



**SRI MANAKULA VINAYAGAR**  
**ENGINEERING COLLEGE**  
(An Autonomous Institution)

**Department of Electrical and Electronics Engineering**

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**Minutes of 4<sup>th</sup> Meeting of BoS (UG)**

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**Venue** : Seminar Hall,  
Department of EEE,  
Sri Manakula Vinayagar Engineering College

**Date & Time** : 22<sup>nd</sup> February, 2022 at 10:00 A.M





# SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE

(An Autonomous Institution)

(Approved by AICTE, New Delhi & Affiliated to Pondicherry University)  
(Accredited by NBA-AICTE, New Delhi, ISO 9001:2000 Certified Institution &  
Accredited by NAAC with "A" Grade)

Madagadipet, Puducherry - 605 107



## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

### Minutes of 4<sup>th</sup> Meeting of Board of Studies (UG)

The Fourth meeting of Board of Studies in Electrical and Electronics Engineering Department was held on **22<sup>nd</sup> February 2022 at 10:00 A.M** in the Seminar Hall, Department of EEE, Sri Manakula Vinayagar Engineering College, with Head of Department in the Chair.

The following members were present for the BoS meeting

Sl. No.	Name of the Member	Designation
<b>Head of the Department (Chairman)</b>		
1	<b>Dr. S. Anbumalar, M.E., Ph.D.,</b> Professor and Head Specialization: Control System Years of Experience: 29 years Sri Manakula Vinayagar Engineering College saravanan.anbumalar@gmail.com 9443179533	Chairman
<b>The entire faculty of each specialization</b>		
2	<b>Dr. P. Jamuna, M.E., Ph.D.,</b> Professor Specialization: Power Electronics and Drives Years of Experience: 16 Sri Manakula Vinayagar Engineering College jamuna1981@gmail.com 9789544379	Member
3	<b>Dr. D. Raja, M.Tech., Ph.D.,</b> Professor Specialization: Electrical Drives and Control Years of Experience: 15 Sri Manakula Vinayagar Engineering College rajaapeee@gmail.com 9944337970	Member
4	<b>Dr. K. Gowrishankar, M.Tech., Ph.D.,</b> Professor Specialization: Instrumentation and control Years of Experience: 16 Sri Manakula Vinayagar Engineering College gowri200@yahoo.com 9095555412	Member
5	<b>Dr. S. Ganesh Kumaran, M.E., Ph.D.,</b> Associate Professor Specialization: Electrical Machines Years of Experience: 10 Sri Manakula Vinayagar Engineering College ganeshphd4u@gmail.com 9677624378	Member

<b>S&amp;H Faculty</b>		
6	<b>Dr. T. Gayathri</b> Professor, Dept. of Mathematics, SMVEC	Member
7	<b>Dr. K. Kathikeyan</b> Associate Professor, Dept. of Chemistry, SMVEC	Member
8	<b>Mrs. G. Namita</b> Associate Professor, Dept. of English, SMVEC	Member
9	<b>Dr. P. Jayavardhane</b> Associate Professor Dept. of Physics, SMVEC, Madagadipet-605107	Member
<b>Two subject experts from outside the Parent University nominated by the Academic Council</b>		
10	<b>Dr. J. Kanagaraj, M.E., Ph.D.,</b> Professor & Head (In charge) Specialization: Control System Years of Experience:22 PSG College of Technology (Autonomous) Coimbatore – 641 004. Jkr.eee@psgtech.ac.in 94436 54496	Subject Expert
11	<b>Dr. P. Lakshmi, M.E., Ph.D.,</b> Professor Specialization: Electrical Engineering Years of Experience:20 College of Engineering Guindy, Anna University, Chennai. 600 025. p_lakshmi@annauniv.edu 9444266117	Subject Expert
<b>One expert nominated by the Vice-Chancellor from a panel of six recommended by the college principal.</b>		
12	<b>Dr. A. Kavitha, M.Tech., Ph.D</b> Professor Specialization: Electrical Engineering Years of Experience: 22 College of Engineering Guindy, Anna University, Chennai-600025 akavitha@annauniv.edu, 9444388778	Subject Expert
<b>One representative from industry/corporate sector/allied area relating to placement.</b>		
13	<b>Er. S. Selva Kumar, B.Tech.</b> Senior Engineer Qualcomm India Private Limited Bengaluru, Karnataka - 560001	Member
<b>One postgraduate meritorious alumnus nominated by the Chairman, Board of Studies, with the approval of the principal of the college</b>		
14	<b>Er. K. Ramraj, M.Tech</b> Technical Director, Specialization: Power Electronics Years of Experience:8 LED FORSE India, Poornankuppam, Puducherry – 605 007. ramraje@ gmail.com, 9786714116	Member



## Agenda of the Meeting

Agenda 1 / BoS/ 4 /2022 /EEE /UG	Confirmation of minutes of 3 <sup>rd</sup> meeting of BoS and the Curriculum Structure of B.Tech Electrical and Electronics Engineering of R-2019 and R-2020 Regulations – Modifications if any
Agenda 2 / BoS/ 4 /2022 /EEE /UG	To discuss modifications in the syllabi of IV year, VII and VIII semesters, under Autonomous Regulations R-2019 for the B.Tech – Electrical and Electronics Engineering students admitted in the Academic Year 2019-20.
Agenda 3 / BoS/ 4 /2022 /EEE /UG	To discuss modifications in the syllabi of II and III years (IV to VI semester), under Autonomous Regulations R-2020 for the B.Tech – Electrical and Electronics Engineering students admitted from the Academic Year 2020-2021.
Agenda 4 / BoS/ 4 /2022 /EEE /UG	To discuss and approve the Academic Calendar for odd/even Semester of Academic year 2021-22. The classes commenced from 21.01.2022 in online mode and in offline mode for all the years from 02.02.2022 onwards.
Agenda 5 / BoS/ 4 /2022 /EEE /UG	To approve the professional and open Elective courses offered to the III year/ VI semester students under R-2019 regulations during the period January 2022 to May 2022.
Agenda 6 / BoS/ 4 /2022 /EEE /UG	To discuss and approve the on-line SWAYAM/MOOCs courses offered for the III year/ VI semester students under R-2019 regulations during the period January 2022 to May 2022.
Agenda 7 / BoS/ 4 /2022 /EEE /UG	To discuss and approve the Certification courses offered for the II year and III year students under R-2019 and R-2020 regulations during the period January 2022 to May 2022.
Agenda 8 / BoS/ 4 /2022 /EEE /UG	To discuss and recommend the panel of examiners to the Academic Council
Agenda 9 / BoS/ 4 /2022 /EEE /UG	<p>To discuss various Research activities in the department</p> <ul style="list-style-type: none"><li>• Implementation of AICTE-MODROB during the period 2021-2023.</li><li>• Patents Publication and submission</li><li>• Submission of research proposals</li><li>• Journal Paper publications and submission</li></ul>
Agenda 10 / BoS/ 4 /2022 /EEE /UG	Any other additional points to be discussed with the permission of Chair.



## Minutes of the Meeting

Dr. S. Anbumalar, Chairman, BoS opened the meeting by welcoming the external members, the internal members and the meeting thereafter deliberated on agenda items that had been approved by the Chairman.

### Agenda 1/ BoS /4 /2022 /EEE /UG

Confirmation of minutes of 3<sup>rd</sup> meeting of BoS and the Curriculum Structure of B.Tech Electrical and Electronics Engineering of R-2019 and R-2020 Regulations – Modifications if any.

Chairman, BoS, apprised the minutes of 3<sup>rd</sup> BoS, its implementation and then it is confirmed with the approval in 4<sup>th</sup> BoS meeting.

### Agenda 2/ BoS /4 /2022 /EEE /UG

To discuss modifications in the syllabi of IV year, VII and VIII semesters, under Autonomous Regulations R-2019 for the B.Tech – Electrical and Electronics Engineering students admitted in the Academic Year 2019-20.

The modifications to be carried out in the syllabi of IV year, VII and VIII semesters (R2019 Regulations) were discussed and the following suggestions are given by BoS members.

S. No.	Regulations	Semester	Course Name with Code	Unit	Changes incorporated
1	R2019	VII	Industrial Automation and Control U19EET71	V	<ul style="list-style-type: none"><li>IoT based experiments are included in the lab course. Hence, Unit V has changed as Introduction to IoT</li></ul>
2	R2019	VII	Industrial Automation and Control Lab U19EEP72	-	<ul style="list-style-type: none"><li>Two IoT based experiments are included by replacing the SCADA experiments.</li></ul>
3	R2019	VII Professional Elective	Communication Engineering U19EEE71	II	<ul style="list-style-type: none"><li>The following topics were additionally present in UNIT-II and they can be removed<ul style="list-style-type: none"><li>OOK Systems, OPSK, QAM, MSK, GMSK</li></ul></li></ul>
				III	<ul style="list-style-type: none"><li>The following topics were additionally present in UNIT – III and they can be removed<ul style="list-style-type: none"><li>Source coding: Shaum, Fao, Huffman coding: noiseless coding theorem</li></ul></li></ul>
4	R2019	VII Professional Elective	SMPS and UPS U19EEE75	I	<ul style="list-style-type: none"><li>The topic Cascaded Boost Converters is not required in UNIT- I and it can be removed.</li></ul>

The above corrections are incorporated and the Syllabi (Given in Annexure- I) are approved by the BoS members.

### Agenda 3/ BoS /4 /2022 /EEE /UG

To discuss modifications in the syllabi of II and III years (IV to VI semester), under Autonomous Regulations R-2020 for the B.Tech – Electrical and Electronics Engineering students admitted from the Academic Year 2020-2021.

The modifications to be carried out in the syllabi of II & III years, IV to VI semesters (R2020 Regulations) were discussed and the following suggestions are given by BoS members.

S. No.	Regulations	Semester	Course Name with Code	Unit	Changes incorporated
1	R2020	IV	Measurement and Instrumentation for Electrical Engineering U20EET411		The content in Measurement and Instrumentation for Electrical Engineering Course is vast and hence, few topics need to be removed as per the suggestions given below.
				I	Systematic and random errors, propagation of errors, Limiting errors of instruments has to be removed.
				II	<ul style="list-style-type: none"> <li>Principle of operation, construction, Torque equation, types, testing and Calibration using direct and phantom loading has to be removed.</li> <li>Testing, application of measuring CT and VT has to be removed by retaining Instrument Transformers.</li> </ul>
				III	Decibel meters - Q meter - tan-delta meter - Modulation index meter - Sampling theory and its applications in current, voltage, power, energy measurements has to be removed.
				IV	<p>The following topics has to be removed</p> <ul style="list-style-type: none"> <li>Owens and Heavy side Campbell bridges</li> <li>De Sauty bridges</li> <li>localization of cable faults by Murray and Varley loop test - Methods of reducing bridge errors - Wagner Earthing Device.</li> <li>Suggested to include Schering Bridge.</li> </ul>
2	R2020	IV	Microprocessor and Microcontroller U20EET412	I, II, III, IV, V	<p>The following topics has to be removed</p> <ul style="list-style-type: none"> <li>stroboscope, gyroscope – Force: Strain gauge – Torque: magnetostrictive, Position: synchro-Transmitter and receiver.</li> <li>Pressure: Manometers, Bourdon.</li> </ul>
					<ul style="list-style-type: none"> <li>Students faced difficulties in understanding both 8-bit and 16-bit processors under R-2019 regulations. Hence, the Units are rearranged only using 8-bit processor.</li> </ul>
3	R2020	IV	Measurements and Instrumentation Lab U20EEP408	-	<ul style="list-style-type: none"> <li>Experiment 2(b): Measurement of inductance and Q-factor using Owen Bridge can be replaced by Maxwell Bridge</li> <li>Experiment 9: Measurement of strain, Load and Level using strain gauges has to be removed</li> </ul>



					<ul style="list-style-type: none"> <li>Experiment 10: Measurement of torque and pressure using strain gauges has to be removed</li> </ul>
4	R2020	IV	Microcontroller and its Applications Lab U20EEP409	-	<ul style="list-style-type: none"> <li>Experiments based on 16 bit processor has to be removed and suggested to include the experiment "Relay interfacing with PIC microcontroller".</li> </ul>
5	R2020	V	Power Electronics U20EET513	I	Included the topic TRIAC
6	R2020	VI	Renewable Energy Sources U20EET617		The content in Renewable Energy Course is vast and hence, few topics need to be removed as per the suggestions given below.
				I	Suggested to remove the terms radiation, Extra-terrestrial, Spectral distribution, Solar constant, solar radiation on earth, measurements
				II	Suggested to remove the terms power extracted - wind distribution and speed prediction - wind map of India, Fundamentals – types of machines and their characteristics, Case study on Wind power generation using micro wind turbine for residential purpose.
7	R2020	VI	Power System Analysis U20EET618	I	Suggested to remove Power Scenario in India.
				V	Suggested to remove the term Contingency selection and ranking for the Power system.
8	R2020	IV Professional Elective	Energy Storage Technology U20EEE405	I	Suggested to remove demand for Portable Energy, Demand and Scale Requirements.
				III	Suggested to remove Shaped Metal Batteries
				II, III	Removed Case Study on Hybridization of different Energy Storage Devices

The above corrections are incorporated and the Syllabi (Given in Annexure- II) are approved by the BoS members.

#### Agenda 4/ BoS /4 /2022 /EEE /UG

To discuss and approve the Academic Calendar for odd/even Semester of Academic year 2021-22. The classes commenced from 21.01.2022 in online mode and in offline mode for all the years from 02.02.2022 onwards.

The Academic Calendars are prepared for this semester and it includes the schedule for CAT, Model Exam, QCM, Project review and Internal Marks distributions were discussed and approved (given in Annexure-III)

- The classes are scheduled in the online mode for II, III years from 21.01.2022 to 01.02.2022.
- As per Government order, the classes for all years had commenced from 02.02.2022 onwards in offline mode.



**Agenda 5/ BoS /4 /2022 /EEE /UG**

To approve the Professional and Open Elective Courses offered to the III year/ VI semester students under R-2019 regulations during the period January 2022 to May 2022.

- The Professional Elective and Open Elective courses opted by III year / VI semester students under R-2019 regulations during the period January 2022 to May 2022 is listed below are approved by the BoS members.

S. No.	Course Name	Course Code
<b>Professional Elective - III</b>		
1	Smart Grid	U19EEE61
2	Special Electrical Machines	U19EEE63
<b>Open Elective - III</b>		
1	Mobile App Development	U19ITO64
2	Web Programming	U19CCO64

**Agenda 6/ BoS /4 /2022 /EEE /UG**

To discuss and approve the on-line SWAYAM/MOOCs courses offered for the III year/ VI semester students under R-2019 regulations during the period January 2022 to May 2022.

- The list of online SWAYAM / MOOCs courses (**given in Annexure- IV**) offered for III year / VI semester students under R-2019 regulations during the period January 2022 to May 2022 was presented and approved by the BoS members.
- The list of online SWAYAM / MOOCs courses (**given in Annexure- IV**) offered for the Faculty of EEE department during the period January 2022 to May 2022 was presented and approved by the BoS members

**Agenda 7/ BoS /4 /2022 /EEE /UG**

To discuss and approve the Certification courses offered for the I, II and III year students under R-2019 and R-2020 regulations during the period January 2022 to May 2022.

- The semester-wise list of Certification courses offered for II and III year students under R-2019 and R-2020 regulations during the period January 2022 to May 2022 was presented and approved by the BoS members.

Semester	Certification Course
<b>R-2019 (Batch: 2019 – 2023)</b>	
<b>VI</b>	Artificial Intelligence and Edge computing / CCNA
<b>R-2020 (Batch: 2020 – 2024)</b>	
<b>III</b>	Solar Smart Energy system with IOT
<b>R-2020 (Batch: 2021 – 2025)</b>	
<b>I</b>	AutoCAD for Electrical

**Agenda 8/ BoS /4 /2022 /EEE /UG**

To discuss and recommend the panel of examiners to the Academic Council.

- The list of Question Paper Setters and Evaluators (**given in Annexure-V**) was presented and recommended by the BoS members to the academic council.

**Agenda 9/ BoS /4 /2022 /EEE /UG**

To discuss various Research activities in the department


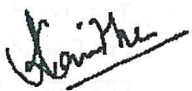
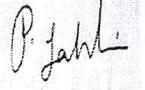
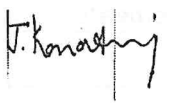
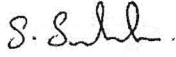
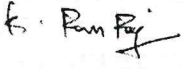

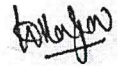
- Implementation of AICTE-MODROB during the period 2021-2023.
- Patents Publication and submission
- Journal Paper publications and submission

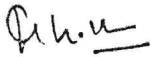
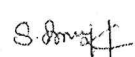
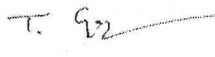


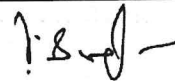


The efforts taken to improve the Research activities in the department were presented and the **BoS noted the Agenda.**

- Implementation of AICTE approved MODROB for the Power Electronics and Drives Lab with a sanctioned amount of 11 Lakhs is in progress.
- The Department has published 10 design patents and Planned to improve in the forthcoming years.
- Each Faculty in the department is advised to publish one SCI and one Scopus Journal for this semester.

The Fourth meeting of BoS approval was concluded at 12.30 PM by **Dr. S. Anbumalar**, Chairman, Board of Studies, Department of Electrical and Electronics Engineering, Sri Manakula Vinayagar Engineering College.

Sl.No	Name of the Member with Designation and official Address	MEMBERS AS PER UGC NORMS	Signature
1	<b>Dr.S.Anbumalar</b> Professor and Head Department of EEE SMVEC, Madagadipet-605107	Chairman	
2	<b>Dr.A.Kavitha</b> Professor, Department of EEE College of Engineering Guindy Anna University Chennai. 600 025.	Subject Expert (University Nominee)	
3	<b>Dr. P. Lakshmi</b> Professor, Department of EEE College of Engineering Guindy Anna University Chennai. 600 025.	Subject Expert (Academic Council Nominee)	
4	<b>Dr. J. Kanakaraj</b> Professor & Head Department of EEE PSG College of Technology (Autonomous) Coimbatore – 641 004.	Subject Expert (Academic Council Nominee)	
5	<b>Er.S. Selva Kumar</b> Senior Engineer Qualcomm India Private Limited Bengaluru, Karnataka - 560001	Representative from Industry	
6	<b>Er.K.Ramraj</b> Technical Director LED FORSE India Poornankuppam Puducherry – 605 007.	Postgraduate Alumnus (nominated by the Principal)	
7	<b>Dr. P. Jamuna</b> Professor Department of EEE, SMVEC	Internal Member	
8	<b>Dr.D.Raja</b> Professor Department of EEE, SMVEC, Madagadipet-605107	Internal Member	

9	<b>Dr. K. Gowrishankar</b> Professor Department of EEE, SMVEC , Madagadipet-605107	Internal Member	
10	<b>Dr.S.Ganesh Kumaran</b> Associate Professor Department of EEE, SMVEC, Madagadipet-605107	Internal Member	
11	<b>Dr.T.Gayathri</b> Professor and Head Dept of Mathematics, SMVEC, Madagadipet-605107	Internal Member	
12	<b>Dr.K.Kathikeyan</b> Associate Professor Dept. of Chemistry, SMVEC, Madagadipet-605107	Internal Member	
13	<b>Mrs.G.Namita</b> Associate Professor Dept. of English, SMVEC Madagadipet-605107,	Internal Member	
14	<b>Dr. P. Jayavardhane</b> Assistant Professor Dept. of Physics, SMVEC, Madagadipet-605107	Internal Member (Science & Humanity)	

## Annexure – I

### R2019 Syllabi

U19EET71	INDUSTRIAL AUTOMATION AND CONTROL	L	T	P	C	Hrs
		3	0	0	3	45

#### **Course Objectives**

- To apprehend the basic architecture of Industrial automation system.
- To study about the components used in PLC.
- To practice the ladder logic programming of PLC.
- To learn about the building blocks of SCADA.
- To brief about the communication protocols and IoT.

