



SRI MANAKULA VINAYAGAR
ENGINEERING COLLEGE
(An Autonomous Institution)

Department of Electrical and Electronics Engineering

Minutes of 5th Meeting of BoS (PG and Ph.D)

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

Date & Time : 13th September, 2022 at 11.00 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, Accredited by NAAC with "A" Grade)
Madagadipet, Puducherry - 605 107



DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

M.Tech – Power Electronics and Drives

Ph.D – Electrical and Electronics Engineering

Minutes of 5th Meeting of Board of Studies (PG and Ph.D)

The Fifth meeting of Board of Studies in Electrical and Electronics Engineering Department was held on **13th Sep 2022 at 11:00 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
Head of the Department (Chairman)		
1	Dr. S. Anbumalar, M.E., Ph.D., Professor and Head Specialization: Control System Years of Experience: 29 years Sri Manakula Vinayagar Engineering College saravanan.anbumalar@gmail.com 9443179533	Chairman
The entire faculty of each specialization		
2	Dr. P. Jamuna, M.E., Ph.D., Professor Specialization: Power Electronics and Drives Years of Experience: 16 Sri Manakula Vinayagar Engineering College jamuna1981@gmail.com 9789544379	Member
3	Dr. D. Raja, M.Tech., Ph.D., Professor Specialization: Electrical Drives and Control Years of Experience: 15 Sri Manakula Vinayagar Engineering College rajaapeee@gmail.com 9944337970	Member
4	Dr. K. Gowrishankar, M.Tech., Ph.D., Professor Specialization: Instrumentation and control Years of Experience: 16 Sri Manakula Vinayagar Engineering College gowri200@yahoo.com 9095555412	Member
5	Dr. S. Ganesh Kumaran, M.E., Ph.D., Associate Professor Specialization: Electrical Machines Years of Experience: 10 Sri Manakula Vinayagar Engineering College ganeshphd4u@gmail.com 9677624378	Member

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

Agenda of the Meeting

Agenda 1 / BoS/ 5 /2022 /EEE /PG	Confirmation of minutes of 4 th meeting of BoS.
Agenda 2 / BoS/ 5 /2022 /EEE /PG	To discuss and approve the Academic Calendar for the ODD/EVEN Semester of Academic year 2022-23.
Agenda 3 / BoS/ 5 /2022 /EEE /PG	To discuss and recommend the panel of examiners to the Academic Council
Agenda 4 / BoS/ 5 /2022 /EEE /PG	To discuss and approve the on-line SWAYAM/MOOCs courses for the II year/ III semester student under R-2020 regulations during the period November 2022 to March 2023.
Agenda 5 / BoS/ 5 /2022 /EEE /PG	To approve the course work for the Research scholar admitted in the academic year 2022 - 2023.
Agenda 6 / BoS/ 5 /2022 /EEE /PG	To approve the Evaluation procedure adopted for the course work for the Research scholar admitted in the academic year 2022-2023.
Agenda 7 / BoS/ 5 /2022 /EEE /PG	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 /5 /2022 /EEE /PG

Confirmation of minutes of 4th meeting of BoS.

Chairman, BoS, apprised the minutes of 4th BoS.

Agenda 2/ BoS /5 /2022 /EEE /PG

To discuss and approve the Academic Calendar for the ODD/EVEN Semester of Academic year 2022-23. The classes commenced from 27.05.2022.

The Academic Calendars are prepared for ODD/EVEN Semester of Academic year and it includes the schedule for CAT, Model Exam, QCM, Project review and Internal Marks distributions were discussed and approved **(given in Annexure-I)**

Agenda 3/ BoS /5 /2022 /EEE /PG

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

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

Agenda 4/ BoS /5 /2022 /EEE /PG

To discuss and approve the on-line SWAYAM/MOOCs courses for the II year/ III semester students under R-2020 regulations during the period November 2022 to March 2023.

The list of online SWAYAM / MOOCS courses (**given in Annexure- III**) offered for II year / III semester student under R-2020 regulations during the November 2022 to March 2023 was presented and approved by the BoS members.

Agenda 5/ BoS /5 /2022 /EEE /PG

To approve the course work for the Research scholar admitted in the academic year 2022 - 2023.

List of Approved DC members and Course work papers are presented and approved by the BoS members. The details of Course work papers are given in **Annexure-IV**.

