



## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

### 1.2.2 - ADDON-COURSES

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**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**

**VALUE ADDED COURSE DETAILS**

**SUBJECT: EVA002 - ADVANCES IN SOLAR ENERGY TECHNOLOGIES  
SEMESTER - V / III - Year EEE**

**TABLE OF CONTENT**

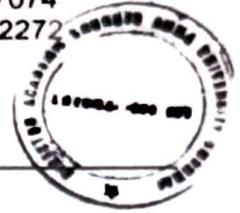
<b>Sl. No.</b>	<b>CONTENT</b>
<b>Academic year 2020-21 Odd Sem</b>	
1.	AU Approval Letter
2.	Syllabus with Resource Person Details
3.	Anna University Approval List



COPY TO HO D/EEB.

Off: 22357077 / 73  
22357074  
Fax / Dir : 22352272

**CENTRE FOR ACADEMIC COURSES**  
**ANNA UNIVERSITY**  
CHENNAI - 600 025

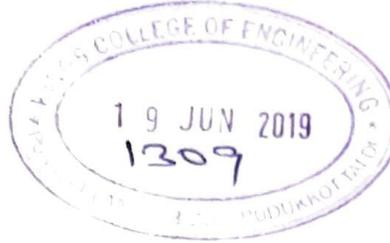


**Dr. R. RAJU**  
**DIRECTOR**

Letter No:2518/AU/EVA/CAC/2019

13.06.2019

To  
The Controller of Examinations  
Anna University  
Chennai - 25.



Sir,

Sub : A.U. - CAC – Kings College of Engineering - Value Added Course - Reg.

Ref. : Letter No. KCE/PRL/VAC/113/18-19, from Kings College of Engineering,  
Dated: 22.05.2019 & 07.06.2019.

\*\*\*\*\*

With reference to the letter cited above, the following Value Added Course offered by Kings College of Engineering, Affiliated Institutions is allotted the course code as detailed below.

S.No	Code Allotted	Title
1.	EVA002	Advances in Solar Energy Technologies

This is for your kind information and necessary action at your end.

Yours faithfully,

**DIRECTOR**

**Copy to:**

1. The Chairperson, Faculty of Electrical Engineering, Anna University, Chennai - 25.
2. The Principal, Kings College of Engineering, Punalkulam, Gandarvakottai Taluk, Pudukkottai District, Tamilnadu – 613 303.
3. The Stock File



**KINGS**  
COLLEGE OF ENGINEERING  
(NAAC Accredited Institution)  
(Approved by AICTE, New Delhi, Affiliated to  
Anna University, Chennai)



**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**

**SUBJECT: ADVANCES IN SOLAR ENERGY TECHNOLOGIES**

**SEMESTER: V**

**COURSE PLAN (EVA 002)**  
*(Version: 2)*

**PREPARED BY**  
**Mr. J. AROKIARAJ AP/EEE**

## SYLLABUS

EVA002

ADVANCES IN SOLAR ENERGY TECHNOLOGIES

L T P C  
2 0 0 2

UNIT I

ADVANCES IN SOLAR PV MATERIALS

6

Semiconductor Materials and Modelling - Crystalline silicon solar cells - Thin film technologies - Space and concentrator cells - Organic and dye sensitized cells - Evaluating a Site for Solar PV Potential.

UNIT II

MPPT CRITERIA FOR PV SYSTEMS

6

Testing, Monitoring and Calibration - Photovoltaic System Components - Maximum Power Point Tracking Algorithms - Different MPPT techniques - Implementation of MPPT using a boost converter.

UNIT III

STAND ALONE PV SYSTEM

6

Solar modules - storage systems - power conditioning and regulation - MPPT- protection - Stand-alone PV systems design - sizing.

UNIT IV

GRID CONNECTED PV SYSTEMS

6

PV systems in buildings - design issues for central power stations - safety - Economic aspect - Efficiency and performance - International PV programs.

UNIT V

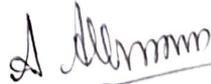
MODELLING AND SIMULATION OF PV SYSTEMS USING MATLAB

6

Introduction to Systems - Systems Modeling - Formulation of State Space Model of Systems - Model Order Reduction - Interpretive Structural Modeling - System Dynamics Techniques - Simulation.

**TOTAL: 30 PERIODS**

  
Mr. J. Arokiaraj  
Faculty in-charge

  
HOD/ EEE



## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

### COURSE PLAN

<b>Sub. Code</b> : EVA002	<b>Branch / Year / Sem</b> : B.E EEE / III /V
<b>Sub. Name</b> : Advances In Solar Energy Technologies	<b>Batch</b> : 2018-2022
<b>Staff Name</b> : Mr.J.Arokiaraj	<b>Academic Year</b> : 2020 - 21 (ODD)

### COURSE OBJECTIVE

1. To get an overview of different types of photovoltaic semiconductor devices and their characteristics.
2. To analyze the operation and performance parameters MPPT criteria for PV systems.
3. To study the operation techniques and basics topologies standalone operation of PV system.
4. To learn the different techniques of grid connected PV system.
5. To study the modelling and simulation of PV systems using MATLAB.

### TEXT BOOKS

- T1. Solar Cells: Materials, Manufacture and Operation, Tom Markvart University of Southampton, UK and Luis Castafier Universidad Politecnica de Catalunya, Barcelona, Spain, First edition 2005 Reprinted 2005, 2006, Elsevier Ltd.
- T2. Study of maximum power point tracking (MPPT) techniques in a solar photovoltaic array, Arjav Harjai, Abhishek Bhardwaj, Mrutyunjaya Sandhibigraha, nit, Rourkela.
- T3. Solanki C.S., "Solar Photovoltaics: Fundamentals, Technologies And Applications", PHI Learning Pvt. Ltd., 2015.
- T4. Modeling and Simulation of Systems Using MATLAB and Simulink, Devendra K. Chaturvedi, CRC Press, 2010 by Taylor and Francis Group, LLC.

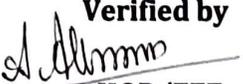
### REFERENCE BOOKS

- R1. "Power Electronics for Renewable Energy Systems". C.R.Bala Murugan, D.Periyaazhagar, N.Suresh, Sruthi Publishers, Jan - 2017.
- R2. "Solar Photovoltaic Technology and systems", Chetan Singh Solanki, PHI Publications. 2017.

### WEB RESOURCES

- W1. <http://www.energy.wsu.edu/Documents/SolarPVforBuildersOct2009.pdf> (Topic No. 06)
- W2. <https://pdfs.semanticscholar.org/1db7/435215cb2d9895bc29e0358a9b23300988f5.pdf> (Topic No. 12)
- W3. <https://www.sciencedirect.com/science/article/pii/S0960148105002831> (Topic No. 22)
- W4. [http://www.os.ucg.ac.me//MS\\_kn.pdf](http://www.os.ucg.ac.me//MS_kn.pdf) (Topic No. 27)

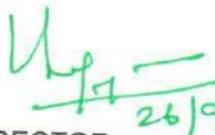


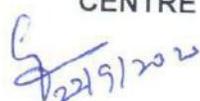
UNIT IV GRID CONNECTED PV SYSTEMS (6)						
Topic No	Topic	Books for Reference	Page No.	Teaching Methodology	No. of Hours Required	Cumulative No. of periods
19.	PV systems in buildings.	T1	446-450	BB	1	19
20.	Design issues for central power stations.	R1	4.28-4.36	BB	1	20
21.	Safety.	T1	299-300	BB	1	21
22.	Economic aspect.	W3	-	PPT	1	22
23.	Efficiency and performance.	T1	173-177	BB	1	23
24.	International PV programs.	R1	5.31-5.32	BB	1	24
<b>LEARNING OUTCOME</b>						
At the end of unit, students should be able to						
<ul style="list-style-type: none"> <li>• Study the Design issues for central power stations.</li> <li>• Understand the Economic aspect, Efficiency and performance.</li> </ul>						
UNIT V MODELLING AND SIMULATION OF PV SYSTEMS USING MATLAB (6)						
25.	Introduction to Systems.	T4	1-98	BB	1	25
26.	Systems Modeling.					
27.	Formulation of State Space Model of Systems.	W4	-	PPT	1	26
28.	Model Order Reduction.	T4	219-263	BB	1	27
29.	Interpretive Structural Modeling.	T4	300-325	BB	1	28
30.	System Dynamics Techniques	T4	327-344	BB	1	29
31.	Simulation.	T4	401-420	PPT	1	30
<b>LEARNING OUTCOME</b>						
At the end of unit, students should be able to						
<ul style="list-style-type: none"> <li>• Understand the Impact of Simulation.</li> <li>• Analyze of the techniques used for simulation tools.</li> </ul>						
<b>COURSE OUTCOME</b>						
At the end of the course, the students will be able to						
<ul style="list-style-type: none"> <li>• Use different materials used for photovoltaic cells manufacturing.</li> <li>• Understand the principles and operation techniques used for MMPT.</li> <li>• Analyze and design standalone operation of PV power generation.</li> <li>• Describe the various grid connecting techniques for PV system.</li> <li>• Understand the simulation tools used for photovoltaic power generation.</li> </ul>						
<b>INTERNAL ASSESSMENT DETAILS</b>						
ASST. NO.	I	II				
Topic Nos.	1 - 14	15-31				
Date						
<p>Prepared by    <b>Mr.J.Arokiaraj</b></p> <p style="text-align: center;">   <b>Approved by</b>  <b>Principal</b> </p> <p style="text-align: right;">   <b>Verified by</b>  <b>HOD/EEE</b> </p>						

**AFFILIATED INSTITUTIONS**  
**FACULTY OF ELECTRICAL ENGINEERING**  
**APPROVED LIST OF VALUE ADDED COURSES**

Sl.No.	Subject Code	Subject Name	L	T	P	C
1.	EVA001	Solar Photovoltaic System Design	2	0	0	2
2.	EVA002	Advances in Solar Energy Technologies	2	0	0	2
3.	EVA003	Arduino Programming	1	0	0	1
4.	EVA004	Material Detection and Inspection Technology	1	0	2	2
5.	EVA005	Industrial Automation with PLC	0	0	2	1
6.	EVA006	Industrial Process Control and Instrumentation	0	0	2	1
7.	EVA007	Energy Conservation, Management and Audit	1	0	0	1
8.	EVA008	Field Oriented Control of BLDC, Induction and Synchronous Motors	1	0	0	1
9.	EVA009	Industrial Automation using PLC & SCADA	1	0	2	2
10.	EVA010	LabVIEW Core -1 and Core - 2 levels with Certified LabVIEW Developer (CLAD) Certification Training	2	0	0	2
11.	EVA011	Solar Photovoltaic Technology	2	0	0	2
12.	EVA012	Measurements in Process Industries	1	0	0	1
13.	EVA013	Automation and Control	0	0	2	1
14.	EVA014	ECAD	0	0	2	1
15.	EVA015	SCADA	0	0	2	1
16.	EVA016	Electric and Hybrid Vehicles	2	0	0	2
17.	EVA017	Programmable Logic Controller	1	0	0	1
18.	EVA018	Factory Automation	1	0	0	1
19.	EVA019	MATLAB and SIMULINK for Electrical Engineers	2	0	0	2
20.	EVA020	Electrical Machine Design	0	0	2	1
21.	EVA021	Abstract for Industrial Internet of Things with Real Time Data Logging	1	0	0	1

22.	EVA022	Industrial and Home Automation	2	0	0	2
23.	EVA023	Supervised Machine Learning for Image Classification	2	0	0	2
24.	EVA024	Fuzzy Logic System and Applications	2	0	0	2
25.	EVA025	Electronic Design Automation & PCB Designing by using ORCAD	2	0	0	2
26.	EVA026	Solar Power Design, Operation and Installation	2	0	0	2
27.	EVA027	Sensor Applications using Arduino and Raspberry Pi	2	0	0	2
28.	EVA028	Solar PV System Design and Installation	2	0	0	2
29.	EVA029	Design and Development of Robotics	2	0	0	2
30.	EVA030	Embedded Laboratory	0	0	2	1
31.	EVA031	Graphical Programming Using Labview	1	0	2	2
32.	EVA032	VERILOG HDL	2	0	0	2
33.	EVA033	Electric Vehicles	2	0	0	2
34.	EVA034	Product Design and Development in Power Electronics and Embedded Systems	2	0	0	2
35.	EVA035	Trends in Smart Grid	1	0	0	1
36.	EVA036	Arduino Programming and Interfacing	0	0	2	1

  
 26/9/2022  
 DIRECTOR  
 CENTRE FOR ACADEMIC COURSES

  
 22/9/2022



**DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING  
ACADEMIC YEAR 2020-2021**

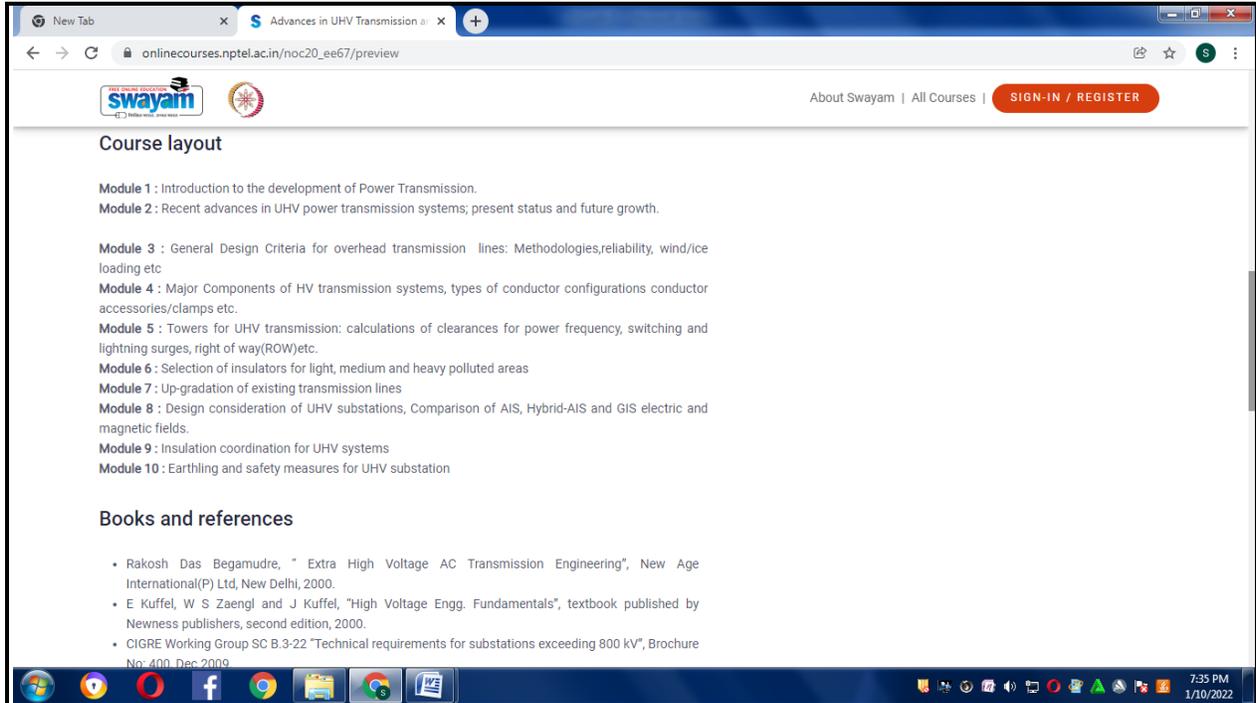
**SWAYAM**

- 1. NAME OF THE PROGRAM:** ADVANCES IN UHV TRANSMISSION AND DISTRIBUTION.
- 2. DURATION :** 8 WEEKS
- 3. NO.OF STUDENTS PARTICIPATE:**1)STUDENTS:04



## DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING SYLLABUS

### ADVANCES IN UHV TRANSMISSION AND DISTRIBUTION



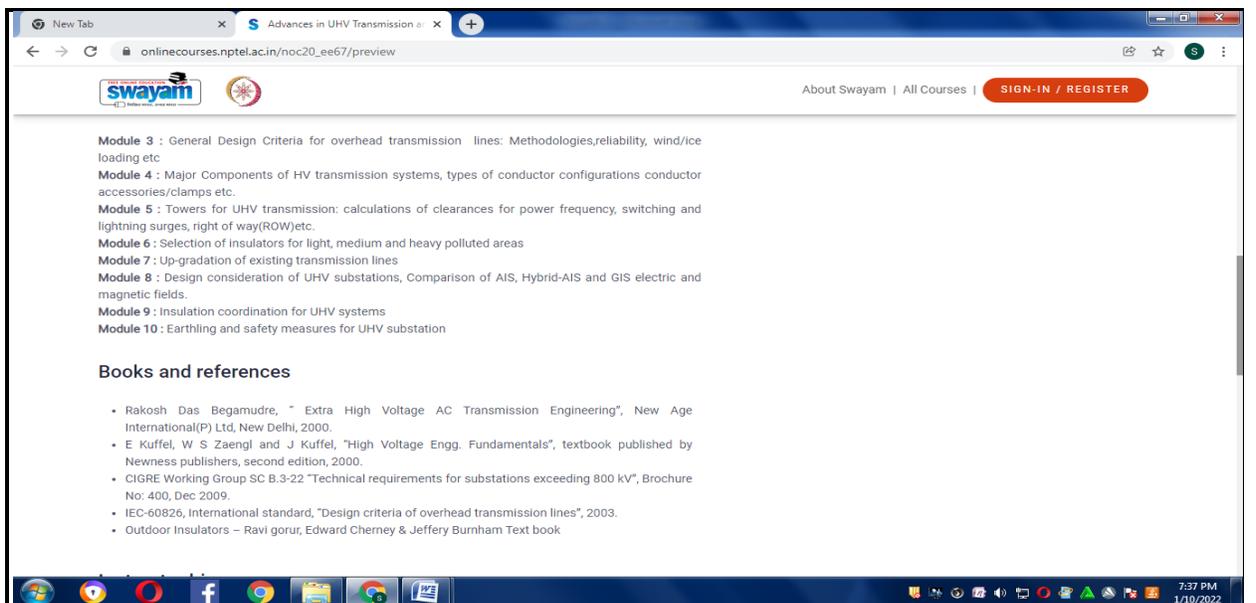
Course layout

**Module 1** : Introduction to the development of Power Transmission.  
**Module 2** : Recent advances in UHV power transmission systems; present status and future growth.

**Module 3** : General Design Criteria for overhead transmission lines: Methodologies, reliability, wind/ice loading etc  
**Module 4** : Major Components of HV transmission systems, types of conductor configurations conductor accessories/clamps etc.  
**Module 5** : Towers for UHV transmission: calculations of clearances for power frequency, switching and lightning surges, right of way(ROW)etc.  
**Module 6** : Selection of insulators for light, medium and heavy polluted areas  
**Module 7** : Up-gradation of existing transmission lines  
**Module 8** : Design consideration of UHV substations, Comparison of AIS, Hybrid-AIS and GIS electric and magnetic fields.  
**Module 9** : Insulation coordination for UHV systems  
**Module 10** : Earthing and safety measures for UHV substation

Books and references

- Rakosh Das Begamudre, " Extra High Voltage AC Transmission Engineering", New Age International(P) Ltd, New Delhi, 2000.
- E Kuffel, W S Zaengl and J Kuffel, "High Voltage Engg. Fundamentals", textbook published by Newness publishers, second edition, 2000.
- CIGRE Working Group SC B.3-22 "Technical requirements for substations exceeding 800 kV", Brochure No: 400, Dec 2009.



Books and references

- Rakosh Das Begamudre, " Extra High Voltage AC Transmission Engineering", New Age International(P) Ltd, New Delhi, 2000.
- E Kuffel, W S Zaengl and J Kuffel, "High Voltage Engg. Fundamentals", textbook published by Newness publishers, second edition, 2000.
- CIGRE Working Group SC B.3-22 "Technical requirements for substations exceeding 800 kV", Brochure No: 400, Dec 2009.
- IEC-60826, International standard, "Design criteria of overhead transmission lines", 2003.
- Outdoor Insulators – Ravi gorur, Edward Cherney & Jeffery Burnham Text book



**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**  
**SWAYAM COURSE ON ADVANCES IN UHV TRANSMISSION AND DISTRIBUTION**

**Resources person details**

**Instructor bio**



**Prof. Subbba Reddy**  
**B**  
IISc

Dr. Subbba Reddy B is a Principal Research Scientist at the High Voltage Laboratory, Dept. of Electrical Engineering, Indian Institute of Science, Bangalore, India. He received Bachelors in Electrical Engineering degree from Karnatak university, Dharwad, and MSc(Engg) and PhD from Indian Institute of Science, Bangalore, India. His research interests are high voltage engineering, transmission line insulators, numerical techniques for high voltage applications, condition monitoring and diagnostics of HV equipment, surge arresters, renewable energy systems etc. He has received national and international recognition for his research work. He is a Fellow of Institution of Engineers (India), Fellow, Society of Power Engineers (India) and Senior member IEEE



**DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING  
REPORT ON SWAYAM COURSE**

**BENEFICIARIES: IV YEAR**

**COURSE OUTCOME**

This course introduces the recent advances in EHV/UHV transmission and distribution systems. The course emphasizes learning and understanding the newer design criteria required for the UHV transmission systems viz: insulation design, protections, safety concerns etc. The course starts with an introduction to the importance of EHV /UHV transmission, its present and future growth. The discussion on the various components used for UHV transmission, design considerations for UHV substations etc are strengthened with the aid of lectures, practical video demonstrations and assignment exercises.

**Swayam Course: ADVANCES IN UHV TRANSMISSION AND DISTRIBUTION.**

**YEAR/SEM: IV/ VIII**

**Batch: 2017-2021**

**Course Strength: 04**

<b>S. No</b>	<b>Register No.</b>	<b>Student Name</b>	<b>Swayam Course-</b>	<b>Status</b>	<b>Course completed</b>
1.	821117105005	ISHWARYA.N	Registered	Assignment Completed	Certified
2.	821117105007	NANDHINI.M	Registered	Assignment Completed	Certified
3.	821117105009	PRIYADHARSHINI.R	Registered	Assignment Completed	Certified
4.	821117105011	SINDHU.S	Registered	Assignment Completed	Certified



**DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING  
ACADEMIC YEAR 2020-2021**

**SWAYAM- ADVANCES IN UHV TRANSMISSION AND DISTRIBUTION.**

**Completed certification**

**NPTEL Online Certification**  
(Funded by the Ministry of HRD, Govt. of India)

This certificate is awarded to  
**NANDHINI M**  
for successfully completing the course

**Advances in UHV Transmission and Distribution**

with a consolidated score of **45 %**

Online Assignments	12.42/25	Proctored Exam	33/75
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Total number of candidates certified in this course: 320

Prof. G. L. Sivakumar Babu  
Chairman, Centre for Continuing Education  
IISc Bangalore

Sep-Nov 2020  
(8 week course)

Prof. L. Umanand  
NPTEL Coordinator  
IISc Bangalore

Indian Institute of Science Bangalore

swayam

Roll No: NPTEL20EE67532390016 To validate and check scores: <https://npTEL.ac.in/hoc>

**NPTEL Online Certification**  
(Funded by the Ministry of HRD, Govt. of India)

This certificate is awarded to  
**PRIYADHARSHINI RAMADOSS**  
for successfully completing the course

**Advances in UHV Transmission and Distribution**

with a consolidated score of **45 %**

Online Assignments	12.42/25	Proctored Exam	32.25/75
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Total number of candidates certified in this course: 320

Prof. G. L. Sivakumar Babu  
Chairman, Centre for Continuing Education  
IISc Bangalore

Sep-Nov 2020  
(8 week course)

Prof. L. Umanand  
NPTEL Coordinator  
IISc Bangalore

Indian Institute of Science Bangalore

swayam

Roll No: NPTEL20EE67532390048 To validate and check scores: <https://npTEL.ac.in/hoc>

**NPTEL Online Certification**  
(Funded by the Ministry of HRD, Govt. of India)

This certificate is awarded to  
**N ISHWARYA**  
for successfully completing the course

**Advances in UHV Transmission and Distribution**

with a consolidated score of **47 %**

Online Assignments	12.75/25	Proctored Exam	34.5/75
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Total number of candidates certified in this course: 320

Prof. G. L. Sivakumar Babu  
Chairman, Centre for Continuing Education  
IISc Bangalore

Sep-Nov 2020  
(8 week course)

Prof. L. Umanand  
NPTEL Coordinator  
IISc Bangalore

Indian Institute of Science Bangalore

swayam

Roll No: NPTEL20EE67532390010 To validate and check scores: <https://npTEL.ac.in/hoc>

**NPTEL Online Certification**  
(Funded by the Ministry of HRD, Govt. of India)

This certificate is awarded to  
**S SINDHU**  
for successfully completing the course

**Advances in UHV Transmission and Distribution**

with a consolidated score of **50 %**

Online Assignments	12.75/25	Proctored Exam	37.5/75
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Total number of candidates certified in this course: 320

Prof. G. L. Sivakumar Babu  
Chairman, Centre for Continuing Education  
IISc Bangalore

Sep-Nov 2020  
(8 week course)

Prof. L. Umanand  
NPTEL Coordinator  
IISc Bangalore

Indian Institute of Science Bangalore

swayam

Roll No: NPTEL20EE67532390067 To validate and check scores: <https://npTEL.ac.in/hoc>



**DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING  
ACADEMIC YEAR 2020-2021**

**SWAYAM**

- 1. NAME OF THE PROGRAM:** "A Brief introduction of Micro sensors".
- 2. DURATION :** 4 WEEKS
- 3. NO.OF STUDENTS PARTICIPATE:**1)STUDENTS:38  
2)STAFF:06

*P. Narayana*

**Staff incharge**

*A. Arumugam*  
**HoD/EEE**



**DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING**  
**SYLLABUS**

**A Brief introduction of Micro sensors**

onlinecourses.nptel.ac.in/noc21\_ee26/course?user\_email=sriseekce@gmail.com

How does an NPTEL online course work?