#### **Course Outcomes**

*After completion of the course, the students will be able to*

**CO1** - Analyze the type of Automation system and its architecture in detail. **(K3)**

**CO2** - Discuss the history of PLC, main parts and its functions. **(K3)**

**CO3** - Illustrate the operation of Relays, contactors, Motor Starters, Switched, Sensors, Output Control Devices, etc., **(K3)**

**CO4** - Acquire knowledge about the operation of SCADA and its sub-systems. **(K3)**

**CO5** - Gain knowledge on fundamentals of IoT. **(K3)**

#### **UNIT I INTRODUCTION TO AUTOMATION (9 Hrs)**

Automation overview – requirement of automation systems – architecture of industrial automation system – Levels of Automation-basic elements of an automated system – industrial bus systems: modbus and profibus.

#### **UNIT II PROGRAMMABLE LOGIC CONTROLLERS (9 Hrs)**

Introduction to PLC, Principles of Operation - Size and Application. Hardware Components: I/O Section, Discrete /Analog I/O Modules, Special I/O Modules, CPU, Memory Design, Memory Types, Programming Terminal Devices, Recording and Retrieving Data - Processor Memory Organization, Relay-Type Instructions, Instruction Addressing, Branch Instructions, Internal Relay Instructions.

#### **UNIT III LADDER LOGIC PROGRAMMING (9 Hrs)**

PLC Wiring Diagrams and Ladder Logic Programs: Electromagnetic Control Relays, Contactors, Motor Starters, Manual/Mechanical Operated Switches, Sensors, Output Control Devices, Seal-in Circuits, Latching Relays, Converting Relay Schematics into PLC Ladder Programs, Programming Timers: Mechanical Timing Relays, Timer Instructions, On-Delay /Off-Delay Timer Instruction, Retentive Timer, Cascading Timers.

#### **UNIT IV SCADA FUNDAMENTALS (9 Hrs)**

Introduction, Open system: Need and advantages, Building blocks of SCADA systems, RTU-Evolution, Components, Communication, Logic, Termination and Testing and HMI subsystem - Power supplies, Advanced RTU functionalities, IEDs, Data concentrators and merging units.

Master Station: Software /Hardware components, Server systems in the master station, Small, medium, and large master stations, GPS.

#### **UNIT V INTRODUCTION TO IoT (9 Hrs)**

IoT fundamentals, IoT Architecture and protocols, Various Platforms, IoT components and Communication Technologies, Challenges in IoT, Case study.

#### **Text Books**

1. Frank D. Petruzella, "Programmable Logic Controllers", McGraw Hill, 4<sup>th</sup> Edition, 2011
2. Mini S. Thomas, "Power System SCADA and Smart Grids", CRC Press, 3<sup>rd</sup> Edition April 2015.
3. S. Mukhopadhyay, S. Sen and A. K. Deb, "Industrial Instrumentation, Control and Automation", Jaico Publishing House, 1<sup>st</sup> Edition, 2013.
4. Jeeva Jose, "Internet of Things", Khanna Publishing House, 1<sup>st</sup> Edition, 2018.

#### **Reference Books**

1. Gary Dunning, "Introduction to Programmable Logic Controllers", Cengage Learning, 3<sup>rd</sup> India Edition, 2007.
2. Frank Lamb, "Industrial Automation: Hands On", McGraw-Hill Education, 1<sup>st</sup> Edition, 2013.
3. T. Huges, "Programmable Logic Controllers", ISA press, 1994.
4. William T. Shaw, "Cybersecurity for SCADA systems", Penn Well Books, 2006.
5. Arshdeep Bahga, Vijay Madisetti, "Internet of Things: A Hands-on Approach", 1<sup>st</sup> Edition, 2014

#### **Web References**

1. <https://electrical-engineering-portal.com/download-center/books-and-guides/automation-control/plc-ladder-sequential-programming>
2. [https://www.beckhoff.com/english.asp?start/?pk\\_campaign=AdWords-AdWordsSearch-IndustrialAutomationEN&pk\\_kwd=industrial%20automation](https://www.beckhoff.com/english.asp?start/?pk_campaign=AdWords-AdWordsSearch-IndustrialAutomationEN&pk_kwd=industrial%20automation)
3. <https://www.plantautomation-technology.com/articles/an-overview-of-distributed-control-systems-dcs>
4. <https://www.controleng.com/articles/scada-remains-relevant-for-industrial-automation/>
5. <https://sw.aveva.com/monitor-and-control/scada>



**COs/POs/PSOs Mapping**

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	3	3	-	-	-	-	-	-	-	1	3	3	3
2	3	3	3	3	-	-	-	-	-	-	-	1	3	3	3
3	3	3	3	3	-	-	-	-	-	-	-	1	3	3	3
4	3	3	3	3	-	-	-	-	-	-	-	1	3	3	3
5	3	3	3	3	-	-	-	-	-	-	-	1	3	3	3

**Correlation Level: 1 - Low, 2 - Medium, 3 - High**



**Course Objectives**

- To gain practical knowledge regarding the automation components.
- To perform delay operations using the PLC.
- To gain practical knowledge on interfacing of different sensors, counter, timer, RTD using PLC.
- To equip the students to provide the solution for real time industrial applications.
- To equip the students to develop a fault monitoring system using SCADA.

**Course Outcomes**

*After completion of the course, the students will be able to*

**CO1** - Analyze the ladder logic programs and components used for process control. **(K2)**

**CO2** - Design PLC-relay logic for the real time applications **(K3)**

**CO3** - Implement Industrial processing system. **(K3)**

**CO4** - Design a SCADA monitoring system for real time applications. **(K3)**

**CO5** - Diagnose the fault in Power generation and distribution networks, etc. **(K3)**

**List of Experiments**

1. Study of basic programming of PLC
2. Arithmetic operation, Timer, Counter operation using PLC
3. PLC based control of Level Process , Temperature Process, Speed .
4. Annunciator system using PLC
5. PLC based control of batch process system
6. Bottle filling system using PLC
7. a. Interfacing of lamp and button with PLC for ON/OFF operation.  
b. Perform Delayed Operation of Lamp By Using Push Button.
8. Combination of Counter and Timer for Lamp ON/OFF operation.
9. DOL Starter and Star Delta Starter operation by using PLC.
10. Develop/ Execute ladder program for the Control of automatic bottle filling system.
11. Develop/ Execute ladder program for Traffic Light Control
12. Develop/ Execute ladder program for Reversal of DC Motor Direction
13. Develop/ Execute ladder program for Stair case lighting
14. IoT - based Street light monitoring and control
15. IoT - based Industrial pollution monitoring system.

**Reference Books**

1. S. Mukhopadhyay, S. Sen and A. K. Deb, "Industrial Instrumentation, Control and Automation", Jaico Publishing House, 1<sup>st</sup> Edition, 2013.
2. Gary Dunning, "Introduction to Programmable Logic Controllers", Cengage Learning, 3<sup>rd</sup> India Edition, 2007.
3. Frank lamb, "Industrial Automation: Hands On", McGraw-Hill Education, 1<sup>st</sup> Edition, 2013.
4. T. Huges, "Programmable Logic Controllers", ISA press, 1994.
5. R. Krishnan, "Electric Motor Drives, Modelling, Analysis and Control", Pearson Education India, 1<sup>st</sup> Edition, 2015.
6. Viswanandham, "Performance Modeling of Automated Manufacturing Systems", PHI, 1<sup>st</sup> Edition, 2009.
7. Jose A. Romagnoli, Ahmet Palazoglu, "Introduction to Process control", CRC Taylor and Francis group, 3<sup>rd</sup> Edition, 2020.

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2. [https://www.beckhoff.com/english.asp?start/?pk\\_campaign=AdWords-AdWordsSearch-IndustrialAutomationEN&pk\\_kwd=industrial%20automation](https://www.beckhoff.com/english.asp?start/?pk_campaign=AdWords-AdWordsSearch-IndustrialAutomationEN&pk_kwd=industrial%20automation)
3. <https://www.advantech.com/solutions/ifactory>
4. <https://www.plantautomation-technology.com/articles/an-overview-of-distributed-control-systems-dcs>
5. <https://www.controleng.com/articles/scada-remains-relevant-for-industrial-automation/>
6. <https://sw.aveva.com/monitor-and-control/scada>



# COs/POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	3	3	-	-	-	-	-	-	-	1	3	3	3
2	3	3	3	3	-	-	-	-	-	-	-	1	3	3	3
3	3	3	3	3	-	-	-	-	-	-	-	1	3	3	3
4	3	3	3	3	-	-	-	-	-	-	-	1	3	3	3
5	3	3	3	3	-	-	-	-	-	-	-	1	3	3	3

Correlation Level: 1 - Low, 2 - Medium, 3 - High

**Course Objectives**

- To introduce different methods of analog communication systems and their significance.
- To introduce Digital Communication methods for high bit rate transmission.
- To introduce MAC used in communication systems for enhancing the number of users.
- To explain the various media for digital communication.
- To deliberate the use of Power Lines for communication.

**Course Outcomes**

*After completion of the course, the students will be able to*

**CO1** - Comprehend the basic Characteristics of the signals and analog modulation techniques. **(K2)**

**CO2** - Comprehend the needs of modulation and various Digital modulation techniques. **(K3)**

**CO3** - Describe multiple access techniques and its applications. **(K2)**

**CO4** - Explain the advanced communication systems. **(K2)**

**CO5** - Explore the role of Communication Engineering in the realization of Smart grids **(K2)**

**UNIT I ANALOG COMMUNICATION****(9 Hrs)**

Modulation –need for modulation - AM – Frequency spectrum – vector representation – power relations – generation of AM – DSB, DSB/SC, SSB, VSB AM Transmitter and Receiver; FM and PM – frequency spectrum – power relations: NBFM and WBFM, Generation of FM and PM, Armstrong method and Reactance modulator:

**UNIT II DIGITAL COMMUNICATION****(9 Hrs)**

Pulse modulations: PAM, PWM, PPM - Sampling theorems - quantization, PCM, DM, DPCM - Digital modulations: ASK, FSK, PSK, BSK, applications of Data communication.

**UNIT III MULTIPLE ACCESS TECHNIQUES****(9 Hrs)**

SS and MA techniques: FDMA, TDMA, CDMA, SDMA application in wire and wireless communication : Advantages (merits)

**UNIT IV SATELLITE AND FIBRE OPTIC COMMUNICATION****(9 Hrs)**

Orbital aspects-Geostationary satellites-Satellite Uplink - Satellite Downlink - Satellite Transponder - Modulation techniques for satellite links - Satellite Earth station  
Principle of light propagation in fibre - Index profiles - Modes of propagation - Losses in fibre -Dispersion -Light sources and detectors- Fibre optic communication link

**UNIT V POWER LINE COMMUNICATION****(9 Hrs)**

Power Supply networks - Narrowband and Broadband PLC – Structure of PLC access network – PLC network elements – connection to core network – structure campus communication network and performance issues – Architecture of smart grid technology.

**Text Books**

1. Taub & Schilling, "Principles of communication systems", Tata McGraw hill, 2007.
2. J.Das, "Principles of digital communication", New Age International, 1986.
3. Halid Harasnica, Ralf Lehner, "Broad band Power line Communications Design", John Wiley and Sons, 2005

**Reference Books**

1. Simon Haykin, "Communication Systems", Tata McGraw Hill, 4<sup>th</sup> Edition.
2. Kennedy and Davis, "Electronic Communication Systems", Tata McGraw hill, 4th Edition, 1993.
3. Sklar, "Digital Communication Fundamentals and Applications", Pearson Education, 2001.
4. Baryle, Memuschmidt, "Digital Communication", Kluwer Publication, 2004.
5. B.P.Lathi, "Modern Digital and Analog Communication Systems", Oxford University Press, 1998.
6. K. Muralibabu, "Communication Engineering", Lakshmi Publications, 2013.

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3. [yoonc01.tistory.com/attachment/fk100000000032.ppt](http://yoonc01.tistory.com/attachment/fk100000000032.ppt)
4. [nptel.ac.in/courses/117101053/](http://nptel.ac.in/courses/117101053/)
5. [nptel.ac.in/courses/117105085/](http://nptel.ac.in/courses/117105085/)

# **COs/POs/PSOs Mapping**

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	1	2	-	2	-	-	-	-	-	1	1	-	2	2
2	3	1	2	-	2	-	-	-	-	-	1	1	-	2	2
3	3	3	2	-	2	-	-	-	-	-	1	1	-	2	2
4	3	3	2	-	2	-	-	-	-	-	1	1	-	2	2
5	3	1	2	-	2	-	-	-	-	-	1	1	-	2	2

**Correlation Level: 1 - Low, 2 - Medium, 3 - High**





**Course Objectives**

- To provide conceptual knowledge of various types of DC – DC converters.
- To impart the knowledge on various types of switched mode power converters and its voltage control techniques
- To understand the importance of Zero voltage and Zero current switching used in resonant converters
- To analyze the PWM techniques and harmonic reduction techniques in DC – AC converters.
- To explain the various types of filters and techniques to improve the power quality.

**Course Outcomes**

*After completion of the course, the students will be able to*

**CO1** - Design the DC-DC converters for different applications. **(K2)**

**CO2** - Analyze, design and select the converters used for switched mode power supplies in Computers, Laptop, and TV. **(K4)**

**CO3** - Describe the importance of resonant Converters in reducing power loss and improving the life time of the power semiconductor device. **(K2)**

**CO4** - Conclude the different voltage and harmonics reduction techniques used for DC-AC converters. **(K4)**

**CO5** - Interpret knowledge on the techniques used to improve the power quality and design of filters for UPS. **(K2)**

**UNIT I DC - DC CONVERTERS****(9 Hrs)**

Principles of DC-DC Converters – Analysis and state space modeling of Buck, Boost, Buck- Boost and Cuk converters, Choice of switching frequency – Device Selection - EMI issues

**UNIT II SWITCHED MODE POWER CONVERTERS****(9 Hrs)**

SMPS Types: Self-Oscillating Flyback, Forward, Push pull, Luo, Half bridge and fullbridge converters- control circuits and PWM techniques - SMPS with multiple outputs - Choice of switching frequency – Device Selection - State space modeling.

**UNIT III RESONANT CONVERTERS****(9 Hrs)**

Introduction- classification - Load Resonant converters - ZVS, ZCS, Clamped voltage topologies- DC link inverters with Zero Voltage Switching- Series and parallel Resonant inverters- Voltage control. Multi energy storage element resonant converters - two, three and four element RPS - Application of Regulated Power Supply.

**UNIT IV DC – AC CONVERTERS****(9 Hrs)**

Single phase and three phase inverters - control techniques, harmonic elimination techniques - Multilevel inverters -Concepts - Types: Diode clamped, Flying capacitor, Cascaded types; Switched Inductor and Capacitor multilevel Inverter - Applications.

**UNIT V POWER CONDITIONERS, UPS AND FILTERS****(9 Hrs)**

Introduction- Power line disturbances- Power conditioners –UPS: offline UPS, Online UPS – Filters: Voltage filters, Series-parallel resonant filters, filter without series capacitors, filter for PWM VSI, current filter, DC filters – Design of high frequency inductor and transformer – Selection of capacitor and Batteries

**Text Books**

1. Simon Ang, Alejandro Oliva, "Power-Switching Converters", CRC Press, 3<sup>rd</sup> Edition, 2010.
2. Kjeld Thorborg, "Power Electronics – In theory and Practice", Overseas Press India Private Ltd, 1<sup>st</sup> Edition, 2005.
3. M. H. Rashid, "Power Electronics handbook", Elsevier Publication, 4<sup>th</sup> Edition, 2017.

**Reference Books**

1. Philip T Krein, "Elements of Power Electronics", Oxford University Press, 2<sup>nd</sup> Edition, 2014.
2. Erickson, W. Robert, "Fundamentals of Power Electronics", Springer, 2<sup>nd</sup> Edition, 2010.
3. Joseph Vithayathil, "Power Electronics, Principles and Applications", McGraw Hill Series, 6<sup>th</sup> Reprint, 2013.
4. Ned Ned Mohan, Tore M. Undeland, William P. Robbins, "Power Electronics: -Converters, Applications, and Design", John Wiley and sons Publication, 3<sup>rd</sup> Edition, 2010.
5. Fang Lin Luo, "Advanced DC/AC converters: Applications in renewable Energy", CRC press, 1<sup>st</sup> Edition, 2013.

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1. <https://nptel.ac.in/courses/108/105/108105066/>
2. <http://www.ni.com/white-paper/14677/en/>
3. <http://www.smps.us/>
4. <http://www.cpes.vt.edu/areas/>
5. <https://www.coursera.org/specializations/power-electronics>

**COs/POs/PSOs Mapping**

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	3	2	2	-	-	-	-	-	-	1	3	3	3
2	3	3	3	2	2	-	-	-	-	-	-	1	3	3	3
3	3	3	3	2	2	-	-	-	-	-	-	1	3	3	3
4	3	3	3	2	2	-	-	-	-	-	-	1	3	3	3
5	3	3	3	2	2	-	-	-	-	-	-	1	3	3	3

**Correlation Level: 1 - Low, 2 - Medium, 3 – High**





## Annexure – II

### R2020 Syllabi

U20EET411	MEASUREMENTS AND INSTRUMENTATION FOR ELECTRICAL ENGINEERING	L	T	P	C	Hrs
		3	0	0	3	45

#### Course Objectives

- To give the students an insight into the constructional details and working principles of various measuring instruments.
- To provide the use of different types of analog and digital meters for measuring electrical and physical quantities.
- To demonstrate various Bridges for the measurement of resistance, inductance and capacitance.
- To provide the procedure to calibrate an energy meter.
- To understand and apply different types of sensors for the measurement of physical quantities such as speed, torque, pressure, displacement, temperature, etc.