Name of the Supervisor	Dr. S.Anbumalar
Name of the Ph.D Scholar	Mr. V.Anandakumar
Title of the Research Work	Performance Investigation of Electric Vehicles Charging Station Using Different AI-Techniques

Approved DC members:

Member	Name and address	E mail and Mobile Number
Supervisor/Convener	Dr.S.Anbumalar, Dean Academics & HOD- EEE, SMVEC.	Email: deanacademic@smvec.ac.in Ph.No:9443179533
External Member-1	Dr.M.Sudhakaran, Professor, Dept.of EEE, Puducherry Technological University.	Email: sudhakaran@ptuniv.edu.in Ph.No:9994071997
External Member-2	Dr.J.Raja, Assistant Director National Power Training Institute.	Email: jraja.npti@gov.in Ph.No:8800124789
Internal Member	Dr.J.Madhusudanan, Professor & Head, Dept.of AI & DS, SMVEC.	Email: madhu@smvec.ac.in Ph.No:9003739274

Course Work Papers:



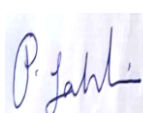




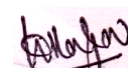

Sl. No	Course	Title of the Course	Credits	Max.Marks		
				CAM	ESM	Total
1	I	Research Methodology	4	-	100	100
2	II	Research and Publication Ethics	4	-	100	100
3	III	Advanced Course – Intelligent Controllers	4	40	60	100
4	IV	Advanced Course – Electric and Hybrid vehicle	4	40	60	100





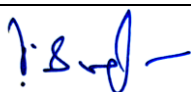
Agenda 6/ BoS /5 /2022 /EEE /PG

To approve the Evaluation procedure adopted for the course work for the Research scholar admitted in the academic year 2022-2023.

Evaluation procedure adopted for the course work to Ph.D research scholar was presented and approved by the BoS members. The details are given in **Annexure-V**.

The meeting for Fifth BoS approval was concluded at 11.45 A.M 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	Dr.S.Anbumalar Professor and Head Department of EEE SMVEC,Madagadipet-605107	Chairman	
2	Dr.A.Kavitha Professor, Department of EEE College of Engineering Guindy Anna University Chennai. 600 025.	Subject Expert (University Nominee)	
3	Dr. P. Lakshmi Professor, Department of EEE College of Engineering Guindy Anna University Chennai. 600 025.	Subject Expert (Academic Council Nominee)	
4	Dr. J. Kanakaraj Professor & Head Department of EEE PSG College of Technology (Autonomous) Coimbatore – 641 004.	Subject Expert (Academic Council Nominee)	
5	Er.S. Selva Kumar Senior Engineer Qualcomm India Private Limited Bengaluru, Karnataka - 560001	Representative from Industry	
6	Er.K.Ramraj Technical Director LED FORSE India Poornankuppam Puducherry – 605 007.	Postgraduate Alumnus (nominated by the Principal)	
7	Dr. P. Jamuna Professor Department of EEE,SMVEC	Internal Member	
8	Dr.D.Raja Professor Department of EEE,SMVEC, Madagadipet-605107	Internal Member	
9	Dr. K. Gowrishankar Professor Department of EEE,SMVEC , Madagadipet-605107	Internal Member	

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

Annexure – I

M.Tech – Power Electronics and Drives

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 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.	
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.	
Working hours	
I hour	08.45 a.m to 09.35 a.m
II hour	09.35 a.m to 10.25 a.m
III hour	10.25 a.m to 11.15 a.m
Break	11.15 a.m to 11.30 a.m
IV hour	11.30 a.m to 12.20 p.m
V hour	12.20 p.m to 01.10 p.m
VI hour	01.50 p.m to 02.40 p.m
VII hour	02.40 p.m to 03.30 p.m
VIII hour	03.30 p.m to 04.20 p.m
Lunch break 1.10 p.m. to 1.50 p.m.	

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Academic Calendar	
May 2022 to September 2022	
Name : _____	
Programme : M.Tech.	
Department : Electrical and Electronics Engineering	
Year / Sem : I Yr / II Sem	
<p>அறிவு செல்வங்கள், உழைப்பில் அழகையடைந்தீர்கள்; இருக்கல் காலத்திலும், காலத்திலும் வாழ்ந்துகொண்டீர்கள்; பயனிலை உண்டாக்கினீர்கள், அது திரைவிழை நெருப்பாகவந்தீர்கள்; கற்றியவை திருக்கல், கற்றியதில் நெருப்பாகவந்தீர்கள்; அங்கையாள் உழைக்கல், அடிமை உழைத்தீர்கள்; அடிமை திருக்கல், கைத்தொழில் உழைத்தீர்கள்; அழகுநிலை திருக்கல், மருமகன் அழகுபட்டீர்கள்; உருகுமாத் திருக்கல், கருமமில் உருத்தீர்கள்; உருகுமாத் திருக்கல், உருகுமாத் திருக்கல்; உருகுமாத் திருக்கல், உருகுமாத் திருக்கல்;</p>	
	
