## 1.2.2 Number of Add on /Certificate programs offered during the last five years (10)

| 2017-2018 | | |
|---|---|---|
| **Sl. No** | **Name of Add on /Certificate programs offered** | **Pg.No** |
| 1. | **EC17181 - Introduction to Internet of Things Using Raspberry pi** | |
| | Permission | 2 |
| | Circular | 3 |
| | Syllabus | 4-5 |
| | Willing Student List | 6-12 |
| | Course Delivery | 13-14 |
| | Resource Person Details | 15 |
| | Attendance | 16-21 |
| | Question Paper | 22-25 |
| | One Page Report | 26 |
| | Certificates | 27-28 |
| 2. | **EC17182 - PCB Design** | |
| | Permission | 29 |
| | Circular | 30 |
| | Syllabus | 31-32 |
| | Willing Student List | 33-39 |
| | Course Delivery | 40-41 |
| | Resource Person Details | 42 |
| | Attendance | 43-48 |
| | Question Paper | 49-53 |
| | One Page Report | 54 |
| | Certificates | 55-56 |
| 3 | **EC17183-Basic Tools of Microwave Engineering** | |
| | Permission | 57 |
| | Circular | 58 |
| | Syllabus | 59-60 |
| | Willing Student List | 61-67 |
| | Course Delivery | 68-69 |
| | Resource Person Details | 70 |
| | Attendance | 71-78 |
| | Question Paper | 79 |
| | One Page Report | 80 |
| | Certificates | 81-82 |

# M.I.E.T. ENGINEERING COLLEGE

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TRICHY – PUDUKKOTTAI ROAD, TIRUCHIRAPPALLI – 620 007.
Email: principalengg@miet.edu, contact@miet.edu
Website: - www.miet.edu

Ph: 0431 – 2660 303


Date: 01.06.2017

To

The Principal

M.I.E.T Engineering College,

Trichy – 620007

Respected Madam,

Sub: Permission to conduct the certificate program – Reg...

We have planned to conduct the certificate program for our Third and Final year students from 12.06.2017 to 17.06.2017)

| Name of the Certificate Program | Course Coordinator |
|---|---|
| Introduction to Internet of Things Using Raspberry pi | Mrs.R.Vijayalakshmi AP/ECE |

So kindly give us permission to conduct the course and to utilize the class room.

Thanking you

Course Coordinator

HoD/ECE

Principal

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05.06.2017

## CIRCULAR

Sub: Certificate Program

It is planned to conduct the Certificate Program for the Third year and Final year Electronics and Communication Engineering students.

The Certificate Program is short term certificate courses which are designed and offered by our department for the benefit of our students.

Certificate Program will be conducted at free of cost and based on the performance of the participated students, the merit certificate will be issued after the successful completion of the course.

Students those who are willing to attend the below mentioned course can enroll their name to the course coordinator.

| Name of the Certificate Program | Course Coordinator |
|---|---|
| Introduction to Internet of Things Using Raspberry pi | Mrs R.Vijayalakshmi AP/ECE |
| Commencement of course from 12.06.2017 to 17.06.2017<br>Time: 09.00 AM – 5.30 PM | |

Course Coordinator | IQAC Coordinator | HoD/ECE | Principal

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**Certificate Program (III Year/V Semester and IV Year /VII Semester )**

**Course Syllabus**

**Name of the Course : Introduction to Internet of Things Using Raspberry pi**

Course Code: EC17181

Course Coordinator:Mrs R.Vijayalakshmi AP/ECE

Total hours: 34

Academic Year:2017-2018

Objectives:

- This course elucidates concepts related to Internet of Things.
- The students will get hands on experience in working with Raspberry Pi 3 and exploring IoT .
- This is a course on Embedded & IoT Systems which provides understanding of Architecture of IoT ,
- Overview and Hardware Platforms, Node MCU, IoT protocols, IoT Cloud Platforms.

**Unit-1 Fundamentals and Applications of IoT** 7

Introduction to Internet of Things (IoT)– Functional Characteristics – Recent Trends in the Adoption of IoT – Societal Benefits of IoT, Health Care — Machine to Machine (M2M) - Smart Transportation – Smart Living – Smart Cities- Smart Grid

**Unit-2 – IoT Architecture** 7

Functional Requirements - Components of IoT: Sensors – Actuators – Embedded Computation Units – Communication Interfaces – Software Development

**Unit-3 –Communication Principles** 7

RFID – ZigBEE – Bluetooth – Internet Communication- IP Addresses - MAC Addresses - TCP and UDP – IEEE 802 Family of Protocols – Cellular-Introduction to EtherCAT

**Unit-4 Communication Interface in IoT** 7

IEEE 802.11 Wireless Networks Attacks: Basic Types, WEP Key Recovery Attacks, Keystream Recovery Attacks against WEP – RFID Security – Security Issues in ZigBEE: Eavesdropping Attacks, Encryption Attacks – Bluetooth Security: Threats to Bluetooth Devices and Networks.

**Unit-5 Cloud security concepts** 6

Confidentiality, privacy, integrity, authentication, non-repudiation, availability, access control, defence in depth, least privilege, how these concepts apply in the cloud, what these concepts mean and their importance in PAAS, IAAS and SAAS.

Total hours:34

Outcome:

- The students will be able to understand the working of Raspberry Pi, its features and how various components can be used with Pi.
- The students will be able to understand IoT practically.

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Books / Reference material required:


- Dr. Guillaume Girardin , Antoine Bonnabel, Dr. Eric Mounier, 'Technologies Sensors for the Internet of Things Businesses & Market Trends 2014 -2024',Yole Development Copyrights ,2014
- Peter Waher, 'Learning Internet of Things', Packt Publishing, 2015
- Editors OvidiuVermesan Peter Friess,'Internet of Things – From Research andInnovation to Market
- N. Ida, Sensors, Actuators and Their Interfaces, Scitech Publishers, 2014.
- Adrian McEwen and Hakim Cassimally, —Designing the Internet of Thingsl, John Wiley and Sons Ltd, UK, 2014.
- Olivier Hersent, David Boswarthick and Omar Elloumi, —The Internet of Things: Key Applications and Protocolsl, John Wiley and Sons Ltd., UK 2012.
- Dieter Uckelmann, Mark Harrison, Florian Michahelles, —Architecting the Internet of Thingsl, Springer, New York, 2011.
- Johnny Cache, Joshua Wright and Vincent Liu, —Hacking Exposed Wireless: Wireless Security Secrets and Solutionsl, Tata McGraw Hill, New Delhi, 2010
- Himanshu Dwivedi, Chris Clark and David Thiel, —Mobile Application Securityl, Tata McGraw Hill, Nw Delhi, 2010.
- Vijay Madisetti, Arshdeep Bahga, —Internet of Things (A Hands-on Approach), Universities Press, 2015.
- Tim Mather, Subra Kumaraswamy, ShahedLatif, "Cloud Security and Privacy: An Enterprise Perspective on Risks and Compliance" O'Reilly Media; 1 edition [ISBN: 0596802765], 2009


Course Coordinator | IQAC Coordinator | HoD/ECE | Principal

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## Willing Student list

CP1 Coordinator: Mrs R.Vijayalakshmi AP/ECE
CP2 Coordinator: Mrs.B.Suganthi AP/ECE
CP3 Coordinator:Ms.P.Delphine Mary
Academic Year: 2017-2018

| SL. NO | STUDENT NAME | CP1 Introduction to Internet of Things Using Raspberry pi | CP2 PCB Design | CP3 Basic Tools of Microwave Engineering |
|---|---|---|---|---|
| 1. | Aarthi. N | | ✓ | |
| 2. | Abarna. N | | ✓ | |
| 3. | Abdul Malik. T | | ✓ | |
| 4. | Ameer Sultan. J | | ✓ | |
| 5. | Ashik Mohamed. A | | ✓ | |
| 6. | Asrin Jaswani. S | | ✓ | |
| 7. | Bhuvaneswari. S | | ✓ | |
| 8. | Deepa.S | | ✓ | |
| 9. | Gayathri Vani. A | | ✓ | |
| 10. | Guna Sunthari. B | | ✓ | |
| 11. | Hari Haran. R | | ✓ | |
| 12. | Lavanya. P | | ✓ | |
| 13. | Madhumitha. C | | ✓ | |
| 14. | Mohamed Faisal. S | | ✓ | |
| 15. | Mohamed Imran. M | | ✓ | |

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| SL. NO | STUDENT NAME | CP1 Introduction to Internet of Things Using Raspberry pi | CP2 PCB Design | CP3 Basic Tools of Microwave Engineering |
|---|---|---|---|---|
| 16. | Mohamed Rafik. M | | ✓ | |
| 17. | Mohamed Riaz. A | | ✓ | |
| 18. | Mohamed Rizwan. B | | ✓ | |
| 19. | Mohamed Sirajudeen. S | | ✓ | |
| 20. | Muhammed Azarudeen. J | | ✓ | |
| 21. | Muthulakshmi. M | | ✓ | |
| 22. | Muthulakshmi. S | | ✓ | |
| 23. | Pavithra Devi. P | | ✓ | |
| 24. | Pearly. J | | ✓ | |
| 25. | Raeisa. A | | ✓ | |
| 26. | Rifansiya. S | | ✓ | |
| 27. | Shabhan. R | | ✓ | |
| 28. | Souban Mohamed. S | | ✓ | |
| 29. | Suguna. S | | ✓ | |
| 30. | Surendhar. B | | ✓ | |
| 31. | Syed Sadham. N | | ✓ | |
| 32. | Thaslima Afrin. S | | ✓ | |
| 33. | Vishnu Priya. N.J | | ✓ | |
| 34. | Viveka. K | | ✓ | |
| 35. | Fayaz Ahamed. A | | ✓ | |
| 36. | Haribaskar. S | | ✓ | |
| 37. | Janani. R | | ✓ | |

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| SL. NO. | STUDENT NAME | CP1 Introduction to Internet of Things Using Raspberry pi | CP2 PCB Design | CP3 Basic Tools of Microwave Engineering |
|---|---|---|---|---|
| 38. | Mohamed Ishan. M | | ✓ | |
| 39. | Mohamed Rayan. A.S | | ✓ | |
| 40. | Mohana Sundari. P | | ✓ | |
| 41. | Vishnuvarthan. N | | ✓ | |
| 42. | Asha Victoria. A | | | ✓ |
| 43. | Bakkia Priya. M | | | ✓ |
| 44. | Baranidharan. S | | | ✓ |
| 45. | Catherine. V | | ✓ | |
| 46. | Dayana. T | ✓ | | |
| 47. | Deepika. S | ✓ | | |
| 48. | Denil Desosa. J | ✓ | | |
| 49. | Fathima. L | ✓ | | |
| 50. | Ghousia Shimaeen. A | ✓ | | |
| 51. | Hema. R | | ✓ | |
| 52. | Hisham. S | | | ✓ |
| 53. | Iyyappan. S | | | ✓ |
| 54. | Janapriya. S | | | ✓ |
| 55. | Joshua Francis. B | | | ✓ |
| 56. | Keerthana. A | ✓ | | |
| 57. | Kousalya. M | ✓ | | |
| 58. | Madhumathi. R | ✓ | | |
| 59. | Mahariba. M | ✓ | | |

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| SL. NO | STUDENT NAME | CP1 Introduction to Internet of Things Using Raspberry pi | CP2 PCB Design | CP3 Basic Tools of Microwave Engineering |
|---|---|---|---|---|
| 60. | Malathy. R | ✓ | | |
| 61. | Manimegalai. M | ✓ | | |
| 62. | Manisha. R | ✓ | | |
| 63. | Mathavi. K | ✓ | | |
| 64. | Merlin Sybila. S | | | ✓ |
| 65. | Mohamed Matharsha. S | | | ✓ |
| 66. | Mohamed Thowfeek Faruk. T.Z | ✓ | | |
| 67. | Nabeez Ahamed. J | ✓ | | |
| 68. | Nagarjun. D | ✓ | | |
| 69. | Nasreen Banu. N | ✓ | | |
| 70. | Nithiyanantham. G | | | ✓ |
| 71. | Preethi. S | | | ✓ |
| 72. | Prithivi. V | | | ✓ |
| 73. | Priyadharshini. A | | | ✓ |
| 74. | Pruthika. S | ✓ | | |
| 75. | Ramya. B | ✓ | | |
| 76. | Rasika. A | ✓ | | |
| 77. | Roslin Shalini. J | ✓ | | |
| 78. | Saranya. S | ✓ | | |
| 79. | Sheik Abdul Kathar. I | | | ✓ |
| 80. | Shirazunnisha. S.S | | | |
| 81. | Siva. P | | | ✓ |

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| SL. NO | STUDENT NAME | CP1 Introduction to Internet of Things Using Raspberry pi | CP2 PCB Design | CP3 Basic Tools of Microwave Engineering |
|---|---|---|---|---|
| 82. | Sornaprabhu. B | | | ✓ |
| 83. | Swathika. A | | | |
| 84. | Swathika. V | | | ✓ |
| 85. | Tabassum Siddiqua. T | ✓ | | |
| 86. | Thakira. J | ✓ | | |
| 87. | Tharanya. V | ✓ | | |
| 88. | Thasneem Banu. M | | | ✓ |
| 89. | Vennila. B | | | ✓ |
| 90. | Yoga. P | | | ✓ |
| 91. | Yogalakshmi. P | | | ✓ |
| 92. | Antony Santhosh Raj.Y. Y | | | ✓ |
| 93. | Beaulah Kirubavathy. B | | | ✓ |
| 94. | Karthika. M | | | ✓ |
| 95. | Mahadir Mohamed. M | | | ✓ |
| 96. | Mary Ezhil Arasi. R | | | ✓ |
| 97. | Mohamed Nasurudeen. K | | | ✓ |
| 98. | Praveen Kumar. B | | | ✓ |
| 99. | Revathibalasathiyavathi. B | | | ✓ |
| 100. | Subashini. V | | | ✓ |
| 101. | Yogeshwaran.M. M | | | ✓ |
| 102. | Ayesha Siddiqah. S | ✓ | | |
| 103. | Deepthi. D | ✓ | | |

