORY I</b> |   |   |   |   |   |   |   |   |   |   |   |   |
| C107.1  | 3 | - | - | - | - | - | - | - | - | - | - | - |
| C107.2  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - |
| C107.3  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - |
| C107.4  | 3 | 2 | 3 | 2 | - | - | - | - | - | - | - | - |
| C107.5  | 3 | 2 | 3 | 2 | - | - | - | - | - | - | - | - |
| <b>C108 / VL5201/ TESTING OF VLSI CIRCUITS</b>  |   |   |   |   |   |   |   |   |   |   |   |   |
| C108.1  | 3 | 2 | 3 | - | - | - | - | - | 3 | 2 | 2 | 2 |
| C108.2  | 3 | 2 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |
| C108.3  | 3 | 3 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |
| C108.4  | 3 | 3 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |
| C108.5  | 3 | 3 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |

  
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| <b>C109 / VL5291/ VLSI SIGNAL PROCESSING</b>                    |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C109.1  | 2 | 2 | - | - | - | 2 | 2 | - | 2 | 3 | - | 2 |
| C109.2  | 2 | 3 | - | - | - | 2 | 2 | - | 2 | 3 | - | 2 |
| C109.3  | 2 | 2 | - | - | - | 2 | 2 | - | 2 | 3 | - | 2 |
| C109.4  | 2 | 2 | - | - | - | 2 | 2 | - | 2 | 3 | - | 2 |
| C109.5  | 2 | 3 | - | - | - | 2 | 2 | - | 2 | 3 | - | 2 |
| <b>C110 / VL5202/ LOW POWER VLSI DESIGN</b>                     |   |   |   |   |   |   |   |   |   |   |   |   |
| C110.1  | 3 | 3 | 3 | 3 | 2 | 2 | - | - | - | 2 | - | - |
| C110.2  | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | - |
| C110.3  | 3 | 3 | 3 | - | - | 2 | - | 2 | - | 2 | - | 2 |
| C110.4  | 3 | 3 | 3 | - | - | 2 | - | 2 | - | 2 | - | 2 |
| C110.5  | 3 | 3 | 3 | - | - | 2 | - | 2 | - | 2 | - | 2 |
| <b>C111 /VL5001 /DEVICE MODELING - I</b>                        |   |   |   |   |   |   |   |   |   |   |   |   |
| C111.1  | 2 | 2 | - | - | - | - | - | - | - | - | - | - |
| C111.2  | 3 | 2 | 3 | - | - | 2 | 2 | - | - | 3 | - | 2 |
| C111.3  | 3 | 3 | 3 | 3 | - | 2 | 2 | - | - | 3 | - | 2 |
| C111.4  | 3 | 3 | 3 | 3 | - | 2 | 2 | - | - | 3 | - | 2 |
| C111.5  | 3 | 3 | 3 | 3 | - | 2 | 2 | - | - | 3 | - | 2 |
| <b>C112/ DS5191/ DSP PROCESSOR ARCHITECTURE AND PROGRAMMING</b> |   |   |   |   |   |   |   |   |   |   |   |   |
| C112.1  | 2 | 2 | 2 | - | 2 | - | - | - | - | - | 2 | 2 |
| C112.2  | 2 | 2 | 2 | - | 2 | - | - | - | - | - | 2 | 2 |
| C112.3  | 2 | 2 | 2 | - | 2 | - | - | - | - | - | 2 | 2 |
| C112.4  | 2 | 2 | 2 | - | 2 | - | - | - | - | - | 2 | 2 |
| C112.5  | 2 | 2 | 2 | - | 2 | - | - | - | - | - | 2 | 2 |
| <b>C113 / AP5191 /EMBEDDED SYSTEM DESIGN</b>                    |   |   |   |   |   |   |   |   |   |   |   |   |
| C113.1  | 3 | 2 | 2 | - | 2 | - | - | - | - | - | - | 2 |
| C113.2  | 3 | 2 | 2 | - | 2 | - | - | - | - | - | - | 2 |
| C113.3  | 3 | 2 | 2 | - | 2 | - | - | - | - | - | - | 2 |
| C113.4  | 3 | 2 | 2 | - | 2 | - | - | - | - | - | - | 2 |
| C113.5  | 3 | 2 | 2 | - | 2 | - | - | - | - | - | - | 2 |
| <b>C114/ VL5211 /VLSI DESIGN LABORATORY II</b>                  |   |   |   |   |   |   |   |   |   |   |   |   |
| C114.1  | 3 | 3 | 3 | 2 | 2 | 2 | - | 2 | 2 | 2 | 3 | 2 |
| C114.2  | 3 | 3 | 3 | 2 | 2 | - | - | - | - | 3 | 2 | 2 |
| C114.3  | 3 | 3 | 3 | 2 | 2 | - | - | - | - | 2 | 2 | 2 |
| C114.4  | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |

  
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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C114.5  | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| <b>C115/ CP5281 /TERM PAPER WRITING AND SEMINAR</b> |   |   |   |   |   |   |   |   |   |   |   |   |
| C115.1  | 2 | - | 2 | 2 | 3 | - | 2 | 2 | 3 | 2 | 3 | 2 |
| C115.2  | 2 | - | 2 | 2 | 3 | - | 2 | 2 | 3 | 2 | 3 | 2 |
| C115.3  | 2 | - | 2 | 2 | 3 | - | 2 | 2 | 3 | 2 | 3 | 2 |
| C115.4  | 2 | - | 2 | 2 | 3 | - | 2 | 2 | 3 | 2 | 3 | 2 |
| C115.5  | 2 | - | 2 | 2 | 3 | - | 2 | 2 | 3 | 2 | 3 | 2 |
| <b>C201/VL5301 ANALOG TO DIGITAL INTERFACES</b>     |   |   |   |   |   |   |   |   |   |   |   |   |
| C201.1  | 3 | 2 | 2 | - | - | 2 | - | - | - | 3 | - | 2 |
| C201.2  | 2 | 3 | 2 | - | - | - | - | - | - | - | - | - |
| C201.3  | 3 | 2 | 2 | - | - | - | - | - | - | 2 | - | - |
| C201.4  | 3 | 2 | 2 | - | - | - | - | - | - | 2 | - | - |
| C201.5  | 3 | 2 | 2 | - | - | - | - | - | - | 2 | - | - |
| <b>C202 / AP5292 DIGITAL IMAGE PROCESSING</b>       |   |   |   |   |   |   |   |   |   |   |   |   |
| C202.1  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C202.2  | 3 | 2 | 2 | 2 | 2 | - | - | - | - | 2 | 2 | 2 |
| C202.3  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C202.4  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| C202.5  | 3 | 2 | 2 | 2 | - | - | - | - | - | 2 | 2 | 2 |
| <b>C203/ VL5091 MEMS AND NEMS</b>                   |   |   |   |   |   |   |   |   |   |   |   |   |
| C203.1  | 3 | 3 | 3 | 2 | 2 | 2 | - | 2 | 2 | 2 | 3 | 2 |
| C203.2  | 3 | 2 | 3 | 2 | 2 | - | - | - | - | 3 | 2 | 2 |
| C203.3  | 3 | 2 | 2 | 2 | 2 | - | - | - | - | 2 | 2 | 2 |
| C203.4  | 3 | 2 | 2 | 2 | 2 | - | - | - | - | 2 | 2 | 2 |
| C203.5  | 3 | 2 | 2 | 2 | 2 | - | - | - | - | 2 | 2 | 2 |
| <b>C204/VL5311 PROJECT WORK PHASE-I</b>             |   |   |   |   |   |   |   |   |   |   |   |   |
| C204.1  | 2 | 2 | 2 | 2 | - | 2 | 2 | 2 | 3 | 3 | 3 | 3 |
| C204.2  | 2 | - | 2 | 2 | 2 | 2 | - | 2 | 3 | 3 | 2 | 2 |
| C204.3  | 2 | 2 | 2 | 2 | 2 | 2 | - | 2 | 2 | 3 | 2 | 2 |
| C204.4  | 2 | 2 | 2 | 2 | 2 | 2 | - | 2 | 2 | 3 | 2 | 2 |
| C204.5  | 2 | 2 | 2 | 2 | 2 | 2 | - | 2 | 2 | 3 | 2 | 2 |

  
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| C205/ VL5411 PROJECT WORK PHASE-II |   |   |   |   |   |   |   |   |   |   |   |   |
|------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| C205.1                             | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | - | 2 |
| C205.2                             | 3 | 3 | 3 | 3 | 3 | - | - | - | - | - | - | 2 |
| C205.3                             | 3 | 3 | 2 | 3 | 2 | - | - | - | - | - | - | 2 |
| C205.4                             | 3 | 3 | 2 | 3 | 2 | - | - | - | - | - | - | 2 |
| C205.5                             | 3 | 3 | 2 | 3 | 2 | - | - | - | - | - | - | 2 |

  
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# MECHANICAL ENGINEERING



A handwritten signature in green ink, appearing to read 'A. S. S.', is positioned above the printed name of the principal.

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## REGULATION- 2017 - UG

| S.NO   | COURSE OUTCOME  | BT LEVEL |
|--|---|----------|
| <b>SEMESTER III</b>  |   |          |
| <b>C201/MA8353-TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS</b> |   |          |
| <b>C201.1</b>  | Study the Partial Differential Equations in various methods.  | K2       |
| <b>C201.2</b>  | Solving Fourier Series for different types of functions.  | K3       |
| <b>C201.3</b>  | Computing the solutions of the heat equation, wave equation and the Laplace equation subject to boundary conditions | K3       |
| <b>C201.4</b>  | Deduce the Gaussian function in Self reciprocal form using Fourier Transforms.                                      | K3       |
| <b>C201.5</b>  | Formation of finite difference method in Z-transforms.  | K2       |
| <b>C202/ME8391-ENGINEERING THERMODYNAMICS</b>                    |   |          |
| <b>C202.1</b>  | Apply the basic concepts of thermodynamics for energy conversion phenomenon.  | K3       |
| <b>C202.2</b>  | Calculate thermal efficiency and coefficient of performance for heat engines, refrigerators and heat pumps.         | K3       |
| <b>C202.3</b>  | Evaluate the performance of steam power cycles.   | K3       |
| <b>C202.4</b>  | Derive simple thermodynamic relations of ideal and real gases.  | K3       |
| <b>C202.5</b>  | Calculate the properties of air vapor mixtures using psychometrics  | K3       |
| <b>C202.6</b>  | Explain the performance of refrigeration systems and its environmental impacts.                                     | K1       |
| <b>C203/CE8394-FLUID MECHANICS AND MACHINERY</b>                 |   |          |
| <b>C203.1</b>  | Apply the concept of fluid properties with their effects on fluid flow.   | K3       |
| <b>C203.2</b>  | Apply the concepts of general energy equations in fluid flow problems.  | K3       |
| <b>C203.3</b>  | Calculate the major and minor losses in flow through pipes.   | K3       |
| <b>C203.4</b>  | Apply the mathematical knowledge in boundary layer concepts.  | K3       |
| <b>C203.5</b>  | Understand the working principle of pumps and turbines.   | K2       |
| <b>C203.6</b>  | Determine the various performance characteristics of pumps and turbines.  | K3       |
| <b>C204/ME8351-MANUFACTURING TECHNOLOGY - I</b>                  |   |          |
| <b>C204.1</b>  | Understand the fundamentals of casting, Welding, Forging and Sheet metal process                                    | K2       |

  
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|  |  |    |
|--|--|----|
| C204.2   | Understand the basic concepts of Fusion and Non-Fusion Welding process                                 | K2 |
| C204.3   | Identify the different defects which occur in welding and casting process.                             | K1 |
| C204.4   | Explain the various forming operations can performed in sheet metal process                            | K1 |
| C204.5   | Compute the casting allowances and time taken for solidification in the process                        | K3 |
| C204.6   | Understand the concepts of thermo and thermo setting plastics used in plastic manufacturing components | K2 |
| <b>C205/EE8353-ELECTRICAL DRIVES AND CONTROLS</b>          |  |    |
| C205.1   | Use the rating and classes of duty of machines for particular application.                             | K3 |
| C205.2   | Explain the mechanical and braking characteristics of dc and ac machines.                              | K1 |
| C205.3   | Describe the starting methods of both dc and ac machines.  | K1 |
| C205.4   | Clarify conventional and solid state speed control of dc drives.                                       | K1 |
| C205.5   | Enlighten the speed control of dc and ac drive by conventional and solid state methods.                | K3 |
| C205.6   | Illustrate the overview of semi conductor devices, design the rectifier and analyze its working        | K2 |
| <b>C206/ME8361-MANUFACTURING TECHNOLOGY LABORATORY - I</b> |  |    |
| C206.1   | Perform the taper turning operation in conventional lathe machine                                      | K3 |
| C206.2   | Perform the various thread operations for the given specification.                                     | K3 |
| C206.3   | Estimate the taper angle and machining time calculations in various machining operations.              | K2 |
| C206.4   | Perform the hexagonal bolts and square studs using shaper machine                                      | K3 |
| C206.5   | Calculate the eccentricity value to produce eccentric components                                       | K3 |
| <b>C207/ME8381-COMPUTER AIDED MACHINE DRAWING</b>          |  |    |
| C207.1   | Construct the machine drawing as per standards, Fits and Tolerances                                    | K2 |
| C207.2   | Identify proper computer graphics techniques for 2D drawing and 3D model.                              | K1 |
| C207.3   | Develop the part model for any machine components by using modeling software.                          | K3 |
| C207.4   | Develop the assembly model for machine components by using modeling software.                          | K3 |
| C207.5   | Develop the program code for CNC machines for simulation   | K3 |
| C207.6   | Understand the concept of Machining the components by using CNC machine                                | K2 |

| <b>C208/EE8361-ELECTRICAL ENGINEERING LABORATORY</b>               |  |    |
|--|--|----|
| <b>C208.1</b>  | Perform the load test, OCC, load characteristics and speed control of DC shunt and DC series motor   | K3 |
| <b>C208.2</b>  | Perform the load test, OC and SC test on a single phase transformer  | K3 |
| <b>C208.3</b>  | Examine the regulation of an alternator by EMF and MMF methods   | K3 |
| <b>C208.4</b>  | Conduct the load test, speed control on various phase of induction motor   | K2 |
| <b>C208.5</b>  | Explore the DC and AC starters   | K3 |
| <b>C208.6</b>  | Perform the load test, OCC, load characteristics and speed control of DC shunt and DC series motor   | K3 |
| <b>C209/HS8381-INTERPERSONAL SKILLS / LISTENING &amp; SPEAKING</b> |  |    |
| <b>C209.1</b>  | Take international examination such as IELTS and TOEFL   | K3 |
| <b>C209.2</b>  | Participate in Group Discussion.   | K3 |
| <b>C209.3</b>  | Successfully answer questions in Interviews.   | K3 |
| <b>C209.4</b>  | Make effective Presentations.  | K3 |
| <b>C209.5</b>  | Participate confidently and appropriately in conversations both formal and informal  | K3 |
| <b>SEMESTER IV</b>   |  |    |
| <b>C210/MA8452-STATISTICS AND NUMERICAL METHODS</b>                |  |    |
| <b>C210.1</b>  | Define null and alternative hypothesis, Apply test statistic, level of significance and decision rule, Distinguish between Type I error and Type II errors to Explain the difference between one and two sided tailed of hypothesis. | K1 |
| <b>C210.2</b>  | Explain the concept of analysis of variance to Distinguish between one and two factor analysis of variance tests.  | K1 |
| <b>C210.3</b>  | Solve Algebraic and Transcendental equations by various methods, Simultaneous linear equations using Direct and Indirect methods. Compute Eigen value of a matrix by power method.   | K3 |
| <b>C210.4</b>  | Interpret the data for Interpolation using various methods and compute the Numerical differentiation for Equal & Unequal intervals. Using Trapezoidal and Simpsons method for Numerical Integration solution.                        | K3 |
| <b>C210.5</b>  | Solving first order differential equations using various types of single and multi step methods.   | K3 |
| <b>C210.6</b>  | Applying finite difference methods for solving II order differential equations.  | K3 |
| <b>C211/ME8492-KINEMATICS OF MACHINERY</b>                         |  |    |
| <b>C211.1</b>  | Understand the various kinematic concepts in different mechanisms.   | K2 |