#### Course Outcomes

*After completion of the course, the students will be able to*

**CO1** - Acquire knowledge on the characteristics of measuring instruments and their classification. **(K2)**

**CO2** - Conversant in construction, working of A.C / D.C meters and their proficient use. **(K3)**

**CO3** - Acquire knowledge in various methods of digital meters and its measurement. **(K3)**

**CO4** - Acquire knowledge on construction and working principle of various types of display devices and bridge comparison methods for R, L and C measurement. **(K3)**

**CO5** - Demonstrate the various types of transducers used for physical measurements. **(K3)**

#### UNIT I INTRODUCTION TO MEASUREMENT

**(9 Hrs)**

Functional elements of Generalized measurement system - Types of measurement - Classification of instruments - Static and Dynamic characteristics of instruments - Mean, Standard deviation - error - Accuracy, Precision, Sensitivity, Linearity, Resolution, Hysteresis, Threshold, Input impedance - loading effects - Probability of errors - Errors in Measurements.

#### UNIT II ELECTRICAL INSTRUMENTS

**(9 Hrs)**

Essential requirements of an instrument - Ammeter and voltmeter - Moving coil - Moving Iron - Extension of voltmeter and ammeter range - Electro dynamo meter type Wattmeter - Induction type Energy meter - Measurement of active and reactive powers in balanced and unbalanced systems - Instrument Transformers - Construction, phasor diagrams - Magnetic measurements - Determination of B-H curve and measurements of iron loss.

#### UNIT III DIGITAL INSTRUMENTS

**(9 Hrs)**

Digital Volt Meter and its design - Voltage ratio measurement techniques - Digital ohmmeter, capacitance meter - impedance meters (Polar and Cartesian types) - Signal analyzers: spectrum and logic analyzers - Digital Frequency Meter - Measurement of Frequency - Study of Phasor Measurement Units (PMU).

#### UNIT IV BRIDGES AND DISPLAY DEVICES

**(9 Hrs)**

Bridges: Measurement of resistances - D.C potentiometer - Wheat stone, Kelvin and Kelvin's Double bridge - A.C bridges for measurement of L and C - Maxwell, Anderson, Hay, Wein and Schering bridges - Measurement of earth resistance.

Display Devices: CRT display, analog and digital CRO, LED, and LCD.

#### UNIT V TRANSDUCERS

**(9 Hrs)**

Transducers - Definition and classification - Linear Displacement: Resistive Potentiometers, strain gauge, LVDT, Capacitive Piezoelectric - Rotational Displacement: magnetic, Position: synchro Transmitter and receiver - speed: Magnetic and photo electric pickup transducer - Temperature: Thermistors, thermocouple - Flow: Electromagnetic, Ultrasonic - Level: DP cell, Ultrasonic - Density: Hydrometer - Voltage, current and power: Hall Effect transducer

#### Text Books

1. A.K. Sawhney, "A Course in Electrical & Electronic Measurements and Instrumentation", Dhanpat Rai and Co., New Delhi, 19<sup>th</sup> Edition, 2015.
2. J. B. Gupta, "A Course in Electronic and Electrical Measurements", S. K. Kataria & Sons, Delhi, 12<sup>th</sup> Edition, 2009.
3. E. O. Doebelin and D. N. Manik, "Measurement Systems – Applications and Design", Tata McGraw Hill Education Pvt. Ltd., Special Indian Edition, 2007.

## Reference Books

1. David Bell, "Electronic Instrumentation and Measurements", Oxford University Press, 1<sup>st</sup> Edition, 2013.
2. A. J. Bouwens, "Digital Instrumentation", Tata McGraw Hill Publications, 16<sup>th</sup> Reprint Edition, 2008.
3. H.S. Kalsi, "Electronic Instrumentation", Tata McGraw Hill Education, 4<sup>th</sup> Edition, 2019.
4. C.S. Rangan, G.R. Sharma and V. S. V. Mani, "Instrumentation Devices and Systems", Tata McGraw Hill Book Co., New Delhi, 1<sup>st</sup> Edition, 2004.

## Web References

1. [https://www.omega.de/green/pdf/CAP\\_LEV\\_MEAS.PDF](https://www.omega.de/green/pdf/CAP_LEV_MEAS.PDF)
2. <https://nptel.ac.in/courses/108/105/108105153/>
3. <http://www.nptelvideos.in/2012/11/industrial-instrumentation.html>
4. <http://vlabs.iitkgp.ernet.in/asnm/>
5. <https://www.youtube.com/watch?v=xLjk5DrScEU>
6. <http://www.wisegEEK.com/what-are-transducers.htm->

## COs/POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	2	2	2	-	-	-	-	-	-	-	-	1	2	3	3
2	2	2	2	-	-	-	-	-	-	-	-	1	2	3	3
3	2	2	2	-	-	-	-	-	-	-	-	1	2	3	3
4	2	2	2	-	-	-	-	-	-	-	-	2	2	3	3
5	2	2	2	-	-	-	-	-	-	-	-	2	2	3	3

Correlation Level: 1 - Low, 2 - Medium, 3 - High



**Course Objectives**

- To get familiar with basic architecture and programming techniques of microprocessor 8085.
- To learn interfacing of memory and data transfer techniques using microcontroller.
- To understand the interfacing of input/output devices required for real time applications.
- To introduce the basic concepts of embedded system design using microcontroller.
- To equip the student with ability to design PWM control for various application such as AC-DC, DC-DC converter, etc.

**Course Outcomes**

*After completion of the course, the students will be able to*

**CO1** - Illustrate the architecture of microprocessor and to develop skills in writing assembly language program. **(K3)**

**CO2** - Have a clear understanding of microcontroller architecture with functional details of each pin. **(K3)**

**CO3** - Write and debug Assembly and C programs for 8 bit Microcontroller. **(K3)**

**CO4** - Interface input/output peripheral devices and to implement the advanced communication protocol like I<sup>2</sup>C and SPI using PIC Microcontroller. **(K4)**

**CO5** - Design and develop microcontroller based real-time applications. **(K4)**

**UNIT I ARCHITECTURE AND PROGRAMMING OF 8085 MICROPROCESSOR (9 Hrs)**

8085 Microprocessor: Architecture, Addressing modes, Instruction set - Assembly language programs - Machine cycles and Timing diagrams. Application: Interfacing of stepper motor control with 8085 microprocessor

**UNIT II INTRODUCTION TO PIC16F MICROCONTROLLER (9 Hrs)**

Microprocessor and Microcontroller difference - RISC and CISC programmer's model - Criteria for selecting microcontroller - Overview of PIC family - PIC16F877A architecture, status register, Special function registers, memory organization, On-Chip peripherals - PIC16F877A pin configuration - Fuse bits of PIC

**UNIT III PIC16F PROGRAMMING (9 Hrs)**

Data types and assembler directives - Addressing modes - Instruction set - Bit addressability - MACROs - Intel HEX file - Programming Tools: MPLAB IDE - I/O Port Programming, Timer programming, PWM programming, External Interrupt programming, ADC programming, EEPROM programming

**UNIT IV SERIAL COMMUNICATION PROTOCOLS AND ITS PROGRAMMING (9 Hrs)**

Introduction to UART protocol and its programming - I2C protocol and its Programming - SPI protocol and its Programming - Serial Port programming.

**UNIT V PERIPHERAL INTERFACING AND ITS PROGRAMMING (9 Hrs)**

LCD and Keyboard Interfacing - Relay interfacing - Stepper and DC Motor control - RTC Interfacing - LM35 Temperature sensor interfacing - MAX7219 display controller interfacing - Ultrasonic sensors interfacing - Introduction to PIC24F and dsPIC33EV

**Text Books**

1. Muhammad Ali Mazidi, Sarmad Naimi and Sepehr Naimi, "PIC Microcontroller and Embedded Systems: Using Assembly and C for PIC18", Micro Digital Education, Illustrated Edition, 2017.
2. Ramesh S Gaonkar, "Microprocessor Architecture: Programming and Applications with the 8085", Prentice Hall of India, New Delhi, 5<sup>th</sup> Edition, 2011.

**Reference Books**

1. Sunil Mathur, Jeebananda Panda, "Microprocessor and microcontroller", PHI Learning Private Limited, New Delhi, 1<sup>st</sup> Edition, 2016.
2. dsPIC33EV data sheet

**Web References**

1. <https://www.microchip.com>
2. <https://www.youtube.com/watch?v=S1QCZW92fU4>
3. <https://www.microchip.com/promo/explorer-8-development-board>
4. <https://www.mikroe.com/easymx-pro-stm32>
5. [https://www.microchip.com/DevelopmentTools/ProductDetails/DM240001-2#utm\\_source=MicroSolutions&utm\\_medium=Link&utm\\_term=FY17Q3&utm\\_content=MCU16&utm\\_campaign=Article](https://www.microchip.com/DevelopmentTools/ProductDetails/DM240001-2#utm_source=MicroSolutions&utm_medium=Link&utm_term=FY17Q3&utm_content=MCU16&utm_campaign=Article)

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1	3	3	3	2	3	-	-	-	-	-	-	3	3	3	3
2	3	3	3	2	3	-	-	-	-	-	-	3	3	3	3
3	3	3	3	2	3	-	-	-	-	-	-	3	3	3	3
4	3	3	3	2	3	-	-	-	-	-	-	3	3	3	3
5	3	3	3	2	3	-	-	-	-	-	-	3	3	3	3

Correlation Level: 1 - Low, 2 - Medium, 3 - High



### Course Objectives

- To give the students an insight into the constructional details of various measuring instruments for better understanding of their working principles.
- To demonstrate various Bridges for the measurement of resistance, inductance and capacitance using simulation and hardware set ups.
- To understand the concept of magnetism and to determine the B-H curve for magnetic material specimen.
- To provide the procedure to calibrate an energy meter.
- To test and apply different types of sensors for the measurement of physical quantities such as speed, torque, pressure, displacement, temperature, etc. by conducting an appropriate experiment.

### Course Outcomes

*After completion of the course, the students will be able to*

- CO1** - Realize the advantages and the necessity of measurement systems in all Engineering and Scientific works. **(K2)**
- CO2** - Measure Resistance, Inductance and capacitance using AC and DC bridges. **(K3)**
- CO3** - Determine the magnetization characteristics and hysteresis loss of Iron specimen using BH curve. **(K3)**
- CO4** - Calibrate single phase and three phase energy meters used in domestic and commercial applications. **(K3)**
- CO5** - Determine the characteristics of RTD, thermostat, strain gauge and LVDT transducers and to apply for the physical quantities measurements. **(K3)**

### List of Experiments

1. (a) Measurement of resistance using Wheatstone bridge  
(b) Measurement of insulation resistance.
2. (a) Measurement of capacitance and loss angle of capacitor using Schering Bridge.  
(b) Measurement of inductance and Q-factor using Maxwell Bridge.
3. Extension of voltmeter and ammeter.
4. Calibration of single phase and three phase Energy meter using loading method.
5. Determination of B-H Curve for the magnetic material specimen.
6. Calibrate Current Transformer and Potential Transformer to determine ratio error and phase errors.
7. Characteristic of Temperature transducers (LDR, thermistor and thermocouple).
8. Measurement of Displacement using transducers.
9. Measurement of Voltage, current and power using Hall Effect transducer.
10. Characteristics of Optical Transducers ( LDR, Phototransistor, Photovoltaic and photoconductive cells)
11. Measurement of speed using Magnetic and photo electric pickup transducers.
12. Measurement of Position using synchro Transmitter and receiver
13. Spectrum analyser and its use for analysing frequency spectra of periodic and non-periodic signals.

### Reference Books

1. A. K. Sawhney, "A course in Electrical and Electronics Measurement and Instrumentation", Dhanpat Rai and Sons, 19<sup>th</sup> Edition, 2015.
2. William D. Coopers and Albert D. Helfrick, "Modern Electronic instrumentation and Measurements Techniques", Pearson Education India, 1<sup>st</sup> Edition, 2002.
3. E. W. Golding and F. C. Widdis, "Electrical Measurements and Measuring Instruments", Medtech Publication, 6<sup>th</sup> Edition, 2019.
4. H.S. Kalsi, "Electronic Instrumentation", Tata McGraw-Hill Education, 4<sup>th</sup> Edition, 2019.
5. C. D. Johnson, "Process Control Instrumentation Technology", Pearson Education India, 8<sup>th</sup> Edition, 2015.
6. Electrical Business Magazine, (Online edition of Electrical Industry Magazine)
7. Instrumentation and Measurement Magazine, IEEE.
8. Instrumentation and Measurement, IEEE Transactions.
9. Science, Measurement and Technology, IET Journal.
10. Measurements, Elsevier Journal.

### Web References

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2. <https://nptel.ac.in/courses/108/105/108105153/>



3. <http://www.nptelvideos.in/2012/11/industrial-instrumentation.html>
4. <http://vlabs.iitkgp.ernet.in/asnm/>
5. <http://www.wisegeek.com/what-are-transducers.htm->

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2	3	2	2	-	2	-	-	-	-	-	-	-	3	2	2
3	2	2	2	-	2	-	-	-	-	-	-	-	3	2	2
4	2	2	2	-	2	-	-	-	-	-	-	-	3	2	2
5	2	2	2	-	2	-	-	-	-	-	-	-	3	2	2

Correlation Level: 1 - Low, 2 - Medium, 3 - High

**Course Objectives**

- To become familiar with architecture and instruction set for 8085.
- To provide hands-on training of interfacing external sensors and actuators with microcontroller
- To impart knowledge for on-chip peripheral programs
- To impart knowledge to generate pulses for electrical applications.
- To impart knowledge to do minor projects using microcontroller for solving real world engineering problems

**Course Outcomes**

*After completion of the course, the students will be able to*

**CO1** - Develop assembly language program for microprocessor 8085. **(K3)**

**CO2** - Analyze various platforms for programming by knowing the complete hardware configurations. **(K4)**

**CO3** - Analyze abstract problems and apply a combination of hardware and software to address the problem. **(K4)**

**CO4** - Design a control algorithm for various applications using microcontrollers. **(K3)**

**CO5** - Design and generate pulses for real time electrical applications. **(K3)**

**List of Experiments****Microprocessor Experiments using 8085:**

1. 8 bit - Addition, Subtraction, Multiplication and Division
2. Assembly Language Programming: Subroutines, parameter passing to subroutines

**Microcontroller Experiments using PIC:**

3. PIC Assembly language- Programming using the PIC Instruction Set.
4. a) PIC Timer to generate accurate delay  
b) PIC Timer to generate waveforms
5. Seven Segment Display interfacing with PIC
6. a) 16x2 LCD interfacing with PIC  
b) 4x4 matrix keyboard interfacing with PIC
7. PIC UART programming
8. PIC on-chip ADC for interfacing analog sensors

**Application of Microcontroller using PIC:**

9. Experimentation of DC Motor Interfacing and Speed/Direction Control with PIC
10. Stepper motor interfacing with PIC
11. Relay interfacing with PIC
12. DS1307 RTC Interfacing with PIC
13. MAX7219 LED matrix driver Interfacing with PIC using SPI protocol
14. Interface to peripherals and use of the I2C bus

**Reference Books**

1. Muhammad Ali Mazidi, Sarmad Naimi and Sepehr Naimi, "The AVR Microcontroller and Embedded Systems Using Assembly and C", Micro Digital Education, Illustrated Edition, 2017.
2. Ramesh S Gaonkar, "Microprocessor Architecture: Programming and Applications with the 8085", Prentice Hall of India, New Delhi, 5<sup>th</sup> Edition, 2011.
3. Sunil Mathur, Jeebananda Panda, "Microprocessor and microcontroller", PHI Learning Private Limited, New Delhi, 1<sup>st</sup> Edition, 2016.
4. dsPIC33EVdata sheet.

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1. <https://www.microchip.com>
2. <https://www.youtube.com/watch?v=S1QCZW92fU4>
3. <https://www.microchip.com/promo/explorer-8-development-board>
4. <https://www.mikroe.com/easymx-pro-stm32>
5. [https://www.microchip.com/DevelopmentTools/ProductDetails/DM240001-2#utm\\_source=MicroSolutions&utm\\_medium=Link&utm\\_term=FY17Q3&utm\\_content=MCU16&utm\\_campaign=Article](https://www.microchip.com/DevelopmentTools/ProductDetails/DM240001-2#utm_source=MicroSolutions&utm_medium=Link&utm_term=FY17Q3&utm_content=MCU16&utm_campaign=Article)

### COs/POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	2	3	3	3	2	-	-	-	-	-	-	2	2	2	3
2	2	3	3	3	2	-	-	-	-	-	-	2	2	2	3
3	2	3	3	3	2	-	-	-	-	-	-	2	2	2	3
4	2	3	3	3	2	-	-	-	-	-	-	2	2	2	3
5	2	3	3	3	2	-	-	-	-	-	-	2	2	2	3

Correlation Level: 1 - Low, 2 - Medium, 3 - High



**Course Objectives**

- To explain about the operations, switching characteristics of power semiconductor devices
- To study the operations and performance parameters of controlled Rectifiers.
- To analyze the operation and performance of dc to dc converters.
- To impart knowledge on different control techniques for inverters.
- To familiarize the principle of operation of AC voltage controllers and cyclo converters

**Course Outcomes**

*After completion of the course, the students will be able to*

**CO1** - Discriminate the switching characteristics of power devices and to use for power conversion. **(K2)**

**CO2** - Inspect the performance of control rectifiers in continuous and discontinuous modes. **(K2)**

**CO3** - Acquire knowledge on operation and analysis of DC to DC converters **(K2)**

**CO4** - Outline the operating principles of various types of inverters. **(K2)**

**CO5** - Gain knowledge on the operation of AC to AC converters and its applications **(K2)**

**UNIT I POWER SEMI-CONDUCTOR DEVICES****(9 Hrs)**

Study of switching characteristics of MOSFET, IGBT, SCR and TRIAC, Turn on and Turn off methods of SCR – Protection circuits – Triggering circuits.

**UNIT II PHASE-CONTROLLED CONVERTERS****(9 Hrs)**

Operation and analysis of single and three phase controlled rectifiers – half and fully controlled Converters with R, RL and RLE loads – Effect of source inductance on controlled rectifiers – Power factor and harmonic improvement methods - series converter, twelve pulse converter, Dual converter- circulating and non-circulating current mode.

**UNIT III DC TO DC CONVERTERS****(9 Hrs)**

Principles of step down and step up chopper – Class A, B, C, D and E chopper, voltage commutated, current commutated chopper, multi-phase chopper, principle of operation of buck, boost and buck boost regulators – switching schemes.

**UNIT IV INVERTERS****(9 Hrs)**

Single phase and three phase voltage source inverters – Voltage and harmonic control techniques – Capacitor commutated current source inverter and auto sequential current source inverter.

**UNIT V AC CHOPPER AND CYCLO CONVERTERS****(9 Hrs)**

Single phase and Three-phase AC voltage controllers – Control strategy – Single phase step-up/step-down midpoint type and bridge type cyclo-converters – Three phase cyclo-converters. Applications – regulated power supply, UPS, solid-state motor starter.

**Text Books**

1. P. S. Bimbhra, "Power Electronics", Khanna Publishers, New Delhi, 6<sup>th</sup> Edition, 2018.
2. M.H. Rashid, "Power Electronics: Circuits, Devices and Applications", Pearson Education, New Delhi, 4<sup>th</sup> Edition, 2017.