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| SL. NO | STUDENT NAME . | CP1 Introduction to Internet of Things Using Raspberry pi | CP2 PCB Design | CP3 Basic Tools of Microwave Engineering |
|---|---|---|---|---|
| 104. | Karkuzhali. S | ✓ | | |
| 105. | Mahabupparveen. S | ✓ | | |
| 106. | Maria Sweety. P | ✓ | | |
| 107. | Mohamed Rifai. M | ✓ | | |
| 108. | Mohamed Yasar Arafath. M | ✓ | | |
| 109. | Mohamed Rabeek. S | ✓ | | |
| 110. | Monisha. A | ✓ | | |
| 111. | Monisha Juliet. M | ✓ | | |
| 112. | Muthu Lakshmi. C | ✓ | | |
| 113. | Ramba. S | ✓ | | |
| 114. | Rojini Preetha. M | | | ✓ |
| 115. | Sabeena Begam. A | | | ✓ |
| 116. | Sriram. S | | | ✓ |
| 117. | Suresh Babu. S | | | ✓ |
| 118. | Sushmithabanu. A | | | ✓ |
| 119. | Vijayabaskar. M | | | ✓ |
| 120. | Vinodhini. S | | | ✓ |
| 121. | Ajith. N | | | ✓ |
| 122. | Arun Prasanth. K | | | ✓ |
| 123. | Fathima Begum. M | | | ✓ |
| 124. | Imran. F | | | ✓ |
| 125. | Infant Durai Raj. C | | | ✓ |

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| SL. NO | STUDENT NAME | CP1 Introduction to Internet of Things Using Raspberry pi | CP2 PCB Design | CP3 Basic Tools of Microwave Engineering |
|---|---|---|---|---|
| 126. | Jayalakshmi. S | | | ✓ |
| 127. | Kalaiyarasan. A | | | ✓ |
| 128. | Mohamed Farooq. K | | | ✓ |
| 129. | Mohamed Irshad Hussain. A | | | ✓ |
| 130. | Mohamed Noordeen. B | | | ✓ |
| 131. | Pahalavan. R | | | ✓ |
| 132. | Palaniyappan-. S | | | ✓ |
| 133. | Pavithra. P | | | ✓ |
| 134. | Punitha. A | | | ✓ |
| 135. | Sahana. M | | | ✓ |
| 136. | Shabeek Ahamed. S | | | ✓ |
| 137. | Terrence. E | | | ✓ |
| 138. | Thiyagaraj. S | | | ✓ |

Course Coordinator

HoD/ECE

Principal

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## Certificate Program ( III Year/V Semester and IV Year/VII Semester )

### Program Schedule

Name of the Course: Introduction to Internet of Things Using Raspberry pi
Course Code: EC17181
Course Coordinator: Mrs R.Vijayalakshmi AP/ECE
Total Hours: 34
Academic Year: 2017-2018

| Sl.No | Topics to be Covered | Hours | Date of Delivery |
|---|---|---|---|
| 1. | Introduction to Internet of Things (IoT) | 7 | 12.06.2017 |
| 2. | Functional Characteristics | | |
| 3. | Recent Trends in the Adoption of IoT | | |
| 4. | Societal Benefits of IoT, Health Care | | |
| 5. | Machine to Machine (M2M) | | |
| 6. | Smart Transportation | | |
| 7. | Smart Living – Smart Cities- Smart Grid | | |
| 8. | IoT Architecture | 7 | 13.06.2017 |
| 9. | Functional Requirements | | |
| 10. | Components of IoT: Sensors | | |
| 11. | Actuators | | |
| 12. | Embedded Computation | | |
| 13. | Communication Interfaces | | |
| 14. | Software Development | | |
| 15. | Communication Principles | 7 | 14.06.2017 |
| 16. | RFID, ZigBEE | | |
| 17. | Internet Communication | | |
| 18. | IP Addresses - MAC Addresses | | |
| 19. | TCP and UDP | | |
| 20. | IEEE 802 Family of Protocols | | |
| 21. | Cellular-Introduction to Ether CAT | | |
| 22. | IEEE 802.11 Wireless Networks Attacks: Basic Types | 7 | 15.06.2017 |
| 23. | WEP Key Recovery Attacks | | |

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| Sl.No | Topics to be Covered | Hours | Date of Delivery |
|---|---|---|---|
| 24. | Keystream Recovery Attacks against WEP | | |
| 25. | RFID Security – Security Issues in ZigBEE | | |
| 26. | Eavesdropping Attacks | | |
| 27. | Encryption Attacks | | |
| 28. | Bluetooth Security- Threats to Bluetooth Devices and Networks | | |
| 29. | Confidentiality | 6 | 16.06.2017 |
| 30. | Privacy, integrity, authentication | | |
| 31. | Non-repudiation, availability | | |
| 32. | Access control, defence in depth, least privilege | | |
| 33. | How these concepts apply in the cloud | | |
| 34. | Importance In Paas, Iaas And Saas. | | |

**Course Coordinator** **HoD/ECE** **Principal**

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## Resource Person Details

| | |
|---|---|
| Title of the program | Introduction to Internet of Things Using Raspberry pi |
| Course Code | EC17181 |
| Duration and timing of the program | 34 Hrs, 09.00AM – 05.30 PM |
| Name of the resource person | Mrs.R.Vijayalakshmi AP/ECE |
| Photo of the resource person |  |
| Email address | Vijayalakshmi.r@miet.edu |
| Contact number | 8489562801 |
| Designation | Assistant Professor |
| Educational qualification | ➢ B.E -Electronics and Communication Engineering 2008 in Sudharsan Engineering College with 75%<br>➢ M.E – Computer and Communication Engineering 2013 in MNSK College of Engineering with 7.5 CGPA |
| Experience | ➢ Teaching Experience – 9 Years. |

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## Certificate Program (III Year/VI Semester and IV Year /VIII Semester )

### Attendance Sheet

**Name of the course: Introduction to Internet of Things Using Raspberry pi**
**Course code: EC17181**
**Course coordinator: Mrs R.Vijayalakshmi AP/ECE**
**Academic Year: 2017-18**

| SL.NO | ROLL NO | STUDENT NAME | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 18 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | E1144002 | Ayesha Siddiqah. S | / | / | / | / | a | / | / | a | / | / | / | a | / | / | / | / | a | / | / | / |
| 2. | E1144003 | Deepthi. D | / | / | a | / | / | / | / | a | / | / | / | / | / | a | / | / | / | a | / | / |
| 3. | E1144004 | Karkuzhali. S | a | / | / | / | a | / | / | / | a | / | / | a | / | a | / | / | / | a | / | / |
| 4. | E1144005 | Mahabupparveen. S | / | / | / | a | / | / | a | / | / | / | a | / | / | a | / | / | a | / | / | / |
| 5. | E1144006 | Maria Sweety. P | / | a | / | / | a | a | / | a | / | a | / | / | / | / | / | a | / | / | a | / |
| 6. | E1144007 | Mohamed Rifai. M | / | a | / | a | / | / | / | / | a | / | / | / | / | a | / | / | a | / | / | a |
| 7. | E1144008 | Mohamed Yasar Arafath. M | a | / | / | / | / | a | / | / | / | / | a | a | / | / | a | / | a | / | / | / |
| 8. | E1144009 | Mohamed Rabeek. S | / | / | a | / | / | a | / | / | / | a | / | / | a | a | / | / | a | a | / | / |
| 9. | E1144010 | Monisha. A | / | a | / | / | a | / | / | / | a | / | / | / | a | / | / | a | / | / | / | a |
| 10. | E1144011 | Monisha Juliet. M | / | a | / | a | / | / | a | / | / | / | a | / | / | / | a | / | / | / | a | / |
| 11. | E1144012 | Muthu Lakshmi. C | / | a | / | / | a | / | / | a | / | / | / | a | / | a | / | / | / | a | / | / |
| 12. | E1144014 | Ramba. S | / | a | / | / | / | / | a | / | / | a | / | / | / | / | / | / | / | / | / | / |

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| SL.NO | ROLL NO | STUDENT NAME | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 18 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 13. | E1154006 | Dayana. T | / | / | / | / | / | a | / | / | / | / | / | / | / | a | / | / | / | / | a | / |
| 14. | E1154007 | Deepika. S | / | / | a | / | / | / | / | / | a | / | / | / | a | / | / | / | / | a | / | / |
| 15. | E1154008 | Denil Desosa. J | / | / | / | / | a | / | / | / | a | / | / | a | / | / | / | / | / | / | a | / |
| 16. | E1154009 | Fathima. L | / | / | / | a | / | / | / | a | / | / | a | / | / | / | a | / | a | / | / | / |
| 17. | E1154010 | Ghousia Shimaeen. A | a | / | / | / | a | / | / | / | / | / | a | / | / | a | / | / | / | / | a | / |
| 18. | E1154017 | Keerthana. A | / | / | / | a | / | / | / | a | / | / | / | a | / | a | / | / | a | / | / | / |
| 19. | E1154018 | Kousalya. M | / | a | / | / | / | a | / | / | / | a | / | / | a | / | / | a | / | a | / | / |
| 20. | E1154019 | Madhumathi. R | a | / | / | / | a | / | / | / | a | / | a | / | / | / | / | a | / | / | a | / |
| 21. | E1154020 | Mahariba. M | / | / | / | a | / | / | / | / | / | / | / | / | a | / | / | / | / | a | / | / |
| 22. | E1154021 | Malathy. R | a | / | / | a | / | / | / | a | / | / | / | / | / | / | a | / | / | / | / | a |
| 23. | E1154022 | Manimegalai. M | / | / | / | / | a | / | / | / | a | / | / | / | / | / | / | / | / | / | / | / |
| 24. | E1154023 | Manisha. R | / | / | a | / | / | / | / | / | a | / | / | / | / | / | a | / | / | / | / | / |
| 25. | E1154024 | Mathavi. K | / | / | / | / | / | a | / | / | / | / | / | a | / | / | / | / | a | / | / | / |
| 26. | E1154027 | Mohamed Thowfeek Faruk. T.Z | / | / | / | a | / | / | / | / | a | / | / | a | / | / | a | / | / | / | a | / |
| 27. | E1154029 | Nabeez Ahamed. J | / | / | a | / | / | / | / | a | / | / | / | a | / | / | / | / | / | / | / | a |
| 28. | E1154030 | Nagarjun. D | / | / | a | / | / | / | a | / | / | / | / | / | / | / | / | a | / | / | / | / |
| 29. | E1154031 | Nasreen Banu. N | / | / | / | / | / | / | / | / | / | a | a | / | / | / | / | / | a | / | / | / |
| 30. | E1154036 | Pruthika. S | / | / | / | / | / | a | / | / | / | a | / | a | / | / | / | a | / | / | / | / |

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| SL.NO | ROLL NO | STUDENT NAME | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 18 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 31. | E1154039 | Ramya. B | / | / | / | a | / | / | / | / | a | / | / | / | a | / | / | / | a | / | / | / |
| 32. | E1154040 | Rasika. A | / | / | / | / | / | a | / | / | / | / | a | / | / | / | a | / | / | / | / | a |
| 33. | E1154041 | Roslin Shalini. J | / | a | / | / | / | / | a | a | / | / | / | a | / | / | / | a | / | / | / | / |
| 34. | E1154043 | Saranya. S | / | / | / | / | / | a | / | / | / | / | / | / | / | / | / | / | / | a | / | / |
| 35. | E1154051 | Tabassum Siddiqua. T | / | a | / | / | / | a | / | / | / | / | / | / | a | / | a | / | / | / | / | a |
| 36. | E1154052 | Thakira. J | a | / | / | / | / | a | / | a | / | / | / | / | / | a | / | / | / | / | a | / |
| 37. | E1154053 | Tharanya. V | / | / | / | a | / | / | / | / | / | a | / | / | a | / | / | a | / | / | / | / |
| | | Total No Students Presents | 30 | 31 | 30 | 30 | 31 | 30 | 20 | 29 | 30 | 30 | 30 | 30 | 30 | 30 | 35 | 35 | 35 | 35 | 35 | 35 |
| | | Total No Students Absent | 7 | 6 | 7 | 7 | 6 | 7 | 17 | 18 | 7 | 7 | 7 | 7 | 7 | 7 | 2 | 2 | 2 | 2 | 2 | 2 |
| | | Signature Course Coordinator | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R |

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| SL.NO | ROLL NO | STUDENT NAME | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | E1144002 | Ayesha Siddiqah. S | / | / | / | a | / | / | / | a | / | / | / | a | / | / | / | a | / |
| 2. | E1144003 | Deepthi. D | / | a | / | / | / | a | / | / | / | a | / | / | / | a | / | / | / |
| 3. | E1144004 | Karkuzhali. S | a | / | / | / | a | / | / | a | / | a | / | / | a | / | / | / | a |
| 4. | E1144005 | Mahabupparveen. S | / | / | a | / | / | / | / | a | / | / | / | / | a | / | / | a | / |
| 5. | E1144006 | Maria Sweety. P | / | / | / | / | / | / | a | / | a | / | / | a | / | / | a | / | / |
| 6. | E1144007 | Mohamed Rifai. M | / | a | / | a | / | / | / | / | / | a | / | a | / | / | a | / | / |
| 7. | E1144008 | Mohamed Yasar Arafath. M | / | / | / | / | / | / | / | / | / | / | a | / | / | / | / | / | / |
| 8. | E1144009 | Mohamed Rabeek. S | / | a | / | / | / | a | / | / | / | a | / | / | / | a | / | / | / |
| 9. | E1144010 | Monisha. A | / | a | / | / | a | / | / | / | / | a | / | / | / | / | a | / | / |
| 10. | E1144011 | Monisha Juliet. M | / | / | / | a | / | / | / | / | / | / | / | / | / | / | a | / | / |
| 11. | E1144012 | Muthu Lakshmi. C | / | a | / | / | / | / | / | a | / | / | / | / | a | / | / | / | a |
| 12. | E1144014 | Ramba. S | a | / | / | / | / | / | / | / | a | / | / | / | a | / | / | a | / |
| 13. | E1154006 | Dayana. T | / | a | / | / | / | / | a | / | / | / | a | / | / | / | / | / | / |
| 14. | E1154007 | Deepika. S | / | / | / | / | / | / | / | / | / | a | / | / | a | / | / | / | / |
| 15. | E1154008 | Denil Desosa. J | / | a | / | / | a | / | / | / | / | / | a | / | / | / | a | / | / |