**Week 0**

**Week 1**

- Introduction to Microscale Sensors or MEMS
- Scaling effect
- Some Simple Mechanics
- Basic Mechanics - Part 01
- Basic Mechanics - Part 02
- Basic Mechanics - Part 03
- Week 1 Lecture Materials
- Quiz: Practice Assignment 1
- Quiz: Assignment 1
- A brief introduction of Micro-Sensors : Week 1 Feedback form
- Solution : Assignment 1

**Week 2**

**Week 3**

Main objective of this course is to introduce students to micro- and nano-scale devices. After successfully completing this short course, students will have an idea about MEMS and NEMS devices and their applications. They will know how to design, analyze and characterize a micro or nano system. They will also have an idea about MEMS fabrication.

**INTENDED AUDIENCE :** Interested audience  
**PRE- REQUISITES :** Basic Physics, Electronics and Mechanics  
**SUPPORT INDUSTRY :** TSMC, ASML, Sandisk, Applied Materials etc semiconductor and process technology based companies

**Dr. Santanu Talukder**  
 IISER Bhopal

Dr. Santanu did his undergraduate in Physics and in Electronics & Instrumentation Engineering both from Jadavpur University, Kolkata. After that he moved to IISc, Bangalore, for his Masters and Ph.D. in Nanoscience and Engineering, where he worked on material transport and lithography at micro and nano scale. After Ph.D., he joined Weizmann Institute of Science, in Israel, for his Post-Doctoral studies on self-assembled monolayer. Since last October, he is working as a faculty member in Electrical Engineering department of IISER Bhopal. He has received several awards/grants. To name a few best PhD thesis award from Indian National Academy of Engineers in 2016, Gandhian Young Technical Innovation award in 2017, Freinberg Graduate Scholarship in 2017, Birac-Srishi grant for the year 2017-2018. His research interests are in micro and nano scale devices and sensors, Lithography, IoT System Development, etc.

A brief introduction of MEMS

Micro Electro-Mechanical Systems  
 Smart Sensors  
 Pressure Sensor  
 Temperature Sensor  
 Micro Sensor

WhatsApp Image...jpeg | Swayamrur | Electronic Waste...pdf | A brief introductio...pdf | EEE\_IV\_Year\_A\_EE4...pdf

12:37 PM 1/12/2022

onlinecourses.nptel.ac.in/noc21\_ee26/course?user\_email=sriseekce@gmail.com

**Week 2**

- Electrostatics
- Electrostatic force
- Coupled electromechanics
- Stiction
- Week 2 Lecture materials
- Quiz: Practice Assignment 2
- Quiz: Assignment 2
- A brief introduction of Micro-Sensors : Week 2 Feedback form
- Solution : Assignment 2

**Week 3**

**Week 4**

**DOWNLOAD VIDEOS**

**Text Transcripts**

**IISER Bhopal**

Freinberg Graduate Scholarship in 2017, Birac-Srishi grant for the year 2017-2018. His research interests are in micro and nano scale devices and sensors, Lithography IoT System Development, etc.

**COURSE TYPE**  
 Elective

**COURSE LEVEL**  
 Postgraduate

**COURSE LAYOUT**

**Week 1 :** What is small? From millimeter to angstrom; MEMS sensors introduction and application  
**Week 2 :** Fundamentals of stress-strain, electrostatics and energy dissipation  
**Week 3 :** Si and its properties; Microfabrication and lithography  
**Week 4 :** Design and analysis of Micro Sensors. Case study: Accelerometer, Pressure sensor

**BOOKS AND REFERENCES**

- Micro and Smart Systems, G. K. Anantha Suresh
- Microsystem Design by Stephen D Senturia, Publisher: Springer US, 1st ed. 2000, Corr. 2nd printing 2004 edition

**CERTIFICATE**

The course is free to enroll and learn from. But if you want a certificate, you have to register and write the proctored exam conducted by us in person at any of the designated exam centres.  
 The exam is optional for a fee of Rs. 1000/- (Rupees one thousand only)

WhatsApp Image...jpeg | Swayamrur | Electronic Waste...pdf | A brief introductio...pdf | EEE\_IV\_Year\_A\_EE4...pdf

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onlinecourses.nptel.ac.in/noc21\_ee26/course?user\_email=srkeekce@gmail.com

Week 2 Fundamentals of stress-strain, electrostatics and energy dissipation  
 Week 3 Si and its properties, Microfabrication and lithography  
 Week 4 Design and analysis of Micro Sensors: Case study: Accelerometer, Pressure sensor

### BOOKS AND REFERENCES

1. Micro and Smart Systems, G. K. Anantha Suresh
2. Microsystem Design by Stephen D Senturia, Publisher: Springer US, 1st ed. 2000. Corr. 2nd printing 2004 edition

### CERTIFICATE

The course is free to enroll and learn from. But if you want a certificate, you have to register and write the proctored exam conducted by us in person at any of the designated exam centres.  
 The exam is optional for a fee of Rs 1000/- (Rupees one thousand only).  
 Date and Time of Exams: 21 March 2021 Morning session 9am to 12 noon; Afternoon Session 2pm to 5pm.  
 Registration url: Announcements will be made when the registration form is open for registrations.  
 The online registration form has to be filled and the certification exam fee needs to be paid. More details will be made available when the exam registration form is published. If there are any changes, it will be mentioned then.  
 Please check the form for more details on the cities where the exams will be held, the conditions you agree to when you fill the form etc.

#### CRITERIA TO GET A CERTIFICATE

Average assignment score = 25% of average of best 3 assignments out of the total 4 assignments given in the course.  
 Exam score = 75% of the proctored certification exam score out of 100

Final score = Average assignment score + Exam score

**YOU WILL BE ELIGIBLE FOR A CERTIFICATE ONLY IF AVERAGE ASSIGNMENT SCORE >= 10/25 AND EXAM SCORE >= 30/75. If one of the 2 criteria is not met, you will not get the certificate even if the Final score >= 40/100.**

onlinecourses.nptel.ac.in/noc21\_ee26/course?user\_email=srkeekce@gmail.com

The online registration form has to be filled and the certification exam fee needs to be paid. More details will be made available when the exam registration form is published. If there are any changes, it will be mentioned then.  
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#### CRITERIA TO GET A CERTIFICATE

Average assignment score = 25% of average of best 3 assignments out of the total 4 assignments given in the course.  
 Exam score = 75% of the proctored certification exam score out of 100

Final score = Average assignment score + Exam score

**YOU WILL BE ELIGIBLE FOR A CERTIFICATE ONLY IF AVERAGE ASSIGNMENT SCORE >= 10/25 AND EXAM SCORE >= 30/75. If one of the 2 criteria is not met, you will not get the certificate even if the Final score >= 40/100.**

Certificate will have your name, photograph and the score in the final exam with the breakup. It will have the logos of NPTEL and IISER Bhopal. It will be e-verifiable at nptel.ac.in/noc.

Only the e-certificate will be made available. Hard copies will not be dispatched.

Once again, thanks for your interest in our online courses and certification. Happy learning.

- NPTEL team

*Srkeekce*  
 HOD / EEE

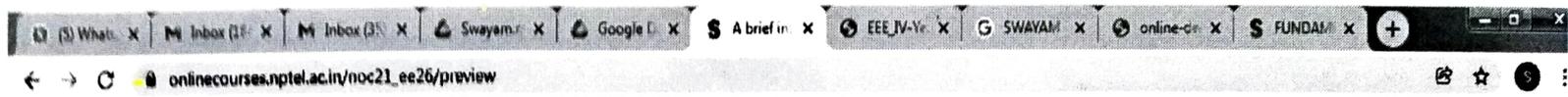


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 Affiliated to Anna University, Chennai



**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**

**Resources person details**



About Swayam | All Courses | srkeekce@gmail.com

1. Micro and Smart Systems, G. K. Anantha Suresh
2. Microsystem Design by Stephen D Senturia, Publisher: Springer US, 1st ed. 2000. Corr. 2nd printing 2004 edition

**Instructor bio**

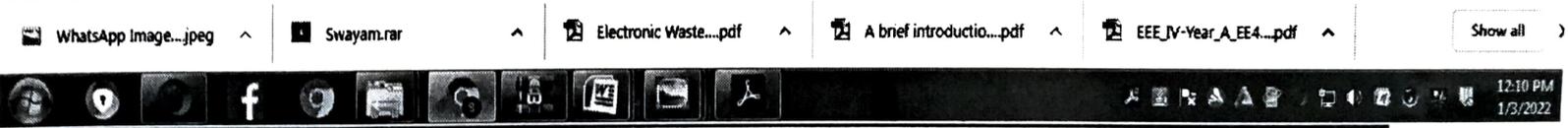


**Prof. Santanu  
 Talukder**  
 IISER Bhopal

Dr. Santanu did his undergraduate in Physics and in Electronics & Instrumentation Engineering both from Jadavpur University, Kolkata. After that he moved to IISc, Bangalore, for his Masters and Ph.D. in Nanoscience and Engineering, where he worked on material transport and lithography at micro and nano scale. After Ph.D., he joined Weizmann Institute of Science, in Israel, for his Post-Doctoral studies on self-assembled monolayer. Since last October, he is working as a faculty member in Electrical Engineering department of IISER Bhopal. He has received several awards/grants. To name a few best PhD thesis award from Indian National Academy of Engineers in 2016, Gandhian Young Technical Innovation award in 2017, Freinberg Graduate Scholarship in 2017, Birac-Sristi grant for the year 2017-2018. His research interests are in micro and nano scale devices and sensors, Lithography, IoT System Development, etc.

**Course certificate**

The course is free to enroll and learn from. But if you want a certificate, you have to register and write the



*Santanu Talukder*  
 HOD / EEE

**R.JAYAPRAKASH**

Date enrolled: 2020-12-30

Email: rajan|prakash@gmail.com

Name: R.JAYAPRAKASH

**Assessment scores**

Assignment 0: 100.0

Practice Assignment 1: -

Assignment 1: -

Practice Assignment 2: 100.0

Assignment 2: 10.0

Practice Assignment 3: 100.0

Practice Assignment 4: 100.0

Assignment 3: 45.0

Assignment 4: 8.0

**R.DIVYABHARATH**

Date enrolled: 2020-12-18

Email: rdivyabharath2000@gmail.com

Name: R.DIVYABHARATH

**Assessment scores**

Assignment 0: 100.0

Practice Assignment 1: 60.0

Assignment 1: 10.0

Practice Assignment 2: 80.0

Assignment 2: 10.0

Practice Assignment 3: 100.0

Practice Assignment 4: 100.0

Assignment 3: 50.0

Assignment 4: 5.0

**GOPINATH P**

Date enrolled: 2020-12-18

Email: gopi45029@gmail.com

Name: GOPINATH P

**Assessment scores**

Assignment 0: 100.0

Practice Assignment 1: 100.0

Assignment 1: -

Practice Assignment 2: 80.0

Assignment 2: 10.0

Practice Assignment 3: 100.0

Practice Assignment 4: 100.0

Assignment 3: 45.0

Assignment 4: 12.0

**S SINDHU**

Date enrolled: 2020-12-18

Email: sindhusha169@gmail.com

Name: S SINDHU

**Assessment scores**

Assignment 0: 100.0

Practice Assignment 1: -

Assignment 1: 20.0

Practice Assignment 2: 100.0

Assignment 2: 10.0

Practice Assignment 3: 100.0

Practice Assignment 4: 100.0

Assignment 3: 45.0

Assignment 4: 5.0



**DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING**  
**REPORT ON SWAYAM COURSE**  
**A Brief Introduction of Micro – Sensors**

**BENEFICIARIES: IV/III/II YEARS**

**COURSE OUTCOME**

- To introduce students to micro- and nano-scale devices.
- After successfully completing this short course, students will have an idea about MEMS and NEMS devices and their applications.
- They will know how to design, analyze and characterize a micro or nano system.
- They will also have an idea about MEMS fabrication.

**YEAR/SEM: IV/ VIII**

**Batch: 2018–22**

**Class Strength: 15**

S. No	Register No.	Student Name	Swayam Course	Status	Course Completed
1.	821117105001	ADHAVAN.S	Registered	Assignment Completed	Completed
2.	821117105002	DIVYA BHARATH.R	Registered	Assignment Completed	Completed
3.	821117105003	GANESAN.E	Registered	Assignment Completed	Completed
4.	821117105004	HARIHARAN.R	Registered	Assignment Completed	Completed
5.	821117105005	ISHWARYA.N	Registered	Assignment Completed	Completed
6.	821117105006	MANO.M	Registered	Assignment Completed	Completed
7.	821117105007	NANDHINI.M	Registered	Assignment Completed	Completed
8.	821117105008	PRABHAKARAN.K	Registered	Assignment Completed	Completed
9.	821117105009	PRIYADHARSHINI.R	Registered	Assignment Completed	Completed
10.	821117105011	SINDHU.S	Registered	Assignment Completed	Completed
11.	821117105013	VIJAY.C	Registered	Assignment Completed	Completed

12.	821117105301	GOPINATH.P	Registered	Assignment Completed	Completed
13.	821117105302	HARIHARAN.S	Registered	Assignment Completed	Completed

**YEAR/SEM: III/VI**

**Batch: 2018-22**

**Class Strength: 15**

S. No	Register No.	Student Name	Swayam Course	Status	Course Completed
1	821118105001	ABIRAMI U	Registered	Assignment Completed	Completed
2.	821118105002	AKESH SATHIYA A	Registered	Assignment Completed	Completed
3.	821118105010	JAYAPRAKASH R	Registered	Assignment Completed	Completed
4.	821118105011	KARTHIKEYAN K	Registered	Assignment Completed	Completed
5.	821118105015	MOHAMEDHALITH S	Registered	Assignment Completed	Completed
6.	821118105023	VASANTH K	Registered	Assignment Completed	Completed
7.	821118105301	PREMALATHA.N	Registered	Assignment Completed	Completed

**YEAR/SEM:II/ IV**

**Batch: 2019- 22**

**Class Strength:09**

S.No	Register No.	Student Name	Swayam Course	Status	Course Completed
1	821119105002	KRISHNA M.E	Registered	Assignment Completed	Completed
2	821119105003	PANDIDEVI.P	Registered	Assignment Completed	Completed
3	821119105005	RAGUL.V	Registered	Assignment Completed	Completed
4	821119105006	REGINA.R	Registered	Assignment Completed	Completed
5	821119105301	SARATHKUMAR.A	Registered	Assignment	Completed

  
HOD/EEE



**DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING  
ACADEMIC YEAR 2020-2021**

**SWAYAM**

- 1. NAME OF THE PROGRAM: ELECTRONIC WASTE MANAGEMENT – ISSUES  
AND CHALLENGES.**
- 2. DURATION : 4 WEEKS**
- 3. NO.OF STUDENTS PARTICIPATE:1)STUDENTS:38  
2)STAFF:06**

*P. K. Anand*

**Staff incharge**

*A. Anand*  
**HoD/EEE (8/01/21)**

**DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING**  
**SYLLABUS**

**ELECTRONIC WASTE MANAGEMENT ISSUES AND CHALLENGES**

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← → ↻ onlinecourses.nptel.ac.in/noc21\_ce03/unit?unit=17&lesson=18

**Lecture-1 : E-Waste Overview**

Course outline

How does an NPTEL online course work?

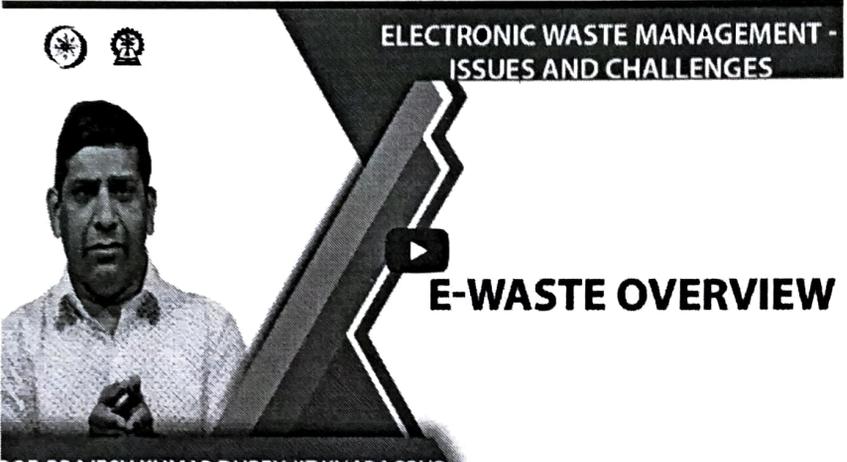
Week 0 :

Week 1

- Lecture-1 : E-Waste Overview
- Lecture-2 : E-Waste Overview
- Lecture-3 : E-Waste Overview
- Lecture-4 : E-Waste Management Overview
- Lecture-5 : E-Waste Management Overview
- Week 1 : Lecture Materials
- Quiz: Assignment 1
- Feedback For Week 1

Week 2

Week 3



**ELECTRONIC WASTE MANAGEMENT - ISSUES AND CHALLENGES**

**E-WASTE OVERVIEW**

DR. BRAJESH KUMAR DUBEY, IIT KHARAGPUR

Swayamrur | Electronic Waste...pdf | A brief introductio...pdf | EEE\_IV-Year\_A\_EE4...pdf | EEE\_IV-Year\_A\_EE4...pdf | Show all

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← → ↻ onlinecourses.nptel.ac.in/noc21\_ce03/unit?unit=17&lesson=18

**Lecture-1 : E-Waste Overview**

Course outline

How does an NPTEL online course work?

Week 0 :

Week 1

- Lecture-1 : E-Waste Overview
- Lecture-2 : E-Waste Overview
- Lecture-3 : E-Waste Overview
- Lecture-4 : E-Waste Management Overview
- Lecture-5 : E-Waste Management Overview
- Week 1 : Lecture Materials
- Quiz: Assignment 1
- Feedback For Week 1

Week 2

Week 3



**ELECTRONIC WASTE MANAGEMENT - ISSUES AND CHALLENGES**

**E-WASTE OVERVIEW**

DR. BRAJESH KUMAR DUBEY, IIT KHARAGPUR

Swayamrur | Electronic Waste...pdf | A brief introductio...pdf | EEE\_IV-Year\_A\_EE4...pdf | EEE\_IV-Year\_A\_EE4...pdf | Show all

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← → ↻ onlinecourses.nptel.ac.in/noc21\_ce03/unit?unit=17&lesson=18

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[onlinecourses.nptel.ac.in/noc21\\_ce03/unit/unit=17&lesson=18](#)

**Week 3**

- Lecture 11: Recovery of materials from E-Waste
- Lecture 12: Metal Recovery Process
- Lecture 13: Recovery of metals from Electronic Waste
- Lecture 14: Recovery of metals from Electronic Waste
- Lecture 15: Recovery of metals from Electronic Waste
- Week 3: Lecture Material
- Quiz: Assignment 3
- Feedback For Week 3

**Week 4**

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Assignment Solution

Live Interactive Session

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[\(3\) WhatsApp](#) | [Inbox \(183\) - senchani](#) | [Inbox \(35\) - senhamil](#) | [Swayam.rnr - Google D](#) | [Google Drive - Virus sc](#) | [Electronic Waste Manag](#)

[onlinecourses.nptel.ac.in/noc21\\_ce03/unit/unit=17&lesson=18](#)

● Feedback For Week 3

**Week 4**

- Lecture 16: E-waste Management
- Lecture 17: E-waste Management
- Lecture 19: E-waste Management
- Lecture 19: Electronics and LCA
- Lecture 20: LCA applications for Electronics
- Lecture 21: Tutorial - I
- Lecture 22: Tutorial - II
- Week 4 Lecture Material
- Quiz: Assignment 4
- Feedback For Week 4

DOWNLOAD VIDEOS

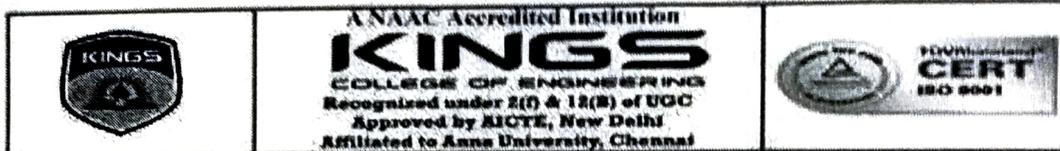
Assignment Solution

Live Interactive Session

[Swayam.rnr](#) | [Electronic Waste...pdf](#) | [A brief introductio...pdf](#) | [EEE\\_IV-Year\\_A\\_EE4...pdf](#) | [EEE\\_IV-Year\\_A\\_EE4...pdf](#) | [Show all](#)

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*Sharma*  
HOD/EEE



## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

### Resources person details

← → ↻ onlinecourses.nptel.ac.in/noc21\_ce03/preview

🔍 ☆ ● |



About Swayam | All Courses | [ankurkce@gmail.com](mailto:ankurkce@gmail.com)

#### Instructor bio



**Prof. Brajesh Kumar Dubey**  
IIT Kharagpur

**Professor Brajesh K. Dubey** has his bachelors degree in Civil Engineering (Hons.) from Indian Institute of Technology (IIT) Kharagpur, India and PhD in Environmental Engineering Sciences, University of Florida, Gainesville, Florida, USA. He is presently Associate Professor (Integrated Waste Management and Sustainable Engineering) in the Division of Environmental Engineering and Management at Indian Institute of Technology (IIT), Kharagpur, India. Dr. Dubey has more than 17 years of research, teaching, training and industrial outreach experience in the areas of Integrated Solid and Hazardous Waste Management, and Sustainable Engineering and Application of Life Cycle Assessment techniques. He also works in the area of Life Cycle Analysis and Sustainable Engineering. He has been teaching courses in the area of Solid Waste Management, Hazardous Waste Management, Life Cycle Analysis and Environmental Risk Assessment among other courses for nearly a decade. He has taught at several universities in USA, Canada, New Zealand, China and India. He has also conducted training programs in the Integrated Waste Management areas including that for Electronics Waste. Dr. Dubey has authored/co-authored more than 200 publications in his area of expertise and have presented at several national and international conferences. He has worked as Waste Management Expert for UN agencies and World Bank.

*A Anam*  
**HOD/EEE**

### GOPINATH P

Date enrolled: 2020-12-23

Email: gopi45029@gmail.com

Name: GOPINATH P

#### Assessment scores

- Assignment 0: 80.0
- Assignment 1: 93.0
- Assignment 2: 80.0
- Assignment 3: 100.0
- Assignment 4: 80.0

### R.JAYAPRAKASH

Date enrolled: 2020-12-30

Email: rajanjprakash@gmail.com

Name: R.JAYAPRAKASH

#### Assessment scores

- Assignment 0: 100.0
- Assignment 1: 93.0
- Assignment 2: 73.0
- Assignment 3: 100.0
- Assignment 4: 80.0

### C.VIJAY

Date enrolled: 2021-01-01

Email: vijayselva529@gmail.com

Name: C.VIJAY

#### Assessment scores

- Assignment 0: 100.0
- Assignment 1: 93.0
- Assignment 2: 80.0
- Assignment 3: 100.0
- Assignment 4: 80.0

### R.DIVYABHARATH

Date enrolled: 2020-12-23

Email: rdivyabharath2000@gmail.com

Name: R.DIVYABHARATH

#### Assessment scores

- Assignment 0: 87.0
- Assignment 1: 93.0
- Assignment 2: 80.0
- Assignment 3: 100.0
- Assignment 4: 80.0



## DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING REPORT ON SWAYAM COURSE

**BENEFICIARIES: IV/III/II YEARS**

### COURSE OUTCOME

This course will discuss the overall scenario of E-Waste management in India in comparison with other countries around the globe. At first, the present scenario of E-Waste management in India (mostly informal) will be discussed along the role of various stakeholders. Then, the effects of recycling and management of Electronic Waste on human health, environment and society will also be presented. This will be followed by the risk assessment owing to pollutants released from E-Waste recycling in soil, air and water. The possible option of extraction of Rare-Earth Minerals will also be discussed in this course. The E-Waste management Rules of India and around the World will be compared. Finally a Life-Cycle Analysis approach will be employed for a possible sustainable solution of E-Waste Management for cutting the ill-effects of informal recycling. The topics will include: Composition of E-Waste and its generation rates across the world; The various processes of informal E-Waste management and its ill-effects on health and society;

- Formal Metal extraction processes from E-Waste;
- Life-Cycle-Analysis (LCA) and sustainable engineering from electrical and electronics industry perspectives.
- The existing E-Waste Management rules in India and comparison with other countries around the world, the Extended Producer Responsibility (EPR) and other take-back system.

A major focus of this course will be the role of E-Waste management within the various initiatives of the Govt. of India including: Swachh Bharat Mission, Smart Cities as well as Make in India. The challenges of E-Waste management for smart cities will also be discussed taking few case studies from various developing nation around the globe. This will be followed by overview of the Electronic Waste (E-Waste) management issues in India in general and for the smart cities in particular. The new rules such as Extended Producer Responsibility (EPR) with respect E-Waste Management will also be covered in these courses.