நினைவு தூதர் அன்புடன்	

Sri Manakula Vinayagar Engineering College has been conferred with Autonomous Status by the University Grants Commission on 26th September, 2019 and the same was approved by Pondicherry University on 18th June 2020. SMVEC Autonomous Regulations R2019, is followed for the students admitted in the Academic Year 2019-20 (present first Year). SMVEC Autonomous Regulations R2020, is followed for the students admitted from the Academic Year 2020-21 onwards (present first year & second year)

- ❖ Industry 4.0 ready curriculum
- ❖ Updated towards skill development to create more job opportunities
- ❖ Multidisciplinary curriculum
- ❖ More entrepreneurship opportunities
- ❖ IELTS model curriculum/ Foreign Languages learning opportunities
- ❖ Department wise Gold Medals
- ❖ Results will be declared within a month after completion of examinations

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, Haris Techno; PTC, LN an Excellence in Technology & Didactic solutions. All students should enroll in one of the certification course in every semester

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

[illegible]

August 2022			
Date	Day	Schedule	Working day / Holiday
1	Mon	Certification course - Testing of DC machines	53
2	Tue		54
3	Wed		55
4	Thu		56
5	Fri	Guest Lecture - Electric Machines In Industries	57
6	Sat	Special teaching class / GP / Seminar / SL / Placement / Academic Activities	58
7	Sun		Holiday
8	Mon	Certification course - Testing of transformers	59
9	Tue	Moharam	Holiday
10	Wed		60
11	Thu		61
12	Fri	Feedback from the students - 3	62
13	Sat	Special teaching class / GP / Seminar / SL / Placement / Academic Activities / GP / Seminar	63
14	Sun		Holiday
15	Mon	Independence Day	Holiday
16	Tue	De Jure Transfer Day	Holiday
17	Wed	Model Exam starts	64
18	Thu		65
19	Fri		66
20	Sat	National Renewable Energy Day	67
21	Sun		Holiday
22	Mon		68
23	Tue	Model Exam ends	69
24	Wed		70
25	Thu		71
26	Fri		72
27	Sat	Guest Lecture - Emerging controller	73
28	Sun		Holiday
29	Mon		74
30	Tue		75
31	Wed	Vinayagar Chathurthi	Holiday
Total number of working days : 23 Total number of holiday : 08			

ഓരോ തീയതിയിലും വിവരിച്ചിരിക്കുന്ന പ്രവർത്തനങ്ങൾ പൂർത്തിയാക്കിയ ശേഷം അടുത്ത തീയതിയിൽ ഏകദേശമായി എത്രയും കൃത്യമായി ഉപയോഗിക്കേണ്ടതാണ്.

SRIMANAKULAVINAYAGAR ENGINEERING COLLEGE

VISION

To be globally recognized for excellence in quality education, innovation and research for the transformation of lives to serve the society.

MISSION

M1: Quality Education: To provide comprehensive academic system that amalgamates the cutting edge technologies with best practices.

M2: Research and Innovation: To foster value-based research and innovation in collaboration with industries and institutions globally for creating intellectuals with new avenues.

M3: Employability and Entrepreneurship: To inculcate the employability and entrepreneurial skills through value and skill based training.

M4: Ethical Values: To instill deep sense of human values by blending societal righteousness with academic professionalism for the growth of society.

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

VISION

To promote proficiency in the field of Electrical and Electronics Engineering by creating a stimulating environment for research, innovation and entrepreneurship.

MISSION

M1: Quality Education: To impart high quality technical education with problem solving capabilities by innovative pedagogy in emerging technologies.

M2: Industrial and Societal needs: To cater the dynamic needs of the industry and society by strengthening industry-institute interaction.

M3: Research and Innovation: To nurture the spirit of research attitude by carrying out innovative technologies pragmatically.