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| SL.NO | ROLL NO | STUDENT NAME | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16. | E1154009 | Fathima. L | / | / | a | / | / | / | a | / | / | / | a | / | / | / | / | a | / |
| 17. | E1154010 | Ghousia Shimaeen. A | / | a | / | / | a | / | / | / | a | / | / | a | / | / | a | / | / |
| 18. | E1154017 | Keerthana. A | / | / | / | / | / | / | / | a | / | / | / | / | / | / | / | / | / |
| 19. | E1154018 | Kousalya. M | / | / | / | / | / | a | / | / | / | a | / | / | a | / | / | / | a |
| 20. | E1154019 | Madhumathi. R | a | / | / | / | / | / | / | a | / | / | / | a | / | / | / | a | / |
| 21. | E1154020 | Mahariba. M | / | / | / | a | / | / | / | / | / | / | / | / | / | a | / | / | / |
| 22. | E1154021 | Malathy. R | / | / | a | / | / | / | / | / | a | / | / | / | / | / | a | / | / |
| 23. | E1154022 | Manimegalai. M | / | / | / | / | a | / | / | / | a | / | / | / | / | / | a | / | / |
| 24. | E1154023 | Manisha. R | / | / | / | a | / | / | / | / | / | a | / | / | / | / | / | / | a |
| 25. | E1154024 | Mathavi. K | / | / | / | / | / | / | / | a | / | / | / | a | / | / | / | / | / |
| 26. | E1154027 | Mohamed Thowfeek Faruk. T.Z | a | / | / | / | / | / | / | / | a | / | / | / | / | / | a | / | / |
| 27. | E1154029 | Nabeez Ahamed. J | / | / | a | / | / | / | a | / | / | / | / | / | / | / | / | a | / |
| 28. | E1154030 | Nagarjun. D | / | / | / | / | / | a | / | / | / | a | a | / | / | a | / | / | / |
| 29. | E1154031 | Nasreen Banu. N | a | / | / | a | / | / | / | / | / | / | / | a | / | / | / | / | / |
| 30. | E1154036 | Pruthika. S | / | / | / | / | a | / | / | / | a | / | / | / | / | a | / | / | / |
| 31. | E1154039 | Ramya. B | / | / | / | a | / | / | a | / | / | / | / | a | / | / | / | a | / |
| 32. | E1154040 | Rasika. A | a | / | / | / | a | / | / | / | / | / | a | / | / | / | / | / | / |

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| SL.NO | ROLL NO | STUDENT NAME | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 33. | E1154041 | Roslin Shalini. J | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 34. | E1154043 | Saranya. S | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 35. | E1154051 | Tabassum Siddiqua. T | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 36. | E1154052 | Thakira. J | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 37. | E1154053 | Tharanya. V | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Total No Students Presents | | | 30 | 30 | 30 | 33 | 33 | 33 | 33 | 33 | 36 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| Total No Students Absent | | | 7 | 7 | 7 | 4 | 4 | 4 | 4 | 4 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| Signature Course Coordinator | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

Course Coordinator

HoD/ECE

Principal

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Website: - www.miet.edu
Ph: 0431 – 2660 303

## Certificate Program Assessment Test

Name of the course: Introduction to Internet of Things Using Raspberry pi

Date: 17.06.2017
Time: 01:30 hrs

Course Code: EC17181
**Academic Year: 2017-2018**

1. Internet of Things (IoT) can be integrated with which of these separate domains:
   a. Cloud-based storage and computing.
   b. Cyber Physical Systems.
   c. Big-data networks.
   d. All of these.

2. In the current market scenario, IoT captures the maximum share in which one of these?
   a. Industry
   b. Security
   c. Healthcare
   d. Home automation

3. Why is IPv6 preferred over IPv4 for IoT implementations?
   a. Larger addressing range
   b. More security
   c. Both a and b
   d. Neither a or b

4. The main function of the IoT Gateway can be summarized as:
   a. Forwarding packets between LAN and WAN on the IP layer.
   b. Performs application layer functions between IoT nodes and other entities.
   c. Enables local, short-range communication between IoT devices.
   d. All of these

5. Scalability of IoT means:
   a. Expandable/reducible in terms of scale or size.
   b. Measurable
   c. Increasing/decreasing monetary costs.
   d. All of these.

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6. Which one of these is the most important factor to be considered in an IoT implementation:
   a. Scalability
   b. Power efficiency
   c. Efficient and scalable addressing schemes
   d. All of these

7. Which statement is NOT TRUE:
   a. IoT WAN connects various network segments.
   b. IoT WAN is geographically wide.
   c. IoT WAN is organizationally wide.
   d. None of these.

8. Which of these statements regarding sensors is TRUE?
   a. Sensors are input devices.
   b. Sensors can be analog as well as digital
   c. Sensors respond to some external stimuli.
   d. All of these.

9. Which of these is NOT a feature of Shape Memory Alloys (SMA)?
   a. Low density
   b. Low strain recovery
   c. Biocompatibility
   d. Biodegradability

10. Which of these is a part of the Sensing Layer of the IoT Service Oriented Architecture?
   a. Service integration
   b. Service repository
   c. Business logic
   d. Data sensing and actuation protocols.

11. MQTT stands for:
   a. Message Queue Telemetry Transport
   b. Multiple Queue Telemetry Transport
   c. Multiple Query Transport Technique
   d. Multiple Query Transport Technique

12. AMQP is designed for connecting:
   a. Constrained networks
   b. LANs and WANs
   c. Systems and Business processes
   d. None of these

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13. Which modulation scheme is followed by IEEE 802.15.4 standard?
    a. BPSK
    b. QPSK
    c. DSSS
    d. All of these

14. Which CoAP message transfers response from the server within the acknowledgment message?
    a. Separate
    b. Confirmable
    c. Non-confirmable
    d. Piggyback

15. Collision prevention in 802.15.4 standard is provided by means of:
    a. CSMA-CA
    b. CSMA-CD
    c. ALOHA
    d. None of these

16. Which of these is a routing protocol for low power lossy networks over IPv6?
    a. RPL
    b. OSPF
    c. Both a and b
    d. None of these

17. The basic unit of AMQP data is:
    a. A frame
    b. A packet
    c. A byte
    d. A bit

18. RPL supports:
    a. Message confidentiality
    b. Loop detection in the routes
    c. Data path validation
    d. All of these

19. Which statement is TRUE with respect to the IEEE 802.15.4 standard?
    a. It is a low data-rate standard.
    b. Used for architecting wireless PANs
    c. Uses only two layers – PHY and MAC
    d. All of these

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20. LOADng routing uses:
    a. AODV
    b. DSDV
    c. RIPv2
    d. OSPF

21. The number of channels incorporated in physical layer of the HART standard are:
    a. 10
    b. 15
    c. 20
    d. 64

22. Channel hopping is performed at which HART layer?
    a. Physical
    b. Data link
    c. Network
    d. Application

23. This process of bypassing radio dead-spots in Z wave is done using a message called
    a. Healing
    b. Beacon
    c. Probe
    d. None of these

24. The difference between the wired and wireless versions of HART are at the:
    a. Network layer
    b. Physical layer
    c. Data link layer
    d. All of these

25. WASN stands for:
    a. Wireless and Sensor networks
    b. Wired and Sensor networks
    c. Wireless Ad-hoc Sensor Networks
    d. None of these

Course Coordinator HoD/ECE Principal

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## Report

Name of the course: Introduction to Internet of Things Using Raspberry pi
Course Code: EC17181
Course Coordinator: Mrs R.Vijayalakshmi AP/ECE
**Total Hours: 34**

**Academic Year: 2017-2018**

I hereby affirm that the entire course contents listed in the course syllabus of the certificate program "**Introduction to Internet of Things Using Raspberry pi**" have educated to the students as the part of the prescribed co – curricular activities through Certificate Program.

The students will be able to understand the working of Raspberry Pi, its features and how various components can be used with Pi.

I confirmed that the certificate program titled as **"Introduction to Internet of Things Using Raspberry pi"** has been conducted in the beginning of the semester and course delivery along with attendance of the students was recorded. I confirmed that all the students were actively attended this certificate Program and performed well throughout the program and eligible students received the certificate.

**Course Coordinator** **HoD/ECE** **Principal**

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MIET
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INSTITUTIONS
Since 1984

## Course Completion Certificate

This is to Certify that Mr/Ms. S. Saranya

of III ECE has Completed the Course on

Introduction to Internet of Things Using Raspberry Pi from 12.6.2018 to 17.6.2018

Course Coordinator

HOD

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Principal

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## Course Completion Certificate

This is to Certify that Mr/Ms. Roslin Shalini J

of II ECE has Completed the Course on

Introduction to internet of things using Raspberrypi from 12.06.2019 to 17.6.2019

Course Coordinator

HOD

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Website: - www.miet.edu
Ph: 0431 – 2660 303


Date: 04.12.2017

To

The Principal
M.I.E.T Engineering College,
Trichy – 620007

Respected Madam,

Sub: Permission to conduct the certificate program – Reg...

We have planned to conduct the certificate program for our Second Year and Third Year students from 11.12.2017 to 16.12.2017)

| Name of the Certificate Program | Course Coordinator |
|---|---|
| PCB Design | Mrs.B.Suganthi AP/ECE |

So kindly give us permission to conduct the course and to utilize the class room.

Thanking you

Course Coordinator

HoD/ECE

Principal

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06.12.2017

## CIRCULAR

**Sub:** Certificate Program

It is planned to conduct the Certificate Program for the Second Year and Third year of Electronics and Communication Engineering students.

The Certificate Program is short term certificate courses which are designed and offered by our department for the benefit of our students.

Certificate Program will be conducted at free of cost and based on the performance of the participated students, the merit certificate will be issued after the successful completion of the course.

Students those who are willing to attend the below mentioned course can enroll their name to the course coordinator.

| Name of the Certificate Program | Course Coordinator |
|---|---|
| PCB Design | Mrs B.Suganthi AP/ECE |
| Commencement of course from 11.12.2017 to 16.12.2017<br>Time: 09.00 AM – 5.30 PM | |

Course Coordinator | IQAC Coordinator | HoD/ECE | Principal

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**Certificate Program (II Year/IV Semester and III Year/VI Semester)**

**Course Syllabus**

**Name of the course : PCB Design**
**Course Code: EC17182**
**Course Coordinator: Mrs.B.Suganthi AP/ECE**
**Total hours:32** **Academic Year:2017-2018**

**Objectives:**

- Students can explore different aspect of Printed Circuit Board Design and fabrication.
- Students can learn various types of PCBs. Schematic Design. entry Rules for Schematic Entry, Component Layout methods

**Unit-1 Introduction to Printed circuit board:** 6

Fundamental of electronic components, basic electronic circuits, Basics of printed circuit board designing: Layout planning, general rules and parameters, ground conductor considerations, thermal issues, check and inspection of artwork.

**Unit-2 Design rules for PCB:** 6

Design rules for Digital circuit PCBs, Analog circuit PCBs, high frequency and fast pulse applications, Power electronic applications, Microwave applications

**Unit-3 Introduction to Electronic design automation(EDA) toolsfor PCB designing:** 6

Brief Introduction of various simulators,SPICE and PSPICE Environment, Selecting the Components Footprints as per design, Making New Footprints, Assigning Footprint to components, Net listing, PCB Layout Designing, Auto routing and manual routing. Assigning specific text (silkscreen) to design, Creating report of design, creating manufacturing data (GERBER) for design.

**Unit-4 Introduction printed circuit board production techniques:** 7

Photo printing, filmmaster production, reprographic camera, basic process for double sided PCBs photo resists, Screen printing process, plating, relative performance and quality control, Etching machines, Solders alloys, fluxes, soldering techniques, Mechanical operations.

**Unit-5 PCB Technology Trends:** 7

Multilayer PCBs. Multiwire PCB, Flexible PCBs, Surface mount PCBs, Reflow soldering, Introduction to High-Density Interconnection (HDI) Technology.

**Total Hours:32**

**Outcome :**

- After completing this course students can design and fabricate their own PCB for their Project and can also work in PCB Designing and Fabrication area.