## Swayam Course: Electronic Waste Management – Issues and Challenges

YEAR/SEM: IV/ VIII

Batch: 2018-22

Class Strength: 15

S. No	Register No.	Student Name	Swayam Course-	Status	Course completed
1.	821117105001	ADHAVAN.S	Registered	Assignment Completed	completed
2.	821117105002	DIVYA BHARATH.R	Registered	Assignment Completed	completed
3.	821117105003	GANESAN.E	Registered	Assignment Completed	completed
4.	821117105004	HARIHARAN.R	Registered	Assignment Completed	completed
5.	821117105005	ISHWARYA.N	Registered	Assignment Completed	completed
6.	821117105006	MANO.M	Registered	Assignment Completed	completed
7.	821117105007	NANDHINI.M	Registered	Assignment Completed	completed
8.	821117105008	PRABHAKARAN.K	Registered	Assignment Completed	completed
9.	821117105009	PRIYADHARSHINI.R	Registered	Assignment Completed	completed
10.	821117105011	SINDHU.S	Registered	Assignment Completed	completed
11.	821117105013	VIJAY.C	Registered	Assignment Completed	completed
12.	821117105301	GOPINATH.P	Registered	Assignment Completed	completed
13.	821117105302	HARIHARAN.S	Registered	Assignment Completed	completed

**YEAR/SEM: III/VI****Batch: 2018-22****Class Strength: 15**

S. No	Register No.	Student Name	Swayam Course	Status	Course completed
1	821118105001	ABIRAMI U	Registered	Assignment Completed	completed
2.	821118105002	AKESH SATHIYA A	Registered	Assignment Completed	completed
3..	821118105010	JAYAPRAKASH R	Registered	Assignment Completed	completed
4.	821118105011	KARTHIKEYAN K	Registered	Assignment Completed	completed
5.	821118105015	MOHAMEDHALITH S	Registered	Assignment Completed	completed
6.	821118105023	VASANTH K	Registered	Assignment Completed	completed
7.	821118105301	PREMALATHA.N	Registered	Assignment Completed	completed

**YEAR/SEM:II/ IV****Batch: 2019- 22****Class Strength:09**

S.No	Register No.	Student Name	Swayam Course	Status	Course completed
1	821119105002	KRISHNA M.E	Registered	Assignment Completed	completed
2	821119105003	PANDIDEVI.P	Registered	Assignment Completed	completed
3	821119105005	RAGUL.V	Registered	Assignment Completed	completed
4	821119105006	REGINA.R	Registered	Assignment Completed	completed
5	821119105301	SARATHKUMAR.A	Registered	Assignment	completed

  
**HOD/EEE**



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Approved by AICTE, New Delhi  
Affiliated to Anna University, Chennai



## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

### VALUE ADDED COURSE DETAILS

**SUBJECT: EVA002 - ADVANCES IN SOLAR ENERGY TECHNOLOGIES**  
**SEMESTER - V / III - Year EEE**

### TABLE OF CONTENT

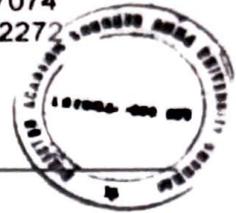
Sl. No.	CONTENT
<b>Academic year 2019-20 Odd Sem</b>	
1.	AU Approval Letter
2.	Syllabus with Resource Person Details
3.	Anna University Approval List



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Off: 22357077 / 73  
22357074  
Fax / Dir : 22352272

**CENTRE FOR ACADEMIC COURSES**  
**ANNA UNIVERSITY**  
CHENNAI - 600 025

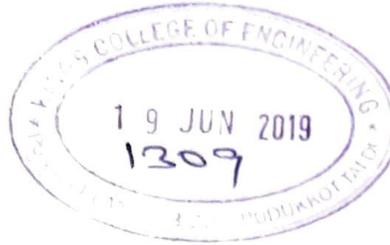


**Dr. R. RAJU**  
**DIRECTOR**

Letter No: 2518/AU/EVA/CAC/2019

13.06.2019

To  
The Controller of Examinations  
Anna University  
Chennai - 25.



Sir,

Sub : A.U. - CAC – Kings College of Engineering - Value Added Course - Reg.

Ref. : Letter No. KCE/PRL/VAC/113/18-19, from Kings College of Engineering,  
Dated: 22.05.2019 & 07.06.2019.

\*\*\*\*\*

With reference to the letter cited above, the following Value Added Course offered by Kings College of Engineering, Affiliated Institutions is allotted the course code as detailed below.

S.No	Code Allotted	Title
1.	EVA002	Advances in Solar Energy Technologies

This is for your kind information and necessary action at your end.

Yours faithfully,

**DIRECTOR**

**Copy to:**

1. The Chairperson, Faculty of Electrical Engineering, Anna University, Chennai - 25.
2. The Principal, Kings College of Engineering, Punalkulam, Gandarvakottai Taluk, Pudukkottai District, Tamilnadu – 613 303.
3. The Stock File



**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**

**SUBJECT: ADVANCES IN SOLAR ENERGY TECHNOLOGIES**

**SEMESTER: V**

**COURSE PLAN (EVA002)**  
*(Version: 1)*

**PREPARED BY**

**Mr. J. AROKIARAJ AP/EEE**

**&**

**Mr. C. JOHN SELVARAJ AP/EEE**

## SYLLABUS

EE851

ADVANCES IN SOLAR ENERGY TECHNOLOGIES

L T P C  
2 0 0 2

UNIT I

ADVANCES IN SOLAR PV MATERIALS

6

Semiconductor Materials and Modelling - Crystalline silicon solar cells - Thin film technologies - Space and concentrator cells - Organic and dye sensitized cells - Evaluating a Site for Solar PV Potential.

UNIT II

MPPT CRITERIA FOR PV SYSTEMS

6

Testing, Monitoring and Calibration - Photovoltaic System Components - Maximum Power Point Tracking Algorithms - Different MPPT techniques - Implementation of MPPT using a boost converter.

UNIT III

STAND ALONE PV SYSTEM

6

Solar modules – storage systems – power conditioning and regulation - MPPT- protection – Stand-alone PV systems design – sizing.

UNIT IV

GRID CONNECTED PV SYSTEMS

6

PV systems in buildings – design issues for central power stations – safety – Economic aspect – Efficiency and performance - International PV programs.

UNIT V

MODELLING AND SIMULATION OF PV SYSTEMS USING MATLAB

6

Introduction to Systems - Systems Modeling - Formulation of State Space Model of Systems - Model Order Reduction - Interpretive Structural Modeling - System Dynamics Techniques – Simulation.

**TOTAL: 30 PERIODS**

  
Mr. J. Arokiaraj & Mr. C. John Selvaraj  
Faculty in-charge

  
HOD/EEE



**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**  
**COURSE PLAN**

<b>Sub. Code</b> : EE851	<b>Branch / Year / Sem</b> : B.E EEE / III /V
<b>Sub. Name</b> : Advances In Solar Energy Technologies	<b>Batch</b> : 2017-2021
<b>Staff Name</b> : Mr.J.Arokiaraj & Mr.C.JohnSelvaraj	<b>Academic Year</b> : 2019 - 20 (ODD)

**COURSE OBJECTIVE**

1. To get an overview of different types of photovoltaic semiconductor devices and their characteristics.
2. To analyze the operation and performance parameters MPPT criteria for PV systems.
3. To study the operation techniques and basics topologies standalone operation of PV system.
4. To learn the different techniques of grid connected PV system.
5. To study the modelling and simulation of PV systems using MATLAB.

**TEXT BOOKS**

- T1.** Solar Cells: Materials, Manufacture and Operation, Tom Markvart University of Southampton, UK and Luis Castafier Universidad Politecnica de Catalunya, Barcelona, Spain, First edition 2005 Reprinted 2005, 2006, Elsevier Ltd.
- T2.** Study of maximum power point tracking (MPPT) techniques in a solar photovoltaic array, Arjav Harjai, Abhishek Bhardwaj, Mrutyunjaya Sandhibigraha, nit, Rourkela.
- T3.** Solanki C.S., "Solar Photovoltaics: Fundamentals, Technologies And Applications", PHI Learning Pvt. Ltd.,2015.
- T4.** Modeling and Simulation of Systems Using MATLAB and Simulink, Devendra K. Chaturvedi, CRC Press, 2010 by Taylor and Francis Group, LLC.

**REFERENCE BOOKS**

- R1.** "Power Electronics for Renewable Energy Systems". C.R.Bala Murugan, D.Periyaaazhagar, N.Suresh, Sruthi Publishers, Jan - 2017.
- R2.** "Solar Photovoltaic Technology and systems", Chetan Singh Solanki, PHI Publications. 2017.

**WEB RESOURCES**

- W1.** <http://www.energy.wsu.edu/Documents/SolarPVforBuildersOct2009.pdf> **(Topic No. 06)**
- W2.** <https://pdfs.semanticscholar.org/1db7/435215cb2d9895bc29e0358a9b23300988f5.pdf> **(Topic No. 12)**
- W3.** <https://www.sciencedirect.com/science/article/pii/S0960148105002831> **(Topic No. 22)**
- W4.** [http://www.os.ucg.ac.me//MS\\_kn.pdf](http://www.os.ucg.ac.me//MS_kn.pdf) **(Topic No. 27)**



<b>UNIT IV GRID CONNECTED PV SYSTEMS (6)</b>						
<b>Topic No</b>	<b>Topic</b>	<b>Books for Reference</b>	<b>Page No.</b>	<b>Teaching Methodology</b>	<b>No. of Hours Required</b>	<b>Cumulative No. of periods</b>
19.	PV systems in buildings.	T1	446-450	BB	1	19
20.	Design issues for central power stations.	R1	4.28-4.36	BB	1	20
21.	Safety.	T1	299-300	BB	1	21
22.	Economic aspect.	W3	-	PPT	1	22
23.	Efficiency and performance.	T1	173-177	BB	1	23
24.	International PV programs.	R1	5.31-5.32	BB	1	24

**LEARNING OUTCOME**

At the end of unit, students should be able to

- Study the Design issues for central power stations.
- Understand the Economic aspect, Efficiency and performance.

**UNIT V MODELLING AND SIMULATION OF PV SYSTEMS USING MATLAB (6)**

25.	Introduction to Systems, Systems Modeling.	T4	1-98	BB	1	25
26.	Formulation of State Space Model of Systems.	W4	-	PPT	1	26
27.	Model Order Reduction.	T4	219-263	BB	1	27
28.	Interpretive Structural Modeling.	T4	300-325	BB	1	28
29.	System Dynamics Techniques	T4	327-344	BB	1	29
30.	Simulation.	T4	401-420	PPT	1	30

**LEARNING OUTCOME**

At the end of unit, students should be able to

- Understand the Impact of Simulation.
- Analyze of the techniques used for simulation tools.

**COURSE OUTCOME**

At the end of the course, the students will be able to

- Use different materials used for photovoltaic cells manufacturing.
- Understand the principles and operation techniques used for MMPT.
- Analyze and design standalone operation of PV power generation.
- Describe the various grid connecting techniques for PV system.
- Understand the simulation tools used for photovoltaic power generation.

**INTERNAL ASSESSMENT DETAILS**

ASST. NO.	I	II
Topic Nos.	1 - 15	16-30
Date		

**Prepared by**

*Mr. J. Arokiaraj & Mr. C. John Selvaraj*

**Verified by**

*A. Almm*  
HOD/EEE

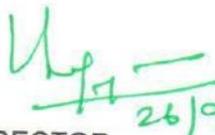
**Approved by**

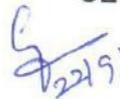
*J. Arumugam*  
Principal

**AFFILIATED INSTITUTIONS**  
**FACULTY OF ELECTRICAL ENGINEERING**  
**APPROVED LIST OF VALUE ADDED COURSES**

Sl.No.	Subject Code	Subject Name	L	T	P	C
1.	EVA001	Solar Photovoltaic System Design	2	0	0	2
2.	EVA002	Advances in Solar Energy Technologies	2	0	0	2
3.	EVA003	Arduino Programming	1	0	0	1
4.	EVA004	Material Detection and Inspection Technology	1	0	2	2
5.	EVA005	Industrial Automation with PLC	0	0	2	1
6.	EVA006	Industrial Process Control and Instrumentation	0	0	2	1
7.	EVA007	Energy Conservation, Management and Audit	1	0	0	1
8.	EVA008	Field Oriented Control of BLDC, Induction and Synchronous Motors	1	0	0	1
9.	EVA009	Industrial Automation using PLC & SCADA	1	0	2	2
10.	EVA010	LabVIEW Core -1 and Core - 2 levels with Certified LabVIEW Developer (CLAD) Certification Training	2	0	0	2
11.	EVA011	Solar Photovoltaic Technology	2	0	0	2
12.	EVA012	Measurements in Process Industries	1	0	0	1
13.	EVA013	Automation and Control	0	0	2	1
14.	EVA014	ECAD	0	0	2	1
15.	EVA015	SCADA	0	0	2	1
16.	EVA016	Electric and Hybrid Vehicles	2	0	0	2
17.	EVA017	Programmable Logic Controller	1	0	0	1
18.	EVA018	Factory Automation	1	0	0	1
19.	EVA019	MATLAB and SIMULINK for Electrical Engineers	2	0	0	2
20.	EVA020	Electrical Machine Design	0	0	2	1
21.	EVA021	Abstract for Industrial Internet of Things with Real Time Data Logging	1	0	0	1

22.	EVA022	Industrial and Home Automation	2	0	0	2
23.	EVA023	Supervised Machine Learning for Image Classification	2	0	0	2
24.	EVA024	Fuzzy Logic System and Applications	2	0	0	2
25.	EVA025	Electronic Design Automation & PCB Designing by using ORCAD	2	0	0	2
26.	EVA026	Solar Power Design, Operation and Installation	2	0	0	2
27.	EVA027	Sensor Applications using Arduino and Raspberry Pi	2	0	0	2
28.	EVA028	Solar PV System Design and Installation	2	0	0	2
29.	EVA029	Design and Development of Robotics	2	0	0	2
30.	EVA030	Embedded Laboratory	0	0	2	1
31.	EVA031	Graphical Programming Using Labview	1	0	2	2
32.	EVA032	VERILOG HDL	2	0	0	2
33.	EVA033	Electric Vehicles	2	0	0	2
34.	EVA034	Product Design and Development in Power Electronics and Embedded Systems	2	0	0	2
35.	EVA035	Trends in Smart Grid	1	0	0	1
36.	EVA036	Arduino Programming and Interfacing	0	0	2	1

  
 26/9/2021  
 DIRECTOR  
 CENTRE FOR ACADEMIC COURSES

  
 22/9/2021



**ACADEMIC YEAR 2019 - 20 (EVEN SEMESTER)**  
**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**

**Siemens CoE Lab Course Attended Students Name List**

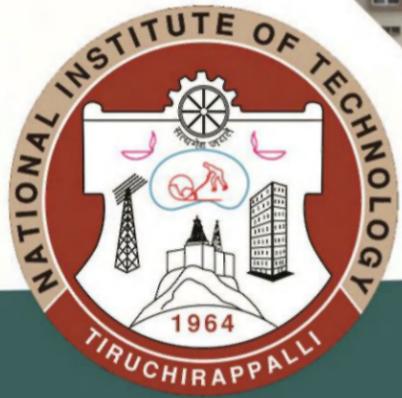
22-01-2020

Sl.No.	YEAR	NAME OF THE STUDENTS	Siemens-CoE Course
1.	III EEE	S. ADHAVAN	Electrical and Energy Savings Lab
2.	III EEE	E. GANESAN	
3.	III EEE	M. MANO	
4.	IV EEE	R. PAVITHRA	
5.	IV EEE	M. RASIKA	
6.	IV EEE	J. MOHAMED KALIFA	
7.	IV EEE	M. JAISAIRAM	
8.	IV EEE	A. PAVITHRAN	
9.	IV EEE	P. ARAVINDAN	
10.	IV EEE	R. SAKTHI SRIDEVI	

  
Dept. Coordinator

  
Academic Coordinator

  
HOD



# CENTRAL FACILITIES AND CENTRES

**National Institute of Technology**

Tiruchirappalli - 620015



## Siemens Centre of Excellence in manufacturing

Siemens CoE at NIT, Trichy was established in 2018 at a total outlay of Rs. 193 Crores. This CoE is intended to bridge today's gap between industry requirements and technical education, and provides solution that makes technical Institutes be more aligned with industry needs and make engineering graduate students industry ready. There are 12 sophisticated Laboratories spanning over 12,000 sqft through which we offer skill development courses, R&D and consultancy services.

### Robotics Lab

This lab is equipped with material handling robot, MIG welding and resistance spot welding robots. Hands on training using Rob CAD and Plant SIM are being given using this laboratory. KUKA material handling robots that are masters in the art of automation are installed. The KUKA material handling robot line assists with moving, selecting and packing of products.

KUKA resistance welding robots use an electrical current to heat two pieces of sheet metal, or other thinner metals, and join them together with a weld. Models in the KUKA resistance welding robot series are more environment friendly than other welding operations, and are a lower cost per weld than any other application.



### CNC Machines Lab

CNC Machines Lab consists of a high precision CNC vertical machining centre which is capable of performing multiple machining operations on workpiece in one set up under CNC system. It is used in the production of many complex three-dimensional shapes and used in jobs that need a high level of precision or very repetitive tasks. The programming is done by using G code & M codes. This VMC is equipped with distinct features such as automatic tool changing (20 cutting tool magazine), automatic workpiece positioning and automatic pallet changing facility in order to reduce non-productive time.

Horizontal Turning centre is a machining process used to make cylindrical parts, where the cutting tool linearly moves while the workpiece rotates. The process uses a single-point cutting tool that inserts parallel to the material to cut. These are generally provided with two axes control, Z-axis parallel to the spindle and X-axis perpendicular to spindle. It is also provided with an index table tool turret which can hold 8, 12, or 16 tools of various types. It is capable of performing turning, facing, grooving, reaming, drilling and threading operations.

### CNC Controller Lab

CNC Controller lab uniquely comprises of SINUMERIK controllers which provide highly productive automation solution for CNC production. SinuTrain allows NC programs to be done offline at a PC in an environment that is close to reality; these NC programs can then be directly transferred to the CNC.



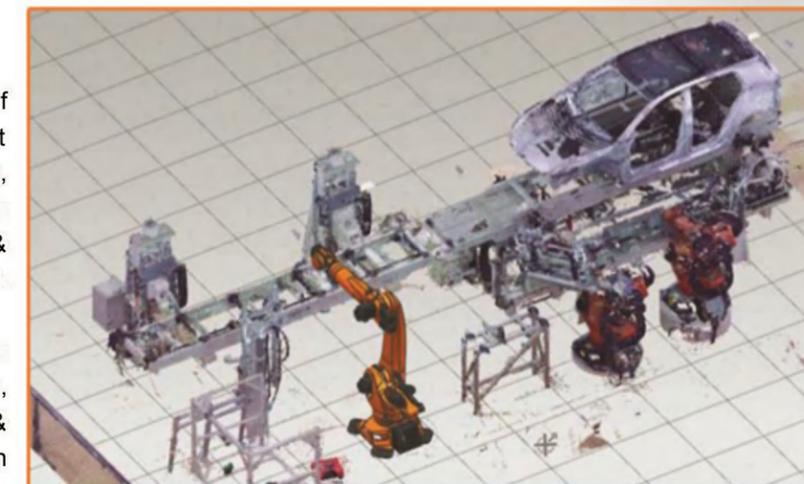
SINUMERIK 808D control is a panel-based CNC for the basic performance range. It is used for basic turning and milling applications. Sequences can be programmed and simulated offline. Different type of cycles can be used to perform machining operation using 808D Controller. SINUMERIK 828D Controller is the advanced version of 808D controller. The advantage of this controller is that it is possible to simulate the operations prior to actual machining.



SINUMERIK 840D si is the customized version of 828D controller. SINUMERIK 840D si is drive based modular CNC for maximum performance range, along with a high degree of flexibility and 3D simulation of a program. A high-performance hardware architecture and intelligent control algorithms as well as premium class drive and motor technology class ensure the highest dynamic performance and machining precision. The graphic operator and programmer interfaces used for Shop-Mill ensure that everything runs perfectly on the SINUMERIK 840D si.

### Advanced Manufacturing Lab

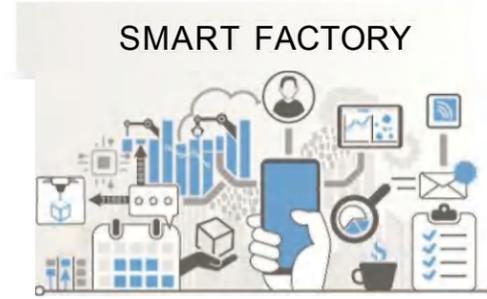
This Lab facilitates factory layout design and optimization through Tecnomatix software. Digital Twins Navigation, Virtual Commissioning of Automated Systems, Plant Simulation & Throughput Optimization, Human-Centered Design and Planning, Ergonomic & Human Performance, Offline Robotic Programming and automation, Press Line Design & Simu, Impact of Dimensional variation, Work Intri Delivery, Manufacturing Process Plan, Assembly Simulation for Virtual Process Verification, Production Logistics & Material Flow, Material Flow Optimization, Plant Simulation & Throughput Optimization, Factory and Line Design are some of the modules available in this software.



## Internet of Things Lab

*JL Smart, Secure and Connected IndustriaC M/orCcC*

The Industrial Internet of things (IIoT) emphasizes remote access to connected machines and other devices to enable transformative business improvements and efficiency. Intelligent connected products, in turn help us to improve performance and reduce downtime through remote diagnostics, trouble shooting and condition monitoring capabilities.



All these approaches are aimed at improving unplanned downtimes, improve productivity and enable all connected assets to function in a more effective manner. For today's high performing manufacturing firms, the ability to leverage this technology to improve profitability and revenue represents a challenge. The IIoT lab provides an end-to-end connected IIoT ecosystem. This lab is equipped with cloud-based hosted platform, Datonis. The platform provides a robust stream-analytics engine for immediate actionable intelligence. This is helpful in analyzing data as it comes in, interactively query, visualize IIoT data and build predictive models using machine learning techniques. The platform equipped with a high-performance edge gateway with built-in support for connectivity protocols, edge computations, rules and notifications, ML and custom plugins are available. Datonis Edge makes devices intelligent by providing them the ability to connect and exchange information with the Datonis IIoT platform. IIoT technology has the ability to capture data from multi-brand sensors, data files and functions developed by customers themselves. This is a multi-tenant platform, in Cloud.

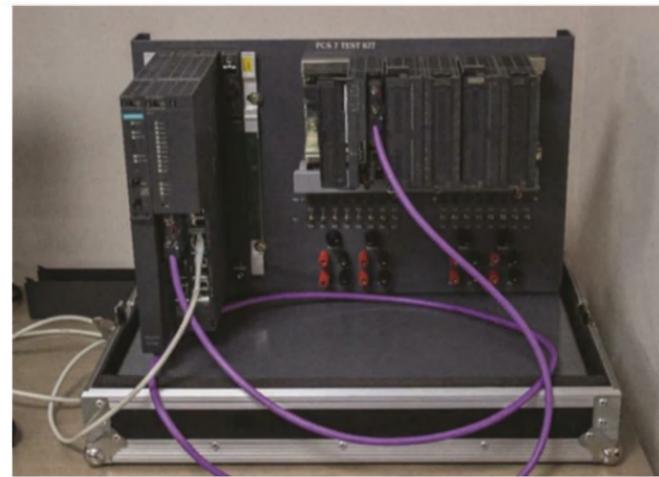
## Process Instrumentation Lab

The purpose of this lab is to impart an adequate knowledge and expertise to handle equipment generally available in an industry. The training gained in this area will be of immense help and ease in any industrial establishment. It is to impart practical training in the field of process automation and instrumentation.

Process Instrumentation lab comprises of Siemens SIMATIC PCS 7 automation kit and Instrumentation rack for measuring temperature, pressure, volumetric and mass flow measurements, level detection, etc. This lab has unique scalable architecture with powerful engineering tools and a wide variety of additional functions such as alarm management, process safety and asset management.

Siemens SIMATIC PCS 7 is more than a Distributed Control Systems (DCS), it gives both PLC and DCS functionality. The open architecture of SIMATIC PCS 7 process control system enables full integration of all the automation systems. The PCS7 platform is essentially software extensions for the Siemens S7-400 PLC and Siemens HMI running WinCC. These software extensions come in the form of function libraries and software tools that are used to create a high-level software solution that when compiled runs on the same hardware platform as a traditional PLC. SIMATIC PCS 7 can be used to safely automate both manufacturing and process plants.

Instrumentation rack comprises of Mass 6000, Sitrans P300, Sitrans FU060 & FUS3300 (Transmitter), Sitrans P, Mass 2100 & Mag 5000 (Transmitter), Prob LU, Pointec and a Position Actuator. These devices are capable of manually attending to each individual device across a facility, operators can program transmitters from the control room. This reduces the commissioning time in applications requiring functional safety. It is also suited for applications where safety is critical: in industries such as chemical, oil and gas, and power generation.



## Automation Lab

Extensive training is provided for learning the logics behind the PLCs and how to program and control it using STEP7 software in TIA Portal. Equipped with S7-1200, S7-1500 PLCs and HMI panels for control and monitoring the Automation process using SIMATIC WinCC. The Lab is facilitated with SIMATIC S7-1200 and S7-1500 PLCs which are capable of controlling, basic to complex applications.