M4: Placement and Entrepreneurship: To inculcate the professionalism in career by advancing synergistic skills to compete in the corporate world.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)	
PEO1: Professional Knowledge	To possess strong educational foundation in Electrical and Electronics Engineering to attain successful career with professional responsibility
PEO2: Innovative Skills	To enrich the skills to design and develop Innovative solutions for engineering problems in a multidisciplinary environment
PEO3: Ethics	To actively embrace leadership qualities for achieving professional goals with ethical values
PEO4: Adaptability	To enhance Intellectual competency along with technical skills by adapting to the current trends through eternal learning
PROGRAMME SPECIFIC OUTCOMES (PSOs)	
PSO1: Core Proficiency	Utilize the engineering core knowledge to identify, formulate, design, and investigate the complex engineering problems of power electronics, electrical machines and power systems.
PSO2: Cutting Edge Technologies	Explore the new cutting edge technologies in the field of Electric vehicle, Automation, Artificial Intelligence, Robotics and Renewable Energy to compete in global market.
PSO3: Design and Evolution	Capability to comprehend the technological advancements with the usage of modern design tools for analysing and designing systems to confront the rapid pace of industrial innovations.

July 2022			
Date	Day	Schedule	Working day/ Holiday
1	Fri		28
2	Sat	Certification course - Testing of electronic devices	29
3	Sun		Holiday
4	Mon		30
5	Tue		31
6	Wed		32
7	Thu		33
8	Fri	Feedback from the students - 2	34
9	Sat	Special coaching class / GP / Seminar / GL / Placement / Academic Activities	35
10	Sun	National tests day - A day of science around the world	Holiday
11	Mon	CAT - II	36
12	Tue		37
13	Wed		38
14	Thu		39
15	Fri	Guest Lecture - Electric Vehicles	40
16	Sat		Holiday
17	Sun		Holiday
18	Mon		41
19	Tue		42
20	Wed		43
21	Thu	Guest Lecture - Battery management system	44
22	Fri		45
23	Sat	Special coaching class / GP / Seminar / GL / Placement / Academic Activities	46
24	Sun		Holiday
25	Mon		47
26	Tue		48
27	Wed		49
28	Thu		50
29	Fri	Industrial Visit	51
30	Sat	Industrial Visit	52
31	Sun		Holiday
Total number of working days : 26			
Total number of holiday : 08			
செவ்வாய், வியாழன், ஞாயிறம், புதன், வெள்ளி - விடுதலை			

June 2022			
Date	Day	Schedule	Working day/ Holiday
1	Wed		5
2	Thu		6
3	Fri		7
4	Sat	Special coaching class / GP / Seminar / GL / Placement / Academic Activities	8
5	Sun		Holiday
6	Mon		9
7	Tue		10
8	Wed		11
9	Thu		12
10	Fri		Holiday
11	Sat		Holiday
12	Sun		Holiday
13	Mon		13
14	Tue	Blood Donation Day	14
15	Wed	National Electricity Day	15
16	Thu	Feedback from the students - 1	16
17	Fri	QCM 1 submission	17
18	Sat		Holiday
19	Sun		Holiday
20	Mon	CAT - I	18
21	Tue	International Yoga Day	19
22	Wed		20
23	Thu		21
24	Fri		22
25	Sat	Industrial Visit	23
26	Sun		Holiday
27	Mon		24
28	Tue		25
29	Wed		26
30	Thu		27
Total number of working days : 28			
Total number of holiday : 07			
திருவிடைக்குளம், சென்னை, கரகம், கரகம், கரகம், கரகம், கரகம் - விடுதலை			

PROGRAMME OUTCOMES (POs)	
Engineering graduates will be able to	
PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.	
PO2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.	
PO3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.	
PO4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.	
PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.	
PO6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.	
PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.	
PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.	
PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.	
PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.	
PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.	
PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.	

U20BST215 ENGINEERING MATHEMATICS - II MULTIPLE INTEGRALS AND TRANSFORMS

Course Outcomes: After completion of the course, the students will be able to
 CO1 - Understand the concept of double and triple integrals. (K2)
 CO2 - Apply Laplace transform and inverse Laplace transform of simple functions. (K3)
 CO3 - Convert a periodic function into series form. (K3)
 CO4 - Compute Fourier transforms of various functions. (K3)
 CO5 - Solve difference equations using Z - transforms. (K3)

U20EST238 BASIC ENGINEERING SCIENCE FOR ELECTRICAL ENGINEERING

Course Outcomes: After completion of the course, the students will be able to
 CO1 - Identify, analyze the properties and applications of magnetic and dielectric materials. (K2)
 CO2 - List the properties and applications of modern engineering materials. (K1)
 CO3 - Appreciate concepts of conservation of mass, conservation of energy, and the Laws of thermodynamics. (K2)
 CO4 - Understand the construction and functioning of IC engines, refrigeration system. (K2)
 CO5 - Attain knowledge about types of pumps and turbines. (K2)