**Reference Books**

1. Ned Mohan, M. Underland, William P. Robbins, "Power Electronics Converters, applications and design", JohnWiley & sons, Singapore, 2001.
2. M. D. Singh, K. B. Khanchandani, "Power Electronics", Tata McGraw Hill, New Delhi, 2007.
3. Cyril W. Lander, "Power Electronics", McGraw Hill Book Company, Singapore, 1993.
4. Williams B.W., "Power Electronics Devices, drivers, applications and passive components", McMillan Press Ltd., London, 1992.

**Web References**

1. [https://www.tutorialspoint.com/power\\_electronics/index.htm](https://www.tutorialspoint.com/power_electronics/index.htm)
2. <https://www.allaboutcircuits.com/technical-articles/a-review-on-power-semiconductor-devices/>
3. <https://www.electrical4u.com/concept-of-power-electronics/>
4. <https://nptel.ac.in/courses/108/101/108101038/>
5. <https://nptel.ac.in/courses/108/102/108102145/>

## COs/POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	3	3	2	-	-	-	-	-	-	1	3	3	3
2	3	2	3	3	2	-	-	-	-	-	-	1	3	3	3
3	3	2	3	3	2	-	-	-	-	-	-	1	3	3	3
4	3	2	3	3	2	-	-	-	-	-	-	1	3	3	3
5	3	2	3	3	2	-	-	-	-	-	-	1	3	3	3

Correlation Level: 1 – Low, 2 – Medium, 3 – High

### Course Objectives

- To impart knowledge on renewable energy sources and technologies.
- To gain adequate knowledge on variety of issues in harnessing renewable energy sources.
- To outline about the alternate renewable energy sources for both domestics and industrial applications.
- To provide knowledge about grid connectivity in renewable energy systems.
- To provide in-depth knowledge in the key concepts of energy policies.

### Course Outcomes

*After completion of the course, the students will be able to*

**CO1** - Analyze the national and international energy scenario of renewable energy Sources. (K2)

**CO2** - Design the aerodynamics of wind turbines and calculate their energy production. (K3)

**CO3** - Analyze electrical power generation from biomass, geothermal, tidal, wave etc. (K2)

**CO4** - Analyze technical and sustainability issues involved in the integration of renewable energy systems. (K2)

**CO5** - Compare the cost economics of using renewable energy sources with non-renewable energy sources. (K2)

### UNIT I SOLAR ENERGY

(9 Hrs)

Overview - Limitations of conventional energy resource - Importance of renewable sources - Types - Present Indian and international energy scenario. Solar Energy: solar thermal power and its energy conversion - solar collectors - types and applications. Photovoltaic (PV) technology - photovoltaic effect - efficiency of solar cells - Design Concept of solar PV system - standards and applications.

### UNIT II WIND AND HYDRO POWER ENERGY

(9 Hrs)

Wind Energy: wind data – properties - speed and power relation - wind turbines and electric generators - horizontal and vertical wind mills - wind energy farms - off-shore plants- Selection factors. Hydro Energy: small, mini and micro hydro power plants and their resource assessment - plant layout with major components -selection factors-application.

### UNIT III ALTERNATE ENERGY SOURCES

(9 Hrs)

Biomass: Photosynthesis and origin of biomass energy – terms and definitions – pyrolysis, thermo-chemical biomass conversion to energy, Geothermal: resources, hot spring, steam system, site selection, challenges. Ocean and Tidal energy: principle of OTEC – wave energy conversion machines – fundamentals of tidal power, conversion systems and limitations – Introduction to fuel cells.

### UNIT IV GRID INTEGRATION

(9 Hrs)

Wind power interconnection requirement - low-voltage ride through (LVRT), ramp-rate limitations, supply of ancillary services for frequency and voltage control - load and reserve requirement – issues in interconnection - steady - state and dynamic performance of power system – interfacing solar system with grid - protective relaying, islanding, Power quality issues.

### UNIT V RENEWABLE ENERGY POLICY

(9 Hrs)

Renewable energy policies: Five Year Plan programmes - Feed-in tariffs - portfolio standards - policy targets, tax incentives – bio-fuels mandates - International policies for climate change and energy security - Economic analysis and comparisons - Life cycle analysis - financial analysis - cost of conserved energy and externalities - Cost assessment of supply technologies versus energy – Efficiency - Renewable Energy Certification – Carbon contents.

### Text Books

1. G. N. Tiwari and M. K. Ghosal, "Renewable Energy Resources: Basic Principle and Application", Alpha Science International Ltd, New Edition, 2005.
2. B. H. Khan, "Non-Conventional Energy Resources", Tata McGraw Hill, 2<sup>nd</sup> Edition, 2009.
3. R. Loulou, P. R. Shukla and A. Kanudia, "Energy and Environment Policies for a sustainable Future", Allied Publishers Ltd, New Delhi, 1997.

### Reference Books

1. Solanki Chetan Singh, "Solar Photovoltaic - Fundamentals, Technologies and Applications", PHI, New Delhi, 3<sup>rd</sup> Edition, 2015.
2. Mukund R Patel, "Wind and Solar Power Systems", CRC Press, New York, 2<sup>nd</sup> Edition, 2011.
3. D. P. Kothari, K. C Singal, Rakesh Ranjan, "Renewable Energy Sources and Emerging Technologies", PHI Learning Pvt. Ltd, New Delhi, 2<sup>nd</sup> Edition, 2013.
4. John Twidell and Tony Weir, "Renewable Energy Resources", Routledge publication, 3<sup>rd</sup> Edition, 2015.
5. Godfrey Boyle, "Renewable Energy: Power for a Sustainable Future", Oxford University Press, 3<sup>rd</sup> Edition, 2014.



6. A. K. Mukerjee and Nivedita Thakur, "Photovoltaic Systems: Analysis and Design", PHI Learning Private Limited, New Delhi, 2011.
7. Ali Keyhani, "Design of Smart Power Grid Renewable Energy Systems", Wiley Publication, 1<sup>st</sup> Edition, 2011.

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4. <https://www.chetansinghsolanki.in/course.php>
5. <https://nptel.ac.in/courses/108/108/108108078/>

#### COs/POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	2	3	-	-	-	-	-	-	-	2	3	2	2
2	3	2	2	3	-	-	-	-	-	-	-	2	3	2	2
3	3	2	2	3	-	-	-	-	-	-	-	2	3	2	2
4	3	2	2	3	-	-	-	-	-	-	-	2	3	2	2
5	3	2	2	3	-	-	-	-	-	-	-	2	3	2	2

Correlation Level: 1 - Low, 2 - Medium, 3 - High

**Course Objectives**

- To create computational models for power system using per unit analysis.
- To perform load flow analysis using Gauss Seidal and Newton-Raphson methods.
- To analyze the sequence network using symmetrical components.
- To import the knowledge about symmetrical and unsymmetrical faults in power system.
- To demonstrate different methods and factors influencing on power system stability

**Course Outcomes**

*After completion of the course, the students will be able to*

- CO1** - Compute the reactance diagram and network matrices. (K4)  
**CO2** - Apply the iterative techniques to solve the power flow analysis used in power system planning. (K3)  
**CO3** - Analyze the Sequence networks using positive, negative and zero sequence network. (K4)  
**CO4** - Carry out short circuit studies to design the circuit breaker ratings in power system (K4)  
**CO5** - Analyze stability problems in power system during pre-fault and post-fault conditions (K4)

**UNIT I MODELING OF POWER SYSTEM COMPONENTS****(12 Hrs)**

Need for system planning and operational studies - Power system components – Representation - Single line diagram - Per unit quantities - P.U. impedance / reactance diagram - Formulation of network matrices for the power systems - Bus impedance and bus admittance matrices - Reduction techniques on network matrices for network changes - Z bus Building algorithm.

**UNIT II LOAD FLOW STUDIES****(12 Hrs)**

Classification of buses - formulation of load flow problem - Load flow solution by Gauss - Seidal, Newton - Raphson and Fast Decoupled Load Flow (FDLF) Analysis - Comparison - Computation of slack bus power, transmission loss and line flow - Voltage Control Methods - Tap-changing and phase - shifting transformers.

**UNIT III SYMMETRICAL COMPONENTS AND SEQUENCE NETWORKS****(12 Hrs)**

Symmetrical components – Simple problems to calculate symmetrical voltages and currents - Sequence networks- positive, negative and zero sequence networks - Sequence networks of Series impedance, loads and Rotating machines – Advantages and Limitations.

**UNIT IV FAULT ANALYSIS****(12 Hrs)**

Need for fault analysis - Types of faults - Symmetrical fault analysis through bus impedance matrix - Analysis of unsymmetrical faults- LG, LL and LLG - Analysis of simultaneous unbalanced short circuit and open conductor faults in power systems – short circuit capacity – circuit breaker selection - Representation of various types of faults in sequence networks.

**UNIT V STABILITY STUDIES****(12 Hrs)**

Definition - Importance of stability analysis- classifications - Steady state and transient stability - Angle and voltage stability - Single Machine Infinite Bus (SMIB) system - swing equation – Swing Curve - Numerical integration methods - Equal area criterion - Critical clearing angle and time - Factors affecting stability - Methods of improving transient stability.

**Text Books**

1. P. Kundur, "Power System Stability and Control", Tata McGraw Hill Education Pvt. Ltd., New Delhi, 10<sup>th</sup> Reprint, 2013.
2. D. P. Kothari and I. J. Nagrath, "Power System Engineering", Tata McGraw-Hill Education, 3<sup>rd</sup> Edition, 2019.
3. Hadi Saadat, "Power System Analysis", Tata McGraw Hill Education Pvt. Ltd., New Delhi, 21<sup>st</sup> Reprint, 2010.

**Reference Books**

1. M. A. Pai, "Computer Techniques in Power System Analysis", Tata McGraw-Hill Publishing Company Ltd., New Delhi, 2<sup>nd</sup> Edition, 2012.
2. J. Duncan Glover, Mulukutla S. Sarma, Thomas J. Overbye, "Power System Analysis and Design", Cengage Learning, 5<sup>th</sup> Edition, 2016.
3. John J. Grainger, Jr. William D. Stevenson, "Power System Analysis", McGraw Hill Education (India) Private Limited, New Delhi, 2<sup>nd</sup> Edition, 2015.

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2. <https://nptel.ac.in/courses/108/107/108107127/>
3. [https://pserc.wisc.edu/webinars/systems\\_webinars.aspx](https://pserc.wisc.edu/webinars/systems_webinars.aspx)
4. <https://www.classcentral.com/course/swayam-power-system-analysis-14243>

### COs/POs/PSOs Mapping

COs	Program Outcomes(POs)												Program Specific Outcomes(PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	2	2	3	-	-	-	-	-	-	1	3	2	2
2	3	2	2	2	3	-	-	-	-	-	-	1	3	2	2
3	3	3	2	2	3	-	-	-	-	-	-	1	3	2	2
4	3	3	2	2	3	-	-	-	-	-	-	1	3	2	2
5	3	3	2	2	3	-	-	-	-	-	-	1	3	2	2

Correlation Level: 1 - Low, 2 - Medium, 3 - High



**Course Objectives**

- To understand the purpose of energy storage systems.
- To learn the different energy storage techniques.
- To learn about the different types of batteries available for energy storage.
- To impart knowledge regarding on the advanced energy storage systems.
- To learn about the different vehicular energy storage schemes.

**Course Outcomes**

*After completion of the course, the students will be able to*

**CO1** - Familiarize the need for energy storing. **(K2)**

**CO2** - Analyze the various energy storage techniques in the form of electrical, magnetic and chemical systems. **(K3)**

**CO3** - Analyze the different batteries and its characteristics used for storing the energy in electric vehicles, nano-tubes etc. **(K4)**

**CO4** - Impart the concepts of Superconducting Magnet Energy Storage Systems and super-capacitors in digital cameras, PC cards, electric vehicles, medical applications etc. **(K3)**

**CO5** - Analyze the various energy storage techniques used in Electric vehicles and its hybridization concepts, power grid stabilization, rail-system power models etc. **(K4)**

**UNIT I ENERGY STORAGE NEEDS****(9 Hrs)**

Energy Storage Need of energy storage - Different modes of Energy Storage - Potential energy - Pumped hydro storage - Kinetic Energy and Compressed gas system - Flywheel storage, compressed air energy storage - Environmental and sustainability issues.

**UNIT II ENERGY STORAGE TYPES****(9 Hrs)**

Electrical and Magnetic energy storage, Capacitors, electromagnets - Chemical Energy storage - Thermo-chemical, photo-chemical, bio-chemical, electro-chemical, fossil fuels and synthetic fuels - Hydrogen for energy storage, Solar Ponds for energy storage. Electrochemical Energy Storage Systems, Case study on perovskite solar cell.

**UNIT III BATTERIES****(9 Hrs)**

Batteries - Primary, Secondary, Lithium, Solid-state and molten solvent batteries - Lead acid batteries - Nickel Cadmium Batteries - Advanced Batteries - Role of carbon nano-tubes in electrodes - Flow battery operation - Flexible fiber battery- air batteries

**UNIT IV SUPERCONDUCTING MAGNET ENERGY STORAGE SYSTEMS****(9 Hrs)**

Superconducting Magnet Energy Storage (SMES) systems - Capacitor and Batteries: Comparison and application - Super capacitor - Electrochemical Double Layer Capacitor (EDLC), principle of working, structure, performance and application, role of activated carbon and carbon nano-tube - Super Capacitors - power calculation - operation and design.

**UNIT V VEHICULAR ENERGY STORAGE SYSTEMS****(9 Hrs)**

Energy storage technologies in hybrid vehicles - flywheel, hydraulic, fuel cell and hybrid fuel cell energy storage system - ultra capacitors - comparison - battery charging control

**Text Books**

1. JiuJun Zhang, Lei Zhang, Hansan Liu, Andy Sun, Ru-Shi Liu, "Electrochemical Technologies for Energy Storage and Conversion-2 Volume set", John Wiley and Sons, 1<sup>st</sup> Edition, 2011.
2. Dettlef Stolten, "Hydrogen and Fuel Cells: Fundamentals, Technologies and Applications", Wiley, 1<sup>st</sup> Edition, 2010.
3. Robert Huggins, "Energy Storage: Fundamentals, Materials and Applications", Springer, 2<sup>nd</sup> Edition, 2016.
4. Andrei G. Ter-Gazarian, "Energy Storage for Power Systems", Institution of Engineering and Technology, 3<sup>rd</sup> Edition, 2020.

**Reference Books**

1. Francois Beguin and Elzbieta Frackowiak, "Super capacitors: Materials, Systems and Applications", Wiley-VCH, 1<sup>st</sup> Edition, 2013.
2. Doughty Liaw, Narayan and Srinivasan, "Batteries for Renewable Energy Storage", The Electrochemical Society, New Jersey, 2010.
3. Ali Emadi, Mehrdad Ehsani, John M. Miller, "Vehicular Electric Power Systems: Land, Sea, Air and Space Vehicles", CRC Press, 1<sup>st</sup> Edition, 2003.
4. Chris Mi, M. Abul Masrur, David Wenzhong Gao, "Hybrid Electric Vehicles: Principles and Applications with Practical Perspectives", Wiley, 1<sup>st</sup> Edition, 2011.

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4. <https://www.sciencedirect.com/topics/engineering/energy-storage-technology>
5. [https://en.wikipedia.org/wiki/Energy\\_storage](https://en.wikipedia.org/wiki/Energy_storage)
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1	3	3	-	2	1	-	-	-	-	-	-	-	3	3	3
2	3	3	-	2	1	-	-	-	-	-	-	-	3	3	3
3	3	3	3	2	1	-	-	-	-	-	-	-	3	3	3
4	3	3	3	2	1	-	-	-	-	-	-	-	3	3	3
5	3	3	3	2	1	-	-	-	-	-	-	-	3	3	3

Correlation Level: 1 - Low, 2 - Medium, 3 - High

### Academic calendar (IV Year)

Use of Cell Phones		
<p>It has been decided not to permit cell phones inside the college campus. If a student is found using the cell phone inside the college campus, it would be confiscated and will not be returned back on any circumstances. Hence the students are instructed not to attend the college with the mobile phones.</p>		
Dress Code		
<p>The students are requested to attend the college neatly dressed. While the male students should attend the college with the shirts neatly tucked in and with the shoes, the female students are permitted to come with chudidar and dupatta properly pinned. Students wearing full hand shirts should wear it as such without folding it to half etc. Casual wear like jeans, T-shirts etc., both for boys and girls are strictly prohibited inside the campus. Each department has prescribed uniforms for the labs. The students are requested to strictly adhere to the dress codes as well as the rules and regulations of the college.</p>		
Maintenance of Discipline		
<p>Discipline is an important factor that shapes one's personality. It is considered as a golden key capable of opening many doors. This institution expects each and every student to follow the rules and regulations in total. Maintaining discipline in the campus will promote a conducive environment for studies.</p>		
Outline class	Working hours	Regular class
I hour 09.30 a.m to 10.20 a.m	I hour 09.00 a.m to 09.50 a.m	
Break 10.20 a.m to 10.30 a.m	II hour 09.50 a.m to 10.40 a.m	
II hour 10.30 a.m to 11.20 a.m	Break 10.40 a.m to 10.55 a.m	
Break 11.20 a.m to 11.30 a.m	III hour 10.55 a.m to 11.45 a.m	
III hour 11.30 a.m to 12.20 p.m	IV hour 11.45 a.m to 12.35 p.m	
IV hour 01.30 p.m to 02.20 p.m	V hour 01.15 p.m to 02.05 p.m	
Break 02.20 p.m to 02.30 p.m	VI hour 02.05 p.m to 02.55 p.m	
V hour 02.30 p.m to 03.20 p.m	VII hour 2.55 pm to 03.45 pm	
Break 03.20 p.m to 03.30 p.m	VIII hour 03.40 p.m to 04.35 p.m	
VII hour 03.30 p.m to 04.20 p.m		
Lunch break 12.20 p.m. to 1.30 p.m.	Lunch break 12.35 p.m. to 1.15 p.m.	