SIMATIC S7-1200 is designed with integrated input and outputs for standalone operations. SIMATIC S7-1500 is designed for performance with integrated technology functions for complex applications. Both the PLCs are enhanced with reliable diagnostics and safety integration. SIMATIC HMI is engineered to support the increasingly complex processes and optimized to meet specific human machine interface needs using open and standardized interfaces in hardware and software.



## Electrical and Energy Savings Lab

Electrical and energy savings lab helps users to understand the basic functions and physical properties of electrical components like motor control units and low voltage switchgear components. This Lab Includes Speed Control of AC/DC Motors, Power Systems, Switchgear, Programming and commissioning of devices and it comprises of latest products, technology, configurations used in Industries like Power Plants, Sugar Plants, Cement Plants etc. It gives a wide variety of opportunities to practice/simulate operations and failures of various drives.

SINAMICS STARTER Software V4.5.1 is used to configure drive and connect with target devices. The software package consists of alarms, parameters, function diagrams and diagnostic functions.

The 6RA80 SINAMICS DC MASTER drive range of DC converters set itself apart as a scalable drive system - for basic as well as demanding drive applications. It converts simple integration into automation solutions. AC induction motors are a preferred choice for industrial applications due to their rugged construction, absence of brushes, and the ability to control the motor speed. Compact, with high-power density, Siemens high-performance induction motors (SINAMICS G120 drive) are almost maintenance-free and feature an optional integrated, high-resolution measuring system for high-end speed and position control.



## List of Courses Offered in Siemens CoE

The following is a list of the certified skill development courses offered to professionals across different units. The duration of the courses is 3-5 hours.

### Robotics Lab

- Material Handling Robot Programming
- MIG Welding Robot Programming
- Spot Welding Robot Programming

### CNC Machines Lab and Controller Lab

- CNC Milling and Turning

### Advanced Manufacturing Lab

- Basic Robotic Simulation (Using Process simulate or robcad)
- Plant simulation Basics
- Human Ergonomic Simulation

### Test and Optimization Lab

- Test Lab Structures and rotating Machineries

### Design and Validation Lab

- NX CAD Beginner
- NX CAD Intermediate
- NX CAD Advanced
- NX CAE Beginner
- NX CAE Intermediate
- NX CAE Advanced
- NX CAM Beginner
- NX CAM Intermediate
- NX CAM Advanced

### Mechatronics Lab

- Mechatronics System Certification Program

### Internet of Things Lab

- Internet of things Certification Program

### Process Instrumentation Lab

- SIMATIC process control system 7
- Basic Process Instrumentation

### Automation Lab

- Basics of Automation

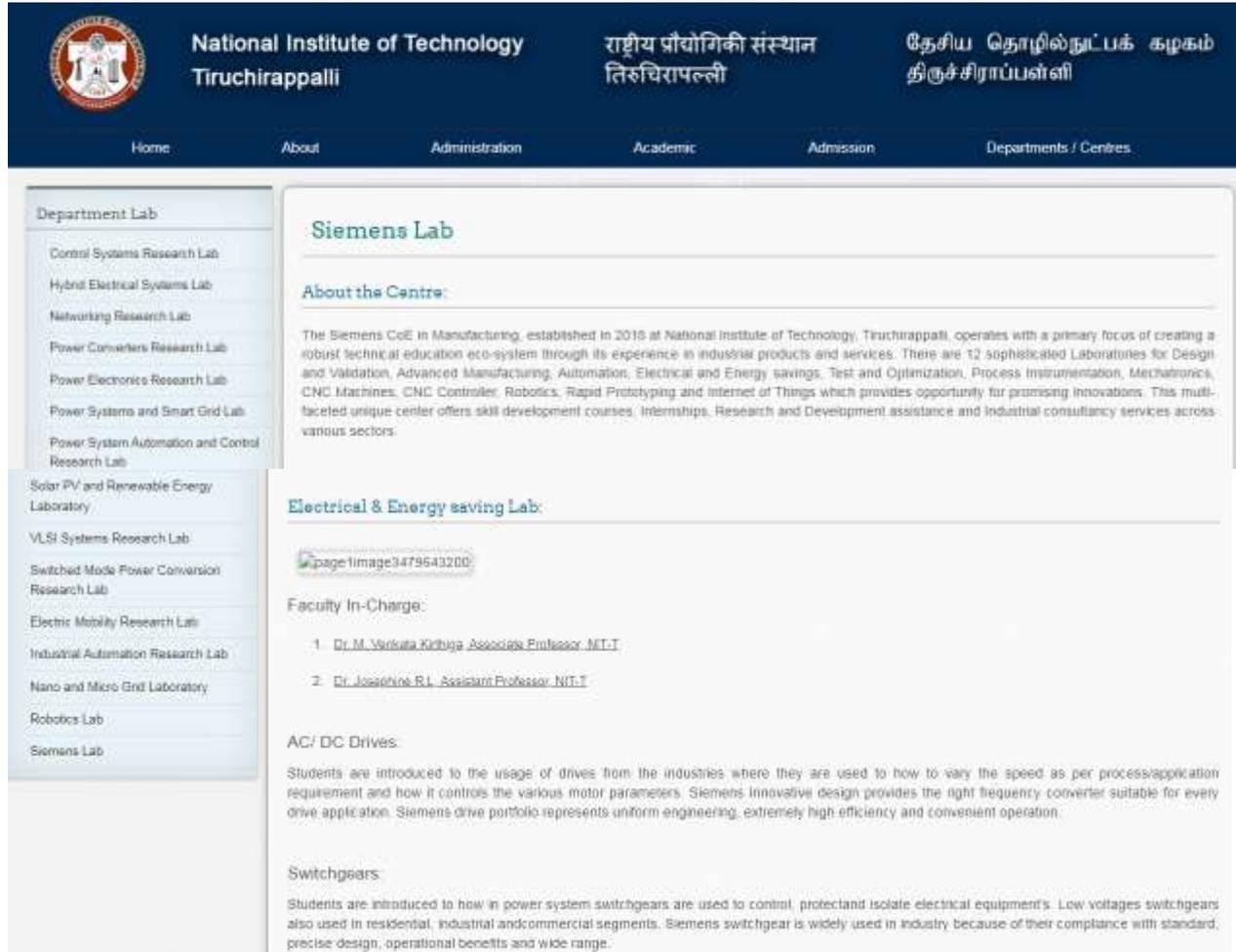
### Electrical and Energy Savings Lab

- Sinamics DC Master 6RA80(DR-DCM)
- Sinamics G120 with starter (DR-G120)
- Sirius Soft Starter (LV-SS)
- LV Switch Gear Products, Distribution and Panel (LVS- WPD)
- Simocode AC - Motor Control (LVSM)
- Sentron PAC Meter(LV-PAC)

Apart from skill development courses, the CoE supports consultancy, R&D services, internships, projects and other services. For more details and updates, please visit the website <http://siemenscoe.nitt.edu/>

## Faculty In-charge – NIT Siemens Lab – Electrical & Energy Lab:

1. Dr. M. Venkata Kirthiga, Associate Professor, NIT-T
2. Dr. Josephine R.L, Assistant Professor, NIT-T



The screenshot displays the website for the Siemens Lab at NIT Tiruchirappalli. The header features the NIT logo and name in English, Hindi, and Tamil. The navigation menu includes Home, About, Administration, Academic, Admission, and Departments / Centres. The left sidebar lists various research labs, with Siemens Lab highlighted. The main content area is titled 'Siemens Lab' and includes an 'About the Centre' section, a 'Faculty In-Charge' list, and sections for 'AC/ DC Drives' and 'Switchgears'.

**National Institute of Technology Tiruchirappalli** राष्ट्रीय प्रौद्योगिकी संस्थान तिरुचिरापल्ली தேசிய தொழில்நுட்பக் கழகம் திருச்சிராப்பள்ளி

Home About Administration Academic Admission Departments / Centres

**Department Lab**

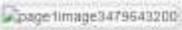
- Control Systems Research Lab
- Hybrid Electrical Systems Lab
- Networking Research Lab
- Power Converters Research Lab
- Power Electronics Research Lab
- Power Systems and Smart Grid Lab
- Power System Automation and Control Research Lab
- Solar PV and Renewable Energy Laboratory
- VLSI Systems Research Lab
- Switched Mode Power Conversion Research Lab
- Electric Mobility Research Lab
- Industrial Automation Research Lab
- Nano and Micro Grid Laboratory
- Robotics Lab
- Siemens Lab

### Siemens Lab

#### About the Centre:

The Siemens CoE in Manufacturing, established in 2010 at National Institute of Technology, Tiruchirappalli, operates with a primary focus of creating a robust technical education eco-system through its experience in industrial products and services. There are 12 sophisticated Laboratories for Design and Validation, Advanced Manufacturing, Automation, Electrical and Energy savings, Test and Optimization, Process Instrumentation, Mechatronics, CNC Machines, CNC Controller, Robotics, Rapid Prototyping and Internet of Things which provides opportunity for promising innovations. This multi-faceted unique center offers skill development courses, Internships, Research and Development assistance and Industrial consultancy services across various sectors.

#### Electrical & Energy saving Lab:



**Faculty In-Charge:**

1. [Dr. M. Venkata Kirthiga Associate Professor, NIT-T](#)
2. [Dr. Josephine R.L Assistant Professor, NIT-T](#)

#### AC/ DC Drives:

Students are introduced to the usage of drives from the industries where they are used to how to vary the speed as per process/application requirement and how it controls the various motor parameters. Siemens Innovative design provides the right frequency converter suitable for every drive application. Siemens drive portfolio represents uniform engineering, extremely high efficiency and convenient operation.

#### Switchgears

Students are introduced to how in power system switchgears are used to control, protect and isolate electrical equipment's. Low voltages switchgears also used in residential, industrial and commercial segments. Siemens switchgear is widely used in industry because of their compliance with standard, precise design, operational benefits and wide range.



**AMAR  
TECH**

**SIEMENS**  
*Ingenuity for life*

siemenscoe.nit.edu

# Certificate

This is to certify that **E.Ganesan**, 6<sup>th</sup> semester, **B.E, Electrical and Electronics Engineering student of Kings College of Engineering, Pudukkottai** bearing registration number **CoE/EES/112019/173** has participated and successfully completed the course **(LVS-SWPD) and (LV-PAC)** conducted at Siemens Centre of Excellence in Manufacturing, NIT Trichy from **25.11.2019 to 30.11.2019** for a duration of **40** hours.

Siemens Industry  
Software Pvt. Ltd

AMAR Tech

Siemens CoE  
NIT, Trichy



**AMAR  
TECH**

**SIEMENS**  
*Ingenuity for life*

siemenscoe.nit.edu

# Certificate

This is to certify that **M. Mano**, 6<sup>th</sup> semester, **B.E, Electrical and Electronics Engineering student of Kings College of Engineering, Pudukkottai** bearing registration number **CoE/EES/112019/174** has participated and successfully completed the course **(LVS-SWPD) and (LV-PAC)** conducted at Siemens Centre of Excellence in Manufacturing, NIT Trichy from **25.11.2019 to 30.11.2019** for a duration of **40** hours.

Siemens Industry  
Software Pvt. Ltd

AMAR Tech

Siemens CoE  
NIT, Trichy



**DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING**

**CDC-CLASS**

1. NAME OF THE PROGRAM: EE302- BASICS IN ELECTRICAL & ELECTRONICS ENGINEERING.
2. DURATION : 30 HOURS
3. NO.OF STUDENTS PARTICIPATE:11

*M. Malar*

**STAFFINCHARGE**

*[Signature]*

**HOD/EEE**



**KINGS**  
COLLEGE OF ENGINEERING  
(NAAC Accredited Institution)  
(Approved by AICTE, New Delhi, Affiliated to  
Anna University, Chennai)



TUV Rheinland  
**CERT**  
ISO 9001

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING  
TIME TABLE (July 2018 - Dec 2018, ODD SEM)  
B.E - EEE (Regulation 2013)-With Effect from 02.07.2018

Strength: 14  
Block : I

116-2020

Semester: V

Class Room: 133

1	2	3	4	5	6	7	8			
09.15am	10.00am	10.45 am	11.00am	11.45am	12.30 pm	01.10pm	01.55pm	02.40pm	03.25 pm	03.40pm
10.00am	10.45am	11.00 am	11.45am	12.30pm	01.10 pm	01.55pm	02.40pm	03.25pm	03.40 pm	04.30pm
ME6701	EE6501	BREAK	IC6501	EE6504	LUNCH BREAK	EE6511			BREAK	EE301/ EE6504
EE6501	ME6701		EE6504	EE6503		GE6674				GE6674
EE6503	IC6501		EE6503	T&P(A)		EE6504	EE6502	EE6504		EE301/ IC6501
EE6502	EE6503		EE6501	LIB/NET		EE6504	EE6501	IC6501		EE303/ ME6701
IC6501	EE6512		EE6512			EE6502	IC6501	ME6701		EE304/ EE6503
EE6504	ME6701		EE6502	EE6501		IC6501	EE6503	T&P(A)		EE303/ EE6502

NAME OF THE SUBJECT	CREDITS	NAME OF THE STAFF	DEPT.	PERIODS/WEEK
<b>TUTORIAL (T), ELECTIVE (E)</b>				
Power System Analysis	3	Dr.S.Sivakumar	EEE	5
Microprocessors and Microcontrollers	3	Mrs.N.Hemavathi	EEE	4
Power Plant Engineering	3	Mr.J.Arokiaraj	EEE	4
Power Electronics	3	Mr.R.Sundaramoorthi	EEE	5
Electrical Machines - II	4(T)	Mr.M.Mayapandi	EEE	6
Control Systems	4(T)	Mr.C.Balaji	EEE	6
<b>PRACTICAL (P)</b>				
Control and Instrumentation Laboratory	2(P)	Mr.R.Sundaramoorthi	EEE	3
Communication and Soft Skills- Laboratory Based	2(P)	Mr.J.Radhakrishnan & Mr.P.Rajeshwaran	S&H	4
Electrical Machines Laboratory - II	2(P)	Ms.E.Suganya	EEE	3
<b>COMPETENCY DEVELOPMENT CLASS (CDC)</b>				
Programming in C	CDC	Mr.M.Arun	CSE	2
Basics in Electrical & Electronics Engineering	CDC	Mr.M.Mayapandi	EEE	1
Communication Skills	CDC	Mrs.A.Prabha	EEE	2
Swayam (Online Education)	CDC	Mr.R.Sundaramoorthi & Mr.Arokiaraj	EEE	1
Library/Internet	---	Mr.J.Arokiaraj	EEE	1
Training and Placement (Aptitude)	CDC	Ms.P.Suganya	T&P	2

CO-ORDINATOR

Mr. J. Arokiaraj

NAME OF THE REPRESENTATIVES

R.Pavithra

ROLL NO.

07

COMMITTEE CHAIR PERSON

Mrs.N.Rajeswari

C. Rajaraj  
DEPT. TTC

HOD 30/6/18

PRINCIPAL 30/6/18



**KINGS**  
KINGDOMS OF ENGINEERING  
(N.A.A.T. Accredited Institution)  
(Approved by AICTE, New Delhi, Affiliated to  
Anna University, Chennai)



**DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING**  
**CDC- CLASS**

**EE302- BASICS IN ELECTRICAL & ELECTRONICS ENGINEERING**

**SYLLABUS**

**LIST OF EXPERIMENTS**

1. Introduction in basic Electrical and electronics engineering.
2. PCB fabrication and soldering and Desoldering practice.
3. Simple LED Dancing Light Circuit.
4. To find the inductance value of a coil having Iron core.
5. To study, locate and sketch the wiring from mains to the terminals of a single-phase motor and then start.
6. To study, locate and sketch the wiring from mains to the terminals of a Three-phase induction motor and then start.
7. To study and internal wiring connection for D.O.L starter.
8. To charge a lead acid battery and measure its specific gravity and voltage.
9. To study and connect the common electrical ceiling fan.
10. To measure the insulation resistance and for a given machine by using megger.
11. To study the testing of open, short and earth test on any machine by using multimeter.

**Total Hours: 30 hours**

*M. M. M. M.*

**STAFF IN-CHARGE**

*A. S. S.*

**HOD/EEE**



**Department of Electrical and Electronics Engineering**

**ACADEMIC YEAR (2018-2019)**

**ASSESSMENT PROCEDURE ON COMPETENCY DEVELOPMENT CLASS**

**CDC- BASICS IN ELECTRICAL & ELECTRONICS**

**CLASS: IV EEE**

Type of Assessment	Assessment Model	Max Mark	Exam Duration
Assessment -1	Objective	50	1 hour 30mins
Assessment -2	Objective	50	1 hour 30mins

**ASSESSMENT-1**

The Assessment Test-1 will be in the following pattern.

Multiple Choice Question = **50 marks**

**ASSESSMENT-2**

The Assessment Test-2 will be in the following pattern.

Multiple Choice Question = **50 marks**

A handwritten signature in blue ink, consisting of a stylized 'S' followed by a series of loops and a horizontal line at the end.

**HOD/EEE**



DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

CDC - CLASS

EE 302 - BASICS IN ELECTRICAL & ELECTRONICS ENGINEERING

ACTION PLAN

STAFF NAME : M.MAYAPANDI

CLASS: IIIyr / V SEM

SL.NO.	DATE	ACTIVITY
1.	10.7.18	Introduction in Basics Electrical and Electronics Engineering
2.	17.7.18	PCB fabrication and Soldering and Desoldering practice.
3.	24.8.18	Simple LED Dancing Light Circuit
4.	31.8.18	To find the inductance value of a coil having iron core
5.	07.8.18	To study, locate and sketch the wiring from mains to the terminals of a single -phase motor and then start.
6.	14.8.18	To study, locate and sketch the wiring from mains to the terminals of a three -phase induction motor and then start.
7.	21.8.18	To study and internal wiring connection for D.O.L. starter.
8.	28.8.18	To charge a lead acid battery and measure its specific gravity and voltage.
9.	01.9.18	To study and connect the common electrical ceiling fan.
10.	18.9.18	To measure the insulation resistance and for a given machine by using megger.
11.	25.9.18	To study the testing of open, short and earth test on any machine by using multimeter.

M. Mayapandi  
Staff Incharge

A. Anand  
20/9/18  
HoD/EEE



DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING  
 ACADEMIC YEAR 2018-2019/ODD SEMESTER  
CDC CLASS-NAMELIST

Year/Sem: IV/VII

CDC Strength: 10

ACTIVITY DETAIL: EE302-BASIC ELECTRICAL & ELECTRONICS ENGINEERING.

Roll no	Register number	Name of the Student	sign
1.	821115105001	AKALYA. T	T. A02
2	821115105005	BARANIKA. R	R. Babesha
3	821115105006	BRINDHA.M	M. Brindha
4	821115105008	DEERTHI.S	S. Deethi
5	821115105010	DIVYA.K	K. Divya
6	821115105012	GANESH KUMAR.P	P. Ganesh
7	821115105017	KALAIYARASI.D	D. Kalaiyarasi
8	821115105023	MUTHUMEENS.K	K. Muthumeen
9	821115105028	PRATHEESH.T	T. Pratheesh
10	821115105046	VICTORIYA.P	P. Victoriya
11	821115105013	PAVITHRA.R	R. Pavithra

M. Maleshi  
 STAFFIN-CHARGE

A. Almas  
 HOD/EEE

**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**  
**ACADEMIC YEAR 2018-2019/ODD SEMESTER**  
**STUDENTS ATTENDANCE DETAILS - CDC CLASS**

Year/Sem: IV/VII

ACTIVITY DETAIL: EE302/BASICS IN ELECTRICAL & ELECTRONICS ENGINEERING

CDC Strength: 10

Roll no	Register number	Name of the Student	Date												
			3	5	7	10	13	20	24	27	31	3	7	10	
			Month	7	7	7	7	7	7	7	7	7	8	8	8
✓ 1.	821115105001	AKALYA. T	/	/	/	/	/	/	/	/	/	/	/	/	/
✓ 2	821115105005	BARANIKA .R	/	/	/	/	/	/	/	/	/	/	/	/	/
✓ 3	821115105006	BRINDHA.M	/	/	/	/	/	/	/	/	/	/	/	/	/
✓ 4	821115105008	DEERTHS	/	/	/	/	/	/	/	/	/	/	/	/	/
✓ 5	821115105010	DIVYA.K	/	/	/	AB	/	/	/	/	/	/	/	/	/
✓ 6	821115105012	GANESH KUMAR.P	/	/	/	/	/	/	/	/	/	/	/	/	/
✓ 7	821115105017	KALAIYARASLD	/	/	/	/	/	/	/	/	/	/	/	/	/
✓ 8	821115105023	MUTHUMEENS.K	/	/	/	/	/	/	AB	/	/	/	/	/	/
✓ 9	821115105028	PRATHEESH.T	/	/	/	/	/	/	/	/	/	/	/	/	/
✓ 10	821115105046	VICTORIYA.P	/	/	/	/	/	/	/	/	/	/	/	/	/
YEAR/SEM:III/V			CDC Strength:1												
✓ 11	821115105013	PAVITHRA.R	/	/	/	/	/	/	/	/	/	/	AB	/	/
No. of student attended			11	11	11	10	11	11	10	11	11	10	11	11	
No. of student absent			NIL	NIL	NIL	01	NIL	NIL	NIL	NIL	NIL	01	NIL	-	
Staff in-charge			sd	sd	sd	sd	sd	sd	sd	sd	sd	sd	sd	sd	
Head of the Department			h	h	h	h	h	h	h	h	h	h	h	h	





**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING  
ACADEMIC YEAR 2018-2019/ODD SEMESTER  
ASSESTMENT -I MARK STATEMENT - CDC CLASS**

Year/Sem: IV/VII

CDC Strength: 10

ACTIVITY DETAIL: EE302-BASIC ELECTRICAL & ELECTRONICS ENGINEERING.

DATE:

Roll no	Register number	Name of the Student	MARKS
1.	821115105001	AKALYA. T	46
2	821115105005	BARANIKA .R	48
3	821115105006	BRINDHAM	50
4	821115105008	DEERTHIS	48
5	821115105010	DIVYA.K	46
6	821115105012	GANESH KUMAR.P	44
7	821115105017	KALAIYARASI.D	44
8	821115105023	MUTHUMEENS.K	46
9	821115105028	PRATHEESH.T	46
10	821115105046	VICTORIYA.P	50
11	821115105013	PAVITHRA.R	50
No. of student attended			50
No. of student absent			

*M. M. Balaji*  
STAFF IN-CHARGE

*[Signature]*  
HOD/EEE



DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING  
 ACADEMIC YEAR 2018-2019/ODD SEMESTER  
ASSESSMENT - II MARK STATEMENT - CDC CLASS

Year/Sem: IV/VII

CDC Strength: 10

ACTIVITY DETAIL: EE302-BASIC ELECTRICAL & ELECTRONICS ENGINEERING.

DATE:

Roll no	Register number	Name of the Student	MARKS
1.	821115105001	AKALYA. T	48
2	821115105005	BARANIKA. R	48
3	821115105006	BRINDHA.M	46
4	821115105008	DEERTHI.S	44
5	821115105010	DIVYA.K	48
6	821115105012	GANESH KUMAR.P	46
7	821115105017	KALAIYARASID	50
8	821115105023	MUTHUMEENS.K	46
9	821115105028	PRATHEESH.T	48
10	821115105046	VICTORIYA.P	48
11	821115105013	PAVITHRA.R	44
No. of student attended			44
No. of student absent			

M. Malar  
 STAFF IN-CHARGE

A. Mmm  
 HOD/EEE  
 27/9/2018



**DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING**

**CDC-CLASS**

1. **NAME OF THE PROGRAM: EE401-PROGRAMMING IN C.**
2. **DURATION : 30 HOURS**
3. **NO.OF STUDENTS PARTICIPATE:11**

  
Staff in-charge

  
HoD/EEE



DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING  
CDC- CLASS

EE401-PROGRAMMING IN C

SYLLABUS

UNIT-1

(10)

Structure of C program - Basics: Data Types - Constants - Variables - Keywords - Operators: Precedence and Associativity - Expressions - Input/Output statements, Assignment statements - Decision-making statements - Switch statement - Looping statements - Pre-processor directives - Compilation process

UNIT-II

(10)

Introduction to Arrays - One dimensional arrays: Declaration - Initialization - Accessing elements - Operations: Traversal, Insertion, Deletion, Searching - Two dimensional arrays: Declaration - Initialization - Accessing elements - Operations: Read - Print - Sum - Transpose

UNIT-III

(10)

Introduction to Strings - Reading and writing a string - String operations (without using built-in string functions): Length - Compare - Concatenate - Copy - Reverse - Substring - Insertion - Indexing - Deletion - Replacement - Array of strings - Introduction to Pointers - Pointer operators - Pointer arithmetic

Total Hours: 30 hours

  
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**Department of Electrical and Electronics Engineering**

**ACADEMIC YEAR (2018-2019)**

**ASSESSMENT PROCEDURE ON COMPETENCY DEVELOPMENT CLASS**

**CDC- EE401 PROGRAMMING IN C**

**CLASS: IV EEE**

Type of Assessment	Assessment Model	Max Mark	Exam Duration
Assessment -1	Descriptive	50	1hour 30mins
Assessment -2	Descriptive	50	1hour 30mins

**ASSESSMENT-1**

The Assessment Test-1 will be in the following pattern.

Part -A-5\*2 marks =10 marks

Part -B-4\*10 marks =40 marks

**Total =50 marks**

**ASSESSMENT-2**

The Assessment Test-2 will be in the following pattern.