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| C211.2  | Understand the velocity and acceleration of links at any point in various mechanisms.                    | K2 |
| C211.3  | Construct the various cam profiles with follower motion.   | K3 |
| C211.4  | Solve the problems on gear and gear trains   | K3 |
| C211.5  | Recognize the effect of friction in different friction drives.   | K3 |
| C211.6  | Design the various motion transmission elements with their relative movements.                           | K3 |
| <b>C212/ME8451-MANUFACTURING TECHNOLOGY- II</b>                   |  |    |
| C212.1  | Understand the constructional features of lathe and special machines                                     | K2 |
| C212.2  | Explain the various mechanism used in special machines   | K1 |
| C212.3  | Develop the part program in CNC milling and turning centers.   | K3 |
| C212.4  | Compute the tool nomenclature and tool life calculation in metal cutting process                         | K3 |
| C212.5  | Select the suitable grinding wheels used in different grinding process                                   | K1 |
| C212.6  | Identify the suitable process to manufacture simple engineering components                               | K1 |
| <b>C213/ME8491-ENGINEERING METALLURGY</b>                         |  |    |
| C213.1  | Describe the various phase diagram for engineering metals  | K1 |
| C213.2  | Identify the different types of engineering materials in industrial applications                         | K1 |
| C213.3  | Understand the various isothermal transformation in heat treatment process                               | K2 |
| C213.4  | Understand the effects of alloying elements on Ferrous and Non-Ferrous materials.                        | K2 |
| C213.5  | Discuss the properties and applications of Polymers, Ceramics and Composite materials                    | K2 |
| C213.6  | Identify the mechanical properties and deformation using various mechanical testing methods.             | K1 |
| <b>C214/ME8395-STRENGTH OF MATERIALS FOR MECHANICAL ENGINEERS</b> |  |    |
| C214.1  | Understand the concept of deformation due to different loading conditions.                               | K1 |
| C214.2  | Understand the fundamentals of various stresses and strains in the structural member.                    | K1 |
| C214.3  | Construct the shear force and bending moment diagram for load transferring mechanism in different beams. | K3 |
| C214.4  | Apply the basic equations to design the shaft and helical springs.                                       | K3 |
| C214.5  | Determine the slope and deflection in beams using different methods.                                     | K2 |

  
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|---|---|----|
| <b>C214.6</b>   | Design thin and thick cylinders subjected to internal and external pressures                                      | K3 |
| <b>C215/ME8493-THERMAL ENGINEERING-I</b>  |   |    |
| <b>C215.1</b>   | Calculate the efficiency of various gas power cycles.   | K3 |
| <b>C215.2</b>   | Compute the performance test on IC engines  | K3 |
| <b>C215.3</b>   | Estimate the concept of single and multi stage steam turbines   | K3 |
| <b>C215.4</b>   | Apply the thermodynamic concepts in various thermal systems.  | K3 |
| <b>C215.5</b>   | Calculate the properties of air vapor mixtures using psychometrics  | K3 |
| <b>C215.6</b>   | Explain the importance of efficient energy utilization in engineering practices and its impact on the environment | K1 |
| <b>C216/ME8462-MANUFACTURING TECHNOLOGY LABORATORY-II</b>                               |   |    |
| <b>C216.1</b>   | Calculate the various cutting forces using tool dynamometers.   | K3 |
| <b>C216.2</b>   | Generate gears using gear hobbling machines   | K2 |
| <b>C216.3</b>   | Perform surface finish operations using surface grinding and cylindrical grinding machines.                       | K3 |
| <b>C216.4</b>   | Develop CNC part programming for turning and milling operations   | K3 |
| <b>C216.5</b>   | Perform contour milling operation in various milling machine.   | K3 |
| <b>C216.6</b>   | Perform gear cutting operation using milling machine.   | K3 |
| <b>C217/CE8381-STRENGTH OF MATERIALS &amp; FLUID MECHANICS AND MACHINERY LABORATORY</b> |   |    |
| <b>C217.1</b>   | Determine the elastic constants by using tensile and torsion test machine for mild steel (MS) specimen            | K2 |
| <b>C217.2</b>   | Conduct hardness test for different metals and carry out impact test for MS specimen                              | K3 |
| <b>C217.3</b>   | Determine deflection in beams   | K2 |
| <b>C217.4</b>   | Determine the discharge coefficients for venture meter & Orifice meter  | K2 |
| <b>C217.5</b>   | Understand the flow measurement by using flow measuring equipment   | K2 |
| <b>C217.6</b>   | Evaluate the performance of hydraulic turbines & pumps under different working conditions.                        | K3 |
| <b>C218/HS8461-ADVANCED READING AND WRITING</b>   |   |    |
| <b>C218.1</b>   | Make effective Presentations.   | K1 |
| <b>C218.2</b>   | Participate in Group Discussion.  | K2 |
| <b>C218.3</b>   | Develop the knowledge to answer the questions successfully in the Interviews.                                     | K3 |

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| <b>C218.4</b>                                 | Take international examination such as IELTS and TOEFL   | K1 |
| <b>C218.5</b>                                 | Participate confidently and appropriately in conversations both formal and informal                                      | K3 |
| <b>C218.6</b>                                 | Take international examination such as IELTS and TOEFL   | K1 |
| <b>SEMESTER /V</b>                            |  |    |
| <b>C301/ME8595-THERMAL ENGINEERING-II</b>     |  |    |
| <b>C301.1</b>                                 | Solve problems in Steam Nozzle   | K2 |
| <b>C301.2</b>                                 | Explain the functioning and features of different types of Boilers and auxiliaries and calculate performance parameters. | K2 |
| <b>C301.3</b>                                 | Explain the flow in steam turbines, draw velocity diagrams for steam turbines and solve problems.                        | K3 |
| <b>C301.4</b>                                 | Summarize the concept of Cogeneration, Working features of Heat pumps and Heat exchangers.                               | K3 |
| <b>C301.5</b>                                 | Solve problems using refrigerant table / charts and psychrometric charts.  | K3 |
| <b>C301.6</b>                                 | Explain and solve the problems in various Refrigeration processes.   | K3 |
| <b>C302/ME8593-DESIGN OF MACHINE ELEMENTS</b> |  |    |
| <b>C302.1</b>                                 | Understand the basic design parameters of various machine elements   | K2 |
| <b>C302.2</b>                                 | Understand the various stresses induce due to different loading conditions.  | K3 |
| <b>C302.3</b>                                 | Apply the basic design procedure to design the shafts, bearing and couplings.  | K3 |
| <b>C302.4</b>                                 | Apply the basic design steps to design the temporary and permanent joints.   | K3 |
| <b>C302.5</b>                                 | Design the various energy storing elements and engine components.  | K3 |
| <b>C302.6</b>                                 | Design the various machine members as per standard design catalogues.  | K2 |
| <b>C303/ME8501-METROLOGY AND MEASUREMENTS</b> |  |    |
| <b>C303.1</b>                                 | Discuss the concepts of measurements in metrological instruments.  | K2 |
| <b>C303.2</b>                                 | Explain the principles of linear and angular measuring instruments for industrial applications.                          | K1 |
| <b>C303.3</b>                                 | Understand the concepts of various computer aided inspection tools.  | K2 |
| <b>C303.4</b>                                 | Explain the different form measurements in industry.   | K1 |
| <b>C303.5</b>                                 | Understand the basic concepts of interchangeability and selective assembly.  | K2 |
| <b>C303.6</b>                                 | Understand the working principle of measuring equipments to measure  | K2 |

  
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|   | intensive and extensive properties.  |    |
| <b>C304/ME8594-DYNAMICS OF MACHINES</b>                 |  |    |
| <b>C304.1</b>   | Understand the various force-motion relationships in different mechanisms  | K2 |
| <b>C304.2</b>   | Apply the principles of statics and dynamics to machinery  | K3 |
| <b>C304.3</b>   | Understand the balancing masses in the rotating and reciprocating machines                                       | K2 |
| <b>C304.4</b>   | Solve the free vibration problems in longitudinal, transverse and torsional systems                              | K3 |
| <b>C304.5</b>   | Apply the basic principles to reduce the undesirable effects of forced vibrations                                | K3 |
| <b>C304.6</b>   | Apply the principles in mechanisms used for speed control and stability control                                  | K3 |
| <b>C305/OIM552-LEAN MANUFACTURING (Open Elective-1)</b> |  |    |
| <b>C305.1</b>   | Understand the concept of conventional manufacturing and Lean manufacturing                                      | K2 |
| <b>C305.2</b>   | Understand the cellular manufacturing theory, and uses of Lean production tools such as JIT, Kuban & TPM         | K2 |
| <b>C305.3</b>   | Apply the 'set up time' reduction principles and implementation of TQM & 5S principles                           | K3 |
| <b>C305.4</b>   | Use the statistical consideration, variability reduction and design of experiment using SIC-ZIGMA implementation | K3 |
| <b>C305.5</b>   | Understand the waste in any process, minimize waste through proper kaizens and other methods                     | K2 |
| <b>C305.6</b>   | To improve the organization's efficiency through the use of LM tools   | K3 |
| <b>C306/ME8511-KINEMATICS AND DYNAMICS LABORATORY</b>   |  |    |
| <b>C306.1</b>   | Understand the concept of differential gear trains and kinematic links   | K2 |
| <b>C306.2</b>   | Evaluate the frequency of the vibrating system   | K3 |
| <b>C306.3</b>   | Use the controlling mechanisms   | K3 |
| <b>C306.4</b>   | Understand the balancing masses in the rotating and reciprocating machines                                       | K2 |
| <b>C306.5</b>   | Determination of mass moment of inertia for different component  | K2 |
| <b>C306.6</b>   | Use the measuring devices for dynamic testing  | K3 |
| <b>C307/ME8512-THERMAL ENGINEERING LABORATORY</b>       |  |    |
| <b>C307.1</b>   | Conduct a test to find thermal conductivity of various engineering materials                                     | K3 |
| <b>C307.2</b>   | Measure the heat transfer rate in natural and forced convection environment                                      | K3 |



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| <b>C307.3</b>  | Evaluate radiation heat transfer between black body surfaces and grey body surfaces                                    | K3 |
| <b>C307.4</b>  | Understand the effectiveness of parallel and counter flow heat exchanger   | K2 |
| <b>C307.5</b>  | Compare the performance of theoretical and experimental refrigeration and air conditioning systems.                    | K2 |
| <b>C307.6</b>  | Evaluate the performance of air compressors.   | K3 |
| <b>C308/ME8513-METROLOGY AND MEASUREMENTS LABORATORY</b>   |  |    |
| <b>C308.1</b>  | Ability to handle different measurement tools and perform measurements in quality impulsion                            | K3 |
| <b>C308.2</b>  | Identify various gauges for measurement.   | K1 |
| <b>C308.3</b>  | Demonstrate linear and angular measurement using precision instruments.  | K3 |
| <b>C308.4</b>  | Apply the load cell to measure the force and torque  | K3 |
| <b>C308.5</b>  | Use thermocouple and comparator for taking measurement.  | K3 |
| <b>C308.6</b>  | Measure bore diameter using Bore gauge, telescope gauge and surface roughness using Surface Finish Measuring Equipment | K2 |
| <b>SEMESTER VI</b>   |  |    |
| <b>C310/ME8651-DESIGN OF TRANSMISSION SYSTEMS</b>          |  |    |
| <b>C310.1</b>  | Select the materials for mechanical transmission system.   | K2 |
| <b>C310.2</b>  | Apply the design knowledge to design the various flexible drives.  | K3 |
| <b>C310.3</b>  | Apply the design concepts to design the parallel axis mating gear.   | K3 |
| <b>C310.4</b>  | Apply the basic design steps to design the perpendicular and oblique axis mating gear.                                 | K3 |
| <b>C310.5</b>  | Apply the design procedure to design the gear box.   | K3 |
| <b>C310.6</b>  | Apply the design principles to design the various friction drives.   | K3 |
| <b>C311/ME8691-COMPUTER AIDED DESIGN AND MANUFACTURING</b> |  |    |
| <b>C311.1</b>  | Understand the concept of 2D and 3D transformations and clipping algorithm.  | K2 |
| <b>C311.2</b>  | Understand the fundamentals of parametric curves, surfaces and Solids  | K2 |
| <b>C311.3</b>  | Apply the visual realism by using different algorithm  | K3 |
| <b>C311.4</b>  | Apply the mass property calculations on different parts  | K3 |
| <b>C311.5</b>  | Understand the different types of CAD Standards.   | K2 |
| <b>C311.6</b>  | Apply the various CAD algorithms in the area of product design and development.  | K3 |

| <b>C312/ME8693-HEAT AND MASS TRANSFER</b>                           |   |    |
|---|---|----|
| <b>C312.1</b>   | Understand the basic laws of heat transfer in the engineering systems.  | K2 |
| <b>C312.2</b>   | Compute the temperature distribution in steady and unsteady state heat conduction.  | K3 |
| <b>C312.3</b>   | Evaluate the heat transfer coefficient for convection   | K3 |
| <b>C312.4</b>   | Calculate the phase change properties and the heat exchanger performance by varying the methods                                       | K3 |
| <b>C312.5</b>   | Calculate radiation heat transfer between black and gray body surfaces.   | K3 |
| <b>C312.6</b>   | Analyze the diffusion and convective mass transfer occurring in different applications  | K3 |
| <b>C313/ME8692-FINITE ELEMENT ANALYSIS</b>                          |   |    |
| <b>C313.1</b>   | Solve Boundary value problems in structural and non-structural application.   | K3 |
| <b>C313 .2</b>  | Apply finite element methods in one dimensional Problem.  | K3 |
| <b>C313 .3</b>  | Solve dynamic problem by using finite element procedure.  | K3 |
| <b>C313 .4</b>  | Apply finite element technique in two dimensional scalar Problems.  | K3 |
| <b>C313 .5</b>  | Apply finite element method in two dimensional Vector problems.   | K3 |
| <b>C313 .6</b>  | Apply finite element procedure to solve problems on iso-parametric element  | K3 |
| <b>C314/ME8694-HYDRAULICS AND PNEUMATICS</b>                        |   |    |
| <b>C314.1</b>   | Explain the Fluid power and operation of different types of pumps.  | K3 |
| <b>C314.2</b>   | Summarize the features and functions of Hydraulic motors, actuators and Flow control valves   | K2 |
| <b>C314.3</b>   | Explain the different types of Hydraulic circuits and systems   | K1 |
| <b>C314.4</b>   | Explain the working of different pneumatic circuits and systems   | K1 |
| <b>C314.5</b>   | Summarize the various trouble shooting methods and applications of hydraulic and pneumatic systems.                                   | K2 |
| <b>C314.6</b>   | Design the hydraulic circuit for multi-functional operations  | K3 |
| <b>C315/ME8091-AUTOMOBILE ENGINEERING (Professional Elective-1)</b> |   |    |
| <b>C315.1</b>   | To understand basics of Automobile Engineering, conversant with drive train and transmission.   | K2 |
| <b>C315.2</b>   | To make the student conversant with Axles, Steering System & Tyre Wheel assembly and to understand basic and types of steering system | K1 |
| <b>C315.3</b>   | To make the student conversant with Suspension and Brake System   | K1 |

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| <b>C315.4</b>                                     | To make the student conversant with Vehicle Performance & Safety also able to understand basics of Vehicle maintenance. | K1 |
| <b>C315.5</b>                                     | To make the student conversant with Vehicle Maintenance & Garage Practice also able to perform garage practices         | K1 |
| <b>C315.6</b>                                     | To understand the various Automobile Electrical System and latest advancement in vehicles                               | K2 |
| <b>C316/ME8681-C.A.D. / C.A.M. LABORATORY</b>     |   |    |
| <b>C316.1</b>                                     | Construct the machine drawing as per standards, Fits and Tolerances   | K3 |
| <b>C316.2</b>                                     | Identify proper computer graphics techniques for 2D drawing and 3D model.   | K1 |
| <b>C316.3</b>                                     | Develop the part model for any machine components by using modeling software.   | K3 |
| <b>C316.4</b>                                     | Develop the assembly model for machine components by using modeling software.   | K3 |
| <b>C316.5</b>                                     | Develop the program code for CNC machines for simulation  | K3 |
| <b>C316.1</b>                                     | Understand the concept of Machining the components by using CNC machine   | K2 |
| <b>C317/ME8682-DESIGN AND FABRICATION PROJECT</b> |   |    |
| <b>C317.1</b>                                     | Identify problems with their technical skills   | K1 |
| <b>C317.2</b>                                     | Design a product as per requirement   | K3 |
| <b>C317.3</b>                                     | Develop the detailed drawing for fabrication product with latest tool   | K3 |
| <b>C317.4</b>                                     | Create prototype of a working model   | K1 |
| <b>C317.5</b>                                     | Contribute effectively as an individual and as a member in a team   | K2 |
| <b>C317.6</b>                                     | Develop detailed report for new product   | K3 |
| <b>C318/HS8581-PROFESSIONAL COMMUNICATION</b>     |   |    |
| <b>C318.1</b>                                     | Take international examination such as IELTS and TOEFL  | K1 |
| <b>C318.2</b>                                     | Participate in Group Discussion.  | K3 |
| <b>C318.3</b>                                     | Successfully answer questions in Interviews.  | K2 |
| <b>C317.4</b>                                     | Make effective Presentations.   | K1 |
| <b>C318.5</b>                                     | Participate confidently and appropriately in conversations both formal and informal                                     | K2 |
| <b>C318.6</b>                                     | Take international examination such as IELTS and TOEFL  | K1 |



| <b>SEMESTER VII</b>                                     |   |    |
|---|---|----|
| <b>C401/ME8792-POWER PLANT ENGINEERING</b>              |   |    |
| <b>C401.1</b>   | Understand the layout and components of various power plants  | K2 |
| <b>C401.2</b>   | Understand different types of cycles and it's efficiencies in various power plants.                         | K2 |
| <b>C401.3</b>   | Understand the sources and concepts of renewable energy   | K2 |
| <b>C401.4</b>   | Calculate the factors associated with power plant economics.  | K3 |
| <b>C401.5</b>   | Select the suitability of site for a power plant.   | K1 |
| <b>C401.6</b>   | Identify safety aspects of power plants   | K1 |
| <b>C402/ME8793-PROCESS PLANNING AND COST ESTIMATION</b> |   |    |
| <b>C402.1</b>   | Introduce the process planning concepts to make cost estimation for various products after process planning | K1 |
| <b>C402.2</b>   | Identify the documents required for the process planning  | K1 |
| <b>C402.3</b>   | Calculate the material cost of a product.   | K3 |
| <b>C402.4</b>   | Explain the various associated in manufacturing shops.  | K1 |
| <b>C402.5</b>   | Calculate the machining time for various machining operations.  | K3 |
| <b>C402.6</b>   | Apply the subcontractor's capabilities and their quality plans.   | K3 |
| <b>C403/ME8791-MECHATRONICS</b>                         |   |    |
| <b>C403.1</b>   | Explain mechatronics design process   | K1 |
| <b>C403.2</b>   | Choose sensors based on their working principle.  | K2 |
| <b>C403.3</b>   | Discuss the working of various actuators.   | K3 |
| <b>C403.4</b>   | Discuss the architecture of microprocessors and microcontroller.  | K3 |
| <b>C403.5</b>   | Explain the architecture of PLC and contrast it from PC and relay systems.                                  | K1 |
| <b>C403.6</b>   | Discuss the various case studies.   | K3 |
| <b>C404/OIE751 ROBOTICS (Open Elective-2)</b>           |   |    |
| <b>C404.1</b>   | To develop the student's knowledge in various robot structures and their workspace                          | K3 |
| <b>C404.2</b>   | To develop student's skills in performing spatial transformations associated with rigid body motions        | K3 |
| <b>C404.3</b>   | To develop student's skills in perform kinematics analysis of robot systems                                 | K3 |
| <b>C404.4</b>   | To provide the student with knowledge of the singularity issues associated with                             | K1 |