[illegible]

<b>About Autonomously</b>	
Sri Mahakula Vinayaka Engineering College has been conferred with Autonomously Status by the University Grants Commission on 26 <sup>th</sup> September 2019 and the same was approved by Pondicherry University on 19 <sup>th</sup> June 2020. The Pondicherry University Regulations 2021.3 is followed for the students admitted in the Academic Year 2018 -19 (present Final year).	
End semester examinations process i.e. question paper setting, answer script evaluation and result will be published by SMIVEC College.	
<b>Punctuality in Attendance</b>	
The students are requested to keep up punctuality in attending the college. The late comers will be reduced their attendance and in turn the internal marks. Hence all the students are requested to attend the college in time. A student shall be permitted to appear for the End Semester Examination at the end of the semester only if he/she secures not less than 75% of overall attendance.	
<b>Repeating the Course</b>	
A student who secures overall attendance which is less than 60% has to repeat the course with the approval of the University when it is next offered.	
<b>Tutor Ward System</b>	
In the tutor ward system, 30 students are allotted to a tutor who will be taking care of these students. The students are requested to utilize the facility.	
<b>Continuous Assessment Marks for Theory : 25 Marks</b>	
25 marks are allotted for continuous assessment for a theory paper. Out of 25 marks 20 marks are awarded for the continuous assessment tests based on the performance of the student in the C-E, C-I, & I marks exam and the remaining 5 marks are awarded for class attendance. The distribution of 5 marks for class attendance and the details of distribution of 25 marks for continuous assessment are as follows:	
5 marks for 95% attendance and above	Best Two out of three test
4 marks for 90% attendance and above but below 95%	CAT, II & Model Exam
3 marks for 85% attendance and above but below 90%	Attendance
2 marks for 80% attendance and above but below 85%	20 marks
1 mark for 75% attendance and above but below 80%	Total
	25 marks
<b>Continuous Assessment Marks for Practical : 50 Marks</b>	
For a practical subject, where there is a end semester examination, 50 marks for external examination and 50 marks for continuous assessment are allocated. The distribution of 50 marks for Continuous assessment is as follows :	
For practical class attendance	10 marks
For Model Exam/Report	15 marks
For average of marks for experiment for each exp.	15 marks
For average of Pre-post-test viva for each experiment	10 marks
Total	50 marks



#### Wi-Fi Campus

Our campus has been enabled by high speed uninterrupted Wi-Fi connectivity. The Computer Centre is open till 8.00 p.m. on all the working days except on the dates of University examinations.

#### Library Working Hours

8.30 a.m. to 8.30 p.m. (On all the working days)  
8.30 a.m. to 10.00 p.m. (During the examination days)

#### Women Cell

For the benefit of the girl students, a Women Cell has been constituted in the college. The girl students may approach the Chairperson / members for assistance.

#### Grievance Redressal Cell

There is a Grievance Redressal Cell under the Chairmanship of the Director of the institution. Students are requested to approach the Chairman / members to redress their grievances. Mail ID : grievance@snivee.ac.in

#### Distribution of Attendance marks for theory : 5 marks

The distribution of 5 marks for theory class attendance is as follows :  
5 marks for 95% attendance and above  
4 marks for 90% attendance and above but below 95%  
3 marks for 85% attendance and above but below 90%  
2 marks for 80% attendance and above but below 85%  
1 mark for 75% attendance and above but below 80%

#### Distribution of Attendance marks for practical : 10 marks

The distribution of 10 marks for practical class attendance is as follows :  
10 marks for 95% attendance and above  
8 marks for 90% attendance and above but below 95%  
6 marks for 85% attendance and above but below 90%  
4 marks for 80% attendance and above but below 85%  
2 marks for 75% attendance and above but below 80%

#### Note:

Students should not be absent for the online classes/regular classes. Attendance for the online classes/regular classes are monitored regularly and it is recorded. Continuous assessment mark will be based on the performance of the students in the continuous assessment test, assignment and attendance percentage.

#### Assignments : 5 marks

Out of 25 continuous assessment marks, 5 marks will be awarded for the assignment. The assignment questions will be different for each and every student. The students have to submit 3 assignments in each subject. Best of 2 out of 3 assignments will be considered.

#### Importance of Continuous Assessment Marks(CAM)

The continuous assessment marks once earned are carried over to the subsequent exams also. Hence the students are requested to work hard to get the maximum continuous assessment marks. If the continuous assessment marks are lower, it will pull down chances of getting the first class, distinction, gold medals and ranks.

#### Importance of CAT-I/CAT-II/Model Examination

Continuous assessment marks are awarded for the performance in the CAT-I, CAT-II & Model Exam. Hence all the students are requested to prepare well for each test / examination to earn the maximum continuous assessment marks.

#### Undertaking Minor / Major Projects

Each student is advised to take atleast one minor project. Involvement in the project will be helping to understand the basics of the subject. Some of the minor / major project will also be benefiting the society. Moreover, the Management awards cash prizes for the best projects in each department.

#### Participation in the Curricular / Co-curricular / Extra curricular Activities

All the students are encouraged to participate in the curricular / co-curricular / extra curricular activities. Involvement in these activities will improve their knowledge level in the subject. If a student or a team gets cash prize / award in the technical event organized by the recognised institutions, then the management of this institution will also sanction an amount equivalent to the winning award / cash prize as a token of appreciation.

#### Leave Account Record

For each student, leave account record has been provided. The students are instructed to show the leave record to their parents and strictly adhere to the instructions given for availing the leave. The leave account record should be maintained properly and prior approval must be obtained for availing the leave. In exceptional cases, the students are permitted to get the approval after availing the leave.

#### Transport Facility

61 buses have been arranged for the students to reach the college from Pudukcherry, Kanagachattikulam, Villupuram, Neyveli, Panruti, Cuddalore, Nellikuppam, Madukarai, Tindivanam, Tiruvannamalai and Virudhachalam covering almost all the areas. Separate transport facility has been arranged for the students who remain in the college after 5 p.m. for utilising computer lab, library and sports facilities. The students are requested to utilise the transport facility.

All the students are requested to avoid mobile phones and travel by two wheelers considering their safety and security.

#### June 2022

Date	Day	Schedule	Working day/ Holiday
1	Wed		
2	Thu		
3	Fri		
4	Sat		
5	Sun		Holiday
6	Mon		
7	Tue		
8	Wed		
9	Thu		
10	Fri		
11	Sat		
12	Sun		Holiday
13	Mon		
14	Tue		
15	Wed		
16	Thu		
17	Fri		
18	Sat		
19	Sun		Holiday
20	Mon		
21	Tue		
22	Wed		
23	Thu		
24	Fri		
25	Sat		
26	Sun		Holiday
27	Mon		
28	Tue		
29	Wed		
30	Thu		
Total number of working days : -			
Total number of holiday : -			
<p> <span> <i> </i> </span> </p>			

May 2022			
Date	Day	Schedule	Working day/Holiday
1	Sun		Holiday
2	Mon		
3	Tue	Ramzan	Holiday
4	Wed		
5	Thu		
6	Fri		
7	Sat		
8	Sun		Holiday
9	Mon		
10	Tue		
11	Wed		
12	Thu		
13	Fri		
14	Sat		
15	Sun		Holiday
16	Mon		
17	Tue		
18	Wed		
19	Thu		
20	Fri		
21	Sat		
22	Sun		Holiday
23	Mon		
24	Tue		
25	Wed		
26	Thu		
27	Fri		
28	Sat		Holiday
29	Sun		
30	Mon		
31	Tue		
Total number of working days : - Total number of holiday : -			
ஐ. பொருளாதார அமைச்சு மற்றும் தொழிலாளர் நல அமைச்சு - டிபார்ட்மென்ட்			

Placement and Training Division						
The placement cell functions round the clock throughout the year to establish contact with reputed multinational companies, well established industrial organizations and plays an important role in locating various job opportunities and placing large number of the students every year at these organizations.						
Activities of the Training Division						
<ul style="list-style-type: none"> <li>Arranges trainings for personality and interpersonal skill development.</li> <li>Assists the students to get in-plant training.</li> <li>Arranges industrial visits.</li> <li>Creates awareness on the opportunities open for higher studies.</li> <li>Arranges coaching classes for GATE, GRE, TOEFL, IELTS, IAS, IES etc.</li> </ul>						
Placement Record						
Academic Year	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Students Placed	95%	95%	93%	95%	95%	95%
Details of Placed Students : 2021 - 22						
KAAR Technologies	27	Amal Osh	3			
Virtusa	14	Chandrad Technologies	6			
ZOIKO	13	Tata Motors	1			
TCS	147	Evelcom	1			
Unisys	11	BenLab Instrument	2			
CTS	240	Elestion	3			
Zenpro	1	Unisteed	5			
Emulex	1	Mobilum India	20			
Econ	1	CSS	3			
Wipro	124	Adroit Soft	1			
Musigma	46	Shishu Infotech	6			
DataMatrix	2	Accenture	1			
ManoLip Technologies	1	MST Keifar	18			
Opus	7	Skolar Academy	13			
Secure Cloud	6	ANZ Bank	1			
Support Studio	4	BHS market	1			
Capgemini	6	Kaer Technology	3			
Exxon	4					
Harmu	3					
Mindtree	3					
HCL	5	Total	745			
* till February 2022						

Gold Medals and Top Ten Ranks			
Your seniors were sincere, hard working and got the Gold medals of the Pondicherry University and the top ten ranks in all the branches. The details of the University Goldmedals and Top Ten Ranks won by the students are given below:			
<ul style="list-style-type: none"> <li>Indicates the Gold medal and University First Rank.</li> </ul>			
For the Award of Gold Medal and ranks for each branch of study, the COPA secured from 1 <sup>st</sup> to 10 <sup>th</sup> semester alone should be considered and it is mandatory that the candidate should have passed all the subjects from 1 <sup>st</sup> to 8 <sup>th</sup> semester in the first attempt. Rank certificates would be issued to the first five candidates in each branch of study.			
Name of the Course	2017	2018	2019
B.Tech. EEE	2, 4, 6, 7	1	1, 2, 3, 4, 5, 7, 8, 9, 10
B.Tech. ECE	2, 3, 4, 5, 6, 7, 8, 9, 10		1, 3, 4, 5, 6, 7, 9, 10
B.Tech. CSE	1, 2, 3, 4, 10		1, 2, 4, 6, 7, 8, 10
B.Tech. IT	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1	1, 2, 3, 5, 6, 8
B.Tech. IE	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
B.Tech. Mech	1, 4, 5, 7, 9, 10		3, 7, 8, 10
B.Tech. Civil	2, 3, 10		2, 3, 4, 6, 7, 10
MCA	1, 4, 7, 9, 10	1	1, 2, 6, 7, 8, 9, 10, 11
MBA	1, 3, 4, 6, 7, 8		1, 2, 3, 4, 5, 7, 8, 10
M.Tech. CSE	1, 2, 3, 4, 5, 7, 8, 9		1, 7
M.Tech. ECE	2, 3, 4, 6, 7, 8, 9		2, 3, 4, 5
M.Tech. PED	1		1, 2, 3
M.Tech. NW	1, 2, 3, 4, 5, 7, 8, 9		1, 2, 3
M.Tech. OLSB	1		1, 2, 3, 4
M.Tech. (MF)	1, 2		1

April 2022			
Date	Day	Schedule	Working day/Holiday
1	Fri		58
2	Sat		59
3	Sun		Holiday
4	Mon		60
5	Tue	Feedback from the students & Analysis	61
6	Wed	QCM meeting-3	62
7	Thu		63
8	Fri		64
9	Sat		65
10	Sun		Holiday
11	Mon	Model for IV Year (5 units)	66
12	Tue		67
13	Wed		68
14	Thu	Tamil New Year	Holiday
15	Fri	Good Friday	Holiday
16	Sat		69
17	Sun		Holiday
18	Mon		70
19	Tue		71
20	Wed		72
21	Thu		73
22	Fri	Model Result Analysis & Report Submission	74
23	Sat	Submission of Attendance & Assessment - Term III	75
24	Sun		Holiday
25	Mon	Tentative End Semester Examination starts	
26	Tue		
27	Wed		
28	Thu		
29	Fri		
30	Sat		
Total number of working days : 17 Total number of holiday : 7			
மாநில அமைச்சு, பொருளாதார அமைச்சு மற்றும் தொழிலாளர் நல அமைச்சு - டிபார்ட்மென்ட்			



March 2022			
Date	Day	Schedule	Working day/ Holiday
1	Tue		31
2	Wed	Phase II Second review	32
3	Thu		33
4	Fri		34
5	Sat		35
6	Sun		Holiday
7	Mon		36
8	Tue	Feedback from the students & Analysis	37
9	Wed	QCM meeting - 2	38
10	Thu		39
11	Fri		40
12	Sat		41
13	Sun		Holiday
14	Mon	CAT-II for IV Year (1 % units)	42
15	Tue		43
16	Wed		44
17	Thu		45
18	Fri		46
19	Sat		47
20	Sun		Holiday
21	Mon	CAT-II Result Analysis & Report Submission	48
22	Tue	Submission of Attendance & Assessment - Term II	49
23	Wed	Final Project Review	50
24	Thu		51
25	Fri		52
26	Sat		53
27	Sun		Holiday
28	Mon		54
29	Tue		55
30	Wed		56
31	Thu		57
Total number of working days : 27			
Total number of holiday : 04			
சமீபத்தில் வரையப்பட்ட ஒவ்வொரு வாரப்பிரதயும் உண்மையானது எனக் கருதப்படும். சந்தர்ப்பம் ஒவ்வொரு சூழ்நிலைக்கும் உடனடி மாற்றங்களை மேற்கொள்ளப்படும்.			

**Important points for the kind attention of the Parents**

Dear Parent

The VIII semester classes commences on 24<sup>th</sup> January 2022. The above mentioned semester is a very short term, including working days meant for model exam. The students have to complete a lot of work within a short period. Hence the parents are kindly requested not to permit their wards to avail frequent leave during this semester period for the following reasons.

Marks in the continuous assessment test decide the major part of the continuous assessment marks. So, availing leave for the continuous assessment test must be avoided at any cost as this would seriously affect the continuous assessment marks.

Practicals are very important not only to score more marks but also it will help to understand the theory part of the subject, hence advice your ward not to avail leaves during practical classes.

Please spare your valuable time to talk to your son/daughter every day and try to understand what he/she is doing in respect of his/her studies. Kindly extend all your support to your son/daughter which will help them to come out successfully. For any assistance from our side you may always feel free to contact the respective Coordinator / HOD any time during the working hours.

January 2022			
Date	Day	Schedule	Working day/ Holiday
1	Sat	New Year	Holiday
2	Sun		Holiday
3	Mon		
4	Tue		
5	Wed		
6	Thu		
7	Fri		
8	Sat		
9	Sun		Holiday
10	Mon		
11	Tue		
12	Wed		
13	Thu	Bogi Festival	Holiday
14	Fri	Pongal	Holiday
15	Sat	Thiruvalluvar Day	Holiday
16	Sun	Uzhavar Thiruna	Holiday
17	Mon		
18	Tue		
19	Wed		
20	Thu		
21	Fri		
22	Sat		
23	Sun		Holiday
24	Mon	Commencement of VIII semester classes	1
25	Tue		2
26	Wed	Republic day	Holiday
27	Thu		3
28	Fri		4
29	Sat		5
30	Sun		Holiday
31	Mon		6
Total number of working days : 06			
Total number of holiday : 03			
தனியாகத் தெரிவிக்க உண்மையானது, ஒவ்வொரு வாரப்பிரதயும் உண்மையானது எனக் கருதப்படும். சந்தர்ப்பம் ஒவ்வொரு சூழ்நிலைக்கும் உடனடி மாற்றங்களை மேற்கொள்ளப்படும்.			

February 2022			
Date	Day	Schedule	Working day/ Holiday
1	Tue		7
2	Wed		8
3	Thu		9
4	Fri		10
5	Sat		11
6	Sun		Holiday
7	Mon		12
8	Tue	Feedback from the students & Analysis	13
9	Wed	QCM meeting - 1	14
10	Thu	Phase II First review	15
11	Fri		16
12	Sat		17
13	Sun		Holiday
14	Mon	CAT-I for IV Year (1 % units)	18
15	Tue		19
16	Wed		20
17	Thu		21
18	Fri		22
19	Sat		23
20	Sun		Holiday
21	Mon	CAT-I Result Analysis & Report Submission	24
22	Tue		25
23	Wed	Submission of Attendance & Assessment - Term I	26
24	Thu		27
25	Fri		28
26	Sat		29
27	Sun		Holiday
28	Mon		30
Total number of working days : 24			
Total number of holiday : 04			
சமீபத்தில் வரையப்பட்ட ஒவ்வொரு வாரப்பிரதயும் உண்மையானது எனக் கருதப்படும். சந்தர்ப்பம் ஒவ்வொரு சூழ்நிலைக்கும் உடனடி மாற்றங்களை மேற்கொள்ளப்படும்.			



### Academic calendar (III & II Year)

### Use of Cell Phones

It has been decided not to permit cell phones inside the college campus. If any student is found using the cell phone inside the college campus, it would be confiscated and will not be returned back on any circumstances. Hence the students are instructed not to attend the college with the mobile phones.

## Dress Code

The students are requested to attend the college neatly dressed. While the male students should attend the college with the shirts neatly tucked in and with the shoes, the female students are permitted to come with churidar and dupatta properly pinned. Students wearing full hand shirts should wear it as such without folding it to half etc. Casual wears like jeans, T-shirts etc., both for boys and girls are strictly prohibited inside the campus. Each department has prescribed uniforms for the labs. The students are requested to strictly adhere to the dress codes as well as the rules and regulations of the college.

### Maintenance of Discipline

Discipline is an important factor that shapes one's personality. It is considered as a golden key capable of opening many doors. This institution expects each and every student to follow the rules and regulations in total. Maintaining discipline in the campus will promote a conducive environment for studies.

Online class			Working hours		Regular class	
I hour	09.30 a.m. to	10.20 a.m.	I hour	09.00 a.m. to	09.50 a.m.	
Break	10.20 a.m. to	10.30 a.m.	II hour	09.50 a.m. to	10.40 a.m.	
II hour	10.30 a.m. to	11.20 a.m.	Break	10.40 a.m. to	10.55 a.m.	
Break	11.20 a.m. to	11.30 a.m.	III hour	10.55 a.m. to	11.45 a.m.	
III hour	11.30 a.m. to	12.20 p.m.	IV hour	11.45 a.m. to	12.35 p.m.	
IV hour	01.30 p.m. to	02.20 p.m.	V hour	01.15 p.m. to	02.05 p.m.	
Break	02.20 p.m. to	02.30 p.m.	VI hour	02.05 p.m. to	02.55 p.m.	
V hour	02.30 p.m. to	03.20 p.m.	VII hour	2.55 pm to	03.45 pm.	
Break	03.20 p.m. to	03.30 p.m.	VIII hour	03.40 p.m. to	04.35 p.m.	
VI hour	03.30 p.m. to	04.20 p.m.				
Lunch break	12.20 p.m. to	1.30 p.m.	Lunch break	12.35 p.m. to	1.15 p.m.	

**SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE**

**An Autonomous Institution**  
(Accredited by NBA-AICTE, New Delhi, NAAC with "A" Grade)

Madagadipet, Puducherry - 605 107



## Academic Calendar

January 2022 to May 2022

Name :  
 Programme : B.Tech  
 Department :  
 Year / Sem : II Yr / III Sem & III Yr / VI Sem

[illegible]

## About Autonomics

Sri Mounskula Vinayagar Engineering College has been conferred with Autonomous Status by the University Grants Commission on 26<sup>th</sup> September 2019 and the same was approved by Pondicherry University on 19<sup>th</sup> June 2020. SMVEC Autonomous Regulations R2019, is followed for the students admitted in the Academic Year 2019-20 (present Third Year). SMVEC Autonomous Regulations R2020, is followed for the students admitted from the Academic Year 2020-21 onwards (present first year & second year).