Part -A-5\*2 marks =10 marks

Part -B-4\*10 marks =40 marks

**Total =50 marks**

*[Handwritten Signature]*

**HOD/EEE**

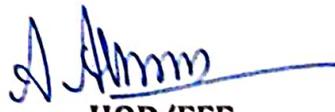


DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING  
CDC- CLASS

EE401-PROGRAMMING IN C  
ACTION PLAN

S.NO	DATE	ACTIVITY
1.	02.07.2018	Structure of C program
2.	04.07.2018	Basics: Data Types - Constants -Variables - Keywords - Operators:
3.	09.07.2018	Precedence and Associativity
4.	11.07.2018	Expressions
5.	16.07.2018	Input/Output statements
6.	18.07.2018	Assignment statements
7.	23.07.2018	Decision-making statements
8.	25.07.2018	Switch statement - Looping statements
9.	30.07.2018	Pre-processor directives - Compilation process
10.	01.08.2018	EXERCISE PROGRAM
11.	06.08.2018	Introduction to Arrays
12.	08.08.2018	One dimensional arrays: Declaration
13.	12.08.2018	Initialization
14.	20.08.2018	Accessing elements
15.	22.08.2018	Operations: Traversal, Insertion, Deletion, Searching
16.	27.08.2018	Two dimensional arrays: Declaration
17.	29.08.2018	Initialization - Accessing elements
18.	03.09.2018	Read - Print - Sum - Transpose
19.	05.09.2018	EXERCISE PROGRAM(Array)
20.	10.09.2018	EXERCISE PROGRAM(Array)
21.	12.09.2018	Introduction to Strings
22.	17.09.2018	- Reading and writing a string
23.	19.09.2018	String operations (without using built-in string functions): Length
24.	24.09.2018	Compare - Concatenate - Copy
25.	26.09.2018	Reverse - Substring - Insertion
26.	01.10.2018	Indexing - Deletion - Replacement
27.	03.10.2018	Array of strings - Introduction to Pointers
28.	08.10.2018	Pointer operators
29.	10.10.2018	- Pointer arithmetic
30.	15.10.2018	EXERCISE PROGRAM(Pointer)

  
STAFF IN CHARGE

  
HOD/EEE



**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**  
**ACADEMIC YEAR 2018-2019/ODD SEMESTER**  
**CDC CLASS-NAMELIST**

Year/Sem: IV/VII

CDC Strength: 11

ACTIVITY DETAIL: EE401-PROGRAMMING IN C.

Roll no	Register number	Name of the Student	sign
1.	821115105001	AKALYA. T	T. Anurag
2	821115105005	BARANIKA .R	R. Balakrishna
3	821115105006	BRINDHA.M	Brindha M.
4	821115105008	DEERTHIS	S. Deerthi
5	821115105010	DIVYA.K	S. Divya
6	821115105012	GANESH KUMAR.P	P. Ganesh Kumar
7	821115105017	KALAIYARASI.D	D. Kalaiyarasi
8	821115105023	MUTHUMEENS.K	K. Muthumeen
9	821115105028	PRATHEESH.T	T. Pratheesh
10	821115105046	VICTORIYA.P	P. Victoriya
11	821115105013	PAVITHRA.R	R. Pavithra

  
**STAFF IN CHARGE**

  
**HOD/EEE**

**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**  
**ACADEMIC YEAR 2018-2019/ODD SEMESTER**  
**STUDENTS ATTENDANCE DETAILS - CDC CLASS**

Year/Sem: IV/VII

ACTIVITY DETAIL: **EE401-PROGRAMMING IN C**

CDC Strength: 10

Roll no	Register number	Name of the Student	Date		2	4	9	11	16	18	23	25	30	01	6	8	13	20	22	27	29	3	5	10	12	17	19	24	26	1	3	8	10	15				
			Month	7	7	7	7	7	7	7	7	7	7	7	8	8	8	8	8	8	8	8	8	9	9	9	9	9	9	9	9	10	10	10	10	10		
1.	821115105001	AKALYA. T	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/			
2	821115105005	BARANIKA. R	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/			
3	821115105006	BRINDHA.M	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/			
4	821115105008	DEERTH.S	/	/	/	/	/	/	/	a	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/			
5	821115105010	DIVYA.K	/	/	/	/	/	/	/	/	/	a	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	a	/	/			
6	821115105012	GANESH KUMAR.P	/	/	/	/	/	/	/	/	/	/	a	/	/	a	/	/	a	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/			
7	821115105017	KALAIYARASI.D	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/			
8	821115105023	MUTHUMEENS.K	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	a	/	/	/	/	/			
9	821115105028	PRATHEESH.T	AB	/	/	/	AB	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/			
10	821115105046	VICTORIYA.P	/	/	/	/	/	/	/	a	/	a	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/		
11	821115105013	PAVITHRA.R	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/		
No. of student attended			10	11	11	11	10	11	09	4	08	11	11	10	11	11	10	11	11	11	11	11	11	11	11	11	11	11	10	11	11	10	11	11				
No. of student absent			01	-	-	-	01	-	02	-	03	-	-	-	01	-	-	01	-	-	-	-	-	-	-	-	-	-	01	-	-	01	-	-				
Staff in-charge			[Handwritten signatures]																																			
Head of the Department			[Handwritten signature]																																			



**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**  
**ACADEMIC YEAR 2018-2019/ODD SEMESTER**  
**ASSESSMENT - I MARK STATEMENT - CDC CLASS**

Year/Sem: IV/VII

CDC Strength: 11

ACTIVITY DETAIL: EE401-PROGRAMMING IN C

DATE: 06-08-2018

Roll no	Register number	Name of the Student	MARKS
1.	821115105001	AKALYA.T	45
2	821115105005	BARANIKA.R	86
3	821115105006	BRINDHAM	87
4	821115105008	DEERTHIS	43
5	821115105010	DIVYAK	39
6	821115105012	GANESH KUMAR.P	32
7	821115105017	KALAIYARASID	42
8	821115105023	MUTHUMEENS.K	34
9	821115105028	PRATHEESH.T	29
10	821115105046	VICTORIYAP	83
11	821115105013	PAVITHRAR	36
No. of student attended			11
No. of student absent			NIL

*[Signature]*  
 STAFF-IN-CHARGE

*[Signature]*  
 HOD/EEE 6/8/18



**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING  
ACADEMIC YEAR 2018-2019/ODD SEMESTER  
ASSESTMENT -II MARK STATEMENT - CDC CLASS**

Year/Sem: IV/VII

CDC Strength: 11

ACTIVITY DETAIL: EE401-PROGRAMMING IN C.

DATE: 06.09.2018

Roll no	Register number	Name of the Student	MARKS
1.	821115105001	AKALYA.T	47
2	821115105005	BARANIKA.R	31
3	821115105006	BRINDHAM	40
4	821115105008	DEERTHIS	27
5	821115105010	DIVYA.K	34
6	821115105012	GANESH KUMAR.P	30
7	821115105017	KALAIYARASI.D	40
8	821115105023	MUTHUMEENS.K	35
9	821115105028	PRATHEESH.T	28
10	821115105046	VICTORIYA.P	36
11	821115105013	PAVITHRA.R	42
No. of student attended			11
No. of student absent			NIL

*[Signature]*  
26/9/18  
STAFF IN CHARGE

*[Signature]*  
26/9/18  
HOD/EEE



## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

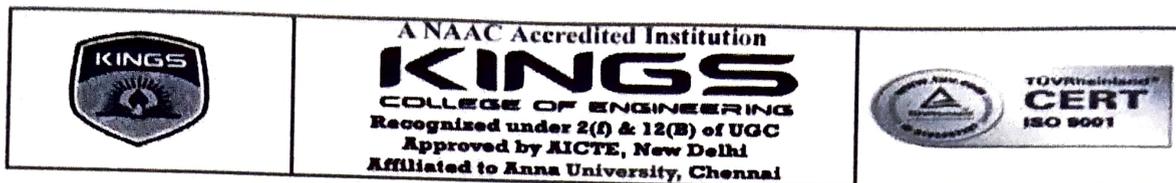
### COMPETENCY DEVELOPMENT CLASS EE403&EE303-COMMUNICATION SKILL ACTION PLAN & EXECUTION DETAILS

#### SYLLABUS

Introduction on basic communication skill, writing skill, writing skill discussions and feedback, reading skill, reading skill discussions and feedback, active listening, body language, conversation, conversation discussions and feedback, role play, role play discussions and feedback, group discussion, non verbal communication, communication skill training games, benefits of good communication, barriers to good communication, barriers to effective communication, videos-do's and don'ts in communication, overview.

A handwritten signature in blue ink, appearing to be 'A. Arum', is written over a horizontal line.

**HOD/EEE**



**Department of Electrical and Electronics Engineering**

**ACADEMIC YEAR (2018-2019)**

**ASSESSMENT PROCEDURE ON COMPETENCY DEVELOPMENT CLASS**

**CDC- EE403/EE303-COMMUNICATION SKILLS**

**CLASS: III/IV EEE**

Type of Assessment	Assessment Model	Max Mark	Exam Duration
Assessment -1	Presentation	50	1hour 30mins

**ASSESSMENT-1**

The Assessment Test-1 will be practical based.

The evaluation pattern for Assessment Test- I is given below.

Presentation = 20

Creativity = 10

Content = 10

Report = 10

**TOTAL = 50**



**HOD/EEE**



**KINGS**  
 COLLEGE OF ENGINEERING  
 (NAAC Accredited Institution)  
 (Approved by AICTE, New Delhi. Affiliated to  
 Anna University, Chennai)



TÜVRheinland  
**CERT**  
 ISO 9001

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

**COMPETENCY DEVELOPMENT CLASS**

**EE 403 - COMMUNICATION SKILL**

**ACTION PLAN / syllabus**

SL.NO.	DATE	ACTIVITY
1.	12.07.18	Introduction on basic communication skill
2.	14.07.18	Writing Skill
3.	19.07.18	Writing Skill Discussions and Feedback
4.	24.07.18	Reading Skill
5.	26.07.18	Reading Skill Discussions and Feedback
6.	28.07.18	Active Listening
7.	02.08.18	Body Language
8.	04.08.18	Conversation
9.	09.08.18	Conversation Discussions and Feedback
10.	11.08.18	Role play
11.	16.08.18	Role Play Discussions and Feedback
12.	18.08.18 23.08.18	Group Discussion
13.	25.08.18 30.08.18	Non Verbal Communication
14.	01.09.18 08.09.18 06.09.18 13.09.18	Communication Skill Training games
15.	15.09.18 22.09.18 20.09.18	Benefits of good Communication
16.	25.09.18 29.09.18 06.10.18	Barriers to Effective Communication
17.	06.10.18 11.10.18 13.10.18	Videos -Do's and Don'ts in Communication
18.	18.10.18 20.10.18	Overview

*[Signature]*  
 CDC IN CHARGE

*[Signature]*  
 HOD/EEE



DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING  
ACADEMIC YEAR 2018-2019 / ODD SEMESTER  
STUDENTS EVALUATION SHEET - CDC CLASS

Year / Sem : IV / VII

ACTIVITY DETAIL: READING SKILL

CDC Strength: 10

DATE: 26/07/18 to 28/07/18

S. NO.	EDUMATE STUDENT ID	REGISTER NUMBER	NAME OF THE STUDENT	EVALUATION			FEEDBACK	SIGNATURE OF THE STUDENT
				PRESENTATION (10)	CONTENT (10)	TOTAL (20)		
1	K15EE001	821115105001	AKALYA. T	07	08	15	Good Content Properly imple	T. Jeyaraj
2	K15EE005	821115105005	BARANIKA. R	06	08	14	should improve	R. Reddy
3	K15EE006	821115105006	BRINDHA. M	07	08	15	should improve	Prathap M
4	K15EE008	821115105008	DHEERTHI. S	09	09	18	Flawless Performance	S. Dhany
5	K15EE010	821115105010	DIVYA. K	09	10	19	Good Readingskill	Divya
6	K15EE012	821115105012	GANESH KUMAR. P	08	08	16	Nicely Practiced.	P. C. Sankar
7	K15EE017	821115105017	KALAIYARASI. D	08	10	18	Improved	Devi
8	K15EE023	821115105023	MUTHUMEENA. K	09	09	18	Good	K. M. T. U.
9	K15EE028	821115105028	PRATHEESH. T	05	05	10	Must Improve	T. J. Pratheesh
10	K15EE046	821115105046	VICTORIYA. P	05	06	11	Need more practice	P. Victoriya
Year / Sem : III / V							CDC Strength: 01	
11	K16EE007	821115105013	R.PAVITHRA	09	09	18	Good Presentation	P. Pavithra

STAFF IN CHARGE

HOD/EEE



DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING  
ACADEMIC YEAR 2018-2019 / ODD SEMESTER

STUDENTS EVALUATION SHEET - CDC CLASS

Year / Sem : IV / VII

CDC Strength: 10

ACTIVITY DETAIL: WRITING SKILL

DATE: 12-07-18  
18-07-18

S. NO.	EDUMATE STUDENT ID	REGISTER NUMBER	NAME OF THE STUDENT	EVALUATION			FEEDBACK	SIGNATURE OF THE STUDENT
				PRESENTATION (10)	CREATIVITY (10)	TOTAL (20)		
1	K15EE001	821115105001	AKALYA. T	07	06	13	Improved a lot.	J. Anand
2	K15EE005	821115105005	BARANIKA. R	08	08	16	Good Content	R. Balaji
3	K15EE006	821115105006	BRINDHA. M	07	05	12	Presentation Good	M. Prathap
4	K15EE008	821115105008	DHEERTHI. S	09	07	16	Good Presentation	S. Dhurthi
5	K15EE010	821115105010	DIVYA. K	09	07	16	Good Creativity	J. Anand
6	K15EE012	821115105012	GANESH KUMAR. P	09	07	16	Presentation is good.	P. Ganesh
7	K15EE017	821115105017	KALAIYARASI. D	08	06	14	Improved	R. Balaji
8	K15EE023	821115105023	MUTHUMEENA. K	07	07	14	Good topic	K. M. L. S.
9	K15EE028	821115105028	PRATHEESH. T	05	07	12	Need to improve Good Content	J. Anand
10	K15EE046	821115105046	VICTORIYA. P	07	06	13	Improved her skill	P. Vickram
Year / Sem : III / V							CDC Strength: 01	
11	K16EE007	821115105013	R.PAVITHRA	06	06	12	Presentation is good. Must improve	J. Anand

STAFF IN-CHARGE

HOD / EEE



DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING  
ACADEMIC YEAR 2018-2019 / ODD SEMESTER  
STUDENTS ATTENDANCE DETAILS - CDC CLASS

Year / Sem : IV / VII

CDC Strength: 10

Roll No.	Register Number	Name of the Student	19.07.18	14.07.18	19.07.18	21.07.18	26.07.18	28.08.18	02.08.18	04.08.18	09.08.18	11.08.18	16.08.18	18.08.18	23.08.18	25.08.18	30.08.18	01.09.18	06.09.18	13.09.18	15.09.18	22.09.18	29.09.18	25.09.18	04.10.18	06.09.18	13.09.18	18.08.18	13.08.18	18.08.18	20.08.2018
1	821115105001	AKALYA. T	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
2	821115105005	BARANIKA. R	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
3	821115105006	BRINDHA. M	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
4	821115105008	DHEERTHI. S	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
5	821115105010	DIVYA. K	/	/	/	/	/	/	/	/	a	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
6	821115105012	GANESH KUMAR. P	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
7	821115105017	KALAIYARASI. D	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
8	821115105023	MUTHUMEENA. K	/	/	/	/	/	/	/	/	/	/	a	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
9	821115105028	PRATHEESH. T	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
10	821115105046	VICTORIYA. P	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/

Year / Sem : III / V

CDC Strength: 1

11	821115105013	RPAVITHRA.R	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
No. of Students Attended			11	11	11	11	11	11	11	10	11	10	11	11	11	11	11	11	11	11	10	11	11	11	11	11	11	11	11	11	
No. of Students Absent			-	-	-	-	-	-	-	01	-	01	-	-	-	-	-	-	-	-	01	-	-	-	-	-	-	-	-	-	
Staff in-charge			D	D	D	D	D	D	A	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
Head of the Department			D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D



**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**

**SUBJECT: SOLAR PANEL INSTALLATION**

**SEMESTER: V**

**SYLLABUS (EE001)**

**PREPARED BY**

**J.AROKIARAJ**

**AP / EEE**



**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING  
SYLLABUS**

<b>Sub. Code</b> : EE001	<b>Branch / Year / Sem</b> : B.E EEE / III /V
<b>Sub. Name</b> : Solar Panel Installation	<b>Batch</b> : 2016-2020
<b>Staff Name</b> : Mr.J.Arokiaraj	<b>Academic Year</b> : 2018 - 19 (ODD)

**COURSE OBJECTIVE**

1. To get an overview of solar PV essentials.
2. To understand the different types of photovoltaic semiconductor devices and their characteristics.
3. To analyze the operation and performance parameters MPPT criteria for PV systems.
4. To study the operation techniques and basics topologies standalone operation of PV system.
5. To learn the different techniques of grid connected PV system.

**UNIT I SOLAR PV ESSENTIALS 6**

Overview of Renewable Energy, The Need of Solar Power, Benefits, Basic principles of Solar Power (Solar Photovoltaic, Solar Thermal, Dish Type, Solar Tower), Components of Solar Systems, Site survey, design and evaluation of various parameters tools involved in installation of system.

**UNIT II ADVANCES IN SOLAR PV MATERIALS 6**

Semiconductor Materials and Modelling - Crystalline silicon solar cells - Thin film technologies - Space and concentrator cells - Organic and dye sensitized cells - Evaluating a Site for Solar PV Potential.

**UNIT III MPPT CRITERIA FOR PV SYSTEMS 6**

Testing, Monitoring and Calibration - Photovoltaic System Components - Maximum Power Point Tracking Algorithms - Different MPPT techniques - Implementation of MPPT using a boost converter.

**UNIT IV STAND ALONE PV SYSTEM 6**

Solar modules – storage systems – power conditioning and regulation - MPPT- protection – Stand-alone PV systems design – sizing.

**UNIT V GRID CONNECTED PV SYSTEMS 6**

PV systems in buildings – design issues for central power stations – safety – Economic aspect – Efficiency and performance - International PV programs.

**TOTAL: 30 PERIODS**

**TEXT BOOKS**

1. Solar Cells: Materials, Manufacture and Operation, Tom Markvart University of Southampton, UK and Luis Castafier Universidad Politecnica de Catalunya, Barcelona, Spain, First edition 2005 Reprinted 2005, 2006, Elsevier Ltd.
2. Study of maximum power point tracking (MPPT) techniques in a solar photovoltaic array, Arjav Harjai, Abhishek Bhardwaj, Mrutyunjaya Sandhibigraha, nit, Rourkela.
3. Solanki C.S., "Solar Photovoltaics: Fundamentals, Technologies And Applications", PHI Learning Pvt. Ltd.,2015.

**REFERENCE BOOKS**

1. "Power Electronics for Renewable Energy Systems". C.R.Bala Murugan, D.Periyaazhagar, N.Suresh, Sruthi Publishers, Jan – 2017.
2. "Solar Photovoltaic Technology and systems", Chetan Singh Solanki, PHI Publications. 2017.

**WEB RESOURCES**

1. <http://www.energy.wsu.edu/Documents/SolarPVforBuildersOct2009.pdf>
2. <https://pdfs.semanticscholar.org/1db7/435215cb2d9895bc29e0358a9b23300988f5.pdf>
3. <https://www.sciencedirect.com/science/article/pii/S0960148105002831>
4. [http://www.os.ucg.ac.me//MS\\_kn.pdf](http://www.os.ucg.ac.me//MS_kn.pdf)

**INTERNAL ASSESSMENT PROCEDURE**

Type of Assessment	Assessment Model	Max Mark	Exam Duration
Assessment -1	Descriptive	50	1hour 30mins
Assessment -2	Descriptive	50	1hour 30mins

**ASSESSMENT-1**

The Assessment Test-1 will be in the following pattern.

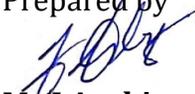
- Part -A-5\*2 marks = 10 marks  
 Part -B-2\*13 marks = 26 marks  
 Part -C-1\*14 marks = 14 marks  
**Total = 50 marks**

**ASSESSMENT-2**

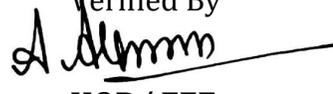
The Assessment Test-2 will be in the following pattern.

- Part -A-5\*2 marks =10 marks  
 Part -B-2\*13 marks =26 marks  
 Part -C-1\*14 marks =14 marks  
**Total =50 marks**

Prepared by

  
**Mr.J.Arokia Raj**

Verified By

  
**HOD/ EEE**

Approved by



**PRINCIPAL**

From

Mrs. A. Prabha  
AP/EEE  
MCC Co-ordinator  
KCE  
Thanjavur

To

The Principal  
KCE  
Thanjavur.

Madam,

Sub: Requisition to grant permission  
to organize one day workshop - reg.

Based on the academic planning  
We have planned to conduct one day  
workshop in line with My Credit course (MCC)  
under the title "Solar Panel Installation" on  
21.02.19. by n root innovations. Hence I  
kindly request you to grant permission to  
organise the same.

Thanking you.

yours faithfully,  
Arunal  
19/02/19

Place: Thanjavur  
Date: 19/02/19

Submitted to the Principal

A. Arun  
19/2/19

J. Prasad  
19/2/19.



DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING  
ACADEMIC YEAR 2018-19 (EVEN)

CIRCULAR

18.02.2019

Here through the students of final year EEE are informed that, one day workshop on "Solar Energy Conversion and its applications" will be conducted on 21.02.2019 by nroot innovations & BOT innovations, Thanjavur in line with MY CREDIT COURSE. The content of the workshop will be covered by both theoretical and practical sessions. Students are instructed to make use of this workshop in an effective way.

Venue: Power System Simulation Laboratory

Time : 09.30 a.m - 04.30 p.m

MCC Coordinator

*[Signature]*  
18/02/19

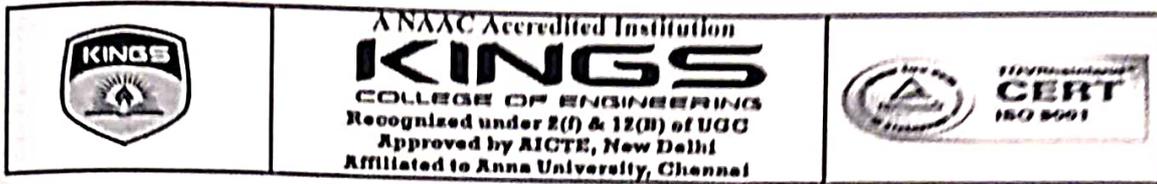
HoD/EEE

*[Signature]*  
18/2

Read in

IV EEE-

*[Signature]*  
18/02/19



**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**

**ACADAMIC YEAR 2018-2019/EVEN SEMESTER**

**MY CREDIT COURSE-SOLAR PANEL INSTALLATION**

**SYLLABUS**

**UNIT 1**

Introduction,Solar Power Generation,Multiple Choice,Multiple Choice In Solar,Solar Panel,Solar Panel AC And DC Supply,AC DC Supply Essential,Disposal Procedures,Standard,Constraints,Quality Requirement

**UNIT 2**

Site Survey,Safety Standard,Importance Of Wearing Clothes,Quality Process,Lighting System,UPS Cable,Pay Return,Cleanliness Of Solar Panel,Capacity Building Service,Market Development

**UNIT 3**

Solar Cost,Difference Between PV And Solar Engines, Difficulty In Installation,System Capacity And Energy Demand,Energy And Role Of Photovoltaic,Site Selection,Common Features,Concenterations Of PV Module,Solar Photovoltaic Modules,Balance Of Solar PV Systems

**UNIT 4**

Photovoltaic System,Planning And Design,Installation,Commissioning,Planning,Positioning Of Panel,Workshop "Solar Energy Conversion And Application",Overview Of Solar Panel Installation

  
HOD/EEE



**Department of EEE**

**ACADEMIC YEAR (2018-2019)**

**ASSESSMENT PROCEDURE ON MY CREDIT COURSE**

**MCC- SOLAR PANEL INSTALLATION**

**CLASS: IV EEE**

Type of Assessment	Assessment Model	Max Mark	Exam Duration
Assessment -1	Descriptive	50	1hour 30mins
	Objective	50	1hour 30mins
Assessment -2	Descriptive	50	1hour 30mins

**ASSESSMENT-1**

The Assessment Test-1 will be in the following pattern.

Part -A-5\*2 mark = 10 mark  
 Part -B-2\*13 mark = 26 mark  
 Part -C-1\*14 mark = 14 mark  
**Total = 50 mark**

Multiple Choice Question = 50 mark

**ASSESSMENT-2**

The Assessment Test-2 will be in the following pattern.