  
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|   | the operation of robotic systems  |    |
| <b>C404.5</b>   | To provide the student with some knowledge and analysis skills associated with trajectory planning  | K1 |
| <b>C404.6</b>   | To provide the student with some knowledge and skills associated with robot control   | K1 |
| <b>C405/GE 8077 TOTAL QUALITY MANAGEMENT (Professional Elective-2)</b>              |   |    |
| <b>C405.1</b>   | Describe the dimensional barrier regarding Quality.   | K2 |
| <b>C405.2</b>   | Summarize the Total quality principles.   | K2 |
| <b>C405.3</b>   | Demonstrate the tools utilization for quality improvement.  | K2 |
| <b>C405.4</b>   | Discover the new decision of principle in real time projects.   | K2 |
| <b>C405.5</b>   | Analyze the various types of techniques are used to measure quality.  | K3 |
| <b>C405.6</b>   | Apply the various quality systems in implementation of Total quality management.  | K3 |
| <b>C406/ME8097 NON DESTRUCTIVE TESTING AND EVALUATION (Professional Elective-3)</b> |   |    |
| <b>C406.1</b>   | The student shall be able to select an appropriate NDT technique as per requirement   | K1 |
| <b>C406.2</b>   | The student shall be able to set various process parameters and control the NDT process for the desired output parameters                                 | K3 |
| <b>C406.3</b>   | The student shall be able to find the internal flaws in the material by NDT and take measures to eliminate them   | K1 |
| <b>C406.4</b>   | The student shall be able to solve various problems encountered like leakage, cracks, blowholes etc with the manufacturing process by analyzing the data. | K3 |
| <b>C406.5</b>   | The student shall be competent enough to make use of modern tools and softwares for analyzing and solving real life problems                              | K2 |
| <b>C406.6</b>   | The student shall be able to introduce environmental friendly solutions to achieve organizational sustainability  | K1 |
| <b>C407/ME8711-SIMULATION AND ANALYSIS LABORATORY</b>                               |   |    |
| <b>C407.1</b>   | Simulate the dynamic system by using MAT lab software.  | K3 |
| <b>C407.2</b>   | Simulate the mechanism by using multi-body dynamic software   | K3 |
| <b>C407.3</b>   | Apply the stresses for trusses and beams using analysis software  | K  |
| <b>C407.4</b>   | Apply the stresses for axis-symmetric components by using analysis software   | K3 |
| <b>C407.5</b>   | Apply the response of vibrating system analysis software  | K3 |

|  |  |           |
|--|--|-----------|
| <b>C407.6</b>  | Apply the Thermal stress and heat transfer analysis of plates and cylindrical shells analysis software | <b>K3</b> |
| <b>C408/ME8781-MECHATRONICS LABORATORY</b>                                     |  |           |
| <b>C408.1</b>  | Simulate Hydraulic, Pneumatic circuit using software tool.   | <b>K3</b> |
| <b>C408.2</b>  | Simulate Electro pneumatic circuits using trainer kits.  | <b>K3</b> |
| <b>C408.3</b>  | Design and test various fluid power circuits using software tool.                                      | <b>K3</b> |
| <b>C408.4</b>  | Interface stepper motor with 8051 micro controller   | <b>K3</b> |
| <b>C408.5</b>  | Conduct experiments using servo controller and stepper motor.  | <b>K3</b> |
| <b>C408.6</b>  | Conduct experiments PID Controller interfacing   | <b>K3</b> |
| <b>C409/ME8712-TECHNICAL SEMINAR</b>   |  |           |
| <b>C409.1</b>  | Enrich the communication skills of the student technical topics of interest                            | <b>K2</b> |
| <b>C409.2</b>  | Familiarize the preparation of content of technical writing  | <b>K2</b> |
| <b>C409.3</b>  | Enrich the presentations skills of the student technical topics of interest                            | <b>K2</b> |
| <b>C409.4</b>  | Participate confidently and appropriately in conversations both formal and informal                    | <b>K3</b> |
| <b>C409.5</b>  | Participate in technical group discussion.   | <b>K3</b> |
| <b>C409.6</b>  | Participate in technical quiz programs   | <b>K3</b> |
| <b>SEMESTER VIII</b>   |  |           |
| <b>C410/ME8591-PRINCIPLES OF MANAGEMENT</b>                                    |  |           |
| <b>C410.1</b>  | Identifies the global context for taking managerial organization.                                      | <b>K1</b> |
| <b>C410.2</b>  | Predict the global opportunity that will impact the management of an organization.                     | <b>K1</b> |
| <b>C410.3</b>  | Prepare the management principles into management practices.   | <b>K2</b> |
| <b>C410.4</b>  | Analyze the managerial problem with ethical practice standards.  | <b>K3</b> |
| <b>C410.5</b>  | Breakdown the managerial task executed in the variety of circumstances.                                | <b>K3</b> |
| <b>C410.6</b>  | Identify the most effective Action to take in the specific situation of addressing issues.             | <b>K1</b> |
| <b>C411/IE8693-PRODUCTION PLANNING AND CONTROL (Professional Elective- IV)</b> |  |           |
| <b>C411.1</b>  | Understand the production planning processes to convert the raw material into                          | <b>K2</b> |

  
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|                                 |  |    |
|---------------------------------|--|----|
|                                 | finished product.  |    |
| <b>C411.2</b>                   | Prepare the production planning activities chart for work study to reduce the production time. | K3 |
| <b>C411.3</b>                   | Improve the market sale of existing product by changing the product planning                   | K3 |
| <b>C411.4</b>                   | Select the suitable process planning for manufacturing of a product.                           | K1 |
| <b>C411.5</b>                   | Use the production schedule for the given product.   | K3 |
| <b>C411.6</b>                   | Use inventory for a new product with help of latest software.                                  | K3 |
| <b>C412/ME8811-PROJECT WORK</b> |  |    |
| <b>C412.1</b>                   | Identify real world problems of core engineering and related systems                           | K1 |
| <b>C412.2</b>                   | Formulate new set of problems  | K2 |
| <b>C412.3</b>                   | Take on with industrial changes  | K1 |
| <b>C412.4</b>                   | Evaluate to obtain solution for problems in mechanical engineering systems                     | K3 |
| <b>C412.5</b>                   | Adapt to work as a team for the successful completion of the project                           | K2 |
| <b>C412.6</b>                   | Document preparation and communication very clearly  | K3 |

| S.NO   | CO-PO MAPPING |     |     |     |     |     |     |     |     |      |      |      |      |      |
|--|---------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|
|  | PO1           | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
| <b>C201/MA8353-TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS</b> |               |     |     |     |     |     |     |     |     |      |      |      |      |      |
| <b>C201.1</b>  | 3             | 2   | 3   | 2   | 2   | -   | -   | -   | -   | -    | -    | 2    | 2    | 3    |
| <b>C201.2</b>  | 3             | 2   | 3   | 2   | 2   | -   | -   | -   | -   | -    | -    | 2    | 2    | 3    |
| <b>C201.3</b>  | 3             | 2   | 3   | 2   | 2   | -   | -   | -   | -   | -    | -    | 2    | 2    | 3    |
| <b>C201.4</b>  | 3             | 2   | 3   | 2   | 2   | -   | -   | -   | -   | -    | -    | 2    | 2    | 3    |
| <b>C201.5</b>  | 3             | 2   | 3   | 2   | 2   | -   | -   | -   | -   | -    | -    | 2    | 2    | 3    |
| <b>C202/ME8391-ENGINEERING THERMODYNAMICS</b>                    |               |     |     |     |     |     |     |     |     |      |      |      |      |      |
| <b>C202.1</b>  | 3             | 3   | 2   | 2   | -   | -   | -   | -   | -   | -    | -    | -    | 3    | 2    |
| <b>C202.2</b>  | 3             | 3   | 2   | 2   | -   | -   | -   | -   | -   | -    | -    | -    | 3    | 2    |
| <b>C202.3</b>  | 3             | 3   | 2   | 2   | -   | -   | -   | -   | -   | -    | -    | -    | 3    | 2    |

  
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|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C202.4   | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C202.5   | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C202.6   | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| <b>C203/CE8394-FLUID MECHANICS AND MACHINERY</b>           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C203.1   | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C203.2   | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C203.3   | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C203.4   | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C203.5   | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C203.6   | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| <b>C204/ME8351-MANUFACTURING TECHNOLOGY - I</b>            |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C204.1   | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C204.2   | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C204.3   | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C204.4   | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C204.5   | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C204.6   | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| <b>C205/EE8353-ELECTRICAL DRIVES AND CONTROLS</b>          |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C205.1   | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 3 |
| C205.2   | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 3 |
| C205.3   | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 3 |
| C205.4   | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 3 |
| C205.5   | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 3 |
| C205.6   | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 3 |
| <b>C206/ME8361-MANUFACTURING TECHNOLOGY LABORATORY - I</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C206.1   | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - | 3 | - |
| C206.2   | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - | 3 | - |
| C206.3   | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - | 3 | - |

  
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|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C206.4   | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - | 3 | - |
| C206.5   | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - | 3 | - |
| <b>C207/ME8381-COMPUTER AIDED MACHINE DRAWING</b>                  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C207.1   | 3 | - | 2 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C207.2   | 3 | - | 2 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C207.3   | 3 | - | 2 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C207.4   | 3 | - | 2 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C207.5   | 3 | - | 2 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C207.6   | 3 | - | 2 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| <b>C208/EE8361-ELECTRICAL ENGINEERING LABORATORY</b>               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C208.1   | 3 | 2 | - | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C208.2   | 3 | 2 | - | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C208.3   | 3 | 2 | - | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C208.4   | 3 | 2 | - | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C208.5   | 3 | 2 | - | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C208.6   | 3 | 2 | - | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| <b>C209/HS8381-INTERPERSONAL SKILLS / LISTENING &amp; SPEAKING</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C209.1   | 3 | 2 | 3 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C209.2   | 3 | 2 | 3 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C209.3   | 3 | 2 | 3 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C209.4   | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C209.5   | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - | 3 | - |
| <b>C210/MA8452-STATISTICS AND NUMERICAL METHODS</b>                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C210.1   | 3 | 2 | 3 | 2 | 2 | - | - | - | - | - | - | 2 | 2 | 3 |
| C210.2   | 3 | 2 | 3 | 2 | 2 | - | - | - | - | - | - | 2 | 2 | 3 |
| C210.3   | 3 | 2 | 3 | 2 | 2 | - | - | - | - | - | - | 2 | 2 | 3 |
| C210.4   | 3 | 2 | 3 | 2 | 2 | - | - | - | - | - | - | 2 | 2 | 3 |
| C210.5   | 3 | 2 | 3 | 2 | 2 | - | - | - | - | - | - | 2 | 2 | 3 |

  
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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C210.6  | 3 | 2 | 3 | 2 | 2 | - | - | - | - | - | - | 2 | 2 | 3 |
| <b>C211/ME8492-KINEMATICS OF MACHINERY</b>                        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C211.1  | 3 | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C211.2  | 3 | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C211.3  | 3 | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C211.4  | 3 | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C211.5  | 3 | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C211.6  | 3 | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| <b>C212/ME8451-MANUFACTURING TECHNOLOGY- II</b>                   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C212.1  | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 3 |
| C212.2  | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 3 |
| C212.3  | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 3 |
| C212.4  | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 3 |
| C212.5  | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 3 |
| C212.6  | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 3 |
| <b>C213/ME8491-ENGINEERING METALLURGY</b>                         |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C213.1  | 3 | - | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C213.2  | 3 | - | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C213.3  | 3 | - | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C213.4  | 3 | - | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C213.5  | 3 | - | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C213.6  | 3 | - | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| <b>C214/ME8395-STRENGTH OF MATERIALS FOR MECHANICAL ENGINEERS</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C214.1  | 2 | 3 | - | - | - | - | - | - | - | - | - | - | 2 | - |
| C214.2  | 2 | 3 | - | - | - | - | - | - | - | - | - | - | 2 | - |
| C214.3  | 2 | 3 | - | - | - | - | - | - | - | - | - | - | 2 | - |
| C214.4  | 2 | 3 | - | - | - | - | - | - | - | - | - | - | 2 | - |
| C214.5  | 2 | 3 | - | - | - | - | - | - | - | - | - | - | 2 | - |

  
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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C214.6  | 2 | 3 | - | - | - | - | - | - | - | - | - | - | 2 | - |
| <b>C215/ME8493-THERMAL ENGINEERING-I</b>  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C215.1  | 3 | 3 | 2 | - | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C215.2  | 3 | 3 | 2 | - | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C215.3  | 3 | 3 | 2 | - | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C215.4  | 3 | 3 | 2 | - | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C215.5  | 3 | 3 | 2 | - | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C215.6  | 3 | 3 | 2 | - | - | - | 2 | - | - | - | - | - | 3 | 2 |
| <b>C216/ME8462-MANUFACTURING TECHNOLOGY LABORATORY-II</b>                                   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C216.1  | 3 | - | 2 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C216.2  | 3 | - | 2 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C216.3  | 3 | - | 2 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C216.4  | 3 | - | 2 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C216.5  | 3 | - | 2 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C216.6  | 3 | - | 2 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| <b>C217/CE8381-STRENGTH OF MATERIALS &amp; FLUID MECHANICS AND MACHINERY<br/>LABORATORY</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C217.1  | 3 | 2 | - | 2 | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C217.2  | 3 | 2 | - | 2 | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C217.3  | 3 | 2 | - | 2 | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C217.4  | 3 | 2 | - | 2 | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C217.5  | 3 | 2 | - | 2 | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C217.6  | 3 | 2 | - | 2 | - | - | 2 | - | - | - | - | - | 3 | 2 |
| <b>C218/HS8461-ADVANCED READING AND WRITING</b>   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C218.1  | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C218.2  | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C218.3  | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C218.4  | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |

  
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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C218.5  | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C218.6  | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| <b>C301/ME8595-THERMAL ENGINEERING-II</b>     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C301.1  | 3 | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C301.2  | 3 | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C301.3  | 3 | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C301.4  | 3 | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C301.5  | 3 | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C301.6  | 3 | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| <b>C302/ME8593-DESIGN OF MACHINE ELEMENTS</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C302.1  | 3 | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C302.2  | 3 | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C302.3  | 3 | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C302.4  | 3 | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C302.5  | 3 | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C302.6  | 3 | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | 3 | 2 |
| <b>C303/ME8501-METROLOGY AND MEASUREMENTS</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C303.1  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C303.2  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C303.3  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C303.4  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C303.5  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C303.6  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| <b>C304/ME8594-DYNAMICS OF MACHINES</b>       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C304.1  | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C304.2  | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C304.3  | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C304.4  | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |

  
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|  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C304.5   | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C304.6   | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| <b>C305/OIM552-LEAN MANUFACTURING (Open Elective-1)</b>  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C305.1   | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 3 |
| C305.2   | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 3 |
| C305.3   | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 3 |
| C305.4   | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 3 |
| C305.5   | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 3 |
| C305.6   | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 3 |
| <b>C306/ME8511-KINEMATICS AND DYNAMICS LABORATORY</b>    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C306.1   | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C306.2   | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C306.3   | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C306.4   | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C306.5   | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C306.6   | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| <b>C307/ME8512-THERMAL ENGINEERING LABORATORY</b>        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C307.1   | 2 | - | - | - | - | - | 3 | 3 | - | - | - | - | 2 | 2 |
| C307.2   | 2 | - | - | - | - | - | 3 | 3 | - | - | - | - | 2 | 2 |
| C307.3   | 2 | - | - | - | - | - | 3 | 3 | - | - | - | - | 2 | 2 |
| C307.4   | 2 | - | - | - | - | - | 3 | 3 | - | - | - | - | 2 | 2 |
| C307.5   | 2 | - | - | - | - | - | 3 | 3 | - | - | - | - | 2 | 2 |
| C307.6   | 2 | - | - | - | - | - | 3 | 3 | - | - | - | - | 2 | 2 |
| <b>C308/ME8513-METROLOGY AND MEASUREMENTS LABORATORY</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C310.1   | 3 | 3 | - | 2 | 2 | - | - | - | - | - | - | - | 3 | 2 |
| C310.2   | 3 | 3 | - | 2 | 2 | - | - | - | - | - | - | - | 3 | 2 |
| C310.3   | 3 | 3 | - | 2 | 2 | - | - | - | - | - | - | - | 3 | 2 |

  
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|  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C310.4   | 3 | 3 | - | 2 | 2 | - | - | - | - | - | - | - | 3 | 2 |
| C310.5   | 3 | 3 | - | 2 | 2 | - | - | - | - | - | - | - | 3 | 2 |
| C310.6   | 3 | 3 | - | 2 | 2 | - | - | - | - | - | - | - | 3 | 2 |
| <b>C310/ME8651-DESIGN OF TRANSMISSION SYSTEMS</b>          |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C302.1   | 3 | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C302.2   | 3 | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C302.3   | 3 | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C302.4   | 3 | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C302.5   | 3 | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C302.6   | 3 | 3 | 2 | 2 | - | - | 2 | - | - | - | - | - | 3 | 2 |
| <b>C311/ME8691-COMPUTER AIDED DESIGN AND MANUFACTURING</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C311.1   | 3 | 2 | - | 2 | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C311.2   | 3 | 2 | - | 2 | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C311.3   | 3 | 2 | - | 2 | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C311.4   | 3 | 2 | - | 2 | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C311.5   | 3 | 2 | - | 2 | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C311.6   | 3 | 2 | - | 2 | - | - | 2 | - | - | - | - | - | 3 | 2 |
| <b>C312/ME8693-HEAT AND MASS TRANSFER</b>                  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C312.1   | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C312.2   | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C312.3   | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C312.4   | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C312.5   | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C312.6   | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| <b>C313/ME8692-FINITE ELEMENT ANALYSIS</b>                 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C313.1   | 2 | - | - | - | 2 | - | - | 3 | - | - | 3 | - | 2 | 2 |
| C313.2   | 2 | - | - | - | 2 | - | - | 3 | - | - | 3 | - | 2 | 2 |
| C313.3   | 2 | - | - | - | 2 | - | - | 3 | - | - | 3 | - | 2 | 2 |

  
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|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C313.4  | 2 | - | - | - | 2 | - | - | 3 | - | - | 3 | - | 2 | 2 |
| C313.5  | 2 | - | - | - | 2 | - | - | 3 | - | - | 3 | - | 2 | 2 |
| C313.6  | 2 | - | - | - | 2 | - | - | 3 | - | - | 3 | - | 2 | 2 |
| <b>C314/ME8694-HYDRAULICS AND PNEUMATICS</b>                        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C314.1  | 3 | - | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C314.2  | 3 | - | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C314.3  | 3 | - | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C314.4  | 3 | - | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C314.5  | 3 | - | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C314.6  | 3 | - | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| <b>C315/ME8091-AUTOMOBILE ENGINEERING (Professional Elective-1)</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C315.1  | 3 | 3 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C315.2  | 3 | 3 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C315.3  | 3 | 3 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C315.4  | 3 | 3 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C315.5  | 3 | 3 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C315.6  | 3 | 3 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| <b>C316/ME8681-C.A.D. / C.A.M. LABORATORY</b>                       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C316.1  | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C316.2  | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C316.3  | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C316.4  | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C316.5  | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C316.6  | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| <b>C317/ME8682-DESIGN AND FABRICATION PROJECT</b>                   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C317.1  | 3 | 3 | 2 | 2 | 2 | - | - | - | - | - | - | - | 3 | 2 |
| C317.2  | 3 | 3 | 2 | 2 | 2 | - | - | - | - | - | - | - | 3 | 2 |
| C317.3  | 3 | 3 | 2 | 2 | 2 | - | - | - | - | - | - | - | 3 | 2 |

  
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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C317.4  | 3 | 3 | 2 | 2 | 2 | - | - | - | - | - | - | - | 3 | 2 |
| C317.5  | 3 | 3 | 2 | 2 | 2 | - | - | - | - | - | - | - | 3 | 2 |
| C317.6  | 3 | 3 | 2 | 2 | 2 | - | - | - | - | - | - | - | 3 | 2 |
| <b>C318/HS8581-PROFESSIONAL COMMUNICATION</b>           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C318.1  | 3 | 3 | 3 | - | 3 | - | - | - | - | - | - | - | 3 | 3 |
| C318.2  | 3 | 3 | 3 | - | 3 | - | - | - | - | - | - | - | 3 | 3 |
| C318.3  | 3 | 3 | 3 | - | 3 | - | - | - | - | - | - | - | 3 | 3 |
| C317.4  | 3 | 3 | 3 | - | 3 | - | - | - | - | - | - | - | 3 | 3 |
| C318.5  | 3 | 3 | 3 | - | 3 | - | - | - | - | - | - | - | 3 | 3 |
| C318.6  | 3 | 3 | 3 | - | 3 | - | - | - | - | - | - | - | 3 | 3 |
| <b>C401/ME8792-POWER PLANT ENGINEERING</b>              |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C401.1  | 3 | 2 | - | - | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C401.2  | 3 | 2 | - | - | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C401.3  | 3 | 2 | - | - | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C401.4  | 3 | 2 | - | - | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C401.5  | 3 | 2 | - | - | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C401.6  | 3 | 2 | - | - | - | - | 2 | - | - | - | - | - | 3 | 2 |
| <b>C402/ME8793-PROCESS PLANNING AND COST ESTIMATION</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C402.1  | 3 | - | - | - | 2 | 3 | 2 | - | - | - | - | - | 3 | 2 |
| C402.2  | 3 | - | - | - | 2 | 3 | 2 | - | - | - | - | - | 3 | 2 |
| C402.3  | 3 | - | - | - | 2 | 3 | 2 | - | - | - | - | - | 3 | 2 |
| C402.4  | 3 | - | - | - | 2 | 3 | 2 | - | - | - | - | - | 3 | 2 |
| C402.5  | 3 | - | - | - | 2 | 3 | 2 | - | - | - | - | - | 3 | 2 |
| C402.6  | 3 | - | - | - | 2 | 3 | 2 | - | - | - | - | - | 3 | 2 |
| <b>C403/ME8791-MECHATRONICS</b>                         |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C403.1  | 3 | 2 | - | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C403.2  | 3 | 2 | - | 2 | - | - | - | - | - | - | - | - | 3 | 2 |

  
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|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C403.3  | 3 | 2 | - | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C403.4  | 3 | 2 | - | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C403.5  | 3 | 2 | - | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C403.6  | 3 | 2 | - | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| <b>C404/OIE751 ROBOTICS (Open Elective-2)</b>                                       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C404.1  | 3 | 2 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C404.2  | 3 | 2 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C404.3  | 3 | 2 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C404.4  | 3 | 2 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C404.5  | 3 | 2 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| C404.6  | 3 | 2 | 2 | 2 | - | - | - | - | - | - | - | - | 3 | 2 |
| <b>C405/GE 8077 TOTAL QUALITY MANAGEMENT (Professional Elective-2)</b>              |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C405.1  | 3 | 3 | 2 | - | 2 | - | - | - | - | - | 2 | - | 3 | 3 |
| C405.2  | 3 | 3 | 2 | - | 2 | - | - | - | - | - | 2 | - | 3 | 3 |
| C405.3  | 3 | 3 | 2 | - | 2 | - | - | - | - | - | 2 | - | 3 | 3 |
| C405.4  | 3 | 3 | 2 | - | 2 | - | - | - | - | - | 2 | - | 3 | 3 |
| C405.5  | 3 | 3 | 2 | - | 2 | - | - | - | - | - | 2 | - | 3 | 3 |
| C405.6  | 3 | 3 | 2 | - | 2 | - | - | - | - | - | 2 | - | 3 | 3 |
| <b>C406/ME8097 NON DESTRUCTIVE TESTING AND EVALUATION (Professional Elective-3)</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C406.1  | 3 | 2 | - | 2 | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C406.2  | 3 | 2 | - | 2 | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C406.3  | 3 | 2 | - | 2 | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C406.4  | 3 | 2 | - | 2 | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C406.5  | 3 | 2 | - | 2 | - | - | 2 | - | - | - | - | - | 3 | 2 |
| C406.6  | 3 | 2 | - | 2 | - | - | 2 | - | - | - | - | - | 3 | 2 |
| <b>C407/ME8711-SIMULATION AND ANALYSIS LABORATORY</b>                               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C407.1  | 2 | - | - | - | 3 | 3 | 3 | 3 | - | 3 | 3 | - | 2 | 3 |
| C407.2  | 2 | - | - | - | 3 | 3 | 3 | 3 | - | 3 | 3 | - | 2 | 3 |

  
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|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C407.3   | 2 | - | - | - | 3 | 3 | 3 | 3 | - | 3 | 3 | - | 2 | 3 |
| C407.4   | 2 | - | - | - | 3 | 3 | 3 | 3 | - | 3 | 3 | - | 2 | 3 |
| C407.5   | 2 | - | - | - | 3 | 3 | 3 | 3 | - | 3 | 3 | - | 2 | 3 |
| C407.6   | 2 | - | - | - | 3 | 3 | 3 | 3 | - | 3 | 3 | - | 2 | 3 |
| <b>C408/ME8781-MECHATRONICS LABORATORY</b>                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C408.1   | 3 | 3 | 2 | - | - | 2 | - | - | - | - | - | - | 3 | 2 |
| C408.2   | 3 | 3 | 2 | - | - | 2 | - | - | - | - | - | - | 3 | 2 |
| C408.3   | 3 | 3 | 2 | - | - | 2 | - | - | - | - | - | - | 3 | 2 |
| C408.4   | 3 | 3 | 2 | - | - | 2 | - | - | - | - | - | - | 3 | 2 |
| C408.5   | 3 | 3 | 2 | - | - | 2 | - | - | - | - | - | - | 3 | 2 |
| C408.6   | 3 | 3 | 2 | - | - | 2 | - | - | - | - | - | - | 3 | 2 |
| <b>C409/ME8712-TECHNICAL SEMINAR</b>   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C409.1   | 3 | 3 | 2 | 2 | 3 | - | - | - | - | - | - | - | 3 | 2 |
| C409.2   | 3 | 3 | 2 | 2 | 3 | - | - | - | - | - | - | - | 3 | 2 |
| C409.3   | 3 | 3 | 2 | 2 | 3 | - | - | - | - | - | - | - | 3 | 2 |
| C409.4   | 3 | 3 | 2 | 2 | 3 | - | - | - | - | - | - | - | 3 | 2 |
| C409.5   | 3 | 3 | 2 | 2 | 3 | - | - | - | - | - | - | - | 3 | 2 |
| C409.6   | 3 | 3 | 2 | 2 | 3 | - | - | - | - | - | - | - | 3 | 2 |
| <b>C410/ME8591-PRINCIPLES OF MANAGEMENT</b>                                    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C410.1   | 3 | 2 | - | - | - | - | - | - | - | - | 2 | - | 3 | 2 |
| C410.2   | 3 | 2 | - | - | - | - | - | - | - | - | 2 | - | 3 | 2 |
| C410.3   | 3 | 2 | - | - | - | - | - | - | - | - | 2 | - | 3 | 2 |
| C410.4   | 3 | 2 | - | - | - | - | - | - | - | - | 2 | - | 3 | 2 |
| C410.5   | 3 | 2 | - | - | - | - | - | - | - | - | 2 | - | 3 | 2 |
| C410.6   | 3 | 2 | - | - | - | - | - | - | - | - | 2 | - | 3 | 2 |
| <b>C411/IE8693-PRODUCTION PLANNING AND CONTROL (Professional Elective- IV)</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C411.1   | 3 | 3 | 2 | - | 2 | - | - | - | - | - | 2 | - | 3 | 3 |
| C411.2   | 3 | 3 | 2 | - | 2 | - | - | - | - | - | 2 | - | 3 | 3 |

  
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|---------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C411.3                          | 3 | 3 | 2 | - | 2 | - | - | - | - | - | 2 | - | 3 | 3 |
| C411.4                          | 3 | 3 | 2 | - | 2 | - | - | - | - | - | 2 | - | 3 | 3 |
| C411.5                          | 3 | 3 | 2 | - | 2 | - | - | - | - | - | 2 | - | 3 | 3 |
| C411.6                          | 3 | 3 | 2 | - | 2 | - | - | - | - | - | 2 | - | 3 | 3 |
| <b>C412/ME8811-PROJECT WORK</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C412.1                          | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | - | - | 3 | - |
| C412.2                          | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | - | - | 3 | - |
| C412.3                          | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | - | - | 3 | - |
| C412.4                          | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | - | - | 3 | - |
| C412.5                          | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | - | - | 3 | - |
| C412.6                          | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | - | - | 3 | - |

  
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## REGULATION – 2017 - PG

### M.E. – MANUFACTURING ENGINEERING

| S.No   | COURSE OUTCOME  | BT LEVEL |
|--|---|----------|
| <b>SEMESTER I</b>  |   |          |
| <b>C101/ MA5160-APPLIED PROBABILITY AND STATISTICS</b>         |   |          |
| <b>C101.1</b>  | Apply the concept to find moments and moment generating functions of distributions using the definition of a random variable.   | K3       |
| <b>C101.2</b>  | Find marginal, conditional distribution, statistical average for the standard probability function.   | K1       |
| <b>C101.3</b>  | For the standard probability function, find the marginal, conditional distribution, statistical average.  | K1       |
| <b>C101.4</b>  | Find the M.L.E. and fit curves and regression lines using the least squares principle.  | K1       |
| <b>C101.5</b>  | Small and large samples should be identified, and hypothesis testing should be used.  | K1       |
| <b>C101.6</b>  | The students should have the ability to use the appropriate and relevant, fundamental and applied mathematical and statistical knowledge, methodologies and modern computational tools. | K1       |
| <b>C102/MF5101-ADVANCES IN MANUFACTURING TECHNOLOGY</b>        |   |          |
| <b>C102.1</b>  | To generate useful test results in the machining of a variety of materials.   | K3       |
| <b>C102.2</b>  | Study hybrid machining techniques using this experience.  | K2       |
| <b>C102.3</b>  | Use of this experience to solve problems on the shop floor.   | K3       |
| <b>C102.4</b>  | To gain a better understanding of special machining methods, unconventional machining processes, and micromachining.  | K1       |
| <b>C102.5</b>  | To gain a better understanding of nano fabrication and rapid prototyping.   | K1       |
| <b>C103/MF5102 - COMPUTER INTEGRATED MANUFACTURING SYSTEMS</b> |   |          |
| <b>C103.1</b>  | To achieve useful research results in the field of computer-assisted manufacturing.   | K3       |
| <b>C103.2</b>  | Make use of your skills to create programming techniques.   | K3       |
| <b>C103.3</b>  | Use of this expertise to make computer-aided planning more practical  | K3       |
| <b>C103.4</b>  | For a typical production system, design automated material handling and storage   | K3       |