## HIGHLIGHTS OF SNT/EC AUTONOMOUS REGULATIONS 2019/2020 &amp; CURRICULUM

- ❖ Industry 4.0 ready curriculum
  - ❖ Curriculum towards skill development and to create more job opportunities
  - ❖ Multidisciplinary curriculum
  - ❖ Oriented towards entrepreneurship development
  - ❖ Choice to learn IELTS / Foreign Languages
  - ❖ Department wise Gold Medals
  - ❖ Results will be declared within a month after completion of examinations
  - ❖ Supplementary Examination in 5<sup>th</sup> and 8<sup>th</sup> semester for the students having 2 arrears
- ❖ **Ethnotech / Mandatory course**
- The Institute has Established 17 Center of Excellence to provide 91 International Certification courses from IBM, Google, Cisco, e Plan, Microsoft, Autodesk, Texas Instruments, Festo, Bentley, Schneider Electric, Amazon web services, Siemens, Tally, DELL EMC<sup>2</sup>, Harita Techserv, PTC, LN an Excellence in Technology & Didactic solutions. All students should enroll in certification course from semester-I to semester-VI.
- ❖ **Industrial Training / Internship**
- Students may undergo training or internship during summer / winter vacation at Industry Research organization. Students are also permitted to undergo internship during their eighth semester after the completion of theory classes.

## June 2022

Date	Day	Schedule	Working day Holiday
1	Wed		
2	Thu		
3	Fri		
4	Sat		
5	Sun		Holiday
6	Mon		
7	Tue		
8	Wed		
9	Thu		
10	Fri		
11	Sat		
12	Sun		Holiday
13	Mon		
14	Tue		
15	Wed		
16	Thu		
17	Fri		
18	Sat		
19	Sun		Holiday
20	Mon		
21	Tue		
22	Wed		
23	Thu		
24	Fri		
25	Sat		
26	Sun		Holiday
27	Mon		
28	Tue		
29	Wed		
30	Thu		
			Total number of working days : -
			Total number of holiday : -

၎် မေ့လျော့မိက သတိပဉ် နဝ္နီယ, မေတ္တာ မဟာသုတ် ဝိညာဉ် အရသာအာ -- လဲးပွဲ

May 2022			
Date	Day	Schedule	Working day Holiday
1	Sun		Holiday
2	Mon		84
3	Tue	Ramzan	Holiday
4	Wed		85
5	Thu		86
6	Fri		87
7	Sat		88
8	Sun		Holiday
9	Mon	Tentative End Semester Theory examination Starts	
10	Tue		
11	Wed		
12	Thu		
13	Fri		
14	Sat		
15	Sun		Holiday
16	Mon		
17	Tue		
18	Wed		
19	Thu		
20	Fri		
21	Sat		
22	Sun		Holiday
23	Mon		
24	Tue		
25	Wed	Tentative Commencement of next semester classes	
26	Thu		
27	Fri		
28	Sat		Holiday
29	Sun		
30	Mon		
31	Tue		
Total number of working days : 07 Total number of holiday : 03			
தமிழ்நாடு கல்வி ச.ச.அமைச்சு, கல்வி அமைச்சு துறை அலுவலர் - இலங்கை			

#### ❖ Supplementary Examinations

Supplementary examination is an additional examination conducted within a month of time after declaring the results of end semester examination. In order to complete the program within 4 years, only the student with maximum of two arrears will be permitted to appear for supplementary examination. The supplementary examination will be conducted in fifth and eighth semester only. For supplementary examination, the continuous assessment marks of the last attempt will be considered.

#### Benefits

- ❖ More number of students will receive the degree within the stipulated time
- ❖ The industries prefer to recruit students with no standing arrear. If the supplementary examinations is conducted then more number of students will be eligible for the recruitment

#### ❖ Photo copy of answer book

After the publication of the result, photocopy of the answer books shall be provided to the student on request with stipulated fee fixed by the College from time to time

#### Punctuality in Attendance

The students are requested to keep up punctuality in attending the college. The late comers will be losing their attendance and in turn the internal marks. Hence all the students are requested to attend the college in time. A student shall be permitted to appear for the End Semester Examination at the end of the semester only if he/she secures not less than 75% of overall attendance.

#### Redo Category

A student who secures overall attendance which is less than 60% has to repeat the course with the approval, when it is next offered.

#### Tutor Ward System

In the tutor ward system, 30 students are allotted to a tutor who will be taking care of these students. The students are requested to utilize the facility.

Marks Distribution of Continuous Assessment Marks (CAM) and End Semester Examination Marks (ESM) Scheme for Continuous Assessment Test (CAT)						
S. No	Course Type	Continues Assessment components				
		Test Marks	Average of pre-post test viva for each experiment	Average of mid-semester report for each experiment	Model Exam Report	Total
1.	Theory	15	-	-	5	25
2.	Practical	-	10	15	-	25
3.	Project work	-	-	-	10	10
The internal marks will be provided fully based on the continuous assessment tests						
Weightage of Assessment for Theory Course						
S. No	Test	Portion for Test	Test Marks	Duration of Test	Weightage for Internal	
1	CAT 1	1½ Units	50	1½ hours		
2	CAT 2	1½ Units	50	1½ hours	10	
3	Model	5 Units	75	3 hours	05	
Continuous Assessment for Theory Course						15

#### Question Paper Pattern

Question paper for CAT and ESE will be based on the patterns shown in Table (a) and (b)

Table (a) Question Paper pattern for CAT/Model Exam

Test Type	2 Marks	5 Marks	10 Marks	Total Marks
CAT 1 to 2	5(questions) (10 Marks)	4(questions) (20 Marks)	2 (questions) (20 Marks)	90
Model	End semester Examination Question Pattern			75

Table (b) Question paper pattern for End semester Examination(ESE)

2 Marks	5 Marks	10 Marks	Total Marks
10(20 Marks)	5 (25 Marks) (one questions from each unit)	3 (30 Marks) (out of 5 questions)	75

April 2022			
Date	Day	Schedule	Working day Holiday
1	Fri		80
2	Sat		81
3	Sun		Holiday
4	Mon		82
5	Tue		83
6	Wed	Assignment - III	84
7	Thu	Feedback from the students & Analysis	85
8	Fri	OCM meeting - 3	86
9	Sat		87
10	Sun		Holiday
11	Mon	Model for II, III Year (5 units)	88
12	Tue		89
13	Wed		90
14	Thu	Tamil New Year	Holiday
15	Fri	Good Friday	Holiday
16	Sat		91
17	Sun		Holiday
18	Mon		92
19	Tue		93
20	Wed		94
21	Thu	Last working day for II, III Year	95
22	Fri	Model Result Analysis & Report Submission	96
23	Sat	Submission of Attendance & Assessment - Term III	97
24	Sun		Holiday
25	Mon	Tentative End Semester practical examination starts	98
26	Tue		99
27	Wed		80
28	Thu		81
29	Fri		82
30	Sat	Tentative End Semester practical examination ends	83
Total number of working days : 24 Total number of holiday : 6			
கல்வி அமைச்சு, தமிழ்நாடு கல்வி அமைச்சு துறை அலுவலர் - இலங்கை			



March 2022			
Date	Day	Schedule	Working day/ Holiday
1	Tue		33
2	Wed		34
3	Thu		35
4	Fri		36
5	Sat		37
6	Sun		Holiday
7	Mon		38
8	Tue		39
9	Wed	Assignment - II	40
10	Thu	Feedback from the students & Analysis	41
11	Fri	QCM meeting - 2	42
12	Sat		43
13	Sun		Holiday
14	Mon	CAT-II for II, III Year (1 ½ units)	44
15	Tue		45
16	Wed		46
17	Thu		47
18	Fri		48
19	Sat		49
20	Sun		Holiday
21	Mon	CAT-II Result Analysis & Report Submission	50
22	Tue		51
23	Wed	Submission of Attendance & Assessment - Term II	52
24	Thu		53
25	Fri		54
26	Sat		55
27	Sun		Holiday
28	Mon		56
29	Tue		57
30	Wed		58
31	Thu		59
Total number of working days : 27			
Total number of holiday : 04			
செவ்வாய், வெள்ளிக்கிழமை, ஓய்வொது விடுதிக்குள் உள்ள ஆய்வுகூடம் பாக்கித்தான். சந்திக்கவும் ஒவ்வொது ஆய்வுகூடம் உள்ள வாய்க்காலில் பாக்கித்தான்.			

**Distribution of Attendance marks for theory : 5 marks**

The distribution of 5 marks for theory class attendance is as follows :

- 5 marks for 95% attendance and above
- 4 marks for 90% attendance and above but below 95%
- 3 marks for 85% attendance and above but below 90%
- 2 marks for 80% attendance and above but below 85%
- 1 mark for 75% attendance and above but below 80%

**Distribution of Attendance marks for practical : 10 marks**

The distribution of 10 marks for practical class attendance is as follows :

- 10 marks for 95% attendance and above
- 8 marks for 90% attendance and above but below 95%
- 6 marks for 85% attendance and above but below 90%
- 4 marks for 80% attendance and above but below 85%
- 2 marks for 75% attendance and above but below 80%

**Note :**

Students should not be absent for the online classes/regular classes. Attendance for the online classes/regular classes are monitored regularly and it is recorded. Continuous assessment mark will be based on the performance of the students in the continuous assessment test, assignment and attendance percentage.

**Assignments : 5 marks**

Out of 25 continuous assessment marks, 5 marks will be awarded for the assignment. The assignment questions will be different for each and every student. The students have to submit 3 assignments in each subject. Best of 2 out of 3 assignments will be consider.

**Women Cell**

For the benefit of the girl students, a Women Cell has been constituted in the college. The girl students may approach the Chairperson / members for assistance.

**Grievance Redressal Cell**

There is a Grievance Redressal Cell under the Chairmanship of the Director of the institution. Students are requested to approach the Chairman / members to redress their grievances. Mail ID : grievance@snu.ac.in

**Importance of Continuous Assessment Marks(CAM)**

The continuous assessment marks once earned are carried over to the subsequent exams also. Hence the students are requested to work hard to get the maximum continuous assessment marks. If the continuous assessment marks are lower, it will pull down chances of getting the first class, distinction, gold medals and ranks.

**Importance of CAT-I/CAT-II/ Model Examination**

Continuous assessment marks are awarded for the performance in the CAT-I, CAT-II & Model Exam. Hence all the students are requested to prepare well for each test / examination to earn the maximum continuous assessment marks.

**Undertaking Minor / Major Projects**

Each student is advised to take atleast one minor project. Involving in the project will be helping to understand the basics of the subject. Some of the minor / major project will also be benefitting the society. Moreover, the Management awards cash prizes for the best projects in each department.

**Participation in the Curricular / Co-curricular / Extra curricular Activities**

All the students are encouraged to participate in the curricular / co-curricular / extra curricular activities. Involvement in these activities will improve their knowledge level in the subject. If a student or a team gets cash prize / award in the technical event organized by the recognized institutions, then the management of this institution will also sanction an amount equivalent to the winning award / cash prize as a token of appreciation.

**Leave Account Record**

For each student, leave account record has been provided. The students are instructed to show the leave record to their parents and strictly adhere to the instructions given for availing the leave. The leave account record should be maintained properly and prior approval must be obtained for availing the leave. In exceptional cases, the students are permitted to get the approval after availing the leave.

**Transport Facility**

61 buses have been arranged for the students to reach the college from Pudukcherry, Kanagachettikulam, Villupuram, Neyveli, Panruti, Cuddalore, Nellikuppam, Madakari, Tindivanam, Tiruvannamalai and Virudhachalam covering almost all the areas. Separate transport facility has been arranged for the students who remain in the college after 5 p.m. for utilising computer lab, library and sports facilities. The students are requested to utilise the transport facility.

All the students are requested to avoid mobile phones and travel by two wheelers considering their safety and security.

February 2022			
Date	Day	Schedule	Working day/ Holiday
1	Tue		9
2	Wed		10
3	Thu		11
4	Fri		12
5	Sat		13
6	Sun		Holiday
7	Mon		14
8	Tue		15
9	Wed	Assignment - I	16
10	Thu	Feedback from the students & Analysis	17
11	Fri	QCM meeting - 1	18
12	Sat		19
13	Sun		Holiday
14	Mon	CAT-I for II, III Year (1 ½ units)	20
15	Tue		21
16	Wed		22
17	Thu		23
18	Fri		24
19	Sat		25
20	Sun		Holiday
21	Mon	CAT-I Result Analysis & Report Submission	26
22	Tue		27
23	Wed	Submission of Attendance & Assessment - Term I	28
24	Thu		29
25	Fri		30
26	Sat		31
27	Sun		Holiday
28	Mon		32
Total number of working days : 24			
Total number of holiday : 04			
செவ்வாய், வெள்ளிக்கிழமை, ஓய்வொது விடுதிக்குள் உள்ள ஆய்வுகூடம் பாக்கித்தான். சந்திக்கவும் ஒவ்வொது ஆய்வுகூடம் உள்ள வாய்க்காலில் பாக்கித்தான்.			



January 2022			
Date	Day	Schedule	Working day/ Holiday
1	Sat	New Year	Holiday
2	Sun		Holiday
3	Mon		
4	Tue		
5	Wed		
6	Thu		
7	Fri		
8	Sat		
9	Sun		Holiday
10	Mon		
11	Tue		
12	Wed		
13	Thu	Bogi Festival	Holiday
14	Fri	Pongal	Holiday
15	Sat	Thiruvalluvar Day	Holiday
16	Sun	Uzhavar Thiruna	Holiday
17	Mon		
18	Tue		
19	Wed		
20	Thu		
21	Fri	Commencement of III & VI semester classes	1
22	Sat		2
23	Sun		Holiday
24	Mon		3
25	Tue		4
26	Wed	Republic day	Holiday
27	Thu		5
28	Fri		6
29	Sat		7
30	Sun		Holiday
31	Mon		8
Total number of working days : 08			
Total number of holiday : 03			
தொழில் துறையின் உயர்வாகியுள்ளது. தலைப்புகளில் முடிந்தவற்றை விரைவில் அறிவிக்கப்படும்.			
-- ரிப்போர்ட்டர்			

Placement and Training Division			
The placement cell functions round the clock throughout the year to establish contact with reputed multinational companies, well established industrial organizations and plays an important role in locating various job opportunities and placing large number of the students every year at these organizations.			
Activities of the Training Division			
<ul style="list-style-type: none"> <li>Arranges trainings for personality and interpersonal skill development.</li> <li>Assists the students to get in-plant training</li> <li>Arranges industrial visits</li> <li>Creates awareness on the opportunities open for higher studies.</li> <li>Arranges coaching classes for GATE, GRE, TOEFL, IELTS, IAS, IES etc.</li> </ul>			
Placement Record	Details of Placed Students: 2021-22		
Academic Year	Students Placed	Company	Count
2013-14	55%	KAAR Technologies	27
		Virtusa	14
		ZOHO	13
2014-15	95%	TCS	147
		Unissys	11
2015-16	95%	CTS	230
		Zucpa	1
2016-17	93%	Embedur	1
		Econ	1
2017-18	95%	Wipro	124
		Musigma	46
2018-19	95%	DataMatrix	2
		Microchip Technologies	1
2019-20	95%	Opko	7
		Secure Cloud	6
		Support Studio	3
		Copgenim	6
		Fatou	4
		Hannan	3
		Mundree	3
2020-21	96%	IEL	5
		Total	745
Wi-Fi Campus * till February 2022			
Our campus has been enabled by high speed uninterrupted Wi-Fi connectivity. The Computer Centre is open till 8.00 p.m. on all the working days except on the dates of University examinations.			
Library Working Hours			
8.30 a.m. to 8.30 p.m. (On all the working days)			
8.30 a.m. to 10.00 p.m. (During the examination days)			

Gold Medals and Top Ten Ranks			
Your seniors were sincere, hard working and got the Gold medals of the Pondicherry University and the top ten ranks in all the branches. The details of the University Goldmedals and Top Ten Ranks won by the students are given below:			
<ul style="list-style-type: none"> <li>Indicates the Gold medal and University First Rank.</li> </ul>			
For the Award of Gold Medal and ranks for each branch of study, the CGPA secured from 1 <sup>st</sup> to 8 <sup>th</sup> semester alone should be considered and it is mandatory that the candidate should have passed all the subjects from 1 <sup>st</sup> to 8 <sup>th</sup> semester in the first attempt. Rank certificates would be issued to the first five candidates in each branch of study.			
Name of the Course	Year		
	2017	2018	2019
B.Tech. EEE	2, 4, 6, 7	1	1, 2, 3, 4, 6, 7, 8, 9, 10
B.Tech. ECE	2, 3, 4, 5, 6, 7, 8, 9, 10	1	1, 3, 4, 5, 6, 7, 9, 10
B.Tech. CSE	1, 2, 3, 4, 10	1	1, 2, 4, 6, 7, 8, 10
B.Tech. IT	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1	1, 2, 3, 5, 6, 8
B.Tech. IE	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
B.Tech. Mech	1, 4, 5, 7, 9, 10	1	3, 7, 8, 10
B.Tech. Civil	2, 3, 10	1	2, 3, 4, 6, 7, 10
MCA	3, 4, 7, 9, 10	1	1, 2, 6, 7, 8, 9, 10, 11
MBA	3, 4, 6, 7, 8	1	1, 2, 3, 4, 5, 7, 8, 10
M.Tech. CSE	1, 2, 3, 4, 5, 7, 8, 9	1	1, 7
M.Tech. ECE	2, 3, 6, 7, 8, 9	1	2, 3, 4, 5
M.Tech. IED	1	1	1, 2, 3
M.Tech. NW	1, 2, 3, 4, 5, 7, 8, 9	1	1, 2, 3
M.Tech. VLSI	1	1	1, 2, 3, 4
M.Tech. (MF)	1, 2	1	1

Important points for the kind attention of the Parents	
Dear Parent	
The III and VI semester classes commences on 21 <sup>st</sup> January 2022. The above mentioned semester is a very short term, including working days meant for model exam. The students have to complete a lot of work within a short period. Hence the parents are kindly requested not to permit their wards to avail frequent leave during this semester period for the following reasons.	
III Semester (II Year) & VI Semester (III Year) : All the III & VI semester papers are considered as analytical papers. Hence, regular attendance and more concentration are required to clear these semester papers.	
Marks in the continuous assessment test decide the major part of the continuous assessment marks. So, availing leave for the continuous assessment test must be avoided at any cost as this would seriously affect the continuous assessment marks.	
Practicals are very important not only to score more marks but also it will help to understand the theory part of the subject, hence advice your ward not to avail leaves during practical classes.	
Please spare your valuable time to talk to your son/daughter every day and try to understand what he/she is doing in respect of his/her studies. Kindly extend all your support to your son/daughter which will help them to come out successfully. For any assistance from our side you may always feel free to contact the respective Coordinator / HOD any time during the working hours.	

## Academic calendar (I Year)

**Use of Cell Phones**

It has been decided not to permit cell phones inside the college campus. If any student is found using the cell phone inside the college campus, it would be confiscated and will not be returned back on any circumstances. Hence the students are instructed not to attend the college with the mobile phones.