**Text Books:**

- Printed circuit board design ,fabrication assembly and testing By R. S. Khandpur, Tata McGraw Hill 2006 Reference

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**Reference Books:**


- Printed circuit Board Design and technology, Walter C. Bosshart
- Printed Circuits Handbook, Sixth Edition,by Clyde F. Coombs, Jr, Happy T. Holden, Publisher: McGraw-Hill Education Year: 2016
- Complete PCB Design Using OrCAD Capture and PCB Editor,Kraig Mitzner Bob Doe Alexander Akulin Anton Suponin Dirk Müller, 2nd Edition 2009.
- Introduction to System-on-Package, Rao R Tummala & Madhavan Swaminathan, McGraw Hill, 2008.
- EMC and Printed circuit board ,Design theory and layout, Mark I Montrose IEEE compatibility society 6. Flexible Printed circuit board Design and manufacturing ,By Robert torzwell


**Course Coordinator** **IQAC Coordinator** **HoD/ECE** **Principal**

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## Willing Student list

CP1 Coordinator: Mrs R.Vijayalakshmi AP/ECE
CP2 Coordinator: Mrs.D.Sugânthi AP/ECE
CP3 Coordinator:Ms.P.Delphine Mary
Academic Year: 2017-2018

| SL. NO | STUDENT NAME | CP1 Introduction to Internet of Things Using Raspberry pi | CP2 PCB Design | CP3 Basic Tools of Microwave Engineering |
|---|---|---|---|---|
| 1. | Aarthi. N | | ✓ | |
| 2. | Abarna. N | | ✓ | |
| 3. | Abdul Malik. T | | ✓ | |
| 4. | Ameer Sultan. J | | ✓ | |
| 5. | Ashik Mohamed. A | | ✓ | |
| 6. | Asrin Jaswani. S | | ✓ | |
| 7. | Bhuvaneswari. S | | ✓ | |
| 8. | Deepa.S | | ✓ | |
| 9. | Gayathri Vani. A | | ✓ | |
| 10. | Guna Sunthari. B | | ✓ | |
| 11. | Hari Haran. R | | ✓ | |
| 12. | Lavanya. P | | ✓ | |
| 13. | Madhumitha. C | | ✓ | |
| 14. | Mohamed Faisal. S | | ✓ | |
| 15. | Mohamed Imran. M | | ✓ | |

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| SL. NO | STUDENT NAME | CP1 Introduction to Internet of Things Using Raspberry pi | CP2 PCB Design | CP3 Basic Tools of Microwave Engineering |
|---|---|---|---|---|
| 16. | Mohamed Rafik. M | | ✓ | |
| 17. | Mohamed Riaz. A | | ✓ | |
| 18. | Mohamed Rizwan. B | | ✓ | |
| 19. | Mohamed Sirajudeen. S | | ✓ | |
| 20. | Muhammed Azarudeen. J | | ✓ | |
| 21. | Muthulakshmi. M | | ✓ | |
| 22. | Muthulakshmi. S | | ✓ | |
| 23. | Pavithra Devi. P | | ✓ | |
| 24. | Pearly. J | | ✓ | |
| 25. | Raeisa. A | | ✓ | |
| 26. | Rifansiya. S | | ✓ | |
| 27. | Shabhan. R | | ✓ | |
| 28. | Souban Mohamed. S | | ✓ | |
| 29. | Suguna. S | | ✓ | |
| 30. | Surendhar. B | | ✓ | |
| 31. | Syed Sadham. N | | ✓ | |
| 32. | Thaslima Afrin. S | | ✓ | |
| 33. | Vishnu Priya. N.J | | ✓ | |
| 34. | Viveka. K | | ✓ | |
| 35. | Fayaz Ahamed. A | | ✓ | |
| 36. | Haribaskar. S | | ✓ | |
| 37. | Janani. R | | ✓ | |

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| SL. NO | STUDENT NAME | CP1 Introduction to Internet of Things Using Raspberry pi | CP2 PCB Design | CP3 Basic Tools of Microwave Engineering |
|---|---|---|---|---|
| 38. | Mohamed Ishan. M | | ✓ | |
| 39. | Mohamed Rayan. A.S | | ✓ | |
| 40. | Mohana Sundari. P. | | ✓ | |
| 41. | Vishnuvarthan. N | | ✓ | |
| 42. | Asha Victoria. A | | | ✓ |
| 43. | Bakkia Priya. M | | | ✓ |
| 44. | Baranidharan. S | | | ✓ |
| 45. | Catherine. V | | | ✓ |
| 46. | Dayana. T | ✓ | | |
| 47. | Deepika. S | ✓ | | |
| 48. | Denil Desosa. J | ✓ | | |
| 49. | Fathima. L | ✓ | | |
| 50. | Ghousia Shimaeen. A | ✓ | | |
| 51. | Hema. R | | ✓ | |
| 52. | Hisham. S | | | ✓ |
| 53. | Iyyappan. S | | | ✓ |
| 54. | Janapriya. S | | | ✓ |
| 55. | Joshua Francis. B | | | ✓ |
| 56. | Keerthana. A | ✓ | | |
| 57. | Kousalya. M | ✓ | | |
| 58. | Madhumathi. R | ✓ | | |
| 59. | Mahariba. M | ✓ | | |

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| SL. NO | STUDENT NAME | CP1 Introduction to Internet of Things Using Raspberry pi | CP2 PCB Design | CP3 Basic Tools of Microwave Engineering |
|---|---|---|---|---|
| 60. | Malathy. R | ✓ | | |
| 61. | Manimegalai. M | ✓ | | |
| 62. | Manisha. R | ✓ | | |
| 63. | Mathavi. K | ✓ | | |
| 64. | Merlin Sybila. S | | ✓ | |
| 65. | Mohamed Matharsha. S | | | ✓ |
| 66. | Mohamed Thowfeek Faruk. T.Z | ✓ | | |
| 67. | Nabeez Ahamed. J | ✓ | | |
| 68. | Nagarjun. D | ✓ | | |
| 69. | Nasreen Banu. N | ✓ | | |
| 70. | Nithiyanantham. G | | | ✓ |
| 71. | Preethi. S | | | ✓ |
| 72. | Prithivi. V | | ✓ | |
| 73. | Priyadharshini. A | | | ✓ |
| 74. | Pruthika. S | ✓ | | |
| 75. | Ramya. B | ✓ | | |
| 76. | Rasika. A | ✓ | | |
| 77. | Roslin Shalini. J | ✓ | | |
| 78. | Saranya. S | ✓ | | |
| 79. | Sheik Abdul Kathar. I | | | ✓ |
| 80. | Shirazunnisha. S.S | | ✓ | |
| 81. | Siva. P | | | ✓ |

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| SL. NO | STUDENT NAME | CP1 Introduction to Internet of Things Using Raspberry pi | CP2 PCB Design | CP3 Basic Tools of Microwave Engineering |
|---|---|---|---|---|
| 82. | Sornaprabhu. B | | | ✓ |
| 83. | Swathika. A | | ✓ | |
| 84. | Swathika. V | | | ✓ |
| 85. | Tabassum Siddiqua. T | ✓ | | |
| 86. | Thakira. J | ✓ | | |
| 87. | Tharanya. V | ✓ | | |
| 88. | Thasneem Banu. M | | | ✓ |
| 89. | Vennila. B | | | ✓ |
| 90. | Yoga. P | | | ✓ |
| 91. | Yogalakshmi. P | | | ✓ |
| 92. | Antony Santhosh Raj.Y. Y | | | ✓ |
| 93. | Beaulah Kirubavathy. B | | | ✓ |
| 94. | Karthika. M | | | ✓ |
| 95. | Mahadir Mohamed. M | | | ✓ |
| 96. | Mary Ezhil Arasi. R | | | ✓ |
| 97. | Mohamed Nasurudeen. K | | | ✓ |
| 98. | Praveen Kumar. B | | | ✓ |
| 99. | Revathibalasathiyavathi. B | | | ✓ |
| 100. | Subashini. V | | | ✓ |
| 101. | Yogeshwaran.M. M | | | ✓ |
| 102. | Ayesha Siddiqah. S | ✓ | | |
| 103. | Deepthi. D | ✓ | | |

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| SL. NO | STUDENT NAME | CP1 Introduction to Internet of Things Using Raspberry pi | CP2 PCB Design | CP3 Basic Tools of Microwave Engineering |
|---|---|---|---|---|
| 104. | Karkuzhali. S | ✓ | | |
| 105. | Mahabupparveen. S | ✓ | | |
| 106. | Maria Sweety. P | ✓ | | |
| 107. | Mohamed Rifai. M | ✓ | | |
| 108. | Mohamed Yasar Arafath. M | ✓ | | |
| 109. | Mohamed Rabeek. S | ✓ | | |
| 110. | Monisha. A | ✓ | | |
| 111. | Monisha Juliet. M | ✓ | | |
| 112. | Muthu Lakshmi. C | ✓ | | |
| 113. | Ramba. S | ✓ | | |
| 114. | Rojini Preetha. M | | | ✓ |
| 115. | Sabeena Begam. A | | | ✓ |
| 116. | Sriram. S | | | ✓ |
| 117. | Suresh Babu. S | | | ✓ |
| 118. | Sushmithabanu. A | | | ✓ |
| 119. | Vijayabaskar. M | | | ✓ |
| 120. | Vinodhini. S | | | ✓ |
| 121. | Ajith. N | | | ✓ |
| 122. | Arun Prasanth. K | | | ✓ |
| 123. | Fathima Begum. M | | | ✓ |
| 124. | Imran. F | | | ✓ |
| 125. | Infant Durai Raj. C | | | ✓ |

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| SL. NO | STUDENT NAME | CP1 Introduction to Internet of Things Using Raspberry pi | CP2 PCB Design | CP3 Basic Tools of Microwave Engineering |
|---|---|---|---|---|
| 126. | Jayalakshmi. S | | | ✓ |
| 127. | Kalaiyarasan. A | | | ✓ |
| 128. | Mohamed Farooq. K | | | ✓ |
| 129. | Mohamed Irshad Hussain. A | | | ✓ |
| 130. | Mohamed Noordeen. B | | | ✓ |
| 131. | Pahalavan. R | | | ✓ |
| 132. | Palaniyappan-. S | | | ✓ |
| 133. | Pavithra. P | | | ✓ |
| 134. | Punitha. A | | | ✓ |
| 135. | Sahana. M | | | ✓ |
| 136. | Shabeek Ahamed. S | | | ✓ |
| 137. | Terrence. E | | | ✓ |
| 138. | Thiyagaraj. S | | | ✓ |

Course Coordinator

HoD/ECE

Principal

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TRICHY – PUDUKKOTTAI ROAD, TIRUCHIRAPPALLI – 620 007.
Email: principalengg@miet.edu, contact@miet.edu
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Ph: 0431 – 2660 303

## Certificate Program (II Year/IV Semester and III Year /VI Semester)

### Program Schedule

**Name of the Course: PCB Design**
**Course Code: EC17182**
**Course Coordinator: Mrs B.Suganthi AP/ECE**
**Total Hours: 32**
Academic Year: 2017-2018

| Sl.No | Topics to be Covered | Hours | Date of Delivery |
|---|---|---|---|
| 1. | Fundamental of electronic components | 6 | 11.12.2017 |
| 2. | Basic electronic circuits | | |
| 3. | Basic of printed circuit board designing | | |
| 4. | Layout planning, general rules and parameters | | |
| 5. | Ground conductor considerations | | |
| 6. | Thermal issues, check and inspection of artwork | | |
| 7. | Design rules for PCB | 6 | 12.12.2017 |
| 8. | Design rules for Digital circuit PCBs | | |
| 9. | Analog circuit PCBs | | |
| 10. | High frequency and fast pulse applications | | |
| 11. | Power electronic applications | | |
| 12. | Microwave applications | | |
| 13. | SPICE and PSPICE Environment | 6 | 13.12.2017 |
| 14. | Selecting the Components Footprints as per design | | |
| 15. | Assigning Footprint to components | | |
| 16. | Net listing, PCB Layout Designing | | |
| 17. | Auto routing and manual routing | | |
| 18. | Creating report of design | | |
| 19. | Creating manufacturing data (GERBER) for design. | | |
| 20. | Photo printing, filmmaster production | 7 | 14.12.2017 |
| 21. | Basic process for double sided PCBs photo resists | | |
| 22. | Screen printing process | | |

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| Sl.No | Topics to be Covered | Hours | Date of Delivery |
|---|---|---|---|
| 23. | Relative performance and quality control | | |
| 24. | Etching machines, Solders alloys | | |
| 25. | fluxes, soldering techniques | | |
| 26. | Mechanical operations | | |
| 27. | Multilayer PCBs | | |
| 28. | Multiwire PCB | | |
| 29. | Flexible PCBs | | |
| 30. | Surface mount PCBs | | |
| 31. | Reflow soldering | 6 | 15.12.2017 |
| 32. | High-Density Interconnection (HDI) Technology | | |

Course Coordinator

HoD/ECE

Principal

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Website: - www.miet.edu
Ph: 0431 – 2660 303

## Resource Person Details

| | |
|---|---|
| Title of the program | PCB Design |
| **Course Code** | EC17182 |
| Duration and timing of the program | 32 Hrs, 09.00AM – 05.30 PM |
| Name of the resource person | K. Amirtha Ganesh |
| Photo of the resource person |  |
| Email address | tcilittrichy1@gmail.com |
| Contact number | 90920 74444 |
| Designation | Automation Trainee in TCIL IT, Trichy. |
| Educational qualification | Bachelor of Engineering |
| Experience | ➢ Industrial experience …8…Years<br>➢ Teaching Experience …2…. Years. |