U20EET203 ELECTRIC CIRCUIT ANALYSIS

Course Outcomes: After completion of the course, the students will be able to
 CO1 - Analyze and solve DC networks using various network theorems. (K4)
 CO2 - Analyze and solve AC networks using various network theorems. (K4)
 CO3 - Analyze the behavior of three phase circuits using network topology for different type of loads under balanced and unbalanced conditions. (K4)
 CO4 - Analyze the steady state and transient behavior of RL, RC and RLC circuit using Laplace transformations for DC and AC excitations. (K4)
 CO5 - Analyze the resonance and tuned circuits for series and parallel connections. (K4)

U20EET204 ELECTRICAL MACHINES – I

Course Outcomes: After completion of the course, the students will be able to
 CO1 - Analyze the performance of DC machines under various operating conditions using their characteristics. (K4)
 CO2 - Interpret the efficiency of DC machines by conducting Suitable tests. (K4)
 CO3 - Inspect the performance of single phase transformers using phasor diagrams and equivalent circuits and understand the characteristics of special transformers. (K4)
 CO4 - Outline the different types of connections in three phase transformers and savings of copper in autotransformers. (K2)
 CO5 - Interpret the efficiency of Transformers by conducting Suitable tests. (K4)

U20EET205 ELECTRONIC CIRCUITS

Course Outcomes: After completion of the course, the students will be able to
 CO1 - Design the transistor Amplifiers using its small signal model. (K4)
 CO2 - Design cascade amplifiers and sweep circuits. (K3)
 CO3 - Evaluate the performance analysis of large signal amplifier. (K4)
 CO4 - Design the feedback amplifiers and analyze frequency response. (K4)
 CO5 - Design oscillators for different types of signal generation. (K3)

U20EET206 DIGITAL ELECTRONICS

Course Outcomes: After completion of the course, the students will be able to
 CO1 - Use the Boolean laws to simplify the logical functions. (K3)
 CO2 - Design 'n' bit counters and shift registers. (K4)

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	Commencement of II semester classes	1
28	Sat		2
29	Sun		Holiday
30	Mon		3
31	Tue		4
Total number of working days : 04			
Total number of holiday : 01			
இ வெற்றியடைபவருக்கு உபயோகத்திற்குரிய, வெறு பாடநூல்கள் தருகை முடியுமாறு - பதிலாக			

Important points for the kind attention of the Parents:

Dear Parent

The II semester classes commence on 27th May 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.

II semester (I Year) : All the II 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.

CO3 - Design and analyze the synchronous and asynchronous sequential circuits. (K4)
CO4 - Gain knowledge on the design and fabrications of semiconductor memories. (K2)
CO5- Design, debug and test digital logic circuits using VHDL. (K4)

U2DEEP203

ELECTRIC CIRCUIT ANALYSIS LAB

Course Outcomes: After completion of the course, the students will be able to
CO1- Verify the basic laws and simplify more complicated circuits into simple equivalent circuits using network theorems to compute various parameters of typical DC and AC electrical circuits. (K4)
CO2- Evaluate the solution of three phase AC balanced and unbalanced circuits with different types of loads. (K4)
CO3- Analyze the transient response of RL, RC and RLC circuits with DC and AC input used in power converters, choppers and sweep circuits. (K4)
CO4- Design tuned circuit for given frequency used in radio amplifiers for frequency tuning. (K5)
CO5- Make use of simulation software for simulating various electrical circuits. (K5)

U2DEEP204

ELECTRICAL MACHINES LAB - I

Course Outcomes: After completion of the course, the students will be able to
CO1- Test the performance of any DC machine (shunt, series or compound) and transformer by conducting suitable experiments and report the results. (K5)
CO2- Predetermine the different performance characteristics of DC machines and transformers. (K5)
CO3- Experiment and analyze the various speed control techniques for DC motors. (K5)
CO4- Experiment the parallel operation and analyze the load sharing of single phase transformers. (K4)
CO5- Develop any prototype module implementing different control techniques in DC machine and transformers for various applications. (K5)

U2DEEP205

ELECTRONICS LAB - II

Course Outcomes: After completion of the course, the students will be able to
CO1- Evaluate the frequency response of amplifier circuits. (K4)
CO2 - Design oscillator circuits for different types of signal generation. (K3)
CO3- Implement projects using amplifiers and oscillator circuits. (K4)
CO4 - Design and verify the combinational circuits using K-Map. (K3)
CO5- Design and verify the different sequential circuits. (K3)
CO6 - Design and verify counters, shift registers and display devices. (K3)