**Dress Code**


The students are requested to attend the college neatly dressed. While the male students should attend the college with the shirts neatly tucked in and with the shoes, the female students are permitted to come with churidar and dupatta properly pinned. Students wearing full hand shirts should wear it as such without folding it to half etc. Casual wears like jeans, T-shirts etc., both for boys and girls are strictly prohibited inside the campus. Each department has prescribed uniforms for the labs. The students are requested to strictly adhere to the dress codes as well as the rules and regulations of the college.

**Maintenance of Discipline**

Discipline is an important factor that shapes one's personality. It is considered as a golden key capable of opening many doors. This institution expects each and every student to follow the rules and regulations in total. Maintaining discipline in the campus will promote a conducive environment for studies.

Online class	Working hours	Regular class
I hour 09.30 a.m. to 10.25 a.m.	I hour 8.45 a.m. to 09.35 a.m.	
Break 10.25 a.m. to 10.30 a.m.	II hour 09.35 a.m. to 10.25 a.m.	
II hour 10.30 a.m. to 11.25 a.m.	III hour 10.25 a.m. to 11.15 a.m.	
Break 11.25 a.m. to 11.30 p.m.	Break 11.15 a.m. to 11.35 a.m.	
III hour 11.30 a.m. to 12.25 p.m.	IV hour 11.35 a.m. to 12.25 p.m.	
IV hour 01.30 p.m. to 02.25 p.m.	V hour 12.25 p.m. to 01.15 p.m.	
Break 02.25 p.m. to 02.30 p.m.	VI hour 01.55 p.m. to 02.45 p.m.	
V hour 02.30 p.m. to 03.25 p.m.	VII hour 02.45 p.m. to 03.35 p.m.	
Break 03.25 p.m. to 03.30 p.m.	VIII hour 03.35 p.m. to 04.25 p.m.	
VI hour 03.30 p.m. to 04.25 p.m.		
Lunch break 12.25 p.m. to 1.30 p.m.	Lunch break 1.15 p.m. to 1.55 p.m.	

**SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE**  
(An Autonomous Institution)  
(Accredited by NBA/ABET, New Delhi and Accredited by NAAC with 'A' Grade)  
Madagalipet, Puducherry - 605 107



**Academic Calendar**  
November 2021 to April 2022

Name : \_\_\_\_\_  
Programme : B.Tech.  
Department : \_\_\_\_\_  
Year / Sem : I year / I semester

சென்னை மாநகல் விநாயகர் இயல்புக் கல்லூரி  
(ஒரு தன்னாட்சி நிறுவனம்)  
(பி.டி.பி. மற்றும் பி.டி.பி.பி. ஆல் அங்கீகரிக்கப்பட்டது)  
மாடகலிபேட்டை, புதுச்சேரி - 605 107

பெயர் : \_\_\_\_\_  
படிப்புகள் : பி.டி.பி.  
பிரிவு : \_\_\_\_\_  
ஆண்டு / அரை : I ஆண்டு / I அரை

சென்னை மாநகல் விநாயகர் இயல்புக் கல்லூரி  
(ஒரு தன்னாட்சி நிறுவனம்)  
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மாடகலிபேட்டை, புதுச்சேரி - 605 107

சென்னை மாநகல் விநாயகர் இயல்புக் கல்லூரி  
(ஒரு தன்னாட்சி நிறுவனம்)  
(பி.டி.பி. மற்றும் பி.டி.பி.பி. ஆல் அங்கீகரிக்கப்பட்டது)  
மாடகலிபேட்டை, புதுச்சேரி - 605 107

**About Autonomous**

Sri Manakula Vinayagar Engineering College has been conferred with Autonomous Status by the University Grants Commission on 26<sup>th</sup> September 2019 and the same was approved by Pondicherry University on 19<sup>th</sup> June 2020. SMVEC Autonomous Regulations R2019, is followed for the students admitted in the Academic Year 2020-21. SMVEC Autonomous Regulations R2020, is followed for the students admitted from the Academic Year 2021-22.

**HIGHLIGHTS OF SMVEC AUTONOMOUS REGULATIONS 2020**

- ❖ Tamil, Hindi and French as options in Modern Indian Language
- ❖ Industry 4.0 ready curriculum
- ❖ Skill enhancement courses in every semester
- ❖ Multidisciplinary curriculum with open elective courses
- ❖ Courses on entrepreneurial development
- ❖ IELTS / IAS / entrance exams coaching
- ❖ Declaration of results within a month after completion of examinations
- ❖ Employability Enhancement Course

The Institute has Established 17 Centers of Excellence to provide 91 International Certification courses from IBM, Google, Cisco, E Plan, Microsoft, Autodesk, Texas Instruments, Festo, Bentley, Schneider Electric, Amazon web services, Siemens, Tally, DELL EMC, Harita Techserv, PTC, L'N an Excellence in Technology & Didactic solutions. All the students should enroll in the certification course in every semester

- ❖ Industrial Training / Internship

Students may undergo training or internship during summer / winter vacation at Industry Research organization. Students are also permitted to undergo internships during their sixth semester after the theory classes are over

April 2022			
Date	Day	Schedule	Working day/ Holiday
1	Fri		
2	Sat		
3	Sun		Holiday
4	Mon		
5	Tue		
6	Wed		
7	Thu		
8	Fri		
9	Sat		
10	Sun		Holiday
11	Mon		
12	Tue		
13	Wed		
14	Thu	Tamil New Year / Dr. Ambedkar Birthday	Holiday
15	Fri	Good Friday	Holiday
16	Sat		
17	Sun		Holiday
18	Mon		
19	Tue		
20	Wed		
21	Thu		
22	Fri		
23	Sat		
24	Sun		Holiday
25	Mon		
26	Tue		
27	Wed		
28	Thu		
29	Fri		
30	Sat		
31	Sun		Holiday
Total number of working days : _____			
Total number of holiday : _____			
சென்னை மாநகல் விநாயகர் இயல்புக் கல்லூரி மாடகலிபேட்டை, புதுச்சேரி - 605 107			



March 2022			
Date	Day	Schedule	Working day/ Holiday
1	Tue		76
2	Wed		77
3	Thu		78
4	Fri		79
5	Sat		80
6	Sun		Holiday
7	Mon	Model exam starts (5 units)	81
8	Tue		82
9	Wed		83
10	Thu		84
11	Fri		85
12	Sat	Model exam result analysis and report submission	86
13	Sun		Holiday
14	Mon		87
15	Tue	Model practical starts	88
16	Wed		89
17	Thu	Model practical ends	90
18	Fri		
19	Sat		
20	Sun		Holiday
21	Mon	Tentative End Semester Practical Examination Starts	
22	Tue		
23	Wed		
24	Thu	Tentative End Semester Practical Examination Ends	
25	Fri	Study Holiday	
26	Sat		
27	Sun		Holiday
28	Mon		
29	Tue		
30	Wed	Tentative End Semester Theory Examination Starts	
31	Thu		
Total number of working days : 15			
Total number of holiday : 02			
ശബരിമല സന്ദർശനം, ഹിന്ദുവിരുദ്ധത പ്രതിരോധനം എന്നിവയ്ക്കായി - തീർത്ഥാടകർക്ക്			

❖ **Supplementary Examinations**

Supplementary examination is an additional examination conducted within a month of time after declaring the results. In order to complete the program within 3 years, only the student with maximum of two arrears will be permitted to appear for supplementary examination.

**Benefits**

- ❖ More number of students will receive the degree within the stipulated time
- ❖ The industries prefer to recruit students having no arrears. If the supplementary examinations are conducted, then more number of students will be eligible for the recruitment.

❖ **Photo copy of answer book**

After the publication of the result, photocopy of the answer books shall be provided to the student on request with stipulated fee fixed by the College from time to time

**Punctuality in Attendance**

The students are requested to keep up punctuality in attending the college. The late comers will be losing their attendance and the internal marks. Hence all the students are requested to attend the college on time. A student shall be permitted to appear for the End Semester Examination at the end of the semester only if he/she secures 75% of overall attendance.

**Repeating the Course**

A student who secures overall attendance which is less than 60% has to repeat the course with the approval from the Academic section of the institution.

**Mentor-Mentee System**

In this system a team of students are allotted to a mentor and he/she will be mentoring these students.

The internal marks will be provided fully based on the continuous assessment tests (CAT I to 2 and Model examinations)											
Marks Distribution of Continuous Assessment Marks (CAM) and End Semester Examination Marks (ESM)											
Scheme for Continuous Assessment Test											
S. No	Course Type	Continuous Assessment components						Total Marks			
		Test Marks	Average of marks for project for each experiment	Average of marks for report for each experiment	Model Exam Report	Assignment	Review - 1		Review - 2	Review - 3	Attendance
1.	Theory	15	-	-	-	5	-	-	-	5	25
2.	Practical	-	10	15	15	-	-	-	-	10	50
3.	Project work	-	-	-	-	-	10	10	20	-	40
<b>Question Paper Pattern</b>											
Question paper pattern for CAT and ESE will be based on the pattern shown in Table (a) and (b)											
<b>Table (a) Question Paper pattern for CAT/Model exam</b>											
Test Type	2 Marks	5 Marks	10 Marks	Total Marks							
CAT I to 2	5	4	2 (open choice)	50							
Model exam	End semester Examination Question Pattern			75							
<b>Table (b) Question paper patterns for End semester Examination (ESE)</b>											
2 Marks	5 Marks	10 Marks	Total Marks								
10 (one question from each unit)	5 (one question from each unit)	3 (out of 5) (open choice)	75								
<b>End Semester Examination Question Paper Pattern for Six Units Courses</b>											
Course	2 Mark	5 Mark	8 / 9 Mark	Total Marks							
Part A	5	2 (out of 3 questions, one from each unit)	1 8 mark question (out of 2 questions, Unit I and Unit II)  1 9 mark question (compulsory question from unit III)	37							
Part B	5	2 (out of 3 questions, one from each unit)	9 mark question (out of 3 questions, one from each Unit)	38							

February 2022			
Date	Day	Schedule	Working day/ Holiday
1	Tue	CAT - II Result Analysis and Report submission	52
2	Wed		53
3	Thu		54
4	Fri		55
5	Sat	Special coaching class / QP / Seminar / Q. / Placement / Academic Activities	56
6	Sun		Holiday
7	Mon		57
8	Tue		58
9	Wed		59
10	Thu		60
11	Fri	Field trip / Industrial Visit	61
12	Sat	Special coaching class / QP / Seminar / Q. / Placement / Academic Activities	62
13	Sun		Holiday
14	Mon		63
15	Tue		64
16	Wed		65
17	Thu		66
18	Fri		67
19	Sat	Assignment - II	68
20	Sun		Holiday
21	Mon	Feedback from the students & Analysis	69
22	Tue	OCM meeting 3 / Report Submission	70
23	Wed		71
24	Thu		72
25	Fri		73
26	Sat		74
27	Sun		Holiday
28	Mon	Submission of attendance and Assessment Term - 3	75
Total number of working days : 24			
Total number of holiday : 04			
ശബരിമല സന്ദർശനം, ഹിന്ദുവിരുദ്ധത പ്രതിരോധനം എന്നിവയ്ക്കായി - തീർത്ഥാടകർക്ക്			





November 2021			
Date	Day	Schedule	Working day/Holiday
1	Mon		
2	Tue		
3	Wed		
4	Thu	Deepavali	Holiday
5	Fri		Holiday
6	Sat		Holiday
7	Sun		Holiday
8	Mon		
9	Tue		
10	Wed		
11	Thu		
12	Fri		
13	Sat		
14	Sun		Holiday
15	Mon		
16	Tue		
17	Wed		
18	Thu		
19	Fri		
20	Sat		
21	Sun		Holiday
22	Mon		
23	Tue		
24	Wed		
25	Thu	1 year Induction Day	
26	Fri	AICTE Induction programs starts	1
27	Sat		2
28	Sun		Holiday
29	Mon		3
30	Tue		4
Total number of working days : 04			
Total number of holiday : 01			
அறிவுறுத்தல்: மாற்றியமைக்கப்பட்ட கல்வியியல் திட்டம், அறிவுறுத்தல் கல்வியியல் திட்டம் மாற்றியமைக்கப்பட்ட கல்வியியல் திட்டம் மாற்றியமைக்கப்பட்ட கல்வியியல் திட்டம். - மாற்றியமைக்கப்பட்ட கல்வியியல் திட்டம்.			

## Placement and Training Division

The placement cell functions round the clock throughout the year to establish contact with reputed multinational companies, industries and plays an important role in locating various job opportunities and placing large number of the students every year at these organizations.

### Activities of the Training Division

- Arranges trainings for personality and interpersonal skill development.
- Assists the students to get in-plant training
- Arranges industrial visits
- Creates awareness on the opportunities open for higher studies.
- Arranges coaching classes for GATE, GRE, TOFEL, IELTS, IAS, IES etc.

### Placement Record

Academic Year	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Students Placed	95%	95%	93%	95%	95%	95%	96%

### Details of Placed Students : 2021 - 22

KAAR Technologies	27	Ami Oala	3
Virtusa	14	Chandavel Technologies	6
ZOHIO	13	Tata Motors	1
TCS	147	Eedacore	1
Unisys	11	BenLab Instrument	2
CTS	230	Elzation	2
Zucchi	1	UniSteel	5
Embechu	1	Muslim India	20
Feon	1	CSS	3
Wipro	124	Adroit Soft	1
Musigma	46	Shishu Infotech	6
DataMatrix	2	Accenture	1
Microchip technologies	1	MST ReKar	18
Oprio	7	Solar Academy	13
Secure Cloud	6	ANZ Bank	1
Support Studio	4	BFS market	1
Cognizant	6	Kaar Technology	2
Faxon	4		
Harcum	3		
Mindtree	3		
IKL	5	Total	*745

\* till February 2022

Gold Medals and Top Ten Ranks			
Your seniors were sincere, hard working and got the Gold medals of the Pondicherry University and the top ten ranks in all the branches. The details of the University Goldmedals and Top Ten Ranks won by the students are given below: * Indicates the Gold medal and University First Rank. The Management awards 3 sovereigns of gold to the 1 <sup>st</sup> rank holder, 2 sovereigns to the 2 <sup>nd</sup> rank holder, 1 sovereign to the 3 <sup>rd</sup> rank holder, 4 <sup>th</sup> and 5 <sup>th</sup> rank holders shall receive a cash award of Rs. 10,000/- (Rupees ten thousand) each and 6 <sup>th</sup> to 10 <sup>th</sup> rank holders shall receive a cash award of Rs. 5,000/- (Rupees five thousand) each.			
Name of the Course	2017	2018	2019
B.Tech. EEE	2, 4, 6, 7	1	2, 3, 4, 5, 6, 7, 8, 9, 10
B.Tech. ECE	2, 3, 4, 5, 6, 7, 8, 9, 10	1	3, 4, 5, 6, 7, 8, 9, 10
B.Tech. CSE	1, 2, 3, 4, 10	1	2, 4, 6, 7, 8, 10
B.Tech. IT	2, 3, 4, 5, 6, 7, 8, 9, 10	1	2, 3, 5, 6, 8
B.Tech. IE	2, 3, 4, 5, 6, 7, 8, 9, 10	1	2, 3, 4, 5, 6, 7, 8, 9, 10
B.Tech. Mech	4, 5, 7, 9, 10		3, 7, 8, 10
B.Tech. Civil	2, 3, 10		2, 3, 4, 6, 7, 10
MCA	3, 4, 7, 9, 10	1	2, 6, 7, 8, 9, 10, 11
MBA	3, 4, 6, 7, 8		2, 3, 4, 5, 7, 8, 10
M.Tech. CSE	2, 3, 4, 5, 7, 8, 9		7
M.Tech. ECE	2, 3, 4, 6, 7, 8, 9		2, 3, 4, 5
M.Tech. RED	1		2, 3
M.Tech. NW	2, 3, 4, 5, 7, 8, 9		2, 3
M.Tech. VLSI	1		2, 3, 4
M.Tech. (MF)	2		1

Important points for the kind attention of the Parents	
Dear Parent	
The I semester classes commenced on 26 <sup>th</sup> November 2021. The students have to complete a lot of work within a short period. Hence the parents are kindly requested not to permit their wards to avail frequent leave during this semester period for the following reasons.	
It is compulsory for all the students to complete Certificate Courses, Skill Development Courses and Mandatory Courses along with their Academic Courses. These courses will enhance the students to upgrade their required skills to cope up with the Industry.	
Marks in the continuous assessment test decide the major part of the continuous assessment marks. So, availing leave for the continuous assessment test must be avoided at any cost as this would seriously affect the assessment marks.	
Practicals are very important not only to score more marks but also it will help to understand the theory part of the subject, hence advice your ward not to cut the practical classes.	
Please spare your valuable time to talk to your son/daughter every day and try to understand what he/she is doing in respect of his/her studies. Kindly extend all your support to your son/daughter which will help them to come out successfully. For any assistance from our side you may always feel free to contact the respective DEAN at 0413-2642000 (extn) 2308.	
Wi-Fi Campus	
Our campus has been enabled by high speed uninterrupted Wi-Fi connectivity. The Computer Centre is open till 8.00 p.m. on all the working days except on the dates of University examinations.	
Library Working Hours	
8.30 a.m. to 8.30 p.m. (On all the working days) 8.30 a.m. to 10.00 p.m. (During the examination days)	
Women Cell	
For the benefit of the girl students, a Women Cell has been constituted in the college. The girl students may approach the Chairperson / members for assistance.	
Grievance Redressal Cell	
There is a Grievance Redressal Cell under the Chairmanship of the Director of the institution. Students are requested to approach the Chairman / members to redress their grievances. Mail ID : grievance@snivec.ac.in	



**Annexure - IV**



**SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE**

(An Autonomous Institution)

(Approved by AICTE, New Delhi & Affiliated to Pondicherry University)  
(Accredited by NBA-AICTE, New Delhi, ISO 9001:2000 Certified Institution &  
Accredited by NAAC with "A" Grade)

Madagadipet, Puducherry - 605 107



**NPTEL**

**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**

**LIST OF STUDENTS AND FACULTIES ENROLLED FOR  
NPTEL COURSE DURING THE ACADEMIC YEAR 2021 - 2022**

PERIOD	DEPARTMENT	FACULTIES	STUDENTS
JAN-APR 2022	EEE	16	111
Total Enrollment		127	



**SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE**

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Accredited by NAAC with "A" Grade)

Madagadipet, Puducherry - 605 107

**NPTEL****DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING****List of faculty enrolled for NPTEL during the academic year 2021-2022**