Part -A-5\*2 mark = 10 mark  
 Part -B-2\*13 mark = 26 mark  
 Part -C-1\*14 mark = 14 mark  
**Total = 50 marks**

  
**HOD/EEE**



**DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING**  
**ACADEMIC YEAR 2018-2019/ EVEN SEMESTER**  
**My Credit Course (MCC)**

Name of the course: Solar Panel Installation

Batch: 2015-2019

Duration: 50

Year/Sem: IV/VIII

Staff in-charges: Mrs. A. Prabha

SYLLABUS

Topic no.	Topics	Hours Planned	Cumulative Hours
1	Introduction	1	1
2	Solar Power Generation	1	2
3	Multiple Choice	1	3
4	Multiple Choice in Solar	1	4
5	Solar Panel	1	5
6	Solar Panel AC and DC Supply	1	6
7	AC DC Supply Essential	1	7
8	Disposal Procedures, Standard	1	8
9	Constraints	1	9
10	Quality Requirement	1	10
11	Site Survey	1	11
12	Safety Standard	1	12
13	Importance of Wearing Clothes	1	13
14	Quality Process	1	14
15	Lightning System	1	15
16	UPS Cable	1	16
17	Pay Return	1	17
18	Cleanliness of Solar Panel	1	18

19	Capacity Building Service	1	19
20	Market Development	1	20
21	Solar Cost	1	21
22	Difference Between PV and Solar Energies	1	22
23	Difficulty in Installation	1	23
24	System Capacity and Energy Demand	1	24
25	Energy and Role of Photovoltaic	1	25
26	Site Selection	1	26
27	Common Features	1	27
28	Concentrations of PV Module	1	28
29	Solar Photovoltaic Modules	1	29
30	Balance of Solar PV Systems	1	30
31	Photovoltaic System	1	31
32	Planning and Design	1	32
33	Installation	1	33
34	Commissioning	1	34
35	Planning	1	35
36	Positioning of Panel	1	36
37	Workshop "Solar Energy Conversion and Application"	8	44
38	Overview of Solar Panel Installation	6	50

*A. Almas*  
HOD / EEE



**KINGS**  
COLLEGE OF ENGINEERING  
(NAAC Accredited Institution)  
(Approved by AICTE, New Delhi, Affiliated to  
Anna University, Chennai)



DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING  
STUDENTS NAMELIST

BATCH NO: 2015-2019

CLASS/SEM :IV/VII

SNO	REGISTER NUMBER	NAME OF THE STUDENTS	
1	821115105001	AKALYA. T	T. Akalya
2	821115105002	AKASH. R	R. Akash
3	821115105003	AKILANDESWARI. S	S. Akilandeswari
4	821115105004	BALAKRISHNAN. R	R. Balakrishnan
5	821115105005	BARANIKA. R	R. Baranika
6	821115105006	BRINDHA. M	M. Brindha
7	821115105007	DEEPAK RAJ.S	S. Deepak Raj
8	821115105008	DHEERTHI. S	S. Dheerthi
9	821115105009	DHINESH. J	J. Dinesh
10	821115105010	DIVYA. K	K. Divya
11	821115105011	ELAKKIYA. E	E. Elakkiya
12	821115105012	GANESH KUMAR. P	P. Ganesh Kumar
13	821115105014	HARINI. K	K. Harini
14	821115105015	HARISHBABU. R	R. Harish Babu
15	821115105017	KALAIYARASI. D	D. Kalaiyarsi
16	821115105019	KAYALVIZHI. R	R. Kayalvizhi
17	821115105023	MUTHU MEENA. K	K. Muthu Meena
18	821115105024	NALINI. N	N. Nalini
19	821115105025	PARATHASARATHI. R	R. Parathasarathi
20	821115105026	PRAKASH. M	M. Prakash
21	821115105027	PRAKASH. S	S. Prakash
22	821115105028	PRATHEESH. T	T. Pratheesh
23	821115105030	PREMKUMAR. P	P. Premkumar
24	821115105031	RAGURAMAN. R	R. Raguraman
25	821115105032	RAMKUMAR. P	P. Ramkumar

26	821115105033	RAMU. P	P. Ramu.
27	821115105034	SAKTHIVEL. M	M. Sakthivel
28	821115105035	SANDRU. K	Sidhu. K
29	821115105036	SANTHOSH KUMAR. R	Santhosh Kumar. R
30	821115105037	SANTHOSHAMI. R	P. Santhoshami
31	821115105038	SATHISH. M	M. Sathish
32	821115105039	SHANTHI. R	P. Shanthi
33	821115105040	SIVAKUMAR.S	S. Sivakumar
34	821115105041	SOWMIYA. S	S. Sowmya
35	821115105042	SRIKANTH. R	P. Srikanth
36	821115105043	SUNDAR. R	R. Sundar
37	821115105044	SURIYA PRAKASH. M	S. Suriya Prakash
38	821115105045	TAMIL SELVAN. T	T. Tamil Selvan
39	821115105046	VICTORIYA. P	P. Victoria
40	821115105301	DINESHKUMAR D	D. Dinesh Kumar
41	821115105302	KARTHIKEYAN R	R. Karthikeyan
42	821115105303	MOHANRAJ S	S. Mohanraj
43	821115105304	PRADEEPKUMAR D	D. Pradeep Kumar
44	821115105305	RAJADURAI R	R. Rajadurai
45	821115105306	RAMKUMAR P	P. Ram Kumar
46	821115105307	SHELAA S	S. Shalpa
47	821115105308	VEERAMANI M	M. Veeramani
48	821115105309	VIBINRAJ N	N. Vibinraj
49	821115105701	ENIYAVAN R	R. Eniyavan
50	821115105702	ROHIND B	B. Rohind

  
HOD/ EEE



DEPARTMENT OF EEE  
**REPORT ON MY CREDIT COURSE**  
MCC 001-MATLAB

26.02.2019

BENEFICIARIES: IV YEAR/VIII SEM

THEORY/ LAB SESSION (Planned/Actual):

No. of .STUDENTS: 48

As per the course plan, **50 hours** of sessions were planned for my credit course-SOLAR PANEL INSTALLATION. The course was started on **20.12.2018**

Details	Sessions Planned	Sessions Handled	% of portions covered
From 20.12.2018 To 26.02.2019	50	50 (22 hrs THEORY+21 hrs PRACTICAL+ 7hrs Workshop)	100%

**OUTCOME:**

This course has provided an aggressively gentle introduction to SOLAR PANEL INSTALLATION. The purpose of the **My Credit Course** is to develop technical skills and knowledge consistent with solar panel installation. The course will include a mix of theory and practical. Prospective students should have a fair understanding about solar panels and its installation procedure. After the course the students can

- able to install, operate and maintain the solar energy equipment.
- able to play an important role as a partner in the long island solar roofs initiative.
- able to initiate research projects in solar power generation.
- able to collaborate with solar energy companies, utilities, and government to attract research grants from state and federal government agencies.
- able to work in teams to complete a design scenario in solar power generation.

**MCC FEEDBACK SUMMARY:**

Total No .of Students: 48

THEORY SESSION				PRACTICAL SESSION				QUERRIES & INTERACTION			
EXCELLENT	V.GOOD	GOOD	FAIR	EXCELLENT	V. GOOD	GOOD	FAIR	EXCELLENT	V. GOOD	GOOD	FAIR
22	17	09	-	26	15	07	-	27	21	-	-

Total No .of Students: 40

**WORKSHOP FEEDBACK SUMMARY:**

THEORY SESSION				PRACTICAL SESSION				QUERRIES & INTERACTION			
EXCELLENT	V.GOOD	GOOD	FAIR	EXCELLENT	V. GOOD	GOOD	FAIR	EXCELLENT	V. GOOD	GOOD	FAIR
19	15	06	-	27	08	05	-	14	20	06	-

**ASSESSMENT PERFORMANCE:** Mark Statement Attached

**CERTIFICATE STATUS:** Photocopy attached.

MCC- CO-ORDINATOR  
(Mrs.A.Prabha)  
*A. Prabh*  
26/02/19

*J. Ramani*  
28/2/19

*Prof. Ramani*  
HOD/EEE 28/2/19



**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**  
**TIME TABLE (December 2018 - April 2019, EVEN SEM)**  
**B.E - EEE (Regulation 2013)-With Effect from 21.12.2018**

Batch: 2016-2020

Year : III

Semester: VI

Class Room: 133

Strength: 13  
Block : I

Session	1	2		3	4		5	6	7		8
Day	09.15am 10.00am	10.00am 10.45am	10.45 am 11.00 am	11.00am 11.45am	11.45am 12.30pm	12.30 pm 01.10 pm	01.10pm 01.55pm	01.55pm 02.40pm	02.40pm 03.25pm	03.25 pm 03.40 pm	03.40pm 04.35pm
MON	EE6601	EE6604	BREAK	EE6603	EE6602	LUNCH BREAK	EE6002	T&P(A)	EC6651	BREAK	EE6601
TUE	EE6603	EE6604		EC6651	EE6602		EE6601	EE6603	EE6002		EE6604
WED	EE6602	EC6651		EE6601	EE6002		EE6611		EE6603		
THU	EE6604	EE6601		EE6602	LIB/NET		T&P(A)	EE6613	EE6602		
FRI	EC6651	EE6603		EE6604	EE6604		EE6612		EE6602		

SUB. CODE	NAME OF THE SUBJECT	CREDITS	NAME OF THE STAFF	DEPT.	PERIODS/WEEK
<b>TUTORIAL (T), ELECTIVE (E)</b>					
EC6651	Communication Engineering	3	Ms.E.Suganya	EEE	4
EE6601	Solid State Drives	3	Mr.R.Sundaramoorthi	EEE	5
EE6602	Embedded Systems	3	Mr.W.Newton David Raj	ECE	4
EE6603	Power System Operation and Control	3	Mrs.A.Prabha	EEE	5
EE6604	Design of Electrical Machines	4(T)	Dr.S.Sivakumar	EEE	6
EE6002	Power System Transients	3(E1)	Mr.J.Arokiaraj	EEE	4
<b>PRACTICAL (P)</b>					
EE6611	Power Electronics and Drives Laboratory	2(P)	Mr.J.Arokiaraj	EEE	3
EE6612	Microprocessors & Microcontrollers Laboratory	2(P)	Mrs.D.Vennila & Mrs.P.Thirumagal	ECE	3
EE6613	Presentation Skills and Technical Seminar	1(P)	Mr.R.Sundaramoorthi	EEE	2
<b>COMPETENCY DEVELOPMENT CLASS (CDC)</b>					
EE305	GATE Coaching	CDC	Mr.S.Sakthivel	EEE	1
LIB/NET	Library/Internet	---	Mr.J.Arokiaraj	EEE	1
T&P(A)	Training and Placement (Aptitude)	CDC	Ms.P.Suganya	T&P	2

CLASS CO-ORDINATOR	NAME OF THE REPRESENTATIVES	ROLL NO.
Mr.J.Arokiaraj	R.Pavithra	07
CLASS COMMITTEE CHAIR PERSON	Mr.C.Balaji	

*(Signature)*  
DEPT. TTC  
14/12/18

*(Signature)*  
HoD 17/12

*(Signature)*  
17/12/18  
PRINCIPAL



**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**  
**ACADAMIC YEAR 2018-2019 EVEN SEMESTER**  
**GATE SYLLABUS**

**SECTION 1: ENGINEERING MATHEMATICS:**

**LINEAR ALGEBRA:** Matrix Algebra, Systems of linear equations, Eigenvalues, Eigenvectors.

**CALCULUS:** Mean value theorems, Theorems of integral calculus, Evaluation of definite and improper integrals, Partial Derivatives, Maxima and minima, Multiple integrals, Fourier series, Vector identities, Directional derivatives, Line integral, Surface integral, Volume integral, Stokes's theorem, Gauss's theorem, Green's theorem.

**DIFFERENTIAL EQUATIONS:** First order equations (linear and nonlinear), Higher order linear differential equations with constant coefficients, Method of variation of parameters, Cauchy's equation, Euler's equation, Initial and boundary value problems, Partial Differential Equations, Method of separation of variables.

**COMPLEX VARIABLES:** Analytic functions, Cauchy's integral theorem, Cauchy's integral formula, Taylor series, Laurent series, Residue theorem, Solution integrals.

**PROBABILITY AND STATISTICS:** Sampling theorems, Conditional probability, Mean, Median, Mode, Standard Deviation, Random variables, Discrete and Continuous distributions, Poisson distribution, Normal distribution, Binomial distribution, Correlation analysis, Regression analysis.

**NUMERICAL METHODS:** Solutions of nonlinear algebraic equations, Single and Multi-step methods for differential equations.

**TRANSFORM THEORY:** Fourier Transform, Laplace Transform, z-Transform.

**ELECTRICAL ENGINEERING:**

**SECTION 2: ELECTRIC CIRCUITS:**

Network graph, KCL, KVL, Node and Mesh analysis, Transient response of dc and ac networks, Sinusoidal steady-state analysis, Resonance, Passive filters, Ideal current and voltage sources, Thevenin's theorem, Norton's theorem, Superposition theorem, Maximum power transfer theorem, Two-port networks, Three phase circuits, Power and power factor in ac circuits.

**SECTION 3: ELECTROMAGNETIC FIELDS:**

Coulomb's Law, Electric Field Intensity, Electric Flux Density, Gauss's Law, Divergence, Electric field and potential due to point, line, plane and spherical charge distributions, Effect of dielectric medium, Capacitance of simple configurations, Biot-Savart's law, Ampere's law, Curl, Faraday's law, Lorentz force, Inductance, Magnetomotive force, Reluctance, Magnetic circuits, Self and Mutual inductance of simple configurations.

Representation of continuous and discrete-time signals, Shifting and scaling operations, Linear Time Invariant and Causal systems; Fourier series representation of continuous periodic signals, Sampling theorem, Applications of Fourier Transform, Laplace Transform and z-Transform.

### **SECTION 5: ELECTRICAL MACHINES:**

Single phase transformer: equivalent circuit, phasor diagram, open circuit and short circuit tests, regulation and efficiency; Three phase transformers: connections, parallel operation; Auto-transformer, Electromechanical energy conversion principles, DC machines: separately excited, series and shunt, motoring and generating mode of operation and their characteristics, starting and speed control of dc motors; Three phase induction motors: principle of operation, types, performance, torque-speed characteristics, no-load and blocked rotor tests, equivalent circuit, starting and speed control; Operating principle of single phase induction motors; Synchronous machines: cylindrical and salient pole machines, performance, regulation and parallel operation of generators, starting of synchronous motor, characteristics; Types of losses and efficiency calculations of electric machines.

### **SECTION 6: POWER SYSTEMS:**

Power generation concepts, ac and dc transmission concepts, Models and performance of transmission lines and cables, Series and shunt compensation, Electric field distribution and insulators, Distribution systems, Per-unit quantities, Bus admittance matrix, Gauss-Seidel and Newton-Raphson load flow methods, Voltage and Frequency control, Power factor correction, Symmetrical components, Symmetrical and unsymmetrical fault analysis, Principles of over-current, differential and distance protection; Circuit breakers, System stability concepts, Equal area criterion.

### **SECTION 7: CONTROL SYSTEMS:**

Mathematical modeling and representation of systems; Feedback principle, transfer function, Block diagrams and Signal flow graphs, Transient and Steady-state analysis of linear time invariant systems, Routh-Hurwitz and Nyquist criteria, Bode plots, Root loci, Stability analysis, Lag, Lead and Lead-Lag compensators; P, PI and PID controllers; State space model, State transition matrix.

### **SECTION 8: ELECTRICAL AND ELECTRONIC MEASUREMENTS:**

Bridges and Potentiometers, Measurement of voltage, current, power, energy and power factor; Instrument transformers, Digital voltmeters and multimeters, Phase, Time and Frequency measurement; Oscilloscopes, Error analysis.

### **SECTION 9: ANALOG AND DIGITAL ELECTRONICS:**

Characteristics of diodes, BJT, MOSFET; Simple diode circuits: clipping, clamping, rectifiers; Amplifiers: Biasing, Equivalent circuit and Frequency response; Oscillators and Feedback amplifiers; Operational amplifiers: Characteristics and applications; Simple active filters, VCOs and Timers, Combinational and Sequential logic circuits, Multiplexer, Demultiplexer, Schmitt trigger, Sample and hold circuits, A/D and D/A converters, 8085 Microprocessor: Architecture, Programming and Interfacing.

### **SECTION 10: POWER ELECTRONICS:**

Characteristics of semiconductor power devices: Diode, Thyristor, Triac, GTO, MOSFET, IGBT; DC to DC conversion: Buck, Boost and Buck-Boost converters; Single and three phase configuration of uncontrolled rectifiers, Line commutated thyristor based converters, Bidirectional ac to dc voltage source converters, Issues of line current harmonics, Power factor, Distortion factor of ac to dc converters, Single phase and three phase inverters, Sinusoidal pulse width modulation.

*S. Sanyal*  
GATE INCHARGE 11/12/18

*S. Sanyal*  
HOD/EEE



**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING  
ACADAMIC YEAR 2018-2019 EVEN SEMESTER**

**GATE ACTION PLAN**

**Year/sem** : **III/VI**  
**STAFF NAME** : **Mr.S.Sakthivel**

S.NO	Topics	No.of.hours required
1.	Circuit theory <ul style="list-style-type: none"> <li>➤ Introduction to DC and AC circuits,</li> <li>➤ Network theorems</li> <li>➤ Resonance</li> </ul>	4
2.	Electrical machines <ul style="list-style-type: none"> <li>➤ Problems based on DC and AC machines</li> <li>➤ Equivalent circuit</li> <li>➤ Characteristics curves for all AC and DC machines</li> </ul>	4
3.	Electromagnetic theory <ul style="list-style-type: none"> <li>➤ Co.ordinate systems and applications</li> <li>➤ Electromagnetic waves</li> <li>➤ Plane reflection and refraction</li> </ul>	3
4.	Control systems <ul style="list-style-type: none"> <li>➤ Transfer function</li> <li>➤ Block diagram</li> <li>➤ Signal flow graph time domain analysis</li> </ul>	3
5.	Power systems <ul style="list-style-type: none"> <li>➤ Transmission and distribution</li> <li>➤ Power system analysis</li> </ul>	3
6.	Power electronics <ul style="list-style-type: none"> <li>➤ Basics about power electronic devices</li> <li>➤ Converters and Inverters</li> <li>➤ Applications</li> </ul>	3

*S. Sakthivel*  
11/12/18  
**GATE CO.ORDINATOR**

*A. Arumugam*  
11/12  
**HOD/EEE**



**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING  
ACADAMIC YEAR 2018-2019 EVEN SEMESTER**

**GATE SUBJECTS HANDLING STAFF NAME LIST**

S.NO	TOPICS	HOURS REQUIRED	STAFF NAME
1.	Circuit theory ➤ Introduction to DC and AC circuits, ➤ Network theorems ➤ Resonance	4 N. Azulmozhi	<i>[Signature]</i>
2.	Electrical machines ➤ Problems based on DC and AC machines ➤ Equivalent circuit ➤ Characteristics curves for all AC and DC machines	4 C. John Selvan	<i>[Signature]</i>
3.	Electromagnetic theory ➤ Co.ordinate systems and applications ➤ Electromagnetic waves ➤ Plane reflection and refraction	3 S. Sakthivel	<i>[Signature]</i>
4.	Control systems ➤ Transfer function ➤ Block diagram ➤ Signal flow graph time domain analysis	3 C. Balaji	<i>[Signature]</i> 26/11/18
5.	Power systems ➤ Transmission and distribution ➤ Power system analysis	3 A. PRABHA D. S. Sivakumar	<i>[Signature]</i>
6.	Power electronics ➤ Basics about power electronic devices ➤ Converters and Inverters ➤ Applications	3 S. R. Karthikayan	<i>[Signature]</i>

*[Signature]*  
11/12/18.  
**GATE INCHARGE**

*[Signature]*  
**HOD/EEE**



**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING  
ACADAMIC YEAR 2018-2019 EVEN SEMESTER**

**STUDENT NAME LIST**

Year/sem : III/VI  
STAFF NAME : Mr.S.Sakthivel

S.NO	REGISTER NUMBER	NAME
1.	821116105012	R.PAVITHRA

*S. Senthil*  
11/12/18.  
GATE CO.ORDINATOR

*A. Arumugam*  
11/12  
HOD/EEE



**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**

**MARK STATEMENT**

Subject: CTATE

Batch: 2016-2020

Year /Sem III /VI

Student Name	Mock Test			
	<u>01</u>	<u>02</u>		
	19.01.19	07.03.19.		
	(12 MARKS)	(12 MARKS)		
R. PAVITHRA	10	10		
Staff In charge Signature	<i>S. Sanyal</i> 15/11/18	<i>S. Sanyal</i> 07/3/19.		
HoD/EEE	<i>Adm</i>	<i>Adm</i>		



**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**  
**ACADAMIC YEAR 2017-18/EVEN SEMESTER**  
**MY CREDIT COURSE(MCC)**  
**MATLAB@Simulink**  
**SYLLABUS**

**CYCLE 1**

Introduction To Simulink, Simulink Library Browser, Simulation Of Single Phase Uncontrolled Half Bridge Rectifier With r And Rl Load, Simulation Of Single Phase Uncontrolled Full Fridge Rectifier With r And Rl Load, Simulation Of Single Phase One Pulse Converter With r And Rl Load

**CYCLE 2**

Simulation Of Single Phase Semi Converter With r And Rl Load, Simulation Of Single Phase Full Converter With r And Rl Load, Simulation Of Three Phase Full Converter With r Load, Simulation Of Dc-Dc Converter Using Scr, Igbts's, Power Transistor & Power Mosfet

**CYCLE 3**

Simulation Of Single Phase Ac Voltage Controller, Simulation Of Three Phase Ac Voltage Controller, Simulation Of Thier Own Project, Find The Polynomial, Roots Of Given Equation Using Matlab Commands, Find The Partial Fraction Using Matlab Commands

**CYCLE 4**

Draw Pole Zero Plot For Overall Transfer Function And Find Poles, Zeros And Gain Corresponding To Overall Transfer Function, For a Unity Feedback System Find The Following. Transfer Function, Pole-Zero, Gain, Eigen Value, Bode Plot, Nquist Plot, Polar Plot Using Matlab Commands, Draw Root Locus Using Matlab Commands, Draw Root Locus Using Matlab Commands Of Uncompensated System For Oltf. Find The Transfer Function Of Given Rlc Circuit Using Matlab Commands, Find The Following For a Given Rlc Circuit, Using Matlab Commands, Bode Plot, Nquist Plot, Polar Plot And Map, One Day Workshop On "Real Time Simulation Using Proteous" By External Resource Person

**HOD/EEE**



**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING  
ACADEMIC YEAR (2017-2018)**

**ASSESSMENT PROCEDURE ON MY CREDIT COURSE**

**MCC- MATLAB**

**CLASS: IV EEE**

Type of Assessment	Assessment Model	Max Mark	Exam Duration
Assessment -1	Descriptive	60	2 Hours
Assessment -2	Descriptive	60	2 Hours

**ASSESSMENT-1**

The Assessment Test-1 will be in the following pattern.

Part -A-6\*2 marks =12 marks

Part -B-2\*8 marks =16 marks

Part -C-2\*16 marks =32 marks

**Total =60 marks**

**ASSESSMENT-2**

The Assessment Test-2 will be in the following pattern.