U2DEES201

SKILL DEVELOPMENT COURSE 1:

DEMONSTRATION OF BASIC ENGINEERING SCIENCE

Course Outcomes: After completion of the course, the students will be able to
CO1 - Distinguish between tools of various trades such as carpentry, fitting, sheet metal, welding, and foundry. (K2)
CO2 - Describe the use of carpentry and fitting joints such as lap, butt, mortise joint, various sheet metal models and casting processes. (K2)
CO3 - Illustrate on centrifugal pump, Air conditioner. (K2)
CO4 - Apply on hand tools used in carpentry and preparation. (K4)
CO5 - Analyze of machine tools used in sheet metal work and fabrication work. (K5)

❖ Supplementary Examination:

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.

Benefit:

- ❖ 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.

Gold Medal 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 Gold medals and Top Ten Ranks won by the students are given below:

🏆 Indicates the Gold medal and University First Rank.

For the Award of Gold Medal and ranks for each branch of study, the CGPA secured from 1st to 8th semester alone should be considered and it is mandatory that the candidate should have passed all the subjects from 1st to 8th semester in the first attempt. Rank certificate 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	🏆	🏆 2, 3, 4, 6, 7, 8, 9, 10
B.Tech. ECE	2, 3, 4, 5, 6, 7, 8, 9, 10		🏆 3, 4, 5, 6, 7, 9, 10
B.Tech. CSE	🏆 2, 3, 4, 10		🏆 2, 4, 6, 7, 8, 10
B.Tech. IT	🏆 2, 3, 4, 5, 6, 7, 8, 9, 10	🏆	🏆 2, 3, 5, 6, 8
B.Tech. ICE	🏆 2, 3, 4, 5, 6, 7, 8, 9, 10	🏆	🏆 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	🏆	🏆 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, 6, 7, 8, 9		2, 3, 4, 5
M.Tech. PED	🏆		🏆 2, 3
M.Tech. NW	2, 3, 4, 5, 7, 8, 9		🏆 2, 3
M.Tech. VLSI	🏆		🏆 2, 3, 4
M.Tech. MF	🏆 2		🏆

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"> 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, TOEFL, IELTS, IAS, IES etc. 			
Placement Record		Details of Placed Students : 2021-22	
Academic Year	Students Placed	MST Rotor Services	18
2013-14	83%	VL and Engg. & Const	11
2014-15	93%	ZOHO	8
2015-16	93%	TCS - Nain	116
2016-17	93%	CTS-Gene	190
2017-18	93%	Wipro	147
2018-19	93%	Mn Sigma	31
2019-20	93%	Herman	4
2020-21	96%	CTS Gene-Elevate	15
2021-22	93%	Econ	1
		Mindtree	27
		Chia	1
		MicroChip Technologies	1
		Cognatum	14
		HCL Technology	14
		Infotree	14
		Infra Nuppon Electrical	1
		Easton	4
		My Medical Shop	3
		Veltech	16
		Apparatus Associates	2
		Total	*897
* till May 2022			
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)			

Mark: Distribution of Continuous Assessment Marks (CAM) and End Semester Examination Marks (ESM)

Scheme for Continuous Assessment Test (CAT)									
S. No	Course Type	Continuous Assessment components							
		Test Marks	Average of pre/post test viva for each experiment	Average of notebook experiment marks for each experiment	Model Exam / Assign	Assignment	Review - 1	Review - 2	Review - 3
1.	Theory	15	-	-	-	5	-	-	5
2.	Practical	-	10	15	15	-	-	-	10
3.	Project work	-	-	-	-	-	10	10	20
									40

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	10
2	CAT 2	1½ Units	50	1½ hours	
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)	30
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

Distribution of Attendance marks for theory : 5 marks

The distribution of 5 marks for theory class attendance is as follows :
5 marks for 93% attendance and above
4 marks for 90% attendance and above but below 93%
3 marks for 87% attendance and above but below 90%
2 marks for 80% attendance and above but below 87%
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 93% attendance and above
8 marks for 90% attendance and above but below 93%
6 marks for 87% attendance and above but below 90%
4 marks for 80% attendance and above but below 87%
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.

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@mvvc.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. 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 Pudukkottai, Kanagachettikulam, Villupuram, Neyveli, Panruti, Cuddalore, Nellikuppam, Madhavai, Tiruvannamalai, Tirumangaludi 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.