S. No	Name	Designation	Name of the course registered
1	Dr. S.Anbumalar	Professor & Head	NBA Accreditation & Teaching And Learning in Engineering [12 Weeks]
2	Dr.P.Jamuna	Professor	
3	Dr.D.Raja	Professor	
4	Dr.K.Gowrishankar	Professor	
5	Dr.G.GaneshKumaran	Associate Professor	
6	Dr.M.Jayachandran	Assistant Professor	
7	Mr.A.Janagiraman	Assistant Professor	
8	Mr.K.Thangaraj	Assistant Professor	
9	Mr.J.Muruganandam	Assistant Professor	
10	Mr.C.Adrien Perianayagam	Assistant Professor	
11	Mr.R.Ragupathy	Assistant Professor	
12	Ms.N.Swarnalakshmi	Assistant Professor	
13	Mr.R.Nakkeeran	Assistant Professor	
14	Mr.D.Sivaraj	Assistant Professor	
15	Ms.R.Aarthi	Assistant Professor	
16	Mr.I.Shivashankar	Assistant Professor	Effective Engineering Teaching in Practice [4 Weeks]

**List of students enrolled for NPTEL during the academic year 2021-2022**

S. No.	Name	Sem	Sec	Name of the course	
1	ABDUL RAZAAK. A	V	A	Microprocessor and Microcontroller	
2	ABIRAAMI. V	V	A	Microprocessor and Microcontroller	
3	AKASH. S	V	B	Microprocessor and Microcontroller	
4	AKSHAYA S	V	B	Ethical Hacking	
5	ALASHFAK M	V	B	Microprocessor and Microcontroller	
6	ANAND M V	V	B	Microprocessor and Microcontroller	
7	ANJANA. V	V	A	Microprocessor and Microcontroller	
8	ANNAMALAI. E	V	A	Microprocessor and Microcontroller	Analog Circuits
9	ARAVIND. G	V	A	Microprocessor and Microcontroller	
10	ARAVINDA. C	V	A	Microprocessor and Microcontroller	
11	ARAVINDHAN. A	V	B	Microprocessor and Microcontroller	
12	ARIPRASATH. N	V	A	Microprocessor and Microcontroller	
13	ARTHI. A	V	A	Microprocessor and Microcontroller	
14	ARULEESWARAN.P	V	B	Microprocessor and Microcontroller	
15	ARUNACHALAM.T	V	A	Microprocessor and Microcontroller	
16	ARVIND.D	V	B	Microprocessor and Microcontroller	

17	ASMA BEGAM. M	V	B	Microprocessor and Microcontroller	
18	BHUVANESH I	V	A	Microprocessor and Microcontroller	
19	BOMIDI PUJITHA	V	B	Microprocessor and Microcontroller	
20	DEEPA PRAGASAN. V	V	A	Microprocessor and Microcontroller	
21	DEEPIKA. V	V	A	Microprocessor and Microcontroller	
22	DEIVAPRASATH.A	V	B	Microprocessor and Microcontroller	
23	DELLI BABU. S	V	B	Microprocessor and Microcontroller	
24	DEVANATHAN. J	V	A	Microprocessor and Microcontroller	
25	DHILIPKUMAR. S	V	A	Microprocessor and Microcontroller	
26	DHINESHE. S	V	A	Microprocessor and Microcontroller	
27	DHIVYADARSHNI. V	V	A	Microprocessor and Microcontroller	
28	DILEEP PRASATH K	V	B	Microprocessor and Microcontroller	
29	DINESH BABU.A	V	A	Microprocessor and Microcontroller	
30	DINESH KUMAR. M	V	B	Microprocessor and Microcontroller	
31	GOGULARAJ.V	V	A	Microprocessor and Microcontroller	
32	GOKULRAJ N	V	B	Microprocessor and Microcontroller	
33	GOKUL S	V	A	Microprocessor and Microcontroller	
34	GUGAN. M	V	A	Fundamental of Power Electronics	
35	GUNAVATHI S	V	B	Microprocessor and Microcontroller	
36	HARIHARAN S	V	B	Microprocessor and Microcontroller	
37	HARI PRASAD K	V	A	Microprocessor and Microcontroller	
38	HARISH. A	V	A	Microprocessor and Microcontroller	
39	HEMALATHA A	V	A	Microprocessor and Microcontroller	
40	HEMALATHA. V	V	B	Microprocessor and Microcontroller	Ethical hacking
41	HEMAMAALAN. C	V	B	Microprocessor and Microcontroller	
42	ISRAK HUSSAIN. S	V	B	Microprocessor and Microcontroller	
43	IYYAPPAN. M	V	A	Microprocessor and Microcontroller	
44	JAGADHEESAN. P	V	B	Microprocessor and Microcontroller	
45	JAGAN.P	V	A	Microprocessor and Microcontroller	
46	JAI GANESH. J	V	A	Microprocessor and Microcontroller	
47	JAWAHAR. G	V	B	Microprocessor and Microcontroller	
48	JEEVAJOTHI. K	V	B	Microprocessor and Microcontroller	
49	JENSY ALBIYA. A.J.	V	B	Microprocessor and Microcontroller	
50	KARTHIK. R	V	B	Microprocessor and Microcontroller	
51	KHAJA MOIDEEN S	V	B	Microprocessor and Microcontroller	
52	KIRUTHIGA. C	V	A	Microprocessor and Microcontroller	
53	KISHOR. G	V	A	Microprocessor and Microcontroller	
54	KISHORE.D	V	B	Microprocessor and Microcontroller	
55	KUMARAN. S	V	A	Microprocessor and Microcontroller	
56	LOGANATHAN S	V	B	Microprocessor and Microcontroller	
57	LOGESHWARAN. V	V	A	Microprocessor and Microcontroller	
58	LOKESWARI. G	V	B	Microprocessor and Microcontroller	
59	MESHACH. E	V	B	Ethical Hacking	
60	MOHAMED FAWAZ.Y	V	A	Microprocessor and Microcontroller	
61	NANDHINI.C	V	A	Microprocessor and Microcontroller	
62	NARENDIRAN.A	V	B	Microprocessor and Microcontroller	
63	NIVETHITHA. R	V	A	Microprocessor and Microcontroller	
64	NIVETHITHAASRI. P.R.	V	B	Microprocessor and Microcontroller	
65	OUMAR GOURU. O	V	A	Microprocessor and Microcontroller	
66	PALEPU SHIVA	V	B	Microprocessor and Microcontroller	



67	PRAVIN. M	V	A	Microprocessor and Microcontroller	
68	PRIYADHARSHAN. S	V	B	Microprocessor and Microcontroller	
69	PRIYENGA.E	V	A	Microprocessor and Microcontroller	
70	RAJARAJAN. D	V	A	Microprocessor and Microcontroller	
71	RAJMUGILAN. R	V	B	Microprocessor and Microcontroller	
72	RASIN A	V	B	Microprocessor and Microcontroller	
73	RATHINASABAPATHY A	V	A	Microprocessor and Microcontroller	
74	SAKTHI ESWARAN.S	V	B	Microprocessor and Microcontroller	
75	SANCHUNA .S	V	B	Microprocessor and Microcontroller	Ethical hacking
76	SANJAY. M	V	B	Microprocessor and Microcontroller	
77	SANJAY. M	V	A	Microprocessor and Microcontroller	
78	SARAVANAKRISHNAN. V	V	B	Microprocessor and Microcontroller	
79	SATHYANARAYANAN.V	V	A	Microprocessor and Microcontroller	
80	SHARAN. S	V	B	Renewable Energy Engineering: Solar, Wind and Biomass Energy Systems	Microprocessor and Microcontroller
81	SINDHUJA. K	V	A	Microprocessor and Microcontroller	
82	SIVABALAN S	V	B	Renewable Energy Engineering: Solar, Wind and Biomass Energy Systems	Microprocessor and Microcontroller
83	SIVARAMAN P	V	A	Microprocessor and Microcontroller	
84	SOWMYA S	V	B	Fuzzy Sets, Logic and Systems & Applications	Microprocessor and Microcontroller
85	SUNIL KUMAR. M	V	B	Microprocessor and Microcontroller	
86	SURENDAR.G	V	A	Microprocessor and Microcontroller	
87	SURYAPRAKASH. P	V	B	Microprocessor and Microcontroller	
88	THAMARAISELVAN. S	V	B	Renewable Energy Engineering: Solar, Wind and Biomass Energy Systems	Microprocessor and Microcontroller
89	THAMIZHSELVAN. G	V	B	Microprocessor and Microcontroller	
90	THAMIZHSELVAN V	V	A	Microprocessor and Microcontroller	
91	THANYASRI.S.K	V	A	Microprocessor and Microcontroller	
92	THIRUMANIRAJ. P	V	A	Microprocessor and Microcontroller	
93	THIRUMARAN. D	V	A	Microprocessor and Microcontroller	
94	VASANTHAKUMAR. R	V	B	Microprocessor and Microcontroller	
95	VETRIVEL.V	V	A	Microprocessor and Microcontroller	
96	VIDHYALAKSHMI E	V	B	Microprocessor and Microcontroller	
97	VIGNESH. K	V	B	Microprocessor and Microcontroller	
98	VIGNESHWARAN.V	V	A	Microprocessor and Microcontroller	
99	YOGESH. A	V	B	Microprocessor and Microcontroller	
100	YOGESH. R	V	A	Microprocessor and Microcontroller	
101	YOGESHWAR S	V	A	Microprocessor and Microcontroller	
102	ATHMAJAN.S	V	B	Microprocessor and Microcontroller	
103	DHANUSH.N	V	B	Microprocessor and Microcontroller	Power System Engineering
104	GANESAMURTHY. S	V	A	Microprocessor and Microcontroller	
105	JAVITH AHAMED.J	V	B	Microprocessor and Microcontroller	
106	MUTHUKUMARAN.R	V	A	Microprocessor and Microcontroller	
107	NANTHAKUMAR.B	V	A	Microprocessor and Microcontroller	
108	NAYAKAN.S.T	V	A	Microprocessor and Microcontroller	
109	SAMEER.B	V	A	Microprocessor and Microcontroller	
110	SETHURAM.S	V	B	Microprocessor and Microcontroller	
111	THAHAADHAMSHARIF.N	V	B	Microprocessor and Microcontroller	



## Annexure – V

### List of Examiners



## SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE

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### DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

#### DETAILS OF EXAMINER

Specialization		Power Electronics and Drives		
S. No	Name of the Examiner	Designation & Institution Name	Mobile No	Mail ID
1.	Dr.J.Ramesh Rahul	Assistant Professor / EEE, National institute of Technology, Andhra Pradesh	7989923036	rahuljammy1925@gmail.com
2.	Dr.K.K.Saravanan	Assistant Professor / EEE, University College of Engineering, Thirukuvalai campus, Nagapattinam	9789695832	saravanan.santi@gmail.com
3.	Dr. S. Jeyasudha,	Professor / EEE, K.Ramakrishnan College of Technology, Trichy,	9629054969	jeyasudhas.eee@krct.ac.in
4.	Dr.S.A.Elankurisil	Professor & Head / EEE, Adhiparasakthi Engineering College, Melmaruvathur.	9442936797	saclankurisil@gmail.com
5.	Dr.V.Vasan Prabhu	Assistant Professor / Department of Automotive Electronics, SRM Institute of Science and Technology, Chennai.	7358682007	vasanprv@srmist.edu.in
6.	Dr. N. Arunkumar	Professor and Head / EEE, Dhanalakshmi Srinivasan Engineering College, Perambalur	9894949670	narunme26@gmail.com
7.	Dr.R.Raja Singh	Associate Professor / Department of Energy and Power Electronics, VIT, Vellore.	9894250650	rrojasingh@vit.ac.in
8.	Dr.C. Kumar	Professor and Head / EEE M Kumarasamy College of Engineering Thalavapalayam Post, Karur TK.	9994942022	kumarc@bitsathy.ac.in
9.	Dr.Srinivasan Pradabane	Assistant Professor / EEE, National institute of Technology, Warangal, Telegana	8639352033	spradabane@nitw.ac.in
10.	Dr.P.Velmurugan	Associate Professor / EEE, St.Joseph's College of Engineering, Chennai	9976949243	velupriya10@gmail.com
11.	Dr.N.Shobanadevi	Professor , University College of Engineering, Ariyalur.	8778149535	shobanadevi1975@gmail.com

12.	Dr.D.Zamrooth	Assistant Professor, Department of EEE, University college of Engineering, Kanchipuram	9176773605	zam.shireen@gm ail.com
13.	Dr.A.Saraswathi	Assistant Professor, Department of EEE, University college of Engineering - Villupuram	9994549910	saraswathiask@g mail.com
14.	Dr.S.Prabhu	Associate Professor, Department of EEE, SreeVidyanikethan Engineering College, SreeSainath Nagar, Tirupati.	9600646211	prabhutajmahal6 @gmail.com
15.	Dr.R.Natarajan	Associate Professor / EEE Fatima Michael College of Engineering and Technology, Madurai	9655986026	natarajanrajavel3 69@gmail.com
16.	Dr.PadmajaSankala	Asst. Professor / EEE, All India Shri Shivaji memorial Society's College of Engineeing,Pune	9923669024	pksankala@aissm scoe.com
17.	Dr.S.Priyadharashni,	Assistant Professor / EEE, Arunai Engineering College, Velu Nagar, Mathur, Tiruvannamalai, Tamilnadu.	9994576791	priyamshanmuga m@gmail.com
18.	Dr.R.Thamaraiselvi	Assistant Professor/EEE, University College of Engineering, Villupuram	9487363388	r.thamaraiselvi1@ gmail.com
19.	Dr.R.Murugesan	Asst. Professor, Department of EEE, Annamacharya Institute of Technology and Sciences Thirupati	9944228455	rmurugesandr@g mail.com
20.	Dr.T Suresh Padmanabhan	Associate Professor, Department of ECE, E.G.S Pillay Engineering College, Nagapattinam.	9444025552	drtsp@egspec.or g
21.	Dr.T.S.BalajiDamodhar	Associate Professor / EEE, Ranipettai Engineering College, Walajah, Vellore	9944665102	balajidamodhar@ gmail.com
22.	Dr.C.Kannan	Associate Professor / EEE, Arunai Engineering College, Thiruvannamalai.	9841005438	kannanc305@gm ail.com
23.	Dr.S.Satthiyaraj	Associate Professor / EEE, University College of Engineering, Panruti	9500405949	satthiya@gmail.c om
24.	Dr.G.Madhusudanan	Professor / EEE, SRM Nagar, Kattankulathur, Chengalpattu.	9884413903	madhusudanang. eee@valliammai. co.in
25.	Dr.G.Haridoss	Associate Professor/EEE, M. A. M College of Engineering and Technology, Siruganur, Trichy	9865481065	haridoss@gmail. com
26.	Dr.S.Albert Alexander	Associate Professor / EEE, Kongu Engineering College, Perundurai, Erode.	9865931597	ootyalex@gmail.c om



27.	Dr.K.Arul Kumar	Assistant Professor / EEE, Madanapalle Institute of Technology & Science, Madanapalle- Chittoor District, Andhra Pradesh	9994822651	karuleee@gmail.com
28.	Dr.Mahendran Nagalingam	Professor / HOD, SAINTGITS College of Engineering Kottayam, Kerala	9894243719	drnmpower@gmail.com
29.	Mr.A.Vinothkumar	Assistant Professor / EEE, SRI College of Engineering and Technology, Vandavasi.	6379224893	vinothkumareee91@gmail.com
30.	Mr.C.Nandakumar	Assistant Professor / EEE Arunai Engineering College, Velu Nagar, Mathur, Tiruvannamalai	9865714571	nandha30electra@gmail.com

Specialization		Power Systems		
S. No	Name of the Examiner	Designation & Institution Name	Mobile No	Mail ID
1.	Dr.N.Chidambararaj	Associate Professor / EEE, St.Joseph's College of Engineering, OMR, Chennai	9840826431	chidambararajn@stjosephs.ac.in
2.	Dr.A.Ragavendiran	Asst.Professor / EEE, AVC College of Engineering, Mannampandal Mayiladudurai	8248781797	ragavendiran.as@gmail.com
3.	Dr. V. Subha Seethalakshmi	Associate Professor / EEE, Dhanalakshmi Srinivasan Engineering College, Perambalur	9865724662	vsubha05@gmail.com
4.	Dr.S.P.Mangaiyarkarasi	Asst.Professor , Department of EEE, University college of Engineering, Panruti.	8903678363	mangaisowmeya@gmail.com
5.	Dr.R.Karthikeyan	Asst.Professor, Department of EEE, University college of Engineering, Pattukottai.	9047656765	kar_thamarai82@yahoo.com
6.	Dr.Arul Murugan	Professor & Head / EEE Excel Group of Institutions Erode, TamilNadu	9842909393	arulvpv@gmail.com
7.	Dr.P.SathishBabu	Asst.Professor, Department of EEE, University college of Engineering, Panruti	8667313405	psathishbabu@yahoo.co.in
8.	Dr.V.Arun	Associate Professor, Department of EEE, Sree Vidyanikethan Engineering College, SreeSainath Nagar, Tirupati.	8667244175	arunphd1986@gmail.com
9.	Dr.S.Durai	Assistant Professor, Department of EEE, Annamalai University	8667264066	abccdurai@gmail.com



10.	Dr.S.Karthikeyan	Assistant Professor Department of EEE, Annamalai University, Chidambaram	8825793371	karthikaueee79@ gmail.com
11.	Dr.M.Sathya	Assistant Professor, Department of EEE, Government college of Engineering, Srirangam, Trichy	7010271378	mrsathyaa@gces. edu.in
12.	Dr. R. Suresh	Associate Professor / EEE, SKP Engineering College , Thiruvannamalai	9943863622	rsureshskp@gmai l.com
13.	Dr.P.Ajay.D.Vimal Raj	Associate Professor Department of EEE, Pondicherry Engineering College.	9486142839	ajayvimal@pec.e du
14.	Ms.V.Logeshwari	Assistant Professor Department of EEE, Government College of Engineering, Srirangam.	8778727201	logulagam@gmail .com

Specialization		Electrical Drives and Control		
S. No	Name of the Examiner	Designation & Institution Name	Mobile No	Mail ID
1	Dr.A.Venkadesan,	Assistant Professor / EEE, National Institute of Technology, NH32, Karaikal, Puducherry.	7598566739	venkadesan@nitp y.ac.in
2	Dr. R .Gunabalan	Associate Professor, School of Electrical Engineering, VIT,Vandalur- Kelambakkam Road, Chennai.	9894919269	gunabalan.r@vit.a c.in
3	Dr.V.Krishnakumar	Associate Professor / EEE St.Joseph college of Engineering Chennai.	9944235136	v.krishnakumarjce @gmail.com
4	Dr.D.Lenine	Professor/EEE R.G.M College of Engg. & Tech. Nandyal, Andhra Pradesh.	9866723784	lenine.eee@gmail .com

Specialization		Electrical Engineering		
S. No	Name of the Examiner	Designation & Institution Name	Mobile No	Mail ID
1	Dr.S.Senthikumar	Associate Professor / EEE University College of Engineering, Ariyalur.	7810062427	senthil21575@gm ail.com
2	Dr.S.R.Sivarasu,	Professor / EEE, Sri Eshwar College of Engineering (Autonomous) Coimbatore.	8056719372 / 9942029372	sivarasu.s.r@sec e.ac.in

Specialization	Image Processing
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S. No	Name of the Examiner	Designation & Institution Name	Mobile No	Mail ID
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Specialization		Very Large Scale Integration (VLSI)		
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