  
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|   |   |    |
|---|---|----|
|   | systems.  |    |
| <b>C103.5</b>   | Study a cellular manufacturing device and a manufacturing cell.   | K3 |
| <b>C104/MF5103-ADVANCES IN CASTING &amp; WELDING</b>              |   |    |
| <b>C104.1</b>   | Understanding of casting style  | K2 |
| <b>C104.2</b>   | Understanding of casting metallurgy   | K2 |
| <b>C104.3</b>   | Understanding of current casting and foundry layout patterns  | K2 |
| <b>C104.4</b>   | Understanding of welding metallurgy and architecture  | K2 |
| <b>C104.5</b>   | Understanding of welding most current patterns  | K2 |
| <b>C105/ MF5104-METAL CUTTING THEORY AND PRACTICE</b>             |   |    |
| <b>C105.1</b>   | Ability to comprehend how material removal processes function.  |    |
| <b>C105.2</b>   | Understanding of the tool nomenclature scheme   | K2 |
| <b>C105.3</b>   | Understanding of machining thermal dimensions   | K2 |
| <b>C105.4</b>   | Awareness of tool materials, tool life, and tool wear   |    |
| <b>C105.5</b>   | Understanding of machining wear mechanisms and chatter  | K2 |
| <b>C106/ MF5003-MICRO MANUFACTURING (Professional Elective-I)</b> |   |    |
| <b>C106.1</b>   | The aim is to familiarize students with the concepts, basic machine tools, and innovations in the micro manufacturing process, as well as research trends in the field. | K1 |
| <b>C106.2</b>   | To disseminate information on micromachining using beam energy.   | K2 |
| <b>C106.3</b>   | to gain knowledge of the nano polishing process used on micro machined components   | K2 |
| <b>C106.4</b>   | To gain a better understanding of the micro forming and welding processes   | K2 |
| <b>C106.5</b>   | To gain a better understanding of the metrology and calculation methods used on micro machined surfaces. to learn about the most current developments in the sector     | K2 |
| <b>C107/ MF5111-CAD/CAM LAB</b>                                   |   |    |
| <b>C107.1</b>   | In sketcher mode, create complex geometries of system components.   | K3 |
| <b>C107.2</b>   | Ability to use modeling software to build 2D and 3D part models.  | K3 |
| <b>C107.3</b>   | Study complex engineering assemblies using acceptable assembly constraints.   | K3 |
| <b>C107.4</b>   | Ability to Understand the CNC Control in Modern Manufacturing System.   | K3 |
| <b>C107.5</b>   | Ability to Prepare CNC Part Programming and Produce   | K3 |



| <b>C110/MF5201- OPTIMIZATION TECHNIQUES IN MANUFACTURING</b> |   |    |
|--|---|----|
| <b>C110.1</b>  | The student has a basic understanding of the history of optimization problems, their formulation, classification, and solutions. Application in a variety of engineering fields | K2 |
| <b>C110.2</b>  | Ability to approach and solve linear equations in organizational research problems that apply to real-world engineering problems.   | K3 |
| <b>C110.3</b>  | Ability to approach and solve non-linear equations of operational research problems that are relevant to real-world engineering business problems.                              | K3 |
| <b>C110.4</b>  | Ability to solve various experimental experiments using various optimization methods in order to achieve the best objective function value.                                     | K3 |
| <b>C110.5</b>  | The student understands various simulation methods and how to apply them to various experimental experiments in order to achieve the best objective function value.             | K2 |
| <b>C111/CM5251- ADVANCES IN METROLOGY AND INSPECTION</b>     |   |    |
| <b>C111.1</b>  | Ability to comprehend metrology principles and measurement errors   | K1 |
| <b>C111.2</b>  | Understanding of the applications of surface roughness calculation  | K2 |
| <b>C111.3</b>  | Ability to comprehend the fundamentals of interferometer and its significance.  | K1 |
| <b>C111.4</b>  | Understanding of measurement devices and laser metrology  | K2 |
| <b>C111.5</b>  | Image processing capability for metrology   | K3 |
| <b>C112/ MF5202-THEORY OF METAL FORMING</b>                  |   |    |
| <b>C112.1</b>  | Enable students to be exposed to the concepts of plasticity and the representation of stress states in various coordinate systems   | K3 |
| <b>C112.2</b>  | Understanding of the different bulk forming processes that are used   | K2 |
| <b>C112.3</b>  | Ability to teach students about the various sheet metal forming processes that are used   | K1 |
| <b>C112.4</b>  | Awareness of powder metallurgy techniques and special forming processes is transferable.  | K1 |
| <b>C112.5</b>  | Understanding of surface treatment for different processes  | K1 |
| <b>C113/MF5203-TOOLING FOR MANUFACTURING</b>                 |   |    |
| <b>C113.1</b>  | To achieve practical research results in the form of tool design for various manufacturing processes.   | K4 |
| <b>C113.2</b>  | Ability to demonstrate how metal removal procedures are carried out using tooling   | K3 |
| <b>C113.3</b>  | Ability to demonstrate how metal forming processes use tooling  | K3 |

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|--|--|----|
| <b>C113.4</b>  | To gain a better understanding of the tooling used in metal casting and joining processes  | K2 |
| <b>C113.5</b>  | To be able to state the state of the art in manufacturing and inspection tooling   | K1 |
| <b>C114/ME5009-NON DESTRUCTIVE TESTING &amp; EVALUATION (NDT) (Professional Elective-II)</b> |  |    |
| <b>C114.1</b>  | Be able to List and define different defects that occur in welding shown through Non-Destructive Examination/Destructive Testing.                                    | K1 |
| <b>C114.2</b>  | Be able to identify the types of equipment used for each Non-Destructive and Destructive Examination   | K1 |
| <b>C114.3</b>  | Be able to explain the purpose of the Equipment, Application, and standard techniques required to perform major non-destructive and destructive examinations of weld | K1 |
| <b>C114.4</b>  | Be able to go to specific Code, Standard, or Specification related to each testing method  | K1 |
| <b>C114.5</b>  | Have the knowledge and essential skills to identify strengths and weaknesses in materials used in fabrication  | K1 |
| <b>C115/MF5071-LEAN MANUFACTURING (Professional Elective-III)</b>                            |  |    |
| <b>C115.1</b>  | The student must have a clear understanding of manufacturing production, classification, and lean manufacturing techniques   | K2 |
| <b>C115.2</b>  | Understanding of the fundamental concepts of job requirements, 5S, and layouts in production and productive maintenance  | K2 |
| <b>C115.3</b>  | Ability to comprehend the JIT and Kanab implementation approaches with a pull method   | K3 |
| <b>C115.4</b>  | Understanding of the Autonomy and Poke Yoke Processes in Lean Implementation   | K2 |
| <b>C115.5</b>  | The student is familiar with a variety of quality principles as well as a structured planning approach   | K1 |
| <b>C116/MF5211-AUTOMATION AND METAL FORMING LABORATORY</b>                                   |  |    |
| <b>C116.1</b>  | Ability to design and implement pneumatic circuits using trainer kits  | K3 |
| <b>C116.2</b>  | Understanding of metal forming techniques and the evaluation of associated parameters  | K2 |
| <b>C116.3</b>  | Ability to use hydro-pneumatic software to plan and conduct pneumo-hydraulic circuits  | K3 |
| <b>C116.4</b>  | Ability to assess and understand material strain hardening   | K3 |
| <b>C116.5</b>  | Understanding of sheet metal formability and shaping techniques  | K2 |



| <b>C117/MF5212-TECHNICAL SEMINAR</b>   |   |    |
|--|---|----|
| <b>C117.1</b>  | Develop reading, writing, comprehension, and presentation skills for research papers  | K2 |
| <b>C117.2</b>  | To assess the breadth of knowledge and coverage of recent areas of manufacturing engineering research   | K3 |
| <b>C117.3</b>  | To assess the consistency of presentation content (PPT/OHP) on recent manufacturing engineering research topics   | K1 |
| <b>C117.4</b>  | To improve the student's communication skills by presenting topics on recent engineering/technology advances  | K3 |
| <b>C117.5</b>  | To establish an analysis of current research problems and developments  | K2 |
| <b>SEMESTER III</b>  |   |    |
| <b>C201/MF5014-MANUFACTURING MANAGEMENT (Professional Elective-IV)</b>                           |   |    |
| <b>C201.1</b>  | The student must have a basic understanding of manufacturing plant layout, classification, and material handling techniques.                              | K2 |
| <b>C201.2</b>  | Understanding of the fundamental concepts of motion economy, as well as the tools and methods used in work studies and measurements                       | K2 |
| <b>C201.3</b>  | Understanding of process planning and forecasting models is a must  | K2 |
| <b>C201.4</b>  | Understanding of project management and scheduling methods  | K2 |
| <b>C201.5</b>  | Personnel management and marketing methods have been studied and understood by the student.   | K3 |
| <b>C202/MF5072-RESEARCH METHODOLOGY (Professional Elective-V)</b>                                |   |    |
| <b>C202.1</b>  | Understand some basic concepts of research and its methodologies  | K2 |
| <b>C202.2</b>  | Identify appropriate research topics  | K1 |
| <b>C202.3</b>  | Select and define appropriate research problem and parameters   | K1 |
| <b>C202.4</b>  | Prepare a project proposal, write a research report and thesis, write a research proposal (grants)  | K2 |
| <b>C202.5</b>  | organize and conduct research (advanced project) in a more appropriate manner   | K3 |
| <b>C203/MF5016-MATERIAL TESTING &amp; CHARACTERIZATION TECHNIQUES (Professional Elective-VI)</b> |   |    |
| <b>C203.1</b>  | To determine the grain size and classify the crystal structure.   | K2 |
| <b>C203.2</b>  | Students will be able to learn about electron microscopic characterization techniques.  | K1 |
| <b>C203.3</b>  | Chemical and thermal analysis approaches include the ability to comprehend their working concepts and instrumentation. The characterization analysis must | K2 |

  
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|                                       |   |    |
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|                                       | be deciphered   |    |
| <b>C203.4</b>                         | The aim of this course is to learn how to perform mechanical testing under static loading and to recognise the various testing codes for metallic and composite materials | K1 |
| <b>C203.5</b>                         | Mechanical research under complex loading conditions: ability to comprehend   | K3 |
| <b>C204/MF5311-PROJECT PHASE - I</b>  |   |    |
| <b>C204.1</b>                         | Choose a subject in Manufacturing Engineering's advanced areas. Determine how to conduct tests and what materials to use  | K1 |
| <b>C204.2</b>                         | Review the literature to find differences and describe the work's goals and scoop   | K1 |
| <b>C204.3</b>                         | Study and incorporate new social-benefit concepts   | K3 |
| <b>C204.4</b>                         | Analyze and explain the findings in order to draw sound conclusions   | K3 |
| <b>C204.5</b>                         | Restructure procedures with a focus on culture, the community, and ethics   | K3 |
| <b>SEMESTER IV</b>                    |   |    |
| <b>C210/MF5411-PROJECT PHASE - II</b> |   |    |
| <b>C210.1</b>                         | Determine a subject in advanced Manufacturing Engineering. Determine experimental methods and materials   | K1 |
| <b>C210.2</b>                         | Review the literature to find differences and describe the work's goals and scope   | K2 |
| <b>C210.3</b>                         | Restructure procedures with a focus on culture, the community, and ethics   | K2 |
| <b>C210.4</b>                         | Study and incorporate new social-benefit concepts   | K3 |
| <b>C210.5</b>                         | Analyze and explain the findings in order to draw sound conclusions   | K3 |

| S.NO   | CO-PO MAPPING |     |     |     |     |     |     |     |     |      |      |      |      |      |
|--|---------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|
|  | PO1           | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
| <b>C101/ MA5160-APPLIED PROBABILITY AND STATISTICS</b> |               |     |     |     |     |     |     |     |     |      |      |      |      |      |
| <b>C101.1</b>  | 3             | 2   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 2    | 2    |
| <b>C101.2</b>  | 3             | 2   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 2    | 2    |
| <b>C101.3</b>  | 3             | 2   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 2    | 2    |
| <b>C101.4</b>  | 3             | 2   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 2    | 2    |
| <b>C101.5</b>  | 3             | 2   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 2    | 2    |

  
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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C101.6  | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 2 |
| <b>C102/MF5101-ADVANCES IN MANUFACTURING TECHNOLOGY</b>           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C102.1  | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C102.2  | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C102.3  | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C102.4  | 3 | 3 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C102.5  | 2 | 3 | - | - | - | - | - | - | - | - | - | - | 2 | 2 |
| <b>C103/MF5102 - COMPUTER INTEGRATED MANUFACTURING SYSTEMS</b>    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C103.1  | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - | 3 | 3 |
| C103.2  | 2 | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 | 3 |
| C103.3  | 2 | 2 | 2 | - | - | - | - | - | - | - | - | - | 2 | 2 |
| C103.4  | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - | 2 | 2 |
| C103.5  | 2 | 2 | 2 | - | - | - | - | - | - | - | - | - | 2 | 2 |
| <b>C104/MF5103-ADVANCES IN CASTING &amp; WELDING</b>              |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C104.1  | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 2 |
| C104.2  | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 2 |
| C104.3  | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 2 |
| C104.4  | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 2 |
| C104.5  | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 2 |
| <b>C105/ MF5104-METAL CUTTING THEORY AND PRACTICE</b>             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C105.1  | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C105.2  | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 2 |
| C105.3  | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C105.4  | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C105.5  | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| <b>C106/ MF5003-MICRO MANUFACTURING (Professional Elective-I)</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C106.1  | 3 | 3 | 2 | - | - | - | - | - | - | - | - | - | 2 | 2 |
| C106.2  | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 2 |

  
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|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C106.3   | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 2 |
| C106.4   | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C106.5   | 3 | 3 | - | - | - | - | - | - | - | - | - | - | 3 | 3 |
| <b>C107/ MF5111-CAD/CAM LAB</b>                              |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C107.1   | 3 | 3 | 3 | - | 3 | - | - | - | - | - | - | - | 3 | 3 |
| C107.2   | 3 | 3 | 3 | - | 3 | - | - | - | - | - | - | - | 3 | 3 |
| C107.3   | 3 | 3 | 3 | - | 3 | - | - | - | - | - | - | - | 3 | 3 |
| C107.4   | 3 | 3 | 3 | - | 3 | - | - | - | - | - | - | - | 3 | 3 |
| C107.5   | 3 | 3 | 3 | - | 3 | - | - | - | - | - | - | - | 3 | 3 |
| <b>C110/MF5201- OPTIMIZATION TECHNIQUES IN MANUFACTURING</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C110.1   | 3 | 3 | 3 | - | - | - | - | - | - | - | - | - | 2 | 3 |
| C110.2   | 3 | 3 | 3 | - | - | - | - | - | - | - | - | - | 2 | 3 |
| C110.3   | 3 | 3 | 3 | - | - | - | - | - | - | - | - | - | 2 | 3 |
| C110.4   | 3 | 3 | 3 | - | - | - | - | - | - | - | - | - | 2 | 3 |
| C110.5   | 3 | 3 | 3 | - | - | - | - | - | - | - | - | - | 2 | 3 |
| <b>C111/CM5251- ADVANCES IN METROLOGY AND INSPECTION</b>     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C111.1   | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 2 |
| C111.2   | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 2 |
| C111.3   | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 2 |
| C111.4   | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 2 |
| C111.5   | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 2 |
| <b>C112/ MF5202-THEORY OF METAL FORMING</b>                  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C112.1   | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C112.2   | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C112.3   | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C112.4   | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C112.5   | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
|  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

  
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| <b>C113/MF5203-TOOLING FOR MANUFACTURING</b>   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C113.1   | 2 | 2 | 3 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C113.2   | 2 | 2 | 3 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C113.3   | 2 | 2 | 3 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C113.4   | 2 | 2 | 3 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C113.5   | 2 | 2 | 3 | - | - | - | - | - | - | - | - | - | 3 | 2 |
| <b>C114/ME5009-NON DESTRUCTIVE TESTING &amp; EVALUATION (NDT) (Professional Elective-II)</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C114.1   | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 2 |
| C114.2   | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 2 |
| C114.3   | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 2 |
| C114.4   | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 2 |
| C114.5   | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 2 |
| <b>C115/MF5071-LEAN MANUFACTURING (Professional Elective-III)</b>                            |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C115.1   | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C115.2   | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C115.3   | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C115.4   | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C115.5   | 3 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| <b>C116/MF5211-AUTOMATION AND METAL FORMING LABORATORY</b>                                   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C116.1   | 3 | 3 | 3 | - | - | - | - | - | - | - | - | - | 3 | 3 |
| C116.2   | 3 | 3 | 3 | - | - | - | - | - | - | - | - | - | 3 | 3 |
| C116.3   | 3 | 3 | 3 | - | - | - | - | - | - | - | - | - | 3 | 3 |
| C116.4   | 3 | 3 | 3 | - | - | - | - | - | - | - | - | - | 3 | 3 |
| C116.5   | 3 | 3 | 3 | - | - | - | - | - | - | - | - | - | 3 | 3 |
| <b>C117/MF5212-TECHNICAL SEMINAR</b>   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C117.1   | 3 | 3 | 2 | 2 | 3 | - | - | - | - | - | - | - | 3 | 2 |
| C117.2   | 3 | 3 | 2 | 2 | 3 | - | - | - | - | - | - | - | 3 | 2 |
| C117.3   | 3 | 3 | 2 | 2 | 3 | - | - | - | - | - | - | - | 3 | 2 |