Annexure – II

List of Examiners



SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE

(An Autonomous Institution)

(Approved by AICTE, New Delhi & Affiliated to Pondicherry University)
(Accredited by NBA-AICTE, New Delhi, Accredited by NAAC with "A" Grade)
Madagadipet, Puducherry - 605 107



DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING M.Tech Power Electronics and Drives

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	jeayasudhas.eee@krct.ac.in
4.	Dr.S.A.Elankurisil	Professor & Head / EEE, Adhiparasakthi Engineering College, Melmaruvathur.	9442936797	saelankurisil@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.V.Krishna kumar	Associate Professor / EEE, St.Joseph's college of Engineering, Chennai	9944235196	v.krishnakumarsjce@gmail.com
7.	Dr.R.Raja Singh	Associate Professor / Department of Energy and Power Electronics, VIT, Vellore.	9894250650	rrajasingh@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	Asst.Professor, Department of EEE, University college of Engineering, Kanchipuram	9176773605	zam.shireen@gmail.com
13.	Dr.A.Saraswathi	Asst.Professor, Department of EEE, University college of Engineering - Villupuram	9994549910	saraswathiask@gmail.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	natarajanrajavel369@gmail.com
16.	Mr.C.Nandakumar	Assistant Professor / EEE Arunai Engineering College, Velu Nagar, Mathur, Tiruvannamalai	9865714571	nandha30electra@gmail.com
17.	Dr.PadmajaSankala	Asst. Professor / EEE, All India Shri Shivaji memorial Society's College of Engineering,Pune	9923669024	pksankala@aissmscoe.com
18.	Dr.S.Priyadharasini,	Assistant Professor / EEE, Arunai Engineering College, Velu Nagar, Mathur, Tiruvannamalai, Tamilnadu.	9994576791	priyamshanmugam@gmail.com
19.	Dr.R.Thamaraiselvi	Assistant Professor/EEE, University College of Engineering, Villupuram	9487363388	r.thamaraiselvi1@gmail.com
20.	Dr.R.Murugesan	Asst. Professor, Department of EEE, Annamacharya Institute of Technology and Sciences Thirupati	9944228455	rmurugesandr@gmail.com
21.	Dr.T.S.BalajiDamo-dhar	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@gmail.com
23.	Dr.K.Sedhuraman	Associate Professor / EEE, Manakula Vinayagar Institute of Technology, Kalitheerthalkuppam, Puducherry.	9092882883	sedhuramaneee@mvit.edu.in
24.	Mr.S.Rajkumar	Assistant Professor / EEE, Manakula Vinayagar Institute	9952628247	rajkumareee@mvit.edu.in

		of Technology, Kalitheerthalkuppam, Puducherry.		
25.	Mr.M.Saravanaku mar	Assistant Professor / EEE, Mailam Engineering College, Mailam	9786863566	saravanakumareee@mailame ngg.com
26.	Mr.G.G.Muthukum ar	Assistant Professor / EEE, Mailam Engineering College, Mailam	9894762505	muthukumareee@mailameng g.com
27.	Dr.S.Satthiyaraj	Associate Professor / EEE, University College of Engineering, Panruti	9500405949	satthiya@gmail.com
28.	Dr. N. Arunkumar	Associate Professor / EEE, DhanalakshmiSrinivasanEng ineeringCollege, Perambalur	9894949670	narunme26@gmail.com
29.	Mr.A.Vinothkumar	Assistant Professor / EEE, SRI College of Engineering and Technology, Vandavasi.	6379224893	vinothkumareee91@gmail.co m
30.	Dr.G.Madhusudan an	Professor / EEE, SRM Nagar, Kattankulathur, Chengalpattu.	9884413903	madhusudanang.eee@valliam mai.co.in
31.	Dr.G.Haridoss	Associate Professor/EEE, M. A. M College of Engineering and Technology, Siruganur, Trichy	9865481065	haridossg@gmail.com
32.	Dr.S.Albert Alexander	Associate Professor / EEE, Kongu Engineering College, Perundurai, Erode.	9865931597	ootyalex@gmail.com
33.	Dr.K.Arul Kumar	Assistant Professor / EEE, Madanapalle Institute of Technology & Science, Madanapalle- Chittoor District, Andhra Pradesh	9994822651	karuleee@gmail.com
34.	Dr.Mahendran Nagalingam	Professor / HOD, SAINTGITS College of Engineering Kottayam, Kerala	9894243719	drnmpower@gmail.com
35.	Dr.R.Natarajan	Associate Professor /EEE Fatima Michael College of Engineering and Technology, Madurai	9655986026	natarajanrajavel369@gmail.co m
36.	Dr.T Suresh Padmanabhan	Associate Professor, Department of ECE, E.G.S Pillay Engineering College, Nagapattinam.	9444025552	drtsp@egspec.org
37.	Dr.Ra.Selvaganap athy	Assistant Professor / EEE, AVC College of Engineering Mayiladuthurai.	9940621275	selvaganapathyeee@avcceng g.net
38.	Dr.S.S.Kumaresh	Asst.Prof / EEE, University college of Engineering, Kanchipuram.	9940545961	kumareshlive@gmail.com