Part -A-6\*2 marks =12 marks

Part -B-2\*8 marks =16 marks

Part -C-2\*16 marks =32 marks

**Total =60 marks**

  
**HOD/EEE**



## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Academic Year 2017-18/ Even Semester

### My Credit Course (MCC)

Name of the Course : MATLAB<sup>®</sup> Simulink  
 Batch : 2014-18 Year/Semester: IV/VIII  
 Duration : 50 Hours Staff in-Charges: **P.Narasimman & V.Moorthy**

### Plan of Action / Syllabus

Topics	Hours Planned	Cumulative Hours
<b>Simulation Experiments based on Power Electronics</b>		
Introduction to Simulink	2	2
Simulink Library Browser	2	4
Simulation of Single Phase uncontrolled half bridge rectifier with R and RL Load	3	7
Simulation of Single Phase uncontrolled full bridge rectifier with R and RL Load	3	10
Simulation of Single Phase one pulse converter with R and RL Load	2	12
Simulation of Single Phase semi converter with R and RL Load	2	14
Simulation of Single Phase Full converter with R and RL Load	2	16
Simulation of Three Phase Full Converter with R Load	1	17
Simulation of DC - DC converter using SCR, IGBT's, Power Transistor & Power MosFET	2	19
Simulation of DC - AC converter using SCR, IGBT's, Power Transistor & Power MosFET	2	21
11. Simulation of Single Phase AC Voltage Controller	2	23
12. Simulation of Three Phase AC Voltage Controller	2	25
13. Simulation of their own Project	3	28

Simulation Experiments based on Control System			
14.	Find the polynomial, roots of given equation using MATLAB commands	2	30
15.	Find the partial fraction using MATLAB commands	2	32
16.	Draw Pole Zero plot for overall transfer function and find poles, Zeros and Gain Corresponding to Overall Transfer Function	2	34
17.	For a Unity feedback System find the following. Transfer Function, Pole - Zero, Gain, Eigen Value, Bode Plot, Polar Plot using MATLAB commands	2	36
18.	Draw Root Locus using MATLAB commands of uncompensated system for OLTF.	2	38
19.	Find the transfer function of given RLC circuit using MATLAB commands	2	40
20.	Find the following for a given RLC circuit Using MATLAB commands. Bode Plot, Nquist Plot, Polar Plot and PZ Map	2	42
21.	One day workshop on "Real Time simulation using PROTEUS" By External Resource Person	8	50
<b>Total Hours</b>		<b>50</b>	<b>50</b>

**References:**

[http://in.mathworks.com/index.html?s\\_tid=gn\\_logo](http://in.mathworks.com/index.html?s_tid=gn_logo)

<https://in.mathworks.com/support/learn-with-matlab-tutorials.html>

*P. Nammay*  
16/12/18.  
Staff in-Charges

*A. Adnan*  
HOD 16/12/18

*J. Praveen*  
16/12/17.  
PRINCIPAL



DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING  
ACADEMIC YEAR 2017-18 (EVEN SEMESTER)

**STUDENTS NAME LIST**

Year/ Sem: IV / VIII

Batch : 2014-2018

Class Strength: 27

Class Coordinator: Mr.C.Balaji

Hall No: 134

ROLL NO	REGISTER NUMBER	NAME OF THE STUDENT	
1	821114105001	S.AJITHKUMAR	S. Ajithkumar
2	821114105002	S.AMARNATH	S. Amarnath
3	821114105004	K.DHARUN	K. Dharmu
4	821114105005	B.INSATHULLAH	B. insathullah
5	821114105006	S.KALISHVARAN	S. kalishvaran
6	821114105007	S.KANIMOZHI	S. Kanimezhi
7	821114105008	S.KARTHIK	S. Karthik
8	821114105009	V.KARTHIK	V. Karthik
9	821114105010	R.KISHORE KUMAR	R. Kishore
10	821114105011	S.KRITHIKA	S. Krithika
11	821114105013	K.MEENAKUMARI	K. meenakumari
12	821114105014	R.MURUGARAJ	R. Murugaraaj
13	821114105015	K.NITHYA	K. Nithya
14	821114105017	S.PONMANI	S. ponmani
15	821114105018	R.PREETHI	R. preethi
16	821114105020	G.SANTHOSH	G. Santhosh
17	821114105021	P.SANTHOSH	P. Santhosh
18	821114105022	P.SARTHASINGH	P. Satharasingh
19	821114105023	S.SOWMIYA	S. Sowmya
20	821114105024	U.R.UMAKANTH	U. R. Umakanth
21	821114105025	M.VIJAYCHANDRAN	M. vijaychandran
22	821114105026	V.VIVEK	V. VIVEK
23	821114105027	K.YUVARAJ	Yuvaraj - K.
24	821114105301	G.ARCHANA	G. Archana
25	821114105302	K.MANIVANNAN	K. Manivannan
26	821114105303	S.SIVASANKAR	S. Sivasankar
27	821114105304	G.SRINIVASAN	G. Srinivasan

C. Balaji  
CLASS COORDINATOR

A. Muthu  
15/12/18  
HEAD OF THE DEPARTMENT



**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**  
**TIME TABLE (DEC 2017 -May 2018, EVEN SEM)**  
**B.E - EEE (Regulation 2013)-With Effect from 18.12.17**

Batch: 2014-2018

Year: IV

Semester: VIII

Class Room: 135

Strength: 27

Block : I

Session	1	2		3	4		5	6		7	8
Day	09.15am 10.00am	10.00am 10.45am	10.45 am 11.00 am	11.00am 11.45am	11.45am 12.30pm	12.30 pm 01.15 pm	01.15pm 02.00pm	02.00pm 02.45pm	02.45 pm 03.00 pm	03.00pm 03.45pm	03.45pm 04.30pm
MON	GE6757	EE6801	BREAK	EE6009		LUNCH BREAK	EE6811	EE6811	BREAK	GE6757	T&P(A)
TUE	EE6009			EE6801	GE6757		EE6801	GE6757		LIB/NET	T&P(S)
WED	EE6801	GE6757		EE6811			GE6757	EE6801		MCC	
THU	GE6757	EE6801		EE6009			EE6801	LIB/NET		MCC	
FRI	EE6009			EE6801	GE6757		TANCET			MCC	

SUB CODE	NAME OF THE SUBJECT	CREDITS	NAME OF THE STAFF	DEPT	PERIODS/WEEK
<b>TUTORIAL (T), ELECTIVE (E)</b>					
EE6801	Electric Energy Generation, Utilization and Conservation	3	Ms.N.Rajeswari	EEE	8
EE6009	Power Electronics for Renewable Energy Systems	3(E)	Prof. A. Albert Martin Ruban	EEE	8
GE6757	Total Quality Management	3(E)	Mr. Suresh Babu	T&P	8
<b>PRACTICAL (P)</b>					
EE6811	Project work	6(P)	Mr.C.Balaji	EEE	4
<b>VALUE ADDITION INITIATIVES (VAI)</b>					
P(S)	Training and Placement - Soft Skills	VAI	Mr.K.Sudhakar		
T&P(A)	Training and Placement - Aptitude	VAI	Ms.P.Suganya	T&P	1
MCC	My credit course	VAI	Mr.P.Narasimman & Mr.V.Moorthy	T&P	1
LIB/NET	Library/Internet	-	Mr.C.Balaji	EEE	6
TANCET	TANCET Coaching	VAI	Mr.M.Mayapandi	EEE	2
				EEE	2

CLASS CO-ORDINATOR	NAME OF THE REPRESENTATIVES	ROLL NO
Mr.C.Balaji	V.Karthik K.Nithya	08
CLASS COMMITTEE CHAIR PERSON	Mr.P.Narasimman	13

*[Signature]*  
DEPT. TTC 12/12/17

*[Signature]*  
HOD 12/12/17

*[Signature]*  
PRINCIPAL



## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Academic Year 2017-18/ Even Semester

### My Credit Course (MCC)

**Name of the Course** : MATLAB® Simulink  
**Batch** : 2014-18      **Year/Semester:** IV/VIII  
**Duration** : 50 Hours      **Staff in-Charges:** P.Narasimman & V.Moorthy

### Plan of Action

Topic No.	Topics	Hours Planned	Cumulative Hours
<b>Simulation Experiments based on Power Electronics</b>			
1.	Introduction to Simulink	2	2
2.	Simulink Library Browser	2	4
3.	Simulation of Single Phase uncontrolled half bridge rectifier with R and RL Load	3	7
4.	Simulation of Single Phase uncontrolled full bridge rectifier with R and RL Load	3	10
5.	Simulation of Single Phase one pulse converter with R and RL Load	2	12
6.	Simulation of Single Phase semi converter with R and RL Load	2	14
7.	Simulation of Single Phase Full converter with R and RL Load	2	16
8.	Simulation of Three Phase Full Converter with R Load	1	17
9.	Simulation of DC – DC converter using SCR, IGBT's, Power Transistor & Power MosFET	2	19
10.	Simulation of DC – AC converter using SCR, IGBT's, Power Transistor & Power MosFET	2	21
11.	Simulation of Single Phase AC Voltage Controller	2	23
12.	Simulation of Three Phase AC Voltage Controller	2	25
13.	Simulation of their own Project	3	28

Simulation Experiments based on Control System			
14.	Find the polynomial, roots of given equation using MATLAB commands	2	30
15.	Find the partial fraction using MATLAB commands	2	32
16.	Draw Pole Zero plot for overall transfer function and find poles, Zeros and Gain Corresponding to Overall Transfer Function	2	34
17.	For a Unity feedback System find the following. Transfer Function, Pole - Zero, Gain, Eigen Value, Bode Plot, Polar Plot using MATLAB commands	2	36
18.	Draw Root Locus using MATLAB commands of uncompensated system for OLTF.	2	38
19.	Find the transfer function of given RLC circuit using MATLAB commands	2	40
20.	Find the following for a given RLC circuit Using MATLAB commands. Bode Plot, Nquist Plot, Polar Plot and PZ Map	2	42
21.	One day workshop on "Real Time simulation using PROTEUS" By External Resource Person	8	50
<b>Total Hours</b>		<b>50</b>	<b>50</b>

**References:**

[http://in.mathworks.com/index.html?s\\_tid=gn\\_logo](http://in.mathworks.com/index.html?s_tid=gn_logo)

<https://in.mathworks.com/support/learn-with-matlab-tutorials.html>

1. P. Nammal  
16/12/17.  
2. 16/12/17

Staff in-Charges

A. Nammal  
16/12/17  
HOD

J. Nammal  
16/12/17.  
PRINCIPAL



DEPARTMENT OF EEE

**REPORT ON MY CREDIT COURSE**

06.02.2018

MCC –MATLAB®Simulink

BENEFICIARIES: IV YEAR/VIII SEM

No. of .Students: 27

THEORY/ LAB SESSION (Planned/Actual):

As per the course plan, 50 hours of sessions were planned for my credit course- MATLAB®Simulink. The course was started on 18.12.2017.

Details	Sessions Planned	Sessions Handled	% of portions covered
From 18.12.2017 To 02.02.2018	50 Hours	50 40( Theory and Practical)+ 2 Assessment Test + Workshop	100%

OUTCOME:

This course has provided an aggressively gentle introduction to MATLAB®Simulink. It was designed to give students fluency in Simulink. The course consists of interactive lectures with students doing real time power Electronics and Control System simulation problem. After the course the students can

- Able to use MATLAB®Simulink for interactive simulation.
- Familiar with Simulink browser
- Able to develop real time simulations based on Power Electronics & Control System oriented problems.

FEEDBACK SUMMARY:

Total No .of Students: 27

THEORY SESSION				PRACTICAL SESSION				STUDY MATERIAL			
EXCELLENT	V.GOOD	GOOD	FAIR	EXCELLENT	V. GOOD	GOOD	FAIR	EXCELLENT	V. GOOD	GOOD	FAIR
10	11	5	1	27	-	-	-	5	11	8	3

*P. Narasimman*  
MCC- CO ORDINATOR  
(Mr. P.Narasimman, AP/EEE)

*A. Jeyaram*  
HoD/EEE

*J. Narasimman*  
Principal



**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING  
WORKSHOP ON MY CREDIT COURSE- MATLAB® Simulink  
ACADEMIC YEAR 2017-18 EVEN SEM  
ATTENDANCE SHEET**

Date: 02.02.2018

S.NO	NAME OF THE STUDENT	SIGNATURE OF THE STUDENT	
		FN	AN
1.	S.AJITH KUMAR	<i>S. Ajith</i>	<i>S. Ajith</i>
2.	S.AMARNATH	<i>S. Amarnath</i>	<i>S. Amarnath</i>
3.	K.DHARUN	<i>K. Dharmu</i>	<i>K. Dharmu</i>
4.	B.INSATHULLAH	<i>B. Insathullah</i>	<i>B. Insathullah</i>
5.	S.KALISHVARAN	<i>S. Kalishvaran</i>	<i>S. Kalishvaran</i>
6.	S.KANIMOZHI	AB	<i>S. Kanimozhi</i>
7.	S.KARTHIK	<i>S. Karthik</i>	<i>S. Karthik</i>
8.	V.KARTHIK	<i>V. Karthik</i>	<i>V. Karthik</i>
9.	R.KISHORE KUMAR	<i>R. Kishore Kumar</i>	<i>R. Kishore Kumar</i>
10.	S.KRITHIKA	<i>S. Krithika</i>	<i>S. Krithika</i>
11.	K.MEENAKUMARI	<i>K. Meenakumari</i>	<i>K. Meenakumari</i>
12.	R.MURUGARAJ	<i>R. Murugaraaj</i>	<i>R. Murugaraaj</i>
13.	K.NITHYA	<i>K. Nithya</i>	<i>K. Nithya</i>
14.	S.PONMANI	<i>S. Ponmani</i>	<i>S. Ponmani</i>
15.	R.PREETHI	<i>R. Preethi</i>	<i>R. Preethi</i>
16.	G.SANTHOSH	<i>G. Santhosh</i>	<i>G. Santhosh</i>
17.	P.SANTHOSH	<i>P. Santhosh</i>	<i>P. Santhosh</i>
18.	P.SARTHA SINGH	<i>P. Sarth Singh</i>	<i>P. Sarth Singh</i>
19.	S.SOWMIYA	<i>S. Sowmya</i>	<i>S. Sowmya</i>
20.	U.R.UMAKANTH	<i>U.R. Umakanth</i>	<i>U.R. Umakanth</i>
21.	M.VIJAY CHANDRAN	<i>M. Vijay Chandran</i>	<i>M. Vijay Chandran</i>
22.	V.VIVEK	<i>V. Vivek</i>	<i>V. Vivek</i>
23.	K.YUVARAJ	<i>K. Yuvaraj</i>	<i>K. Yuvaraj</i>
24.	G.ARCHANA	<i>G. Archana</i>	<i>G. Archana</i>
25.	K.MANIVANNAN	<i>K. Manivannan</i>	<i>K. Manivannan</i>
26.	S.SIVASANKAR	<i>S. Sivasankar</i>	<i>S. Sivasankar</i>
27.	G.SRINIVASAN	<i>G. Srinivasan</i>	<i>G. Srinivasan</i>

*P. Nammayya*  
2/2/18

MCC- COORDINATOR

*A. Namm*  
3/2

HEAD OF THE DEPARTMENT



## MATLAB Programming (SYLLABUS)

ACADEMIC YEAR (2016-17)

### UNIT 1: Basics of Matlab and MATLAB Compiler

- ✓ The Matlab user interface
- ✓ Working with Matlab data types
- ✓ Creating matrices and arrays
- ✓ Operators and control statements
- ✓ Using scripts and functions
- ✓ Data import and export
- ✓ Using the graphical features

### UNIT 2: Programming with simple examples

### UNIT 3: Discussion of Toolboxes with Applications

- ✓ Signal Processing
- ✓ Image Acquisition Toolbox
- ✓ Image Processing
- ✓ Neural Network
- ✓ Fuzzy Logic Toolbox

### UNIT 4: Simulink and Hardware Interfacing (Using Kits: Lego, Raspberry Pi, Mind storms etc.

#### Prerequisite:

1. C Programming, Basics of Engineering Mathematics
2. No prior knowledge of Matlab is required. Basic computer literacy is expected.

#### Course Objectives:

1. To Impart the Knowledge to the students with MATLAB software. *[This enhances programming knowledge in Research and Development].*
2. To provide a working introduction to the Matlab technical computing environment.  
*[Themes of data analysis, visualization, and programming].*
3. To introduce students the use of a high-level programming language, Matlab.  
*[scientific problem solving with applications and examples from Engineering].*

HOD/EEE



**Department of EEE**

**ACADEMIC YEAR (2016-2017)**

**ASSESSMENT PROCEDURE ON MY CREDIT COURSE**

**MCC- MATLAB**

**CLASS: IV EEE**

Type of Assessment	Assessment Model	Max Mark	Exam Duration
Assessment -1	Descriptive	50	1hour 30mins
Assessment -2	Descriptive	50	1hour 30mins

**ASSESSMENT-1**

The Assessment Test-1 will be in the following pattern.

Part -A-5\*2 marks =10 marks

Part -B-2\*20 marks =40 marks

**Total =50 marks**

**ASSESSMENT-2**

The Assessment Test-2 will be in the following pattern.

Part -A-5\*2 marks =10 marks

Part -B-2\*20 marks =40 marks

**Total =50 marks**

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**HOD/EEE**



DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING  
Academic year 2016-17/Even Semester  
**MY CREDIT COURSE – MATLAB**  
(For VIII Semester EEE students – 2013 TO 2017 Batch)

DURATION: 50 Hrs

Staff Incharges: **Dr.S.Sivakumar & Mrs.A.Prabha**

**SYLLABUS**

UNIT	TOPICS	HOURS PLANNED	CUMULATIVE HOURS
1	MATLAB – Desktop Basics	1	1
	Arrays, Matrix, Polynomial Functions		
	Introduction to Vectors in MATLAB	2	3
	Defining a Vector		
	Accessing elements within a vector		
	Basic operations on vectors	1	4
	Introduction to Matrices in MATLAB	1	5
	Defining Matrices		
	Matrix Functions		
	Matrix Operations		
	Solution to Differential Equation		
2	Introduction to Programming in MATLAB	1	9
	M-file scripts	1	10
	Function, Structuring scripts	1	11
	Loops - For Loops, While Loops	1	12
	Sub routines	1	13
	If statements		
	Calling functions	1	14
	Character strings	1	15
	Open ended loops		
	Debugging		
3	MATLAB Graphics	1	17
	Two dimensional plots	1	18
	Parametric plots	1	19
	Contour plots		
	Field plots	1	20
	Three Dimensional Plots	2	22
	Curves		
	Surfaces		

	Figure windows		
	Multiple Figure windows	1	23
	Combining plots		
	Images, animation and sound	2	25
4	Troubleshooting	1	26
	Common problems		
	Wrong or unexpected output	1	27
	Syntax error	1	28
	Spelling error	1	29
	Error or Warning messages in Plotting		
	A Previously saved M-File Evaluates Differently	1	30
	Computer won't respond	1	31
	Debugging Techniques	1	32
	5	Simulink	1
What is Simulink?			
Building and running a model		1	34
Creating a Model		1	35
Open a new Model window			
Collecting and connecting blocks		1	36
Creating sub systems		1	37
Defining Variables			
GoTO from blocks		1	38
Running a simulation			
Parameter Setting		1	39
Getting data into and out of models			
Analyzing results		1	40
6	Test and Evaluation	2	42
7	Workshop	8	50
TOTAL			50

Web resources

W1: <http://www.cyclismo.org/tutorial/matlab/index.html>

W2: [http://www.tutorialspoint.com/matlab/matlab\\_quick\\_guide.htm](http://www.tutorialspoint.com/matlab/matlab_quick_guide.htm)

W3: [http://in.mathworks.com/support/learn-with-matlab-tutorials.html?s\\_tid=gn\\_loc\\_drop](http://in.mathworks.com/support/learn-with-matlab-tutorials.html?s_tid=gn_loc_drop)

Prepared by: 1. Dr.S.Sivakumar

2. Mrs.A.Prabha

*[Handwritten signatures]*  
*Prabha*  
*01/10/2016*

*[Handwritten signature]*  
HOD / EEE

Date: 01.10.2016



**KINGS**  
COLLEGE OF ENGINEERING  
(NAAC Accredited Institution)  
(Approved by AICTE, New Delhi, Affiliated to  
Anna University, Chennai)



TUV Rheinland  
**CERT**  
ISO 9001

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING  
ACADEMIC YEAR 2016-2017/EVEN SEMESTER  
MCC 001-MY CREDIT COURSE -**MATLAB**  
**STUDENTS NAMELIST**

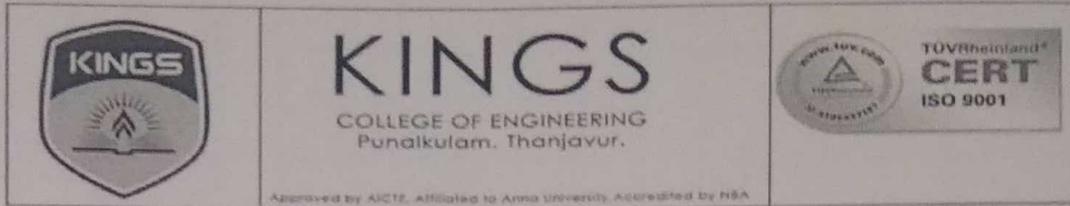
Year/Sem: IV/VII

Batch: 2013-2017

S.NO	REGISTER NUMBER	NAME OF THE STUDENT
1.	821113105001	ABINAYA .K
2.	821113105005	CHANDRAN.M
3.	821113105009	GANESH.S.M
4.	821113105018	MONISHA.V
5.	821113105020	PREMANAND.K
6.	821113105021	PRIYADHARSINI.P
7.	821113105022	PRIYADHARSINY.C
8.	821113105026	RATHIBHARATHI.R
9.	821113105027	SAMEER AHAMED.S
10.	821113105029	SANJEEV.N
11.	821113105031	SANTHOSH KUMAR.V
12.	821113105033	SEMMALRAJ.K
13.	821113105034	SHANMUGAPRIYA.R
14.	821113105037	SHUDHARSAN.I
15.	821113105305	RESHMA.R
16.	821113105306	SANGAVI.R

*A. Arumugam*

EEE/HOD



**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**  
**ACADEMIC YEAR 2016-2017 / EVEN SEMESTER**  
**WORKSHOP ON MY CREDIT COURSE -MATLAB**  
**ATTENDANCE DETAILS**

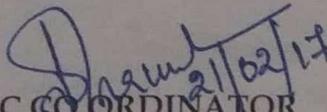
Year / Sem: IV / VII

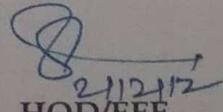
Batch: 2013-2017

Date: 21.02.2017

S.NO	REGISTER NUMBER	NAME OF THE STUDENT	SIGNATURE	
			FORENOON	AFTERNOON
1	821113105001	ABINAYA. K	<i>A. Abinaya</i>	<i>A. Abinaya</i>
2	821113105005	CHANDRAN. M	<i>M. Chandran</i>	<i>M. Chandran</i>
3	821113105009	GANESH. S. M	<i>S.M. Ganesh</i>	<i>S.M. Ganesh</i>
4	821113105018	MONISHA. V	<i>V. Monisha</i>	<i>V. Monisha</i>
5	821113105020	PREM ANANTH. K	<i>K. Prem Ananth</i>	<i>K. Prem Ananth</i>
6	821113105021	PRIYADHARSHINI. P	<i>P. Priyadharshini</i>	<i>P. Priyadharshini</i>
7	821113105022	PRIYADHARSHINY. C	<i>C. Priyadharshini</i>	<i>C. Priyadharshini</i>
8	821113105026	RATHIBHARATHI. R	<i>R. Rathibharathi</i>	<i>R. Rathibharathi</i>
9	821113105027	SAMEER AHAMED. S	<i>S. Sameer Ahamed</i>	<i>S. Sameer Ahamed</i>
10	821113105029	SANJEEV. N	<i>N. Sanjeev</i>	<i>N. Sanjeev</i>
11	821113105031	SANTHOSH KUMAR. V	<i>V. Santhosh Kumar</i>	<i>V. Santhosh Kumar</i>
12	821113105033	SEMMAL RAJ. K	<i>K. Semmal Raj</i>	<i>K. Semmal Raj</i>
13	821113105034	SHANMUGA PRIYA. R	<i>R. Shanmuga Priya</i>	<i>R. Shanmuga Priya</i>
14	821113105037	SUDHARSAN. I	<i>I. Sudharsan</i>	<i>I. Sudharsan</i>
15	821113105305	RESHMA.R	<i>R. Reshma</i>	<i>R. Reshma</i>
16	821113105306	SANGAVI.R	<i>R. Sangavi</i>	<i>R. Sangavi</i>

Total No.of Students : 16  
 No.of Students Present : 16  
 No.of Students Absent : -

  
 MCC COORDINATOR  
 21/02/17

  
 HOD/EEE  
 21/2/17



**MATLAB Programming  
(MY CREDIT COURSE)  
COURSE OUTCOME**

**MCC Coordinator: Dr.S.Sivakumar & Mrs.A.Prabha**  
**Course Structure:**

Course	Class	No. Of Students (Max)	Duration	Date
Matlab Programming	IV YEAR	16	50hours	27.12.2016 to 21.02.2017

**Course outcomes:** By the end of this course, the student will be able to

1. Understand the basics of Matlab
2. Break a complex task up into smaller, simpler tasks
3. Case Study (Any two Modules)
4. Tabulate results and Analyse

**Assessment:**

1. Every student has to give periodic tests consisting of Programming tasks and Objective Questions
2. At the end of the Course each student will give a presentation on a topic covered in the course

**Companies Using Matlab:**

Companies ranging from automotive, banking, and software implement the MATLAB software. The lists of companies in automotive sector using the MATLAB Software are:

- Volvo
- Jaguar
- Mercedes
- BMW

A company from the software sector includes:

- Adobe Photoshop

All the Banking companies which involve crunches of calculations such as Citi Bank, HDFC do implement the concepts indirectly.

*Courtesy:* CETPA INFOTECH PVT LTD, Noida , <http://www.cetpainfotech.com/technology/matlab>

**HOD/EEE**



DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING ACADEMIC YEAR  
2016-2017

**MY CREDIT COURSE (MCC)**

Name of the course: PSpice For Power Electronics

Batch : 2013-2017

Year/Semester: IV/VIII

Duration : 50 Hours

Staff in Charges: P.Narasimman

&J.Arokiaraj

**SYLLABUS**

**UNIT 1-**Introduction To PSpice,Circuit Discriptions,Defining Output Variables,Voltage And Current Sources,Passive Element,Dot Commands,Diode Rectifiers-Introduction,Diode Model,Diode Parameters,Laboratory Experiment-I)Single Phase Full Wave Center Tapped Rectifier Ii)Single Phase Bridge Rectifier Iii)Three Phase Bridge Rectifier,Dc-Dc Converters-Introduction,Bjt Spice Model,Bjt Parameters,Example Of Bjt Dc-Dc Converter, Mosfet And IGBT Dc-Dc Converter

**UNIT 2-**Laboratory Experiment-I)Dc Block Chopper Under Various Load Conditions Ii)Dc Boost Chopper Under Various Load Conditions, Pulse Width Modulated Inverters, Voltage Source Inverter,Current Source Inverter-Examples Of Single Phase Inverters,Single Phase Spwm Inverters,Laboratory Experiment-i)Single Phase Half Bridge(Transistor)Under Various Load Condition,ii)Single Phase Full-Fridge(Transistor)Under Various Load Condition Iii)Single Phase Current Source Inverter Under Various Load Condition, Resonant Pulse Inverters-Introduction,Examples Of Resonant Pulse Inverters, Examples Of Zero -Current Switching Resonant Converter,Examples Of Zero-Voltage Switching Resonant Converter,Laboratory Experiment-i)Single Phase Half-Bridge(Transistor)Resonant Inverter -ii)Single Phase Parallel Resonant Inverter

**UNIT 3-**Controlled Rectifiers-Introduction,Ac Thyristor Model,Gto Thyristor Model,Example Of Single Phase Controlled Rectifiers,Example Of Three Phase Controlled Rectifiers,Laboratory Experiment -i)Single Phase Half Wave Controller Rectifier Under Various Load Condition ii)Single Phase Fully Wave Controller Rectifier Under Various Load Condition,Ac Voltage Controller-Introduction,Ac Thyristor Model,Example Of Phase Controlled Ac Voltage Controllers,Ac Voltage Controller With Pwm Control,Laboratory Experiment-i) Single Phase Ac Voltage Controller Under Various Load Condition ii)Three Phase Ac Voltage Controller Rectifier Under Various Load Condition

**UNIT 4-**Cycloconverters-Introduction,Examples Of Single Phase Cycloconverters,Laboratory-Experiment i)Single Phase To Single Phase Cycloconverters ii)Three Phase To Single Phase Cycloconverters,Control Applications-Introduction,Examples Of Op-Amp Circuits,Examples Of Control Systems,Examples Of Closed Loop Controlsystems,Examples Of Closed Loop Control,Characteristics Of Electric Motors-Introduction, Examples Of Dc Motor Controlled By Dc-Dc Converter, Examples Of Induction Motor Characteristics, Simulation Errors, Convergence Problem And Other Difficulties

HOD EEE



Department of EEE

ACADEMIC YEAR (2016-2017)

**ASSESSMENT PROCEDURE ON MY CREDIT COURSE**

**MCC- Pspice for Power Electronics**

**CLASS: IV EEE**

Type of Assessment	Assessment Model	Max Mark	Exam Duration
Assessment -1	Descriptive	50	1hour 30mins
Assessment -2	Descriptive	50	1hour 30mins

**ASSESSMENT-1**

The Assessment Test-1 will be in the following pattern.