  
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|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C117.4   | 3 | 3 | 2 | 2 | 3 | - | - | - | - | - | - | - | 3 | 2 |
| C117.5   | 3 | 3 | 2 | 2 | 3 | - | - | - | - | - | - | - | 3 | 2 |
| <b>C201/MF5014-MANUFACTURING MANAGEMENT (Professional Elective-IV)</b>                               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C201.1   | 3 | 3 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C201.2   | 3 | 3 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C201.3   | 3 | 3 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C201.4   | 3 | 3 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| C201.5   | 3 | 3 | - | - | - | - | - | - | - | - | - | - | 3 | 2 |
| <b>C202/MF5072-RESEARCH METHODOLOGY (Professional Elective-V)</b>                                    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C202.1   | 2 | 3 | 2 | - | - | - | - | - | - | - | - | - | 2 | 2 |
| C202.2   | 2 | 3 | 2 | - | - | - | - | - | - | - | - | - | 2 | 2 |
| C202.3   | 2 | 3 | 2 | - | - | - | - | - | - | - | - | - | 2 | 2 |
| C202.4   | 2 | 3 | 2 | - | - | - | - | - | - | - | - | - | 2 | 2 |
| C202.5   | 2 | 3 | 2 | - | - | - | - | - | - | - | - | - | 2 | 2 |
| <b>C203/MF5016-MATERIAL TESTING &amp; CHARACTERIZATION TECHNIQUES<br/>(Professional Elective-VI)</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C203.1   | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 2 |
| C203.2   | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 2 |
| C203.3   | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 2 |
| C203.4   | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 2 |
| C203.5   | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | 2 |
| <b>C204/MF5311-PROJECT PHASE – I</b>   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| C204.1   | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 |
| C204.2   | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 |
| C204.3   | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 |
| C204.4   | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 |
| C204.5   | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 |

  
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**C210/MF5411-PROJECT PHASE – II**

|               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| <b>C210.1</b> | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 |
| <b>C210.2</b> | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 |
| <b>C210.3</b> | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 |
| <b>C210.4</b> | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 |
| <b>C210.5</b> | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 |

  
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**MASTER OF  
BUSINESS  
ADMINISTRATION**



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## REGULATION - 2017

| S.NO   | COURSE OUTCOME   | BT LEVEL |
|--|--|----------|
| <b>SEMESTER I</b>                                  |  |          |
| <b>C101 BA 5101 ECONOMIC ANALYSIS FOR BUSINESS</b> |  |          |
| <b>C101.1</b>                                      | Analyze the basic fundamentals economic problems and the behavior by understanding the basic concepts of micro and macro economies.  | K2       |
| <b>C101.2</b>                                      | Understanding of the standard theoretical analysis of consumer and producer behaviour  | K2       |
| <b>C101.3</b>                                      | Design competition strategies, and market environment according to the natures of products and the structures of the markets.  | K3       |
| <b>C101.4</b>                                      | Integrate the concept of macroeconomic aggregates and output decisions of firms under various national income.   | K3       |
| <b>C101.5</b>                                      | Make optimal business decisions by integrating the concepts of Demand and supply of money.   | K3       |
| <b>C102 BA5102 PRINCIPLES OF MANAGEMENT</b>        |  |          |
| <b>C102.1</b>                                      | Evaluate the context for taking managerial actions of planning, organizing and controlling .   | K1       |
| <b>C102.2</b>                                      | Assess situation, including opportunities and threats that will impact management of an organization   | K1       |
| <b>C102.3</b>                                      | Integrate management principles into management practices  | K2       |
| <b>C102.4</b>                                      | The students should be able to describe and discuss the elements of effective management,  | K2       |
| <b>C102.5</b>                                      | Discuss and apply the planning, organizing and control processes, iii) describe various theories related to the development of leadership skills, motivation techniques, team work and effective communication | K3       |
| <b>C103 BA5103 ACCOUNTING FOR MANAGEMENT</b>       |  |          |
| <b>C103.1</b>                                      | Prepare various costing schedules where an analysis of cost classification, behaviour, and types.  | K1       |
| <b>C103.2</b>                                      | Analyze cost-volume-profit techniques to determine optimal managerial decisions.   | K3       |
| <b>C103.3</b>                                      | Apply and analyze different types of activity-based management tools through the preparation of estimates  | K3       |
| <b>C103.4</b>                                      | Possess a managerial outlook at accounts   | K3       |

  
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| <b>C103.5</b>                                | Acquire a reasonable knowledge in accounts. Analysis and evaluate financial statements.   | K3 |
| <b>C104 BA5104 Legal Aspects Of Business</b> |   |    |
| <b>C104.1</b>                                | Acquire Basic knowledge and understanding of the principles governing the business organization.  | K1 |
| <b>C104.2</b>                                | Ability to analyze legal issues facing a company with the knowledge gained.   | K3 |
| <b>C104.3</b>                                | Comprehend the key concepts of business law relating to contract formation, the selection of a business organization etc                                      | K2 |
| <b>C104.4</b>                                | Legal insight will be established in the business practices according to the situation of changing environment  | K2 |
| <b>C104.5</b>                                | Analyse the knowledge of Legal perspective and its practices to improvise the business  | K3 |
| <b>C105 BA5105 ORGANIZATIONAL BEHAVIOUR</b>  |   |    |
| <b>C105.1</b>                                | Students will have a better understanding of human behavior in organization. They will know the framework for managing individual and group performance.      | K2 |
| <b>C105.2</b>                                | Analyze how these theories and empirical evidence can help to understand contemporary organizational issues.  | K3 |
| <b>C105.3</b>                                | Apply theories to practical problems in organizations in a critical manner.   | K3 |
| <b>C105.4</b>                                | Comprehend some of the main theories of Organizational Behavior   | K1 |
| <b>C105.5</b>                                | Analyse an overview of theories and practices in organizational behavior in individual, group and organizational level.                                       | K3 |
| <b>C106 BA5106 STATISTICS FOR MANAGEMENT</b> |   |    |
| <b>C106.1</b>                                | Have a fundamental knowledge of the basic statistics and probability distribution concepts.   | K1 |
| <b>C106.2</b>                                | Aware of the problem and know how to apply the normal, t-distribution and F-distribution and one-way and two-way analysis of variance for hypothesis testing. | K1 |
| <b>C106.3</b>                                | Find the application of correlation, regression and time series analysis in various aspects.  | K2 |
| <b>C206.4</b>                                | To facilitate objective solutions in business decision making under subjective conditions   | K2 |
| <b>C206.5</b>                                | Students to solve the problems by understanding the basic concepts and learn the applications of statistics in business decision making.                      | K3 |
| <b>C107 BA5107 TOTAL QUALITY MANAGEMENT</b>  |   |    |
| <b>C107.1</b>                                | Apply quality philosophies and tools to facilitate continuous improvement and ensure customer delight.  | K3 |



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| C107.2  | Familiar the principles of total quality management and peculiarities of their implementation  | K1 |
| C107.3  | Use quality management methods analyzing and solving problems of organization.   | K3 |
| C107.4  | To use new concepts of TQM Process of continuous improvement and learning  | K2 |
| C107.5  | To create an awareness of fundamental principles , significance and implementation of quality management.  | K1 |
| <b>C108 BA5108 SPOKEN AND WRITTEN COMMUNICATION</b> |  |    |
| C108.1  | Get into the habit of writing regularly.   | K1 |
| C108.2  | Express themselves in different genres of writing from creative to critical to factual writing.  | K2 |
| C108.3  | Take part in print and online media communication.   | K2 |
| C108.4  | Read quite widely to acquire a style of writing  | K2 |
| C108.5  | Identify their area of strengths and weaknesses in writing   | K2 |
| C108.6  | Speak confidently with any speakers of English, including native speakers. Speak effortlessly in different contexts – informal and formal  | K3 |
| <b>SEMESTER II</b>                                  |  |    |
| <b>C201 BA5201 APPLIED OPERATIONS RESEARCH</b>      |  |    |
| C201.1  | Understand and analyze managerial problems in industry so that they are able to use resources more effectively.  | K2 |
| C201.2  | Specialized linear programming problems like the transportation and assignment Problems.   | K2 |
| C201.3  | Understand the applications of basic methods for and challenges in integer programming and the concepts of game theory to know how they are used in modeling and analyzing an interactive situation.                       | K2 |
| C201.4  | Understand the characteristics of different types of decision making environments and the appropriate decision making approaches and tools to be used in each type.  | K2 |
| C201.5  | Understand basic characteristic features of a queuing system and acquire in analyzing queuing models and analyzing the problem of replacement when machines, equipment become less effective using the replacement models. | K2 |
| <b>C202 BA5202 BUSINESS RESEARCH METHODS</b>        |  |    |
| C202.1  | Remembering the types of research, its objectives and how the concept theory plays its role in research.   | K1 |

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| C202.2                                       | Understanding the different types of research designs, types of validity and various measurement techniques.  | K2 |
| C202.3                                       | Knowledge about the various methods of data collection and how sample and sample size could be determined.  | K3 |
| C202.4                                       | Possessing the statistical techniques and different analytical methods for research.  | K3 |
| C202.5                                       | Knowing the needs and values of ethical research and how it could be implemented in report writing.   | K3 |
| <b>C203 BA5203 FINANCIAL MANAGEMENT</b>      |   |    |
| C203.1                                       | Understanding basic concepts of financial management such as decisions and functions of financial management. And to learn meaning and estimations of time value of money, valuation of securities and risk and return of securities.             | K2 |
| C203.2                                       | Evaluate long term investments using techniques like payback period, accounting rate of return, net present value, profitability index and internal rate of return and to estimate specific cost of capital and weighted average cost of capital. | K2 |
| C203.3                                       | concepts of dividend and examine impact of dividend policy of a firm.   | K2 |
| C203.4                                       | Estimate and evaluate different components of working capital such as Receivables, payables, inventory, cash, etc.,   | K3 |
| C203.5                                       | Exposure and knowledge of long term sources of fund namely share, debenture, term loans, private equity, venture capital, and so on.  | K3 |
| <b>C204 BA5204 HUMAN RESOURCE MANAGEMENT</b> |   |    |
| C204.1                                       | Knowledge about the evolution of human resource management, its roles, policies and the application of computers in human resource management   | K1 |
| C204.2                                       | Understanding the need for human resource requirement and the process of recruitment and selection  | K2 |
| C204.3                                       | Knowing the training methods, development programmes and the concepts of knowledge management   | K1 |
| C204.4                                       | Insight into the concept of motivation, its theories and techniques and the concept of career management  | K2 |
| C204.5                                       | Understanding the necessity of performance evaluation and the importance, process and methods of control system   | K2 |
| <b>C205 BA5205 Information Management</b>    |   |    |
| C205.1                                       | Knowledge about the basic concepts of information technology and functional information systems   | K1 |
| C205.2                                       | Remembering the tools for system analysis and its application in information  | K1 |



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|  | management   |    |
| <b>C205.3</b>                            | Familiarity with the database management systems and the concepts like data warehousing and data mart  | K2 |
| <b>C205.4</b>                            | Understanding the need for security, testing process, knowing the concepts of disaster management, computer crimes etc., and ethics in Information technology.   | K2 |
| <b>C205.5</b>                            | Understanding the role of e- commerce in information management and knowledge about data mining and cloud computing  | K2 |
| <b>C206 BA5206 OPERATIONS MANAGEMENT</b> |  |    |
| <b>C206.1</b>                            | Familiarize the basics of operations management, its importance in transformation process, development over years in a system perspective by studying the functions, recent trends, future challenges and to frame strategy to achieve it..  | K1 |
| <b>C206.2</b>                            | Knowing the various quantitative and qualitative forecasting methods and make planning of capacity, facility location, facility layout and operations based on that.   | K1 |
| <b>C206.3</b>                            | Identify the factors to be considered and the various approaches to be followed in designing the product, process and the work; and the method to measure and improve productivity.  | K2 |
| <b>C206.4</b>                            | Understand the need and importance of managing materials by planning and purchasing the right material; and managing the inventory for best output.  | K2 |
| <b>C206.5</b>                            | Knowing various scheduling techniques like PERT and CPM and also the various methods to schedule and manage the projects.  | K2 |
| <b>C207 BA5207 MARKETING MANAGEMENT</b>  |  |    |
| <b>C207.1</b>                            | Understanding of ideas and nuances of marketing; Define the business environment and priorities of marketing. And to distinguish the various marketing practices in serving the needs of organizations versus consumer goods and to explain the key core concepts of marketing globally. | K2 |
| <b>C207.2</b>                            | Formulate and manage the industrial market and consumer marketing strategies including all key components and to understand the basics of service marketing and competitor analysis with Marketing mix.  | K2 |
| <b>C207.3</b>                            | Explain the techniques to conduct market analysis practices including market segmentation and targeting and apply the 4 P's in the industrial and consumer market.   | K3 |
| <b>C207.4</b>                            | Compare and contrast different perspectives that characterize the study of consumer behavior and apply theories and Models of consumer behavior to the formulation of effective marketing strategy.  | K3 |



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| C207.5  | consumer behavior and also to understand the role of Marketing information systems, Online marketing and the impact of Ethics in business.               | K2 |
| <b>C208 BA5208 DATA ANALYSIS AND BUSINESS MODELLING</b> |  |    |
| C208.1  | Determine the aspects of creating spreadsheet, performing calculations, formatting, some very widely used formulas                                       | K1 |
| C208.2  | Compute and interpret the results of Bi variate and Multivariate Regression and Correlation Analysis, for forecasting and also perform ANOVA and F-test. | K2 |
| C208.3  | Understand the various alternatives available for investment and make sound investment decisions in the context of Analysis                              | K2 |
| C208.4  | Build an understanding of the fundamental concepts of computer networking.   | K2 |
| C208.5  | Familiarity with the basic protocols of networking Models and how they can be used to assist in network design and implementation.                       | K2 |
| <b>SEMESTER III</b>                                     |  |    |
| <b>C301 BA5301 INTERNATIONAL BUSINESS MANAGEMENT</b>    |  |    |
| C301.1  | Knowing the nature, factors and advantages of International business and its business Environment.   | K1 |
| C301.2  | Understanding the roles of GATT/WTO, Regional Trade block and the theories of international trade.   | K2 |
| C301.3  | Familiarity with the concepts of strategic compulsion, strategic options, controlling of international business and its performance evaluation.          | K2 |
| C301.4  | Understanding the necessity of make or buy decision, concepts of product development and criteria in selecting and training the expatriate managers.     | K2 |
| C301.5  | Awareness about the conflict management, the disadvantages and ethical issues of international business.   | K2 |
| <b>C302 BA5302 STRATEGIC MANAGEMENT</b>                 |  |    |
| C302.1  | Determine Understanding the conceptual framework, process, objectives and goals of strategic management.   | K1 |
| C302.2  | Knowing the basic concept of competitive advantage and its impact in external and internal business environment.   | K1 |
| C302.3  | Analyzing the generic strategic alternatives, corporate strategy, diversification and strategic alliances.   | K3 |
| C302.4  | Implementing the strategic processes, strategic change, designing organizational structure and the techniques of strategic evaluation and control.       | K3 |
| C302.5  | Awareness about the strategic issues for non-profit organization and understanding the new business models and strategies for internet economy.          | K3 |

  
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| <b>C303 BA5001 BRAND MANAGEMENT</b>   |  |    |
|---------------------------------------|--|----|
| <b>C303.1</b>                         | Developing a basic understanding of Branding its functions, Significance and various types of brands.  | K2 |
| <b>C303.2</b>                         | Highlighting the strategic issues in branding. And also to study the branding strategies used by companies to compete with foreign brands.   | K2 |
| <b>C303.3</b>                         | Develop hands-on abilities establishing the key foundations of a strong brand image building, brand loyalty programmes, brand promotion, and brand personality   | K2 |
| <b>C303.4</b>                         | Understanding of brand adoption practices and basic issues in brand extensions.  | K2 |
| <b>C303.5</b>                         | Develop critical perspectives in evaluating research in branding and applying them in strategic management of brands in creative industries, traditional and non-traditional tools for measuring brand strength – both qualitative and quantitative measures.. | K2 |
| <b>C304 BA5006 SERVICES MARKETING</b> |  |    |
| <b>C304.1</b>                         | Familiarize role of services in economy, nature, scope and characteristics, of services marketing, and to understand the issues related to services marketing  | K1 |
| <b>C304.2</b>                         | Analyze the service market potential, to understand the Classification of services and also to understand service market segmentation, targeting and positioning.  | K2 |
| <b>C304.3</b>                         | Understand to concept service life cycle and new service development and to construct Service Blue Printing, to analyze service quality of service organization through SERVQUAL and Service Quality function development                                      | K3 |
| <b>C304.4</b>                         | Explain the concept of pricing of services, its methods. To understand the service marketing triangle and Integrated Service marketing communication   | K3 |
| <b>C304.5</b>                         | Apply service marketing strategies for health, Hospitality, Tourism, Financial, Logistics, Educational, Entertainment & public utility Information technique Services .  | K3 |
| <b>C305 BA5005 RETAIL MARKETING</b>   |  |    |
| <b>C305.1</b>                         | Explain the central role of retail in industrialised societies, and the impact of key market/retail trends upon this sector in the local and global contexts   | K3 |
| <b>C305.2</b>                         | Identify the key stakeholders and the roles/responsibilities of retail towards these stakeholders  | K3 |
| <b>C305.3</b>                         | Understand and apply appropriate frameworks to develop high level retail marketing strategy, and identify the role of marketing strategies in the building of brand equity and shareholder value in the retail industry  | K2 |
| <b>C305.4</b>                         | Evaluate the implementation of marketing strategy through the retail mix – including product and merchandise mix, pricing, location and store- design, promotions, and store management - to improve the total customer experience                             | K2 |