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Ph: 0431 – 2660 303

## Certificate Program (II Year/IV Semester and III Year/VI Semester)

### Attendance Sheet

Name of the course: PCB Design
Course code: EC17182
Course coordinator: Mrs Mrs.B.Suganthi AP/ECE
Academic Year: 2017-18

| SL.NO | ROLL NO | STUDENT NAME | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 18 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | E1164001 | Aarthi. N | / | / | / | / | / | / | / | / | / | / | a | / | / | / | a | / | / | / | a | / |
| 2. | E1164002 | Abarna. N | / | a | / | / | / | / | / | / | / | a | / | / | / | a | / | / | / | / | / | a |
| 3. | E1164003 | Abdul Malik. T | / | / | a | / | a | a | / | a | / | / | / | / | / | / | / | / | a | / | / | / |
| 4. | E1164004 | Ameer Sultan. J | / | / | / | a | / | / | / | / | / | a | / | a | / | / | / | / | / | / | / | a |
| 5. | E1164005 | Ashik Mohamed. A | / | / | / | / | a | / | / | / | / | a | / | / | / | a | / | a | / | / | / | / |
| 6. | E1164006 | Asrin Jaswani. S | / | / | a | / | / | a | a | / | / | / | a | / | / | / | a | / | / | / | / | a |
| 7. | E1164007 | Bhuvaneswari. S | / | / | / | / | / | / | / | a | / | / | a | / | / | a | / | / | a | / | a | / |
| 8. | E1164008 | Deeba. S | a | / | / | a | a | / | / | / | / | a | a | / | / | / | a | / | / | / | / | a |
| 9. | E1164009 | Gayathri Vani. A | / | / | / | / | / | / | a | / | / | / | / | / | / | / | / | / | / | / | / | / |
| 10. | E1164011 | Guna Sunthari. B | / | / | / | a | / | / | / | / | / | / | / | / | / | / | / | / | a | / | / | / |
| 11. | E1164012 | Hari Haran. R | a | / | a | / | / | / | / | / | a | / | a | a | a | / | / | a | / | / | / | / |
| 12. | E1164014 | Lavanya. P | / | a | / | a | a | / | / | / | / | a | / | / | / | / | / | / | / | / | / | / |

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| SL.NO | ROLL NO | STUDENT NAME | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 18 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 13. | E1164015 | Madhumitha. C | | | | | | | | | | | | | | | | | | | | |
| 14. | E1164016 | Mohamed Faisal. S | | | | | | | | | | | | | | | | | | | | |
| 15. | E1164017 | Mohamed Imran. M | | | | | | | | | | | | | | | | | | | | |
| 16. | E1164018 | Mohamed Rafik. M | | | | | | | | | | | | | | | | | | | | |
| 17. | E1164019 | Mohamed Riaz. A | | | | | | | | | | | | | | | | | | | | |
| 18. | E1164020 | Mohamed Rizwan. B | | | | | | | | | | | | | | | | | | | | |
| 19. | E1164021 | Mohamed Sirajudeen. S | | | | | | | | | | | | | | | | | | | | |
| 20. | E1164022 | Muhammed Azarudeen. J | | | | | | | | | | | | | | | | | | | | |
| 21. | E1164023 | Muthulakshmi. M | | | | | | | | | | | | | | | | | | | | |
| 22. | E1164024 | Muthulakshmi. S | | | | | | | | | | | | | | | | | | | | |
| 23. | E1164025 | Pavithra Devi. P | | | | | | | | | | | | | | | | | | | | |
| 24. | E1164026 | Pearly. J | | | | | | | | | | | | | | | | | | | | |
| 25. | E1164029 | Raeisa. A | | | | | | | | | | | | | | | | | | | | |
| 26. | E1164031 | Rifansiya. S | | | | | | | | | | | | | | | | | | | | |
| 27. | E1164032 | Shabhan. R | | | | | | | | | | | | | | | | | | | | |
| 28. | E1164033 | Souban Mohamed. S | | | | | | | | | | | | | | | | | | | | |
| 29. | E1164034 | Suguna. S | | | | | | | | | | | | | | | | | | | | |
| 30. | E1164035 | Surendhar. B | | | | | | | | | | | | | | | | | | | | |

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| SL.NO | ROLL NO | STUDENT NAME | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 18 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 31. | E1164036 | Syed Sadham. N | / | / | / | a | / | / | / | / | a | / | / | / | / | / | a | / | a | / | a | / |
| 32. | E1164037 | Thaslima Afrin. S | / | / | / | / | / | / | / | / | / | a | / | / | / | / | a | / | / | / | a | / |
| 33. | E1164040 | Vishnu Priya. N.J | / | / | / | a | / | / | / | / | a | / | / | / | a | / | / | / | / | / | a | / |
| 34. | E1164041 | Viveka. K | a | / | a | / | / | / | a | / | / | / | / | / | a | / | / | / | a | / | / | / |
| 35. | E2174043 | Fayaz Ahamed. A | / | / | / | / | / | a | / | / | / | a | / | / | / | / | / | a | a | a | / | / |
| 36. | E2174044 | Haribaskar. S | / | / | / | a | / | / | / | / | / | a | / | / | / | a | / | / | / | / | a | a |
| 37. | E2174045 | Janani. R | / | / | / | / | / | / | / | a | / | / | / | / | / | / | a | / | / | / | / | / |
| 38. | E2174046 | Mohamed Ishan. M | / | / | / | a | / | / | / | / | / | / | / | / | / | / | / | / | / | a | / | / |
| 39. | E2174047 | Mohamed Rayan. A.S | a | / | / | / | / | / | / | / | a | / | / | / | a | / | a | / | a | / | a | a |
| 40. | E2174048 | Mohana Sundari. P | / | / | / | / | / | / | a | / | a | / | / | / | / | a | a | / | a | / | / | / |
| 41. | E2174050 | Vishnuvarthan. N | a | a | / | / | / | / | / | / | / | / | / | / | / | / | a | / | a | / | a | / |
| 42. | E1154004 | Catherine. V | / | / | / | / | / | / | a | / | / | a | / | / | / | / | a | / | a | a | / | / |
| 43. | E1154011 | Hema. R | / | / | a | / | / | / | a | / | / | a | / | / | / | / | / | a | a | / | a | / |
| | | Total No Students Presents | 40 | 35 | 30 | 40 | 40 | 35 | 35 | 30 | 30 | 40 | 40 | 35 | 35 | 40 | 40 | 30 | 30 | 30 | 40 | 40 |
| | | Total No Students Absent | 3 | 08 | 13 | 13 | 3 | 8 | 8 | 13 | 13 | 3 | 3 | 8 | 8 | 3 | 3 | 13 | 13 | 13 | 3 | 3 |
| | | Signature Course Coordinator | | | | | | | | | | | | | | | | | | | | |

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| SL.NO | ROLL NO | STUDENT NAME | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | E1164001 | Aarthi. N | / | / | / | a | / | a | / | a | / | / | / | / | / | a | / | a | / |
| 2. | E1164002 | Abarna. N | / | a | / | / | a | / | a | / | / | a | / | / | / | / | / | / | / |
| 3. | E1164003 | Abdul Malik. T | / | / | / | a | / | / | / | / | / | / | / | / | a | / | / | / | / |
| 4. | E1164004 | Ameer Sultan. J | / | / | a | a | / | a | / | / | a | / | / | a | / | / | / | / | / |
| 5. | E1164005 | Ashik Mohamed. A | a | / | / | / | / | / | / | a | / | / | / | a | / | / | / | / | a |
| 6. | E1164006 | Asrin Jaswani. S | a | a | / | / | / | / | / | / | / | / | a | / | a | / | / | / | / |
| 7. | E1164007 | Bhuvaneswari. S | a | / | / | a | / | / | a | / | / | a | / | / | a | / | / | / | / |
| 8. | E1164008 | Deeba. S | / | / | a | / | / | a | / | / | / | / | / | a | / | / | a | / | / |
| 9. | E1164009 | Gayathri Vani. A | a | / | a | / | / | / | / | / | / | / | a | / | / | / | a | / | / |
| 10. | E1164011 | Guna Sunthari. B | / | / | / | / | a | / | / | a | a | / | / | / | / | / | / | / | / |
| 11. | E1164012 | Hari Haran. R | / | / | / | / | / | / | / | / | / | a | / | a | / | / | / | / | / |
| 12. | E1164014 | Lavanya. P | / | / | a | a | / | / | / | / | a | / | / | / | / | / | a | a | a |
| 13. | E1164015 | Madhumitha. C | / | / | / | / | a | / | / | / | / | / | a | a | / | / | / | / | / |
| 14. | E1164016 | Mohamed Faisal. S | / | / | a | / | / | / | / | a | / | / | / | / | a | / | / | / | / |
| 15. | E1164017 | Mohamed Imran. M | a | / | a | / | / | / | / | / | / | / | a | / | / | / | / | a | / |
| 16. | E1164018 | Mohamed Rafik. M | / | / | a | / | / | / | / | / | / | / | / | / | a | / | a | / | / |
| 17. | E1164019 | Mohamed Riaz. A | a | / | / | / | a | / | / | / | a | a | / | / | / | / | / | / | / |
| 18. | E1164020 | Mohamed Rizwan. B | / | / | / | a | / | a | / | / | / | / | a | / | a | / | / | / | / |

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| SL.NO | ROLL NO | STUDENT NAME | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 19. | E1164021 | Mohamed Sirajudeen. S | / | / | / | / | a | / | | / | / | / | / | / | / | / | / | / | a |
| 20. | E1164022 | Muhammed Azarudeen. J | / | / | a | / | a | / | / | / | / | / | a | a | a | / | / | / | a |
| 21. | E1164023 | Muthulakshmi. M | / | a | / | a | / | / | / | / | / | / | a | / | / | a | / | / | / |
| 22. | E1164024 | Muthulakshmi. S | / | / | a | / | a | / | / | / | a | / | / | / | / | a | / | / | a |
| 23. | E1164025 | Pavithra Devi. P | a | / | / | a | / | / | / | a | / | / | a | / | / | / | a | / | / |
| 24. | E1164026 | Pearly. J | / | a | / | a | / | / | / | / | / | / | a | / | / | / | / | a | / |
| 25. | E1164029 | Raeisa. A | / | a | / | / | / | a | / | / | / | / | / | / | a | / | / | / | / |
| 26. | E1164031 | Rifansiya. S | / | / | / | / | / | a | / | / | / | / | a | / | / | / | / | / | / |
| 27. | E1164032 | Shabhan. R | / | / | / | / | / | / | / | / | a | / | / | / | / | / | / | a | / |
| 28. | E1164033 | Souban Mohamed. S | / | / | / | a | / | / | a | / | a | / | / | / | / | / | / | / | / |
| 29. | E1164034 | Suguna. S | / | / | a | / | / | a | / | / | a | / | / | a | / | / | / | / | a |
| 30. | E1164035 | Surendhar. B | / | a | / | / | a | / | / | a | / | a | / | / | / | a | / | / | / |
| 31. | E1164036 | Syed Sadham. N | / | / | a | / | / | / | / | a | / | a | / | / | / | / | / | a | / |
| 32. | E1164037 | Thaslima Afrin. S | / | / | / | a | / | / | / | / | a | / | / | / | a | / | / | / | / |
| 33. | E1164040 | Vishnu Priya. N.J | / | / | / | a | / | / | a | / | / | / | / | a | / | / | / | / | / |
| 34. | E1164041 | Viveka. K | a | a | / | / | / | a | / | / | / | / | / | / | a | / | a | / | / |
| 35. | E2174043 | Fayaz Ahamed. A | / | / | a | / | / | / | a | / | / | / | / | a | / | / | / | / | / |

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| SL.NO | ROLL NO | STUDENT NAME | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 36. | E2174044 | Haribaskar. S | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 37. | E2174045 | Janani. R | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 38. | E2174046 | Mohamed Ishan. M | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 39. | E2174047 | Mohamed Rayan. A.S | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 40. | E2174048 | Mohana Sundari. P | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 41. | E2174050 | Vishnuvarthan. N | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 42. | E1154004 | Catherine. V | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 43. | E1154011 | Hema. R | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Total No Students Presents | | | 40 | 40 | 35 | 30 | 30 | 40 | 40 | 40 | 40 | 42 | 40 | 35 | 36 | 35 | 36 | 35 | 35 |
| Total No Students Absent | | | 3 | 3 | 8 | 13 | 13 | 3 | 3 | 3 | 3 | 1 | 3 | 8 | 7 | 8 | 7 | 8 | 8 |
| Signature Course Coordinator | | | | | | | | | | | | | | | | | | | |

B. Bagyo

Course Coordinator

HoD/ECE

Principal

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## Certificate Program Assessment Test

Name of the course: PCB Design

Course Code: EC17182
Academic Year: 2017-2018

Date: 16.12.2017
Time: 01:30 hrs

**1.Which among the below mentioned packages does not belong to the category of 'Small Outline Package'?**

a. SO

b. SOP

c. SOT

d. SON

**2. Which type of solderability testing is carried out for the generation of solder sample due to immersion of wire or sheet metal specimen in a bath of molten solder?**

a. Solder Bath Testing

b. Meniscus Rise Testing

c. Solder Iron Testing

d. None of the above

3. **Which among the below stated soldering methods is also renowned as 'High Frequency Resistance Soldering'?**

a. Iron Soldering

b. Furnace Soldering

c. Torch Soldering

d. Electrical Soldering

4. **Which among the below mentioned approaches belongs to the category of In-circuit Testing?**

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a. Impedance Testing

b. Component Testing

c. Apply Signal and check output

d. All of the above

5. **High current circuits are purposely located or placed near the edge of PCB in accordance to the supply lines for** _____

a. Removal of heat

b. Isolation of stray current

c. Reduction of path length

d. All of the above

6. **What is/are the necessity/ies to provide guarding to precision differential amplifiers?**

a. To increase leakage resistance

b. To reduce capacitance between signal conductors & ground

c. Both a and b

d. None of the above

7. **Which phenomenon is not reduced by the circuit paths of lowest impedances especially provided by power and return planes for shielding purposes?**

a. Radiation

b. Convection

c. Noise

d. Crosstalk

8. **Which among the below specified assertions is not a grounding consideration associated with ADC as well as DAC?**

a. Analog side to analog ground

b. Digital side to digital ground

c. Use of separate power supply and connection of their ground leads to single point reference

d. Reduction of inductive loop area between power and return traces

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9. **Which among the below stated devices/equipments are preferred for elimination of ground and supply line noise especially in TTL/CMOS / ECL PCB designing?**