Part -A-5\*2 marks =10 marks

Part -B-2\*20 marks =40 marks

**Total =50 marks**

**ASSESSMENT-2**

The Assessment Test-2 will be in the following pattern.

Part -A-5\*2 marks =10 marks

Part -B-2\*20 marks =40 marks

**Total =50 marks**

**HOD/EEE**

**KINGS**COLLEGE OF ENGINEERING  
Punalakulam, Thanjavur**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**

Academic Year 2016-17/ Even Semester

My Credit Course (MCC)

Name of the Course : PSpice for Power electronics  
 Batch : 2013-17 Year/Semester : IV/VIII  
 Duration : 50 Hours Staff In-Charges: P.Narasimman & J.Aroklaraj

**SYLLABUS**

Topic No.	Topics	Hours Planned	Cumulative Hours
1.	Introduction to PSpice	1	1
2.	Circuit descriptions	2	3
3.	Defining output variables	2	5
4.	Voltage and current sources	2	7
5.	Passive Element	1	8
6.	Dot commands	3	11
7.	Diode rectifiers-Introduction, Diode model, Diode parameters	1	12
8.	Laboratory Experiment i)Single phase full wave center tapped rectifier ii)Single phase bridge rectifier iii)Three phase bridge rectifier	3	15
9.	DC-DC converters-Introduction, BJT SPICE model,BJT parameters, Example of BJT DC-DC converter	2	17
10.	MOSFET and IGBT SPICE , Example of MOSFET and IGBT DC-DC converter	2	19
11.	Laboratory Experiment i)DC buck chopper under various load conditions ii) DC boost chopper under various load conditions	2	21
12.	Pulse width modulated inverters Voltage source inverter, current source inverter-Examples of single phase inverters, single phase SPWM inverters	2	23
13.	Laboratory Experiment i)Single phase half-bridge (transistor) under various load condition. ii) Single phase full-bridge (transistor) under various load condition iii) Single phase current source inverter under various load condition.	3	26
14.	Resonant pulse inverters-Introduction, Examples of Resonant pulse inverters, Examples of Zero-current switching resonant converter, Examples of Zero-voltage switching resonant converter	2	28
15.	Laboratory Experiment i)Single phase half-bridge (transistor) resonant inverter. ii) Single phase parallel resonant inverter.	2	30

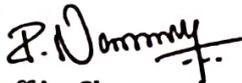
16.	Controlled rectifiers-Introduction,AC thyristor model,GTO thyristor model,Example of single phase controlled rectifiers, Example of three phase controlled rectifiers	2	32
17.	Laboratory Experiment i) Single phase half wave controller rectifier under various load condition. ii) Single phase fully wave controller rectifier under various load condition.	2	34
18.	AC voltage controller- Introduction,AC thyristor model,Examples of phase controlled AC voltage controllers, AC voltage controller with PWM control	2	36
19.	Laboratory Experiment i)Single phase AC voltage controller under various load condition. ii) Three phase AC voltage controller rectifier under various load condition.	3	39
20.	Cycloconverters- Introduction, ,Examples of single phase Cycloconverters	1	40
21.	Laboratory Experiment i)Single phase to single phase Cycloconverters ii) Three phase to single phase Cycloconverters	2	42
22.	Control applications-Introduction, Examples of Op-Amp circuits, Examples of control systems, Examples of closed loop control	2	44
23.	Characteristics of electric motors-Introduction, Examples of DC motor controlled by DC-DC converter, Examples of induction motor characteristics,	3	47
24.	Simulation errors, Convergence problems and other difficulties	3	50
<b>Total Hours</b>		<b>50</b>	<b>50</b>

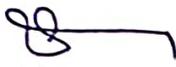
**References:**

[http://www.engr.colostate.edu/EE534/spice/spice\\_list.htm](http://www.engr.colostate.edu/EE534/spice/spice_list.htm)  
<http://www.engr.colostate.edu/academic/ece/PSpice/>  
[http://denethor.wlu.ca/pc300/PSpice/pspice\\_tutorial.html#IIIE](http://denethor.wlu.ca/pc300/PSpice/pspice_tutorial.html#IIIE)  
<http://rock.uta.edu/dillon/pspice/> <http://www.glue.umd.edu/~oramahi/PSPICE-TUTORIAL.pdf>  
[http://www.te.rl.ac.uk/europractice/vendors/cadence\\_pspice.pdf](http://www.te.rl.ac.uk/europractice/vendors/cadence_pspice.pdf)  
<http://www.yk.psu.edu/~dec147/eet101/pspqrc.pdf>  
[http://www.stanford.edu/class/ee122/Spice\\_Decks/pspicedemo.pdf](http://www.stanford.edu/class/ee122/Spice_Decks/pspicedemo.pdf)  
[http://www2.elen.utah.edu/~ee3110/Intro\\_to\\_Spice.pdf](http://www2.elen.utah.edu/~ee3110/Intro_to_Spice.pdf)

**Internet Resources:**

<http://www.sedrasmith.com/>  
<http://www.cadence.com/> (for downloading PSPICE)

  
 Staff in-Charges

  
 HOD



## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

### My Credit Course - PSPICE for Power electronics

1. The PSPICE for Power electronics course will be conducted for duration of 50 hours which includes 2 hours test and evaluation and a day of workshop.
2. It is planned to provide the students with all necessary study materials and a CD containing supporting documents compiled from internet.
3. Test of two hours with exercises will be conducted, evaluated and the marks will be displayed.
4. A certificate will be issued upon completion of the course.
5. Rs.500/- (Rupees five Hundred only) will be charged from the students for this course.

Prepared by

1. P.Narasimman
2. J.Arokiaraj

A handwritten signature in blue ink, appearing to read 'P. Narasimman', is written over the first name in the list.

A handwritten signature in black ink, consisting of a loop and a long horizontal line, is written above the text 'HOD'.

HOD



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Anna University, Chennai)



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DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING  
ACADEMIC YEAR 2016-2017/EVEN SEMESTER  
MCC 002-MY CREDIT COURSE -PSPICE  
**STUDENTS NAMELIST**

Year/Sem: IV/VII

Batch: 2013-2017

S.NO	REGISTER NUMBER	NAME OF THE STUDENT	SIGN
1.	821113105007	DINESH.G	<i>[Signature]</i>
2.	821113105008	DINESH.S	<i>[Signature]</i>
3.	821113105010	GANESHKUMAR.V	<i>[Signature]</i>
4.	821113105012	HARIHARAN.A	<i>[Signature]</i>
5.	821113105013	JAGABARNATCHIYAR.R	<i>[Signature]</i>
6.	821113105014	KARTHI.M	<i>[Signature]</i>
7.	821113105016	MANIMOZHIL.R	<i>[Signature]</i>
8.	821113105017	MEENA.V	<i>[Signature]</i>
9.	821113105023	RAGAVENDRAN.D	<i>[Signature]</i>
10.	821113105025	RAMACHANDRAN.M	<i>[Signature]</i>
11.	821113105030	SANTHOSHKUMAR.S	<i>[Signature]</i>
12.	821113105035	SINDHU.C	<i>[Signature]</i>
13.	821113105038	THILAGAVATHY.B	<i>[Signature]</i>
14.	821113105040	VENKADESHWARAN.K	<i>[Signature]</i>
15.	821113105303	PRAVEEN.R	<i>[Signature]</i>
16.	821113105304	RAMKUMAR.K	<i>[Signature]</i>

*[Signature]*

EEE/HOD



**PSPICE FOR POWER ELECTRONICS  
(MY CREDIT COURSE)  
COURSE OUTCOME**

**MCC Coordinator: Dr.P.Narasimman & Mr.J.Arokiaraj**

**Course Structure:**

Course	Class	No. Of Students (Max)	Duration	Date
Pspice for Power electronics	IV YEAR	16	50hours	27.12.2016 to 220.02.2017

**Course outcomes:** By the end of this course, the student will be able to

1. Describe the role of Power Electronics as an enabling technology in various applications such as flexible production systems, energy conservation, renewable energy, transportation etc.
2. Identify a switching power-pole as the basic building block and to use Pulse Width Modulation to synthesize the desired output.
3. Design the switching power-pole using the available power semiconductor devices, their drive circuitry and driver ICs and heat sinks. You will be able to model these in PSpice.
4. Learn the basic concepts of operation of dc-dc converters in steady state in continuous and discontinuous modes and be able to analyze basic converter topologies.
5. Using the average model of the building block, quickly simulate the dynamic performance of dc-dc converters and compare them with their switching counterparts.
6. Design controllers for dc-dc converters in voltage and peak-current mode.
7. Design, using simulations, the interface between the power electronics equipment and single-phase and three-phase utility using diode rectifiers and analyze the total harmonic distortion.
8. Design the single-phase power factor correction (PFC) circuits to draw sinusoidal currents at unity power factor.
9. Learn basic magnetic concepts, analyze transformer-isolated switch-mode power supplies and design high-frequency inductors and transformers.
10. Learn basic concepts of soft-switching and their applications to dc-dc converters, compact fluorescent lamps (CFL) and induction heating.
11. Learn the requirements imposed by electric drives (dc and ac) on converters and synthesize these converters using the building block approach.
12. Understand, simulate and design single-phase and three-phase thyristor converters.
13. Learn the role of Power Electronics in utility-related applications which are becoming extremely important.

**Assessment:**

1. Every student has to give periodic tests consisting of Programming tasks and Objective Questions
2. At the end of the Course each student will give a presentation on a topic covered in the course.

  
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## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

ACADEMIC YEAR 2016-17/EVEN SEMESTER

### MY CREDIT COURSE (MCC)

Name of the course : Embedded system  
Batch : 2013-17  
Year/semester : IV/VIII  
Duration : 50 hours  
Staff in charges : N.Hemavathi & N.Rajeshwari

### SYLLABUS

#### UNIT 1

Introduction To Embedded Systems,Structural Units In Embedded Processor,Selection Of Processor &Memory Devices,Timer And Counting Devices,In Circuit Emulator,Target Hardware Debugging ,I/Odevice Port &Busses,Serial Bus Communication Protocalls,RS232 Standardrs422,RS485,Canbus,Serial Pheripheral Interface (Spi),Inter Integrated Circuits(12c),8051 Microcontroller-Hardware Architecture.

#### UNIT 2

Register Associated With8051,Assembly Level Programming In 8051,Introduction To C,Operators In C,Keil C Compilers,Hi-Tech C Compilers,Timer Programming In 8051,Serial Programming In 8051,Interrupts Programming ,Two Day Workshop On "Real Time Embedded System Design",Traffic Light Controller,Real Time Temperature Monitoring System Using Sensors Speed Controll Of Dc Motor,Introduction To Arduino And Zigbee,Implementation Of A Real Time Monitoring System Using Arduino,Test

  
HOD/EEE



**Department of EEE**

**ACADEMIC YEAR (2016-2017)**

**ASSESSMENT PROCEDURE ON MY CREDIT COURSE**

**MCC- EMBEDDED SYSTEMS**

**CLASS: IV EEE**

Type of Assessment	Assessment Model	Max Mark	Exam Duration
Assessment -1	Descriptive	50	1hour 30mins
Assessment -2	Descriptive	50	1hour 30mins

**ASSESSMENT-1**

The Assessment Test-1 will be in the following pattern.

Part -A-5\*2 marks =10 marks

Part -B-2\*20 marks =40 marks

**Total =50 marks**

**ASSESSMENT-2**

The Assessment Test-2 will be in the following pattern.

Part -A-5\*2 marks =10 marks

Part -B-2\*20 marks =40 marks

**Total =50 marks**

**HOD/EEE**



**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**

Academic Year 2016-17/ Even Semester

My Credit Course (MCC)

Name of the Course : Embedded Systems  
 Batch : 2013-17  
 Year/Semester : IV/VIII  
 Duration : 50 Hours  
 Staff in-Charges : **N.Hemavathi & N.Rajeswarl**

SYLLABUS

Topic No.	Topics	Hours Planned
1.	Introduction to Embedded Systems	1
2.	Structural units in Embedded processor	1
3.	Selection of processor & memory devices	1
4.	Timer and Counting devices	2
5.	In circuit emulator	1
6.	Target Hardware Debugging	1
7.	I/O Device Ports & Buses	2
8.	Serial Bus communication protocols, RS232 standard, RS422, RS 485, CAN Bus	1
9.	Serial Peripheral Interface (SPI)	1
10.	Inter Integrated Circuits (I2C)	1
11.	8051 microcontroller- Hardware Architecture	2
12.	Registers Associated with 8051	1
13.	Assembly Level Programming in 8051	3
14.	Introduction to C, Operators in C, Keil C Compilers, Hi-Tech C Compilers	4

15.	Timer Programming In 8051	1
16.	Serial Programming In 8051	1
17.	Interrupts Programming	1
18.	Two day workshop on "Real Time Embedded System Design"	16
19.	Traffic Light Controller	2
20.	Real time temperature monitoring system using Sensors, Speed control of DC Motor	3
21.	Introduction to Arduino and Zigbee	1
22.	Implementation of a real time monitoring system using Arduino	1
23.	Test	2
<b>Total Hours</b>		<b>50</b>

**References:**

1. Rajkamal, 'Embedded System-Architecture, Programming, Design', Mc Graw Hill, 2013.
2. Elicia White, 'Making Embedded Systems', O' Reilly Series, SPD, 2011.
3. [http://www.dauniv.ac.in/downloads/EmbsysRevEd\\_PPTs](http://www.dauniv.ac.in/downloads/EmbsysRevEd_PPTs)
4. <http://galia.fc.uaslp.mx/~cantocar/microprocesadores/EL Z80 PDF S/8051.PDF>
5. <http://www.me.sc.edu/courses/emch367/Download/programming.pdf>

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 Staff in-Charges

  
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**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**

Academic Year 2016-17/ Even Semester

My Credit Course (MCC)

Name of the Course : Embedded Systems  
 Batch : 2013-17  
 Year/Semester : IV/VIII  
 Duration : 50 Hours  
 Staff in-Charges : N.Hemavathi & N.Rajeswari

Plan of Action

Topic No.	Topics	Hours Planned	Cumulative Hours
1.	Introduction to Embedded Systems	1	1
2.	Structural units in Embedded processor	1	2
3.	Selection of processor & memory devices	1	3
4.	Timer and Counting devices	2	5
5.	In circuit emulator	1	6
6.	Target Hardware Debugging	1	7
7.	I/O Device Ports & Buses	2	9
8.	Serial Bus communication protocols, RS232 standard, RS422, RS 485, CAN Bus	1	10
9.	Serial Peripheral Interface (SPI)	1	11
10.	Inter Integrated Circuits (I2C)	1	12
11.	8051 microcontroller- Hardware Architecture	2	14
12.	Registers Associated with 8051	1	15
13.	Assembly Level Programming in 8051	3	18

14.	Introduction to C, Operators in C, Keil C Compilers, Hi-Tech C Compilers	4	22
15.	Timer Programming In 8051	1	23
16.	Serial Programming In 8051	1	24
17.	Interrupts Programming	1	25
18.	Two day workshop on "Real Time Embedded System Design"	16	41
19.	Traffic Light Controller	2	43
20.	Real time temperature monitoring system using Sensors, Speed control of DC Motor	3	46
21.	Introduction to Arduino and Zigbee	1	47
22.	Implementation of a real time monitoring system using Arduino	1	48
23.	Test	2	50
<b>Total Hours</b>		<b>50</b>	

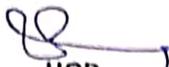
**References:**

1. Rajkamal, 'Embedded System-Architecture, Programming, Design', Mc Graw Hill, 2013.
2. Elicia White, 'Making Embedded Systems', O' Reilly Series, SPD, 2011.
3. [http://www.dauniv.ac.in/downloads/EmbsysRevEd\\_PPTs](http://www.dauniv.ac.in/downloads/EmbsysRevEd_PPTs)
4. [http://galia.fc.uaslp.mx/~cantocar/microprocesadores/EL\\_Z80\\_PDF\\_S/8051.PDF](http://galia.fc.uaslp.mx/~cantocar/microprocesadores/EL_Z80_PDF_S/8051.PDF)
5. <http://www.me.sc.edu/courses/emch367/Download/programming.pdf>

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Staff in-Charges

  
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**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**

Academic Year 2016-17/ Even Semester

My Credit Course (MCC)

Name of the Course : Embedded Systems  
 Batch : 2013-17  
 Year/Semester : IV/VIII  
 Duration : 50 Hours  
 Staff in-Charges : N.Hemavathi & N.Rajeswari

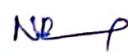
Plan of Action

Topic No.	Topics	Hours Planned	Cumulative Hours
1.	Introduction to Embedded Systems	1	1
2.	Structural units in Embedded processor	1	2
3.	Selection of processor & memory devices	1	3
4.	Timer and Counting devices	2	5
5.	In circuit emulator	1	6
6.	Target Hardware Debugging	1	7
7.	I/O Device Ports & Buses	2	9
8.	Serial Bus communication protocols, RS232 standard, RS422, RS 485, CAN Bus	1	10
9.	Serial Peripheral Interface (SPI)	1	11
10.	Inter Integrated Circuits (I2C)	1	12
11.	8051 microcontroller- Hardware Architecture	2	14
12.	Registers Associated with 8051	1	15
13.	Assembly Level Programming in 8051	3	18

14.	Introduction to C, Operators in C, Keil C Compilers, Hi-Tech C Compilers	4	22
15.	Timer Programming In 8051	1	23
16.	Serial Programming In 8051	1	24
17.	Interrupts Programming	1	25
18.	Two day workshop on "Real Time Embedded System Design"	16	41
19.	Traffic Light Controller	2	43
20.	Real time temperature monitoring system using Sensors, Speed control of DC Motor	3	46
21.	Introduction to Arduino and Zigbee	1	47
22.	Implementation of a real time monitoring system using Arduino	1	48
23.	Test	2	50
<b>Total Hours</b>		<b>50</b>	

**References:**

1. Rajkamal, 'Embedded System-Architecture, Programming, Design', Mc Graw Hill, 2013.
2. Elicia White, 'Making Embedded Systems', O' Reilly Series, SPD, 2011.
3. [http://www.dauniv.ac.in/downloads/EmbsysRevEd\\_PPTs](http://www.dauniv.ac.in/downloads/EmbsysRevEd_PPTs)
4. [http://galia.fc.uaslp.mx/~cantocar/microprocesadores/EL\\_Z80\\_PDF\\_S/8051.PDF](http://galia.fc.uaslp.mx/~cantocar/microprocesadores/EL_Z80_PDF_S/8051.PDF)
5. <http://www.me.sc.edu/courses/emch367/Download/programming.pdf>

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**Staff in-Charges**

  
**HOD**



**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**  
**ACADEMIC YEAR 2016-2017 / EVEN SEMESTER**  
**STUDENTS NAME LIST - MCC 3 - EMBEDDED SYSTEM**

Year/Sem: IV / VIII

Batch: 2013-2017

R. NO	REGISTER NUMBER	NAME OF THE STUDENT	R. NO	REGISTER NUMBER	NAME OF THE STUDENT
1	821113105001	ABINAYA. K	25	821113105025	RAMACHANDRAN. M
2	821113105002	ABIRAMI. G	26	821113105026	RATHIBHARATHI. R
3	821113105003	AISHVARYA. K	27	821113105027	SAMEER AHAMED. S
4	821113105004	ARUN PRASATH. S	28	821113105028	SANGEETHA. V
5	821113105005	CHANDRAN. M	29	821113105029	SANJEEV. N
6	821113105006	DHARANI PRIYA. R	30	821113105030	SANTHOSH KUMAR. S
7	821113105007	DINESH. G	31	821113105031	SANTHOSH KUMAR. V
8	821113105008	DINESH. S	32	821113105033	SEMMAL RAJ. K
9	821113105009	GANESH. S. M	33	821113105034	SHANMUGA PRIYA. R
10	821113105010	GANESH KUMAR. V	34	821113105035	SINDHU. C
11	821113105011	GAYATHRI. K	35	821113105036	SIVARAJAN. L
12	821113105012	HARIHARAN. A	36	821113105037	SUDHARSAN. I
13	821113105013	JAGABAR NACHIYAR. R	37	821113105038	THILAGAVATHI. B
14	821113105014	KARTHI. M	38	821113105039	VAISHALI. I
15	821113105015	MADHAVAN. B	39	821113105040	VENKATESHWARAN. K
16	821113105016	MANIMOZHI. R	40	821113105041	VIJENDRAN. R
17	821113105017	MEENA. V	41	821113105042	VINITHA. V
18	821113105018	MONISHA. V	42	821113105301	ARAVIND.A
19	821113105019	NALLENDRAN. S	43	821113105303	PRAVEEN.R
20	821113105020	PREM ANANTH. K	44	821113105304	RAMKUMAR.K
21	821113105021	PRIYADHARSHINI. P	45	821113105305	RESHMA.R
22	821113105022	PRIYADHARSHINY. C	46	821113105306	SANGAVI.R
23	821113105023	RAGAVENDRAN. D	47	821113105308	SUNDAR.J
24	821113105024	RAJKUMAR. D	48	821113105701	DIVYAASHREE.S

*NP 20/12/16*  
**CLASS INCHARGE**

*[Signature]*  
**HEAD OF THE DEPARTMENT**



**KINGS**  
COLLEGE OF ENGINEERING  
(NAAC Accredited Institution)  
(Approved by AICTE, New Delhi, Affiliated to  
Anna University, Chennai)



DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING  
ACADEMIC YEAR 2016-2017/EVEN SEMESTER  
MCC 002-MY CREDIT COURSE -EMBEDDED SYSTEM  
**STUDENTS NAMELIST**

Year/Sem: IV/VII

Batch: 2013-2017

S.NO	REGISTER NUMBER	NAME OF THE STUDENT	SIGN
1.	821113105002	ABIRAMI.G	G. Abirami
2.	821113105003	AISHWARYA.K	K.A. Aishwarya
3.	821113105004	ARUNPRASANTH	Arunpranth
4.	821113105006	DHARANIPRIYA.R	R. Dhara Priya
5.	821113105011	GAYATHRI.K	K. Gayathri
6.	821113105015	MADHAN.B	B. Madhan
7.	821113105019	NALLENDRAN.S	S. Nallendran
8.	821113105024	RAJKUMAR.D	D. Rajkumar
9.	821113105028	SANGEETHA.V	V. Sangeetha
10.	821113105036	SIVARANJAN.L	L. Sivaranjan
11.	821113105039	VISHALI.I	I. Vishali
12.	821113105041	VIJENDRAN.R	R. Vijendran
13.	821113105042	VINITHA.V	V. Vinitha
14.	821113105301	ARAVIND A	A. Aravind
15.	821113105308	SUNDAR.J	J. Sundar
16.	821113105701	DIVYASHREE.S	S. Divyashree

EEE/HOD

**MATLAB Programming  
ACADEMIC YEAR (2016-17)  
(MY CREDIT COURSE)**

**COURSE OUTCOME**

**MCC Coordinator: Ms.N.Hemavathi & Ms.N.Rajeswari**

**Course Structure:**

Course	Class	No. Of Students (Max)	Duration	Date
Embedded systems	IV YEAR	16	50 hours	27.12.2016 to 21.02.2017

**Course outcomes:**

- Define embedded systems and identify applications to real word systems
- Utilize hardware, software, and peripherals involved in an embedded system
- Understand basic microprocessor and microcontroller functionality utilizing registers and memory and Hardware/Software interfacing concepts
- Explain primary microcontroller capabilities and their applications for embedded system development
- Explore the features and functionality of your ST Microcontroller

**Hardware:** STM32 IOT Discovery Node 915MHZ - Mfg. Part # B-L475E-IOT01A. Part can be purchased from Digi-Key Electronics or any other reputable electronics dealer. This microcontroller is used in all four required courses in this program.

  
**HOD/EEE**