  
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|   | and retailer market competitiveness.  |           |
| <b>C305.5</b>   | Interpret retail problems and be capable of critically evaluating and applying appropriate retail management models and theories to generate strategic and tactical solutions | <b>K3</b> |
| <b>C306 BA5008 BANKING FINANCIAL SERVICES MANAGEMENT</b>      |   |           |
| <b>C306.1</b>   | Familiarize overview of Indian Banking System, its function, acts governing the function of Indian banking system and the bank financial statement.                           | <b>K1</b> |
| <b>C306.2</b>   | Price various types of loans and deposits proposed by banks to various prospective Borrowers and depositors respectively.   | <b>K1</b> |
| <b>C306.3</b>   | Identify the various risk profiles and evaluate the performance of banks and manage the asset liabilities of the bank.  | <b>K2</b> |
| <b>C306.4</b>   | Understand the need and importance of mergers and diversification of bank and the methods to evaluate the performance of banking.   | <b>K2</b> |
| <b>C306.5</b>   | Understand e-banking and the threats that go with it.   | <b>K2</b> |
| <b>C307 BA5022 MERCHANT BANKING AND FINANCIAL SERVICES</b>    |   |           |
| <b>C307.1</b>   | Apply corporate finance concepts, principles and theories to the basic financial problems of the industry.  | <b>K3</b> |
| <b>C307.2</b>   | Apply best practice tools and methods in investment management to different settings  | <b>K3</b> |
| <b>C307.3</b>   | Explain the capital structure and analyze how financing decisions influence firm value.   | <b>K2</b> |
| <b>C307.4</b>   | Describe how dividends are paid and explain factors that affect a firm's dividend policy.   | <b>K3</b> |
| <b>C307.5</b>   | Evaluate different stakeholders' roles and significance in relation to corporate Governance   | <b>K1</b> |
| <b>C308 BA5012 SECURITY ANALYSIS AND PORTFOLIO MANAGEMENT</b> |   |           |
| <b>C308.1</b>   | Understanding the basic environment of Indian financial systems especially investment options and their risk and return.  | <b>K2</b> |
| <b>C308.2</b>   | Understanding the mechanism and functioning of primary and secondary markets of capital market and intermediaries   | <b>K2</b> |
| <b>C308.3</b>   | Analyze and predict securities risk and return using fundamental analysis.  | <b>K3</b> |
| <b>C308.4</b>   | Skill to predict share price movements and make decisions using different methods of technical analysis   | <b>K2</b> |
| <b>C308.5</b>   | Analyze, evaluate and manage portfolio of securities based on various techniques.   | <b>K3</b> |



| <b>C309 BA5014 ENTREPRENEURSHIP DEVELOPMENT</b>            |  |    |
|--|--|----|
| <b>C309.1</b>  | Familiarize overview of the competencies, personality traits and characteristics of Entrepreneurs.   | K1 |
| <b>C309.2</b>  | Understand the Environmental factors affecting entrepreneurship and central and state government policies for SME's  | K2 |
| <b>C309.3</b>  | Understand about prefeasibility, feasibility, project preparation for starting a business enterprise.  | K2 |
| <b>C309.4</b>  | Understand the various functions areas of Management ie Finance Marketing, HR and Operations management.   | K2 |
| <b>C309.5</b>  | Understand monitoring of business, preventing of sickness, rehabilitation of business Enterprises.   | K2 |
| <b>C310 BA5015 INDUSTRIAL RELATIONS AND LABOUR WELFARE</b> |  |    |
| <b>C310.1</b>  | Developing an understanding of ideas and nuances of Industrial relation; Define Concepts, trends dominated I.R. concept in early stages, causes of Disputes improving I.R, strengthening Trade unions & Corporate codes of conduct on workers.   | K2 |
| <b>C310.2</b>  | Identify the major causes for industrial conflicts, how Collective Bargaining, negotiation, adjudication and arbitration helps to reduce conflict. Techniques can be implemented to bring Industrial Peace administrative machinery set up for resolving disputes.                       | K2 |
| <b>C310.3</b>  | Explain the labour welfare, kinds of training available for workers, voluntary welfare measures, How do labour welfare officers can prevent the industrial conflicts and analyse the effective strategy to improve the labour management relations in India                              | K2 |
| <b>C310.4</b>  | Social security and social assistance provided for child labor, women labour, agriculture labour , contract labour, knowledge workers and physically challenged people. various Acts, which regulate labour and employment in India  | K2 |
| <b>C310.5</b>  | Explain the statutory health, welfare and safety provisions, find the consequences of work stress, preventive and curative measures of occupational diseases. causes of accidents in a factory and discuss the need for counseling. Major psychological problems of workers in factories | K2 |
| <b>C311 BA5017 MANAGERIAL BEHAVIOUR AND EFFECTIVENESS</b>  |  |    |
| <b>C311.1</b>  | To understand the various roles of a manager for effective performance by comparing the different models in various levels of management. To understand the various dimensions of jobs performed by the employees in an organization.  | K2 |
| <b>C311.2</b>  | Knowing the methods of identifying the managerial talents, followed by recruitment, selection and the various appraisal measures which would help in   | K1 |

  
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|  |   |    |
|--|---|----|
|  | designing the managerial job.   |    |
| C311.3   | Understanding the importance of managerial effectiveness and the techniques for bridging the gap.   | K2 |
| C311.4   | Awareness about the environmental issues in organizational climate, leadership and group influences.  | K1 |
| C311.5   | Understanding the managerial skills like self development, negotiation skills, creativity and innovation for developing the winning edge.   | K2 |
| <b>C312 BA5020 ADVANCED DATABASE MANAGEMENT SYSTEM</b> |   |    |
| C312.1   | To provide insight into the various types of databases used in different organisations and to provide the applications of different databases for various purposes.   | K1 |
| C312.2   | To understand the steps in database query processing with the objective of accessing the data from the database. To provide the importance of data security and data recovery process followed by different organisation.   | K2 |
| C312.3   | To understand the concepts of databases used in different locations with the intricacies of data access and providing data security in various networks. To understand the importance of data concurrency and the reliability of data used at various levels of management. | K2 |
| C312.4   | To provide insight into Object Oriented Database structure with different models to store and retrieve the datas from different modes in an organisation.   | K1 |
| C312.5   | To understand the recent developments in Database Technology with various tools and techniques for better usage of database. To understand the various connectivity process for effective date access.  | K2 |
| <b>C313 BA5024 E- BUSINESS MANAGEMENT</b>              |   |    |
| C313.1   | Ability to understand basic business models on the web and the methods to generate revenue (Knowledge and Understanding)  | K2 |
| C313.2   | To attain a comprehensive level of understanding of the use of information and communication technologies for conducting and supporting business activities (Problem solving and analysis)  | K1 |
| C313.3   | To attain a clear understanding of the strategic impacts of use of electronic tools and their effects on the way business activities are done (Problem solving)   | K2 |
| C313.4   | To understand the different ways of online payment system and their security (Critical thinking)  | K2 |
| C313.5   | To understand and critically analyze legal, ethical and privacy issues in doing business online (Thinking and analysis)   | K2 |
| <b>C314 BA5024 ENTERPRISE RESOURCE PLANNING</b>        |   |    |
| C314.1   | Identify the important business functions provided by typical business software   | K2 |

|                            |  |    |
|----------------------------|--|----|
|                            | such as enterprise resource planning and Business Process management   |    |
| <b>C314.2</b>              | Describe basic concepts of ERP software solutions for best business practices.                                 | K2 |
| <b>C314.3</b>              | Design the ERP implementation strategies   | K2 |
| <b>C314.4</b>              | Create reengineered business processes for successful ERP implementation.                                      | K2 |
| <b>C314.5</b>              | To understand the basics in business intelligence (BI), data mining (DM), and knowledge discovery in databases | K2 |
| <b>SEMESTER IV</b>         |  |    |
| <b>BA5411 PROJECT WORK</b> |  |    |
| <b>C401.1</b>              | Understand the problem statement in a various domain   | K3 |
| <b>C401.2</b>              | Identify the problem and do the literature survey  | K3 |
| <b>C401.3</b>              | Design a module for solving a problem in the respective area.  | K3 |
| <b>C401.4</b>              | Implement a module for solving a problem identified.   | K3 |
| <b>C401.5</b>              | Evaluate the module results and make improvements.   | K3 |

| S.NO   | CO-PO MAPPING                         |     |     |     |     |     |     |     |     |      |      |      |
|--|---------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
|  | PG101 BA5102 PRINCIPLES OF MANAGEMENT |     |     |     |     |     |     |     |     |      |      |      |
|  | PO1                                   | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| <b>PG101.1</b>                                 | 2                                     | 2   | 2   | -   | 2   | -   | -   | -   | -   | -    | -    | 2    |
| <b>PG101.2</b>                                 | 2                                     | 2   | -   | 2   | -   | -   | -   | -   | -   | -    | -    | 2    |
| <b>PG101.3</b>                                 | -                                     | 2   | -   | 2   | 2   | 2   | 2   | -   | 2   | -    | -    | 2    |
| <b>PG101.4</b>                                 | 2                                     | 2   | -   | 2   | -   | -   | -   | -   | -   | -    | -    | 2    |
| <b>PG101.5</b>                                 | 2                                     | -   | -   | -   | -   | 2   | 2   | -   | 2   | 3    | -    | 2    |
| <b>PG101.6</b>                                 | 2                                     | -   | -   | -   | 3   | 2   | 2   | -   | 2   | 3    | -    | 2    |
| <b>PG 102 BA5103 ACCOUNTING FOR MANAGEMENT</b> |                                       |     |     |     |     |     |     |     |     |      |      |      |
| <b>PG102.1</b>                                 | 2                                     | 2   | 2   |     | -   |     | -   | -   | -   | -    | -    | 2    |
| <b>PG102.2</b>                                 | 2                                     | 3   | 2   | -   | -   | -   | -   | -   | -   | -    | -    | 2    |
| <b>PG102.3</b>                                 | 2                                     | 2   | 2   | -   | -   | -   | -   | -   | -   | 2    | -    | 2    |

  
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|  |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|
| PG102.4  | 2 | 2 | 3 | 2 | 2 | - | - | 2 | - | 2 | - | 2 |
| PG102.5  | 2 | 3 | 2 | 2 | - | 2 | - | - | - | - | - | 2 |
| PG102.6  | 2 | 2 | 2 | 2 | 2 | 2 | - | 2 | - | - | 2 | 2 |
| <b>PG 103 BA 5101 ECONOMIC ANALYSIS FOR BUSINESS</b> |   |   |   |   |   |   |   |   |   |   |   |   |
| PG103.1  | 3 | 2 | 2 | 3 | 2 | 2 | - | - | - | - | - | 3 |
| PG103.2  | 3 | 3 | 3 | 2 | - | 2 | - | - | - | - | - | 3 |
| PG103.3  | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 |
| PG103.4  | 3 | 3 | 3 | 3 | 2 | 2 | - | - | - | - | - | 2 |
| PG103.5  | 3 | 2 | 3 | 3 | 2 | 3 | 2 | - | - | - | - | 2 |
| PG103.6  | 3 | 2 | 3 | 3 | 2 | 3 | 2 | - | - | - | - | 2 |
| <b>PG 104 BA5104 LEGAL ASPECTS OF BUSINESS</b>       |   |   |   |   |   |   |   |   |   |   |   |   |
| PG104.1  | 2 | 2 | 2 | 2 | 2 | - | 3 | - | 2 | - | 2 | 3 |
| PG104.2  | 2 | 2 | 2 | 2 | 2 | - | - | - | 2 | - | 2 | 2 |
| PG104.3  | 2 | 2 | 2 | 2 | 2 | - | 2 | - | 2 | - | 2 | 2 |
| PG104.4  | 2 | 2 | 2 | 2 | 2 | - | 2 | - | 2 | - | 2 | 2 |
| PG104.5  | 2 | 2 | 2 | 2 | 2 | - | 2 | 2 | 2 | - | 2 | 2 |
| PG104.6  | 2 | 2 | 2 | 2 | 2 | - | 2 | 2 | 2 | - | 2 | 2 |
| <b>PG105 BA5105 ORGANIZATIONAL BEHAVIOUR</b>         |   |   |   |   |   |   |   |   |   |   |   |   |
| PG105.1  | 3 | 2 | - | - | - | - | - | - | - | - | - | - |
| PG105.2  | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - |
| PG105.3  | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - |
| PG105.4  | 3 | 2 | 2 | 2 | 2 | - | - | - | - | - | - | - |
| PG105.5  | 3 | 2 | 2 | 2 | 2 | 2 | - | 2 | - | - | - | - |
| PG105.6  | 3 | 2 | 2 | 2 | 2 | 2 | - | 2 | - | - | - | - |
| <b>PG106 BA5106 STATISTICS FOR MANAGEMENT</b>        |   |   |   |   |   |   |   |   |   |   |   |   |
| PG106.1  | 2 | 2 | 2 | 2 | 2 | - | - | - | - | 2 | 3 | 2 |
| PG106.2  | 2 | 2 | 2 | 2 | 2 | - | - | - | - | 3 | 2 | 2 |
| PG106.3  | 2 | 2 | 2 | 2 | 2 | - | - | - | - | 2 | 2 | 2 |
| PG106.4  | 2 | 2 | 2 | 2 | 3 | - | - | - | - | 2 | 2 | 2 |

  
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|--|---|---|---|---|---|---|---|---|---|---|---|---|
| PG106.5  |   |   |   | 2 | 2 | - | - | - | - | 3 | 2 | 2 |
| PG106.6  |   |   |   | 2 | 3 | - | - | - | - | 2 | 2 | 2 |
| <b>PG107 BA5107 TOTAL QUALITY MANAGEMENT</b>           |   |   |   |   |   |   |   |   |   |   |   |   |
| PG107.1  | 3 | - | - | - | - | - | - | - | - | - | - | - |
| PG107.2  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - |
| PG107.3  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - |
| PG107.4  | 3 | 2 | 3 | 2 | - | - | - | - | - | - | - | - |
| PG107.5  | 3 | 2 | 3 | 2 | - | - | - | - | - | - | - | - |
| PG107.6  | 3 | 2 | 3 | 2 | - | - | - | - | - | - | - | - |
| <b>PG 108 BA 5111 SPOKEN AND WRITTEN COMMUNICATION</b> |   |   |   |   |   |   |   |   |   |   |   |   |
| PG108.1  | 3 | 2 | 3 | - | - | - | - | - | 3 | 2 | 2 | 2 |
| PG108.2  | 3 | 2 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |
| PG108.3  | 3 | 3 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |
| PG108.4  | 3 | 2 | 2 | - | - | - | - | - | 3 | 2 | 2 | 2 |
| PG108.5  | 3 | 3 | 2 | - | - | - | - | - | 3 | 2 | 2 | 3 |
| PG108.6  | 3 | 2 | 2 | - | - | - | - | - | 3 | 2 | 2 | 2 |
| <b>PG 201 BA5201 APPLIED OPERATIONS RESEARCH</b>       |   |   |   |   |   |   |   |   |   |   |   |   |
| PG201.1  | 2 | - | 2 | 2 | 3 | - | 2 | 2 | 3 | 2 | 3 | 2 |
| PG201.2  | 2 | - | 2 | 3 | 3 | - | 2 | 2 | 2 | 2 | 3 | 2 |
| PG201.3  | 2 | - | 2 | 2 | 2 | - | 2 | 2 | 2 | 2 | 3 | 2 |
| PG201.4  | 2 | - | 2 | 2 | 3 | - | 2 | 2 | 3 | 2 | 3 | 2 |
| PG201.5  | 2 | - | 2 | 3 | 3 | - | 2 | 2 | 2 | 2 | 3 | 2 |
| PG201.6  | 2 | - | 2 | 2 | 2 | - | 2 | 2 | 2 | 2 | 3 | 2 |
| <b>PG202 BA5202 BUSINESS RESEARCH METHODS</b>          |   |   |   |   |   |   |   |   |   |   |   |   |
| PG202.1  | 2 | 2 | - | - | - | 2 | 2 | - | 2 | 3 | - | 2 |
| PG202.2  | 2 | 3 | - | - | - | 2 | 2 | - | 2 | 3 | - | 2 |
| PG202.3  | 2 | 2 | - | - | - | 2 | 2 | - | 2 | 3 | - | 2 |
| PG202.4  | 2 | 2 | - | - | - | 2 | 2 | - | 2 | 3 | - | 2 |
| PG202.5  | 2 | 3 | - | - | - | 2 | 2 | - | 2 | 3 | - | 2 |