**a.** Coupling capacitor

**b.** Decoupling capacitor

**c.** Snubber circuits

**d.** All of the above

10. **Which among the below mentioned assertions is not a way of cross-talk reduction while designing digital PCBs?**

**a.** Decrease in the distance between conductors

**b.** Shielding of clock lines with guard strips

**c.** Reduction in the loop area of circuits

**d.** Avoid running of parallel traces for longer distances especially for asynchronous signals

11. **Which among the below specified condition is precise in the crosstalk verification mechanism using logic flow in opposite direction with the limit of avoiding dangerous interference in digital PCB designing?**

**a.** $Z_{even} > Z_{odd}$

**b.** $Z_{odd} \geq 0.5\ Z_{even}$

**c.** $Z_{odd} \geq 0.8\ Z_{even}$

**d.** $Z_{odd} = Z_{even}$

12. **Which among the following assists in obtaining the desired value of wave impedance in reflection phase while designing digital PCBs?**

**A. Width of signal lines**
**B. Distance between signal line and ground line**
**C. Signal Delays**
**D. Double Pulsing**

**a.** A & B

**b.** B & C

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c. C & D

d. A, B, C, D

13. **Which problems are about to occur if PCB is not designed properly in a confined manner for digital circuits?**

A. Diffraction
B. Refraction
C. Ground & Supply-line Noise
D. Electromagnetic Interference

a. A & B

b. B & C

c. C & D

d. A, B, C, D

14. **What effects can be observed if the separate power and ground planes are provided with large conducting surfaces for better decoupling in PCB layouts?**

a. Increase in self-inductance

b. Reduction in self-inductance

c. Stability in self-inductance

d. None of the above

15. **What should be the resistance of 0.6 mm wide conductor with 15 cm length and 25 μm thickness of standard copper foil? (Assume $\rho = 1.7241 \times 10^{-6}$(at 20° C)**

a. 118.2 mΩ

b. 138.2 mΩ

c. 172.4 mΩ

d. 192.4 mΩ

16. **Which type of PCB requires minimum soldering on component side in order to avoid replacement oriented difficulties?**

a. Single-sided PCB

b. Double-sided PCB

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c. Both a and b

d. None of the above

**17. Which factors contribute to the occurrence of mechanical stress?**

a. Resonance

b. Cracked Solder Joints

c. Both a and b

d. None of the above

**18. The actual cost of PCB can be evaluated on the basis of _____**

a. PCB size & material

b. Number of layers

c. Vias on PCB

d. All of the above

**19. Which terminology of PCB represents a thin photo-sensitive polymer by supporting photographic pattern of single traces or IC pads for etching?**

a. Prepreg

b. Etching

c. Photo-resist

d. Solder mask

20.The grid used in a PCB layout tool should be

a.In metric (mm)

b. In imperial (mils)

c.Both A and b interchangeably

d.Either A or B

**Course Coordinator** **HoD/ECE** **Principal**

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## Report

Name of the course: PCB Design
Course Code: EC17182
Course Coordinator: Mrs B.Suganthi AP/ECE
Total Hours: 32

Academic Year: 2017-2018

I hereby affirm that the entire course contents listed in the course syllabus of the certificate program " PCB Design" have educated to the students as the part of the prescribed co – curricular activities through Certificate Program.

Students can explore different aspect of Printed Circuit Board Design and learned various types of PCBs. Schematic Design. Entry Rules for Schematic Entry, Component Layout methods, Placement Rules, Routing Techniques for Single Sided Board.

I confirmed that the certificate program titled as "PCB Design" has been conducted in the beginning of the semester and course delivery along with attendance of the students was recorded. I confirmed that all the students were actively attended this certificate Program and performed well throughout the program and eligible students received the certificate.

Course Coordinator

HoD/ECE

Principal

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## Course Completion Certificate

This is to Certify that Mr/Ms. R Janani

of II ECE has Completed the Course on

PIB Design from 11.12.2017 to 16.12.2017

B. Sivajothi
Course Coordinator

HOD

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Principal

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## Course Completion Certificate

This is to Certify that Mr/Ms. N. Aarthi

of II ECE has Completed the Course on

PCB Design from 11.12.2017 to 16.12.2017

B. Suryakala
Course Coordinator

HOD

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Ph: 0431 – 2660 303

Date: 04.12.2017

To

The Principal
M.I.E.T Engineering College,
Trichy – 620007

Respected Madam,

Sub: Permission to conduct the certificate program – Reg...

We have planned to conduct the certificate program for our Third and Final year students from 11.12.2017 to 15.12.2017)

| Name of the Certificate Program | Course Coordinator |
|---|---|
| Basic Tools of Microwave Engineering | Ms.P.Delphine Mary AP/ECE |

So kindly give us permission to conduct the course and to utilize the class room.

Thanking you

Course Coordinator

HoD/ECE

Principal

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06.12.2017

## CIRCULAR

Sub: Certificate Program

It is planned to conduct the Certificate Program for the Third year and Final year Electronics and Communication Engineering students.

The Certificate Program is short term certificate courses which are designed and offered by our department for the benefit of our students.

Certificate Program will be conducted at free of cost and based on the performance of the participated students, the merit certificate will be issued after the successful completion of the course.

Students those who are willing to attend the below mentioned course can enroll their name to the course coordinator.

| Name of the Certificate Program | Course Coordinator |
|---|---|
| **Basic Tools of Microwave Engineering** | **Ms.P.Delphine Mary AP/ECE** |
| Commencement of course from 11.12.2017 to 15.12.2017<br>Time: 09.00 AM – 5.30 PM | |

Course Coordinator  IQAC Coordinator  HoD/ECE  Principal

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## Certificate Program (III/VI Semester and IV Year/VIII Semester)

## Course Syllabus

**Name of the Course: Basic Tools of Microwave Engineering**
**Course Code: EC17183**
**Course Coordinator: Ms.P.Delphine Mary AP/ECE**
Total hours: 31 Academic Year:2017-2018

Objectives:

- An understanding of microwave waveguides, passive & active devices, tubes and network analysis.
- An ability to design microwave matching networks.
- An ability to perform microwave measurements.
- An understanding of EDA tools for RF/Microwave ICs.

Unit-1: Microwave Radio System: 7

Review of basic concepts: Introduction to MICs, MMICs and RF ICs, Review of transmission line analysis: transmission line equations; reflection coefficient, standing waves and impedance. Transmission line open & short sections as circuit elements; transmission line resonators. Substrates for transmission lines – dielectrics, semiconductors.

**Unit-2 Passive Circuit Design for RF ICs.** 8

Impedance matching circuits: L-section impedance matching, stubs for impedance matching, impedance matching by quarter wave transformers, multi section transformers, Circuit elements and discontinuities: Lumped elements, planar transmission line sections as circuit elements, equivalent network model for micro strip discontinuities. DC returns and blocks, bias injection circuits.

Unit-3 EDA tools for RF IC Design. 8

Numerical Techniques for the analysis and design of RF/Microwave structures, circuit theory based CAD, field theory based CAD, nonlinear RF and Microwave circuit analysis. Introduction to available EDA tools

Unit- 4: Active circuit design for RF/Microwave ICs. 8

Active devices for RF/Microwave ICs, Design of amplifiers, phase shifters, switches, mixers and oscillators. Implementation in MIC, MMIC and RFIC. Layout optimization. Usage of EDA tools in active circuit design and simulation.

**Total hours:31**

Outcome:

- Students have learned about Microwave Radio system.
- Students have learned about passive and Active Circuit for designing Microwave ICs
- Students have learned about the EDA tools for Designing RF/Microwave ICs

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**Reference Book:**


- David M. Pozar, "Microwave Engineering," 2nd Edition, John Wiley 1998, ISBN 0-471-17096-8
- Peter A. Rizzi, "Microwave Enginnering – Passive Circuits", PHI, ISBN 81-203-1461-1
- K. C. Gupta, Ramesh Garg, Inder Bahl, and Prakash Bhartia, "Microstrip Lines and Slotlines," Artech House, 2nd edition, 1996, ISBN: 089006766X.
- T. C. Edwards and M. B. Steer, "Foundations of Interconnect and Microstrip Design," John Wiley & Sons, 3rd edition, 2001, ISBN: 0471607010.
- Mike Golio (Ed.), The RF and Microwave Handbook, CRC Press.
- Novel technologies for microwave and millimeter-wave applications, Jean-Fu Kiang, Kluwer Academic Publishers.
- RFIC and MMIC design and technology, I.D. Robertson and S.Lucyszyn, IEE Circuits, Devices and Systems Series 13.


Course Coordinator | IQAC Coordinator | HoD/ECE | Principal

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## Willing Student list

CP1 Coordinator: Mrs R.Vijayalakshmi AP/ECE
CP2 Coordinator: Mrs.B.Suganthi AP/ECE
CP3 Coordinator:Ms.P.Delphine Mary
Academic Year: 2017-2018

| SL. NO | STUDENT NAME | CP1 Introduction to Internet of Things Using Raspberry pi | CP2 PCB Design | CP3 Basic Tools of Microwave Engineering |
|---|---|---|---|---|
| 1. | Aarthi. N | | ✓ | |
| 2. | Abarna. N | | ✓ | |
| 3. | Abdul Malik. T | | ✓ | |
| 4. | Ameer Sultan. J | | ✓ | |
| 5. | Ashik Mohamed. A | | ✓ | |
| 6. | Asrin Jaswani. S | | ✓ | |
| 7. | Bhuvaneswari. S | | ✓ | |
| 8. | Deepa.S | | ✓ | |
| 9. | Gayathri Vani. A | | ✓ | |
| 10. | Guna Sunthari. B | | ✓ | |
| 11. | Hari Haran. R | | ✓ | |
| 12. | Lavanya. P | | ✓ | |
| 13. | Madhumitha. C | | ✓ | |
| 14. | Mohamed Faisal. S | | ✓ | |
| 15. | Mohamed Imran. M | | ✓ | |

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| SL. NO | STUDENT NAME | CP1 Introduction to Internet of Things Using Raspberry pi | CP2 PCB Design | CP3 Basic Tools of Microwave Engineering |
|---|---|---|---|---|
| 16. | Mohamed Rafik. M | | ✓ | |
| 17. | Mohamed Riaz. A | | ✓ | |
| 18. | Mohamed Rizwan. B | | ✓ | |
| 19. | Mohamed Sirajudeen. S | | ✓ | |
| 20. | Muhammed Azarudeen. J | | ✓ | |
| 21. | Muthulakshmi. M | | ✓ | |
| 22. | Muthulakshmi. S | | ✓ | |
| 23. | Pavithra Devi. P | | ✓ | |
| 24. | Pearly. J | | ✓ | |
| 25. | Raeisa. A | | ✓ | |
| 26. | Rifansiya. S | | ✓ | |
| 27. | Shabhan. R | | ✓ | |
| 28. | Souban Mohamed. S | | ✓ | |
| 29. | Suguna. S | | ✓ | |
| 30. | Surendhar. B | | ✓ | |
| 31. | Syed Sadham. N | | ✓ | |
| 32. | Thaslima Afrin. S | | ✓ | |
| 33. | Vishnu Priya. N.J | | ✓ | |
| 34. | Viveka. K | | ✓ | |
| 35. | Fayaz Ahamed. A | | ✓ | |
| 36. | Haribaskar. S | | ✓ | |
| 37. | Janani. R | | ✓ | |

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| SL. NO | STUDENT NAME | CP1 Introduction to Internet of Things Using Raspberry pi | CP2 PCB Design | CP3 Basic Tools of Microwave Engineering |
|---|---|---|---|---|
| 38. | Mohamed Ishan. M | | ✓ | |
| 39. | Mohamed Rayan. A.S | | ✓ | |
| 40. | Mohana Sundari. P | | ✓ | |
| 41. | Vishnuvarthan. N | | ✓ | |
| 42. | Asha Victoria. A | | | ✓ |
| 43. | Bakkia Priya. M | | | ✓ |
| 44. | Baranidharan. S | | | ✓ |
| 45. | Catherine. V | | | ✓ |
| 46. | Dayana. T | ✓ | | |
| 47. | Deepika. S | ✓ | | |
| 48. | Denil Desosa. J | ✓ | | |
| 49. | Fathima. L | ✓ | | |
| 50. | Ghousia Shimaeen. A | ✓ | | |
| 51. | Hema. R | | ✓ | |
| 52. | Hisham. S | | | ✓ |
| 53. | Iyyappan. S | | | ✓ |
| 54. | Janapriya. S | | | ✓ |
| 55. | Joshua Francis. B | | | ✓ |
| 56. | Keerthana. A | ✓ | | |
| 57. | Kousalya. M | ✓ | | |
| 58. | Madhumathi. R | ✓ | | |
| 59. | Mahariba. M | ✓ | | |

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| SL. NO | STUDENT NAME | CP1 Introduction to Internet of Things Using Raspberry pi | CP2 PCB Design | CP3 Basic Tools of Microwave Engineering |
|---|---|---|---|---|
| 60. | Malathy. R | ✓ | | |
| 61. | Manimegalai. M | ✓ | | |
| 62. | Manisha. R | ✓ | | |
| 63. | Mathavi. K | ✓ | | |
| 64. | Merlin Sybila. S | | ✓ | |
| 65. | Mohamed Matharsha. S | | | ✓ |
| 66. | Mohamed Thowfeek Faruk. T.Z | ✓ | | |
| 67. | Nabeez Ahamed. J | ✓ | | |
| 68. | Nagarjun. D | ✓ | | |
| 69. | Nasreen Banu. N | ✓ | | |
| 70. | Nithiyanantham. G | | | ✓ |
| 71. | Preethi. S | | | ✓ |
| 72. | Prithivi. V | | ✓ | |
| 73. | Priyadharshini. A | | | ✓ |
| 74. | Pruthika. S | ✓ | | |
| 75. | Ramya. B | ✓ | | |
| 76. | Rasika. A | ✓ | | |
| 77. | Roslin Shalini. J | ✓ | | |
| 78. | Saranya. S | ✓ | | |
| 79. | Sheik Abdul Kathar. I | | | ✓ |
| 80. | Shirazunnisha. S.S | | ✓ | |
| 81. | Siva. P | | | ✓ |