  
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|--|---|---|---|---|---|---|---|---|---|---|---|---|
| PG202.6  | 2 | 3 | - | - | - | 2 | 2 | - | 2 | 3 | - | 2 |
| <b>PG203 BA5203 FINANCIAL MANAGEMENT</b>       |   |   |   |   |   |   |   |   |   |   |   |   |
| PG203.1  | 3 | 3 | 3 | 3 | 2 | 2 | - | - |   | 2 | - | - |
| PG203.2  | 2 | 2 | - | - | - | 2 | - | - | - | - | - | - |
| PG203.3  | 2 | 2 | - | - | - | 2 | - | 2 | - | 2 | - | 2 |
| PG203.4  | 2 | 2 | - | - | 2 | - | - | - | - | - | - | - |
| PG203.5  | 2 | 2 | - | - | 2 | - | - | - | - | 2 | 2 | - |
| PF203.5  | 2 | 2 | - | 2 | 2 | 2 | - | - | - | 2 | - | 2 |
| <b>PG 204 BA5204 HUMAN RESOURCE MANAGEMENT</b> |   |   |   |   |   |   |   |   |   |   |   |   |
| PG204.1  | 2 | 2 | - | - | - | - | - | - | - | - | - | - |
| PG204.2  | 2 | 2 | - | - | - | 2 | - | - | - | 3 | - | 2 |
| PG204.3  | 2 | 2 | - | 3 | - | 2 | - | - | - | 3 | - | 2 |
| PG204.4  | 2 | 2 | - | 3 | - | 2 | - | - | - | 3 | - | 2 |
| PG204.5  | 2 | 2 | - | - | 2 | 2 | - | - | 2 | 3 | - | 3 |
| PG204.6  | 2 | 2 | - | - | 2 | 2 | - | - | 2 | 3 | - | 3 |
| <b>PG 205 BA5205 INFORMATION MANAGEMENT</b>    |   |   |   |   |   |   |   |   |   |   |   |   |
| PG205.1  | 2 | 2 | 2 | - | 2 | - | - | - | - | - | 2 | 2 |
| PG205.2  | 2 | - | 2 | - | 2 | - | - | - | - | - | 2 | 2 |
| PG205.3  | 2 | - | 2 | 2 | 2 | 2 | - | - | - | - | 2 | 2 |
| PG205.4  | 2 | - | 2 | - | 2 | 2 | - | - | - | - | 2 | 2 |
| PG205.5  | 2 | - | 2 | - | 2 | 2 | 2 | - | 2 | - | 2 | 2 |
| PG205.6  | 2 | - | 2 | 2 | 2 | 2 | 2 | - | 2 | - | 2 | 2 |
| <b>PG 206 BA5206 OPERATIONS MANAGEMENT</b>     |   |   |   |   |   |   |   |   |   |   |   |   |
| PG206.1  | 2 | 2 | 2 | - | 2 | - | - | - | - | - | - | 2 |
| PG206.2  | 2 | 2 | 2 | - | 2 | - | - | - | - | - | - | 2 |
| PG206.3  | 2 | 2 | 2 | - | 2 | - | - | - | - | - | - | 2 |
| PG206.4  | 2 | 2 | 2 | - | 2 | - | - | - | - | - | - | 2 |
| PG206.5  | 1 | 2 | 2 | - | 2 | - | - | - | - | - | - | 2 |
| PG206.6  | 2 | 2 | 2 | - | 2 | - | - | - | - | - | - | 2 |

  
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| PG 207 BA5207 MARKETING MANAGEMENT                 |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|
| PG207.1  | 2 | 2 | - | - | 2 | - | - | - | - | - | - | 2 |
| PG207.2  | 2 | 2 | 2 | - | 2 | - | - | - | - | - | - | 2 |
| PG207.3  | 2 | 2 | 2 | - | 2 | - | - | - | - | - | - | 2 |
| PG207.4  | 2 | 2 | 2 | - | 2 | - | - | - | - | - | - | 2 |
| PG207.5  | 2 | 2 | 2 | - | 2 | - | - | - | - | - | - | 2 |
| PG207.6  | 2 | 2 | 2 | - | 2 | - | - | - | - | - | - | 2 |
| PG 208 BA5211 DATA ANALYSIS AND BUSINESS MODELLING |   |   |   |   |   |   |   |   |   |   |   |   |
| PG208.1  | 2 | - | 2 | 2 | 3 | - | 2 | 2 | 3 | 2 | 3 | 2 |
| PG208.2  | 2 | - | 2 | 3 | 3 | - | 2 | 2 | 2 | 2 | 3 | 2 |
| PG208.3  | 2 | - | 2 | 2 | 2 | - | 2 | 2 | 2 | 2 | 3 | 2 |
| PG208.4  | 2 | - | 2 | 2 | 3 | - | 2 | 2 | 3 | 2 | 3 | 2 |
| PG208.5  | 2 | - | 2 | 3 | 3 | - | 2 | 2 | 2 | 2 | 3 | 2 |
| PG209 BA5311 SUMMER TRAINING                       |   |   |   |   |   |   |   |   |   |   |   |   |
| PG 209.1   | 3 | - | - | - | - | - | - | - | - | - | - | - |
| PG301 BA5302 STRATEGIC MANAGEMENT                  |   |   |   |   |   |   |   |   |   |   |   |   |
| PG301.1  | 2 | 2 | - | - | - | 2 | - | 2 | 2 | 2 | - | 2 |
| PG301.2  | 2 | 2 | - | - | - | - | - | - | - | 3 | - | 2 |
| PG301.3  | 2 | 2 | - | - | - | - | - | - | - | 2 | - | 2 |
| PG301.4  | 2 | 2 | - | - | - | - | 2 | - | - | 2 | 2 | 2 |
| PG301.5  | 2 | 2 | - | - | - | - | - | - | - | 3 | - | 2 |
| PG301.6  | 2 | 2 | - | - | - | - | - | 2 | - | 2 | - | 2 |
| PG 302 BA5301 INTERNATIONAL BUSINESS MANAGEMENT    |   |   |   |   |   |   |   |   |   |   |   |   |
| PG302.1  | 2 | 2 | - | - | - | - | - | - | - | - | - | - |
| PG302.2  | 2 | 2 | - | - | - | - | - | - | - | - | - | - |
| PG302.3  | 2 | 2 | - | - | - | - | - | - | - | - | - | - |
| PG302.4  | 2 | 2 | - | - | - | - | - | - | - | - | - | - |
| PG302.5  | 2 | 2 | - | - | - | - | - | - | - | - | - | - |
| PG302.6  | 2 | 2 | - | - | - | - | - | - | - | - | - | - |

  
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| PG 303 BA5001 BRAND MANAGEMENT        |   |   |   |   |   |   |   |   |   |   |   |   |
|---------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| PG303.1                               | 2 | 2 | - | - | - | 2 | - | 2 | 2 | 2 | - | 2 |
| PG303.2                               | 2 | 2 | - | - | - | - | - | - | - | 3 | - | 2 |
| PG303.3                               | 2 | - | - | - | 2 | - | - | - | - | 2 | - | 2 |
| PG303.4                               | 2 | - | - | - | - | - | 2 | - | - | 2 | 2 | 2 |
| PG303.5                               | 2 | - | - | - | - | - | - | - | - | 3 | - | 2 |
| PG303.6                               | 2 | - | - | - | - | - | - | 2 | - | 2 | - | 2 |
| PG 304 BA5301 BA5005 RETAIL MARKETING |   |   |   |   |   |   |   |   |   |   |   |   |
| PG304.1                               | 2 | 2 | - | - | - | - | - | - | - | - | - | - |
| PG304.2                               | 2 | 2 | - | - | - | - | - | - | - | - | - | - |
| PG304.3                               | 2 | 2 | - | - | - | - | - | - | - | - | - | - |
| PG304.4                               | 2 | 2 | - | - | - | - | - | - | - | - | - | - |
| PG304.5                               | 2 | 2 | - | - | - | - | - | - | - | - | - | - |
| PG304.6                               | 2 | 2 | 2 | - | - | - | - | - | - | - | - | - |
| PG305 BA5006 SERVICES MARKETING       |   |   |   |   |   |   |   |   |   |   |   |   |
| PG305.1                               | 3 | 2 | 3 | 2 | - | 2 | - | 2 | 2 | 2 | - | 2 |
| PG305.2                               | 2 | 3 | 3 | 2 | - | - | - | - | - | 3 | - | 2 |
| PG305.3                               | 3 | 3 | 3 | 2 | 2 | - | - | - | - | 2 | - | 2 |
| PG305.4                               | 2 | 3 | 3 | 2 | - | - | 2 | - | - | 2 | 2 | 2 |
| PG305.5                               | 3 | 2 | 3 | 2 | - | - | - | - | - | 3 | - | 2 |
| PG305.6                               | 3 | 3 | 3 | 2 | - | - | - | 2 | - | 2 | - | 2 |

| PG 306 BA5008 BANKING FINANCIAL SERVICES MANAGEMENT |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PG306.1   | 2 | 3 | - | - | - | - | - | - | - | - | - | - |
| PG306.2   | 2 | 2 | - | - | - | - | - | - | - | - | - | - |
| PG306.3   | 2 | 2 | - | - | - | - | - | - | - | - | - | - |
| PG306.4   | 2 | 2 | - | - | - | - | - | - | - | - | - | - |
| PG306.5   | 3 | 3 | - | - | - | - | - | - | - | - | - | - |
| PG306.6   | 3 | 3 | - | - | - | - | - | - | - | - | - | - |

  
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| PG 307 BA5011 MERCHANT BANKING AND FINANCIAL SERVICES    |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|
| PG307.1  | 3 | 2 | 2 | 3 | - | 2 | - | 2 | 2 | 2 | - | 2 |
| PG307.2  | 2 | 2 | 2 | 2 | - | - | - | - | - | 3 | - | 2 |
| PG307.3  | 3 | 2 | 2 | 2 | 2 | - | - | - | - | 2 | - | 2 |
| PG307.4  | 2 | 2 | 2 | 2 | - | - | 2 | - | - | 2 | 2 | 2 |
| PG307.5  | 3 | 2 | 2 | 2 | - | - | - | - | - | 3 | - | 2 |
| PG307.6  | 3 | 2 | 2 | 2 | - | - | - | 2 | - | 2 | - | 2 |
| PG 308 BA5012 SECURITY ANALYSIS AND PORTFOLIO MANAGEMENT |   |   |   |   |   |   |   |   |   |   |   |   |
| PG308.1  | 3 | - | - | - | - | - | - | - | - | - | - | - |
| PG308.2  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - |
| PG308.3  | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | - |
| PG308.4  | 3 | 2 | 3 | 2 | - | - | - | - | - | - | - | - |
| PG308.5  | 3 | 2 | 3 | 2 | - | - | - | - | - | - | - | - |
| PG308.6  | 3 | 2 | 3 | 2 | - | - | - | - | - | - | - | - |
| PG 309 BA5015 INDUSTRIAL RELATIONS AND LABOUR WELFARE    |   |   |   |   |   |   |   |   |   |   |   |   |
| PG309.1  | 3 | 2 | 3 | 2 | - | 2 | - | 2 | 2 | 2 | - | 2 |
| PG309.2  | 2 | 3 | 3 | 2 | - | - | - | - | - | 3 | - | 2 |
| PG309.3  | 3 | 3 | 3 | 2 | 2 | - | - | - | - | 2 | - | 2 |
| PG309.4  | 2 | 3 | 3 | 2 | - | - | 2 | - | - | 2 | 2 | 2 |
| PG309.5  | 3 | 2 | 3 | 2 | - | - | - | - | - | 3 | - | 2 |
| PG309.6  | 3 | 3 | 3 | 2 | - | - | - | 2 | - | 2 | - | 2 |
| PG 310 BA5017 MANAGERIAL BEHAVIOUR AND EFFECTIVENESS     |   |   |   |   |   |   |   |   |   |   |   |   |
| PG310.1  | 3 | - | - | - | - | - | - | - | - | - | - | 2 |
| PG310.2  | 2 | - | - | - | - | - | - | - | - | - | - | 2 |
| PG310.3  | 2 | 2 | - | - | - | - | - | - | - | - | - | 2 |
| PG310.4  | 2 | 2 | - | - | - | - | - | - | - | - | - | 2 |
| PG310.5  | 3 | 2 | 3 | 2 | - | - | - | - | - | - | - | 2 |
| PG310.6  | 3 | 2 | 3 | 2 | - | - | - | - | - | - | - | - |

  
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| <b>PG 311 BA5019 Strategic Human Resource Management</b> |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|
| PG311.1  | 2 | 3 | - | - | - | 2 | - | 2 | 2 | 2 | - | 2 |
| PG311.2  | 2 | 2 | - | - | - | - | - | - | - | 3 | - | 2 |
| PG311.3  | 2 | 2 | - | - | 2 | - | - | - | - | 2 | - | 2 |
| PG311.4  | 2 | 2 | - | - | - | - | 2 | - | - | 2 | 2 | 2 |
| PG311.5  | 2 | 3 | - | - | - | - | - | - | - | 3 | - | 2 |
| PG311.6  | 2 | 2 | - | - | - | - | - | 2 | - | 2 | - | 2 |
| <b>PG 312 BA5020 Advanced Database Management System</b> |   |   |   |   |   |   |   |   |   |   |   |   |
| PG312.1  | 3 | 2 | 3 | 2 | - | 2 | - | 2 | 2 | 2 | - | 2 |
| PG312.2  | 2 | 3 | 3 | 2 | - | - | - | - | - | 3 | - | 2 |
| PG312.3  | 3 | 3 | 3 | 2 | 2 | - | - | - | - | 2 | - | 2 |
| PG312.4  | 2 | 3 | 3 | 2 | - | - | 2 | - | - | 2 | 2 | 2 |
| PG312.5  | 3 | 2 | 3 | 2 | - | - | - | - | - | 3 | - | 2 |
| PG312.6  | 3 | 3 | 3 | 2 | - | - | - | 2 | - | 2 | - | 2 |
| <b>PG 313 BA5022 Enterprise Resource Planning</b>        |   |   |   |   |   |   |   |   |   |   |   |   |
| PG313.1  | 3 | 2 | 3 | 2 | - | 2 | - | 2 | 2 | 2 | - | 2 |
| PG313.2  | 2 | 3 | 3 | 2 | - | - | - | - | - | 3 | - | 2 |
| PG313.3  | 3 | 3 | 3 | 2 | 2 | - | - | - | - | 2 | - | 2 |
| PG313.4  | 2 | 3 | 3 | 2 | - | - | 2 | - | - | 2 | 2 | 2 |
| PG313.5  | 3 | 2 | 3 | 2 | - | - | - | - | - | 3 | - | 2 |
| PG313.6  | 3 | 3 | 3 | 2 | - | - | - | 2 | - | 2 | - | 2 |
| <b>PG 314 BA5024 E-Business Management</b>               |   |   |   |   |   |   |   |   |   |   |   |   |
| PG314.1  | 3 | 2 | 3 | 2 | - | 2 | - | 2 | 2 | 2 | - | 2 |
| PG314.2  | 2 | 3 | 3 | 2 | - | - | - | - | - | 3 | - | 2 |
| PG314.3  | 3 | 3 | 3 | 2 | 2 | - | - | - | - | 2 | - | 2 |
| PG314.4  | 2 | 3 | 3 | 2 | - | - | 2 | - | - | 2 | 2 | 2 |
| PG314.5  | 3 | 2 | 3 | 2 | - | - | - | - | - | 3 | - | 2 |
| PG314.6  | 3 | 3 | 3 | 2 | - | - | - | 2 | - | 2 | - | 2 |
| <b>PG 401 BA5411 Project Work</b>                        |   |   |   |   |   |   |   |   |   |   |   |   |

  
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|         |   |   |   |   |   |   |   |   |   |   |   |   |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|
| PG401.1 | 3 | 2 | 3 | 2 | - | 2 | - | 2 | 2 | 2 | - | 2 |
| PG401.2 | 2 | 3 | 3 | 2 | - | - | - | - | - | 3 | - | 2 |
| PG401.3 | 3 | 3 | 3 | 2 | 2 | - | - | - | - | 2 | - | 2 |
| PG401.4 | 2 | 3 | 3 | 2 | - | - | 2 | - | - | 2 | 2 | 2 |
| PG401.5 | 3 | 2 | 3 | 2 | - | - | - | - | - | 3 | - | 2 |



Handwritten signature in green ink, likely of the Principal.

PRINCIPAL

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