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| SL. NO | STUDENT NAME | CP1 Introduction to Internet of Things Using Raspberry pi | CP2 PCB Design | CP3 Basic Tools of Microwave Engineering |
|---|---|---|---|---|
| 82. | Sornaprabhu. B | | | ✓ |
| 83. | Swathika. A | | ✓ | |
| 84. | Swathika. V | | | ✓ |
| 85. | Tabassum Siddiqua. T | ✓ | | |
| 86. | Thakira. J | ✓ | | |
| 87. | Tharanya. V | ✓ | | |
| 88. | Thasneem Banu. M | | | ✓ |
| 89. | Vennila. B | | | ✓ |
| 90. | Yoga. P | | | ✓ |
| 91. | Yogalakshmi. P | | | ✓ |
| 92. | Antony Santhosh Raj.Y. Y | | | ✓ |
| 93. | Beaulah Kirubavathy. B | | | ✓ |
| 94. | Karthika. M | | | ✓ |
| 95. | Mahadir Mohamed. M | | | ✓ |
| 96. | Mary Ezhil Arasi. R | | | ✓ |
| 97. | Mohamed Nasurudeen. K | | | ✓ |
| 98. | Praveen Kumar. B | | | ✓ |
| 99. | Revathibalasathiyavathi. B | | | ✓ |
| 100. | Subashini. V | | | ✓ |
| 101. | Yogeshwaran.M. M | | | ✓ |
| 102. | Ayesha Siddiqah. S | ✓ | | |
| 103. | Deepthi. D | ✓ | | |

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| SL. NO | STUDENT NAME | CP1 Introduction to Internet of Things Using Raspberry pi | CP2 PCB Design | CP3 Basic Tools of Microwave Engineering |
|---|---|---|---|---|
| 104. | Karkuzhali. S | ✓ | | |
| 105. | Mahabupparveen. S | ✓ | | |
| 106. | Maria Sweety. P | ✓ | | |
| 107. | Mohamed Rifai. M | ✓ | | |
| 108. | Mohamed Yasar Arafath. M | ✓ | | |
| 109. | Mohamed Rabeek. S | ✓ | | |
| 110. | Monisha. A | ✓ | | |
| 111. | Monisha Juliet. M | ✓ | | |
| 112. | Muthu Lakshmi. C | ✓ | | |
| 113. | Ramba. S | ✓ | | |
| 114. | Rojini Preetha. M | | | ✓ |
| 115. | Sabeena Begam. A | | | ✓ |
| 116. | Sriram. S | | | ✓ |
| 117. | Suresh Babu. S | | | ✓ |
| 118. | Sushmithabanu. A | | | ✓ |
| 119. | Vijayabaskar. M | | | ✓ |
| 120. | Vinodhini. S | | | ✓ |
| 121. | Ajith. N | | | ✓ |
| 122. | Arun Prasanth. K | | | ✓ |
| 123. | Fathima Begum. M | | | ✓ |
| 124. | Imran. F | | | ✓ |
| 125. | Infant Durai Raj. C | | | ✓ |

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| SL. NO | STUDENT NAME | CP1 Introduction to Internet of Things Using Raspberry pi | CP2 PCB Design | CP3 Basic Tools of Microwave Engineering |
|---|---|---|---|---|
| 126. | Jayalakshmi. S | | | ✓ |
| 127. | Kalaiyarasan. A | | | ✓ |
| 128. | Mohamed Farooq. K | | | ✓ |
| 129. | Mohamed Irshad Hussain. A | | | ✓ |
| 130. | Mohamed Noordeen. B | | | ✓ |
| 131. | Pahalavan. R | | | ✓ |
| 132. | Palaniyappan-. S | | | ✓ |
| 133. | Pavithra. P | | | ✓ |
| 134. | Punitha. A | | | ✓ |
| 135. | Sahana. M | | | ✓ |
| 136. | Shabeek Ahamed. S | | | ✓ |
| 137. | Terrence. E | | | ✓ |
| 138. | Thiyagaraj. S | | | ✓ |

Course Coordinator HoD/ECE Principal

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M.I.E.T. ENGINEERING COLLEGE
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TRICHY – PUDUKKOTTAI ROAD, TIRUCHIRAPPALLI – 620 007.
Email: principalengg@miet.edu, contact@miet.edu
Website: - www.miet.edu
Ph: 0431 – 2660 303

## Certificate Program (III/VI Semester and IV Year/VIII Semester)

### Program Schedule

Name of the Course: Basic Tools of Microwave Engineering
**Course Code: EC17183**
Course Coordinator: Ms.P.Delphine Mary
**Total Hours: 31**
**Academic Year: 2017-2018**

| Sl.No | Topics to be Covered | Hours | Date of Delivery |
|---|---|---|---|
| 1. | Review of basic concepts: Introduction to MICs, MMIC and RF ICs | 7 | 11.12.2017 |
| 2. | Review of transmission line analysis: transmission lin equations; reflection coefficient | | |
| 3. | Standing waves and impedance. | | |
| 4. | Transmission line open circuit elements | | |
| 5. | Transmission short sections as circuit elements | | |
| 6. | Transmission line resonators. Substrates for transmissio lines – dielectrics | | |
| 7. | Semiconductors. | | |
| 8. | Impedance matching circuits: L-section impedanc matching | 7 | 12.12.2017 |
| 9. | Stubs for impedance matching | | |
| 10. | Impedance matching by quarter wave transformers | | |
| 11. | Multi section transformers | | |
| 12. | Circuit elements and discontinuities | | |
| 13. | Lumped elements, Planar transmission line sectior as circuit elements | | |
| 14. | Equivalent network model for micro strip discontinuities | | |
| 15. | DC returns and blocks, bias injection circuits. | 7 | 13.12.2017 |
| 16. | EDA tools for RF IC Design | | |
| 17. | Numerical Techniques for the analysis and | | |
| 18. | Design of RF/Microwave structures | | |
| 19. | circuit theory | | |
| 20. | circuit theory based CAD | | |

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| Sl.No | Topics to be Covered | Hours | Date of Delivery |
|---|---|---|---|
| 21. | Field theory based CAD | | |
| 22. | Nonlinear RF | 7 | 14.12.2017 |
| 23. | Microwave circuit analysis | | |
| 24. | Introduction to available EDA tools | | |
| 25. | Active devices for RF | | |
| 26. | Active devices for Microwave ICs | | |
| 27. | Design of Amplifiers | | |
| 28. | Phase Shifters | | |
| 29. | Mixers , Oscillators | 3 | 15.12.2017 |
| 30. | Implementation in MIC, MMIC , RFIC | | |
| 31. | Usage of EDA tools in active circuit design and simulation | | |

Course Coordinator HoD/ECE Principal

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Website: - www.miet.edu
Ph: 0431 – 2660 303

## Resource Person Details

| | |
|---|---|
| Title of the program | Basic Tools of Microwave Engineering |
| Course Code | EC17183 |
| Duration and timing of the program | 31 Hrs, 09.00AM – 05.30 PM |
| Name of the resource person | Ms.P.Delphine Mary Ap/ECE |
| Photo of the resource person |  |
| Email address | delphine@miet.edu |
| Contact number | 9791562423 |
| Designation | Assistant Professor |
| Educational qualification | ➢ B.E -Electronics and Communication Engineering 2001 in JJ College of Engineering and Technology (Anna University), Chennai, Tamil Nadu, with 72.34%.<br>➢ M.E –Communication System 2013 in Oxford Engg College, affiliated to Anna University Chennai with CGPA 8.28 |
| Experience | ➢ Teaching Experience – 10 Years. |

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## Certificate Program (III/VI Semester and IV Year/VIII Semester)

### Attendance Sheet

**Name of the course:** Basic Tools of Microwave Engineering
**Course code:** EC17183
**Course coordinator:** Ms.P.Delphine Mary
**Academic Year:** 2017-18

| SL.NO | ROLL NO | STUDENT NAME | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 18 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | E1154001 | Asha Victoria. A | / | / | / | / | / | / | / | a | / | / | a | / | / | / | / | / | / | a | / | / |
| 2. | E1154002 | Bakkia Priya. M | a | / | / | / | a | / | / | / | / | a | / | / | / | / | / | a | / | / | / | a |
| 3. | E1154003 | Baranidharan. S | / | / | a | / | / | / | / | / | / | / | a | / | / | a | / | / | / | / | a | / |
| 4. | E1154012 | Hisham. S | / | a | / | / | a | / | / | a | / | / | / | a | a | / | / | / | / | / | / | / |
| 5. | E1154013 | Iyyappan. S | / | a | / | / | / | / | a | / | / | / | / | / | a | / | a | / | / | a | / | / |
| 6. | E1154014 | Janapriya. S | a | / | a | / | / | / | / | / | / | / | / | / | a | / | / | / | a | / | / | / |
| 7. | E1154015 | Joshua Francis. B | / | / | / | a | / | / | / | / | a | / | a | / | / | / | / | / | / | / | a | / |
| 8. | E1154025 | Merlin Sybila. S | / | / | a | / | / | / | / | a | / | / | / | a | / | / | a | / | / | / | / | a |
| 9. | E1154026 | Mohamed Matharsha. S | / | / | / | / | / | a | / | / | / | / | / | / | / | a | / | a | / | / | / | / |
| 10. | E1154032 | Nithiyanantham. G | a | / | / | / | / | / | / | / | a | / | / | / | a | / | / | / | / | / | / | a |
| 11. | E1154033 | Preethi. S | / | a | / | / | / | / | a | / | / | a | / | / | / | / | / | a | / | / | / | / |
| 12. | E1154034 | Prithivi. V | / | / | / | a | / | / | / | a | / | / | / | / | / | / | / | / | a | / | / | / |

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| SL.NO | ROLL NO | STUDENT NAME | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 18 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 13. | E1154035 | Priyadharshini. A | / | a | / | / | / | / | a | / | / | / | / | / | / | a | / | / | / | / | a | / |
| 14. | E1154044 | Sheik Abdul Kathar. I | a | / | / | / | / | a | / | / | / | a | / | / | a | / | / | / | / | / | / | a |
| 15. | E1154047 | Siva. P | / | / | a | / | / | / | / | a | / | / | / | / | / | / | / | a | / | / | / | / |
| 16. | E1154048 | Sornaprabhu. B | / | a | / | / | a | / | / | / | a | / | / | / | a | / | / | / | a | / | / | a |
| 17. | E1154050 | Swathika. V | / | / | / | / | a | / | / | / | / | / | a | / | / | / | a | / | / | a | / | / |
| 18. | E1154054 | Thasneem Banu. M | / | / | a | a | / | / | / | / | / | / | / | / | / | a | / | / | / | / | a | / |
| 19. | E1154055 | Vennila. B | a | / | / | / | / | / | a | / | / | / | / | a | / | / | / | / | a | / | / | / |
| 20. | E1154056 | Yoga. P | / | / | / | a | / | / | a | / | / | a | / | / | / | / | / | / | / | a | / | / |
| 21. | E1154057 | Yogalakshmi. P | / | / | / | / | / | a | / | / | / | / | / | / | / | / | / | a | / | / | a | / |
| 22. | E2164059 | Antony Santhosh Raj.Y. Y | a | / | / | / | / | / | a | / | a | / | / | / | a | / | / | / | / | a | / | / |
| 23. | E2164061 | Beaulah Kirubavathy. B | / | / | / | a | / | / | / | / | / | / | / | / | / | a | / | / | / | / | a | / |
| 24. | E2164062 | Karthika. M | / | a | / | / | / | a | / | / | / | a | / | / | / | / | a | / | / | / | a | / |
| 25. | E2164063 | Mahadir Mohamed. M | / | / | / | / | a | / | / | / | a | / | / | / | / | / | / | a | / | / | / | / |
| 26. | E2164064 | Mary Ezhil Arasi. R | / | / | a | / | / | / | / | / | / | / | / | a | / | / | / | / | / | a | / | / |
| 27. | E2164065 | Mohamed Nasurudeen. K | a | / | / | / | a | / | / | / | / | a | / | / | / | / | a | / | / | / | a | / |
| 28. | E2164066 | Praveen Kumar. B | / | / | / | / | / | a | / | / | a | / | / | / | / | / | / | a | / | / | / | a |
| 29. | E2164067 | Revathibalasathiyavathi. B | / | / | a | / | / | / | / | / | a | / | / | a | / | / | / | / | a | / | / | / |
| 30. | E2164068 | Subashini. V | / | / | / | a | / | / | / | / | / | / | / | / | a | / | a | / | / | / | / | a |

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| SL.NO | ROLL NO | STUDENT NAME | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 18 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 31. | E2164069 | Yogeshwaran.M. M | / | / | a | / | / | / | / | a | / | / | / | / | / | / | / | a | / | / | a | / |
| 32. | E1144015 | Rojini Preetha. M | / | / | / | a | / | / | / | / | a | / | / | / | / | a | / | / | / | / | / | a |
| 33. | E1144016 | Sabeena Begam. A | a | / | / | / | / | a | / | / | / | / | / | a | / | / | / | a | / | / | / | a |
| 34. | E1144018 | Sriram. S | / | / | / | / | a | / | / | / | / | / | a | / | / | / | / | / | a | / | / | / |
| 35. | E1144019 | Suresh Babu. S | / | / | a | / | / | / | / | / | / | / | / | a | / | / | / | a | / | / | / | / |
| 36. | E1144020 | Sushmithabanu. A | / | / | / | / | / | / | a | / | / | / | / | / | a | / | / | / | a | / | / | a |
| 37. | E1144021 | Vijayabaskar. M | / | / | / | / | / | a | / | / | / | a | / | / | / | a | / | / | / | a | / | / |
| 38. | E1144022 | Vinodhini. S | / | / | / | / | a | / | / | / | / | / | / | a | / | / | / | / | a | / | / | / |
| 39. | E2154023 | Ajith. N | / | / | / | a | / | / | / | / | / | / | / | / | / | / | a | / | / | a | a | a |
| 40. | E2154024 | Arun Prasanth. K | / | / | / | a | / | / | / | / | / | / | / | a | / | / | a | / | / | / | / | a |
| 41. | E2154025 | Fathima Begum. M | / | / | / | a | / | a | / | / | a | a | / | / | / | a | / | / | a | / | / | / |
| 42. | E2154026 | Imran. F | / | / | a | / | / | / | a | / | / | / | a | / | / | / | / | a | / | / | / | / |
| 43. | E2154027 | Infant Durai Raj. C | / | a | / | / | a | / | / | a | / | a | / | / | / | / | / | a | / | / | / | a |
| 44. | E2154028 | Jayalakshmi. S | a | / | / | / | a | / | / | / | / | / | a | / | / | / | a | / | / | / | a | / |
| 45. | E2154029 | Kalaiyarasan. A | / | / | / | / | / | / | a | / | / | a | / | / | / | / | / | a | / | / | / | / |
| 46. | E2154030 | Mohamed Farooq. K | / | a | / | / | / | / | / | / | a | / | / | / | / | a | / | / | / | a | / | / |
| 47. | E2154031 | Mohamed Irshad Hussain. A | a | / | / | / | a | / | / | / | / | / | a | / | a | / | / | / | a | / | / | a |
| 48. | E2154032 | Mohamed Noordeen. B | / | / | / | / | / | a | / | / | / | / | a | / | / | / | / | / | / | a | / | / |

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| SL.NO | ROLL NO | STUDENT NAME | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 18 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 49. | E2154033 | Pahalavan. R | / | / | a | / | / | / | a | / | / | / | / | / | a | / | / | / | / | a | / | / |
| 50. | E2154034 | Palaniyappan-. S | / | / | / | a | / | / | / | / | / | a | / | / | / | / | a | / | / | / | a | / |
| 51. | E2154035 | Pavithra. P | a | / | / | / | a | / | / | a | / | / | / | a | / | / | / | a | / | / | / | a |
| 52. | E2154036 | Punitha. A | / | / | a | / | / | a | / | / | a | / | / | / | / | / | / | / | a | / | / | a |
| 53. | E2154037 | Sahana. M | / | / | / | / | a | / | / | / | / | / | a | / | / | a | / | / | / | / | a | / |
| 54. | E2154038 | Shabeek Ahamed. S | / | / | / | a | / | / | / | / | / | / | / | / | a | / | / | / | / | a | / | / |
| 55. | E2154039 | Terrence. E | / | / | a | / | / | / | / | / | / | / | / | / | a | / | / | / | / | / | a | / |
| 56. | E2154040 | Thiyagaraj. S | a | / | / | / | / | a | / | / | / | a | / | / | / | a | / | / | / | a | / | / |
| | | Total No Students Presents | 50 | 50 | 50 | 50 | 50 | 50 | 51 | 51 | 51 | 51 | 55 | 55 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| | | Total No Students Absent | 6 | 6 | 6 | 6 | 6 | 6 | 5 | 5 | 5 | 5 | 1 | 1 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| | | Signature Course Coordinator | | | | | | | | | | | | | | | | | | | | |

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GUNDUR, TIRUCHIRAPPALLI-620 007.

| SL.NO | ROLL NO | STUDENT NAME | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | E1154001 | Asha Victoria. A | / | / | a | / | / | a | / | / | a | / | / | a | / | / | / | a | / |
| 2. | E1154002 | Bakkia Priya. M | / | a | / | / | a | / | / | / | / | a | / | / | / | / | / | / | a |
| 3. | E1154003 | Baranidharan. S | / | / | / | / | a | / | / | / | / | / | / | / | / | a | / | / | / |
| 4. | E1154012 | Hisham. S | / | / | / | a | / | / | / | / | / | / | a | / | a | / | / | / | a |
| 5. | E1154013 | Iyyappan. S | / | / | / | / | / | / | a | a | / | / | / | / | / | / | / | / | / |
| 6. | E1154014 | Janapriya. S | a | / | / | / | / | a | / | / | / | a | / | / | / | / | a | / | / |
| 7. | E1154015 | Joshua Francis. B | / | a | / | / | / | / | / | / | a | / | / | a | / | / | / | a | / |
| 8. | E1154025 | Merlin Sybila. S | / | a | a | / | / | / | / | / | a | / | / | / | / | a | / | / | / |
| 9. | E1154026 | Mohamed Matharsha. S | / | / | / | a | / | / | / | a | / | / | / | / | / | a | / | / | / |
| 10. | E1154032 | Nithiyanantham. G | / | a | / | / | a | / | / | / | / | / | a | / | a | / | / | / | a |
| 11. | E1154033 | Preethi. S | / | / | / | / | / | a | / | / | / | a | / | / | / | / | / | a | / |
| 12. | E1154034 | Prithivi. V | / | a | / | / | / | / | / | a | / | / | / | a | / | / | / | / | / |
| 13. | E1154035 | Priyadharshini. A | a | / | / | / | / | / | / | / | a | / | / | / | / | / | a | / | / |
| 14. | E1154044 | Sheik Abdul Kathar. I | / | / | / | a | / | / | / | a | / | / | a | / | / | / | / | / | / |
| 15. | E1154047 | Siva. P | / | a | / | / | / | / | a | / | / | a | / | / | a | / | / | / | / |
| 16. | E1154048 | Sornaprabhu. B | / | / | a | / | / | / | / | / | / | / | a | / | / | a | / | / | / |

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| SL.NO | ROLL NO | STUDENT NAME | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 17. | E1154050 | Swathika. V | / | / | a | / | / | / | / | a | / | / | / | / | / | a | / | / | / |
| 18. | E1154054 | Thasneem Banu. M | / | a | / | / | / | / | / | / | a | / | / | / | / | / | a | / | / |
| 19. | E1154055 | Vennila. B | / | / | / | / | a | / | / | / | / | / | a | / | / | / | / | / | a |
| 20. | E1154056 | Yoga. P | / | / | / | a | / | / | / | / | / | / | / | / | a | / | / | / | / |
| 21. | E1154057 | Yogalakshmi. P | / | a | / | / | / | / | / | a | / | / | / | / | / | / | / | a | / |
| 22. | E2164059 | Antony Santhosh Raj.Y. Y | a | / | / | / | / | a | / | / | / | a | / | a | / | / | / | / | / |
| 23. | E2164061 | Beaulah Kirubavathy. B | / | / | a | / | / | / | a | / | / | / | / | / | / | a | / | / | / |
| 24. | E2164062 | Karthika. M | / | / | a | / | / | a | / | / | / | / | / | / | / | / | a | / | / |
| 25. | E2164063 | Mahadir Mohamed. M | / | / | / | / | a | / | / | / | a | / | / | / | / | / | / | / | / |
| 26. | E2164064 | Mary Ezhil Arasi. R | / | / | / | a | / | / | / | / | / | / | / | / | / | / | / | / | / |
| 27. | E2164065 | Mohamed Nasurudeen. K | a | / | / | a | / | / | / | / | / | / | / | a | / | / | / | / | / |
| 28. | E2164066 | Praveen Kumar. B | / | a | / | / | / | / | / | / | / | a | / | / | / | / | a | / | / |
| 29. | E2164067 | Revathibalasathiyavathi. B | / | / | / | / | / | a | / | / | / | / | a | / | / | / | / | / | a |
| 30. | E2164068 | Subashini. V | / | / | / | / | / | / | / | a | / | / | / | / | / | / | / | a | / |
| 31. | E2164069 | Yogeshwaran.M. M | / | / | / | a | / | / | / | / | a | / | / | / | / | / | a | / | / |
| 32. | E1144015 | Rojini Preetha. M | / | / | / | / | a | / | a | / | / | / | / | / | a | / | / | / | / |

| SL.NO | ROLL NO | STUDENT NAME | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 33. | E1144016 | Sabeena Begam. A | / | / | / | a | / | / | / | / | / | a | / | / | / | a | / | / | / |
| 34. | E1144018 | Sriram. S | a | / | / | / | / | / | / | / | a | / | / | / | a | / | / | a | / |
| 35. | E1144019 | Suresh Babu. S | / | / | a | / | / | / | a | / | / | / | / | / | / | / | a | / | / |
| 36. | E1144020 | Sushmithabanu. A | / | a | / | / | / | a | / | / | / | / | / | / | / | / | / | / | / |
| 37. | E1144021 | Vijayabaskar. M | / | / | / | / | a | / | / | / | / | / | / | a | / | / | / | / | a |
| 38. | E1144022 | Vinodhini. S | / | / | / | a | / | / | a | / | / | / | / | a | / | / | / | / | / |
| 39. | E2154023 | Ajith. N | / | / | / | a | / | / | / | a | / | a | / | / | / | a | / | / | / |
| 40. | E2154024 | Arun Prasanth. K | / | / | / | a | / | / | / | / | a | / | a | / | / | / | / | a | / |
| 41. | E2154025 | Fathima Begum. M | a | / | a | / | / | a | / | / | / | / | / | / | a | / | / | / | / |
| 42. | E2154026 | Imran. F | / | a | / | / | / | / | a | / | / | / | / | a | / | / | a | / | / |
| 43. | E2154027 | Infant Durai Raj. C | / | / | / | / | a | / | / | / | / | / | / | / | / | a | / | / | / |
| 44. | E2154028 | Jayalakshmi. S | a | / | / | / | / | / | / | / | a | / | / | / | a | / | / | / | / |
| 45. | E2154029 | Kalaiyarasan. A | / | / | a | / | a | / | / | / | / | a | / | / | / | / | a | / | a |
| 46. | E2154030 | Mohamed Farooq. K | / | / | / | a | / | / | / | a | / | / | / | / | a | / | / | / | / |
| 47. | E2154031 | Mohamed Irshad Hussain. A | / | a | / | / | / | a | / | / | / | / | / | / | / | / | / | / | / |
| 48. | E2154032 | Mohamed Noordeen. B | / | / | a | / | / | / | / | a | / | / | / | / | a | / | / | / | a |
| 49. | E2154033 | Pahalavan. R | / | / | / | / | a | / | / | / | / | a | / | / | / | / | / | a | / |

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| SL.NO | ROLL NO | STUDENT NAME | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50. | E2154034 | Palaniyappan-. S | | | | | | | | | | | | | | | | | |
| 51. | E2154035 | Pavithra. P | | | | | | | | | | | | | | | | | |
| 52. | E2154036 | Punitha. A | | | | | | | | | | | | | | | | | |
| 53. | E2154037 | Sahana. M | | | | | | | | | | | | | | | | | |
| 54. | E2154038 | Shabeek Ahamed. S | | | | | | | | | | | | | | | | | |
| 55. | E2154039 | Terrence. E | | | | | | | | | | | | | | | | | |
| 56. | E2154040 | Thiyagaraj. S | | | | | | | | | | | | | | | | | |
| Total No Students Presents | | | | | | | | | | | | | | | | | | | |
| Total No Students Absent | | | | | | | | | | | | | | | | | | | |
| Signature Course Coordinator | | | | | | | | | | | | | | | | | | | |

Course Coordinator

HoD/ECE

Principal

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Ph: 0431 – 2660 303

## Certificate Program Assessment Test

Name of the course: Basic Tools of Microwave Engineering

Date: 16.12.2017
Time: 01:30 hrs

Course Code: EC17183
**Academic Year: 2017-2018**

**Answer the following question :** 10*2=20

1. What is Microwave Engineering?
2. Define S matrix and its properties
3. Write the application of microwave engineering
4. Why is the S matrix used in MW analysis?
5. What are the advantage of ABCD matrix?
6. What are Junctions? Give some Examples?
7. What are the application of reflex klystron ?
8. What is the purpose of slow wave Structures used in TWT amplifier?
9. What are non reciprocal Devices? Give two Examples?
10. Give two examples for two port junctions?

Course Coordinator HoD/ECE Principal

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## Report

Name of the course: Basic Tools of Microwave Engineering
**Course Code: EC17183**
Course Coordinator: Ms.P.Delphine Mary AP/ECE
**Total Hours: 31** **Academic Year: 2017-2018**

I hereby affirm that the entire course contents listed in the course syllabus of the certificate program **"Basic Tools of Microwave Engineering"** have educated to the students as the part of the prescribed co – curricular activities through Certificate Program.

Students can explore with the Microwave radio system and had knowledge in passive and active Circuits for designing Microwave Ic's and EDA tools for designing RF /Microwave ICs.

I confirmed that the certificate program titled as **"Basic Tools of Microwave Engineering"** has been conducted in the beginning of the semester and course delivery along with attendance of the students was recorded. I confirmed that all the students were actively attended this certificate Program and performed well throughout the program and eligible students received the certificate.

Course Coordinator HoD/ECE Principal

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## Course Completion Certificate

This is to Certify that Mr/Ms. M. Mohamed Imran

of II ECE has Completed the Course on

Basic Tools & Miniature Projects from 11.12.2013 to 15.12.2013

Course Coordinator

HoD

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Principal

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## Course Completion Certificate

This is to Certify that Mr/Ms. B. Guna Aurthan

of II ECE has Completed the Course on

Basic Tools of microwave Engineering from 11.12.2012 to 15.12.2012

Course Coordinator

Hod

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Principal