39.	Dr.R.Murugesan	Assistant Professor / EEE, Annamacharya Institute of Technology and Sciences, Tirupati	9944228455	rmurugesandr@gmail.com
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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	arulpvp@gmail.com
7.	Dr.P.Sathish Babu	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	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@gmail.com

13.	Dr.P.Ajay.D.Vimal Raj	Associate Professor Department of EEE, Pondicherry Engineering College.	9486142839	ajayvimal@pec.edu
14.	Ms.V.Logeshwari	Assistant Professor Department of EEE, Government College of Engineering, Srirangam.	8778727201	logulagam@gmail.com
15.	Dr. S. A.Elankurisil	Professor and Head/ EEE Adhiprasakthi Engineering College, Melmaruvathur,	9442936797	saelankurisil@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@nitpy.ac.in
2	Dr. R .Gunabalan	Associate Professor, School of Electrical Engineering, VIT,Vandalur-Kelambakkam Road, Chennai.	9894919269	gunabalan.r@vit.ac.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
5.	Dr.C.Carunaiselvan	Assistant Professor, Department of Automobile Engineering SRM Institute of Science and Technology, KTR Campus, Chennai	8265804594	carunaic@srmist.edu.in

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@gmail.com
2	Dr.S.R.Sivarasu,	Professor / EEE, Sri Eshwar College of Engineering (Autonomous) Coimbatore.	8056719372 / 9942029372	sivarasu.s.r@sece.ac.in

Specialization		Image Processing		
S.No	Name of the Examiner	Designation & Institution Name	Mobile No	Mail ID
1	Dr. S. Karthick	Associate Professor / EEE, Sengunthar Engineering College, Thudupathi Post, Perundurai, Erode	9486937253	resumekarthick@gmail.com

Specialization		Very Large Scale Integration		
S.No	Name of the Examiner	Designation & Institution Name	Mobile No	Mail ID
1	Dr.T.Venishkunmar	Associate Professor / EEE, Sethu Institute of Technology, Pulloor, Kariapatti – Virudhunagar, Tamilnadu	9095577477	tvenishkumar@gmail.com

Specialization		Control System and Instrumentation		
S.No	Name of the Examiner	Designation & Institution Name	Mobile No	Mail ID
1	Dr.S.N.Sivaraj	Associate Professor/ EEE Velammal Engineering College, Chennai	9944238133/ 9080801268	sivarajsn@gmail.com
2	Dr. P. Manikannan	Professor / EEE, AKT Memorial College of Engineering and Technology, Kallakurichi	9786658571	p.manikannan@gmail.com
4	Mr.P.Jekan	Assistant Professor / EEE, SRM University, Kattankulathur, Chengalpattu.	9884937734	jeganp@srmist.edu.in

Specialization		Applied Electronics		
S.No	Name of the Examiner	Designation & Institution Name	Mobile No	Mail ID
1	Dr. J.P.Srividhya	Associate Professor / EEE, Arunai Engineering College, Tiruvannamalai	9486985422	sriviprakash2007@gmail.com

Specialization		Automotive Technology, Material Science		
S.No	Name of the Examiner	Designation & Institution Name	Mobile No	Mail ID
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ANNEXURE - III



SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE

(An Autonomous Institution)

(Approved by AICTE, New Delhi & Affiliated to Pondicherry University)
(Accredited by NBA-AICTE, New Delhi, Accredited by NAAC with "A" Grade)
Madagadipet, Puducherry - 605 107



DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

M.Tech Power Electronics and Drives

LIST OF STUDENTS AND FACULTIES REGISTERED FOR NPTEL/MOOC COURSES FOR ACADEMIC YEAR 2022-2023

PERIOD	DEPARTMENT	STUDENTS
JULY-OCT 2022	EEE	01

List of student enrolled for NPTEL/MOOC Courses July – October 2022

Sl. No.	Name of the certification course	NPTEL/ Edx / Coursera, etc
1.	Introduction to smart grid	NPTEL



**(COMMON TO ALL ENGINEERING & TECHNOLOGY STREAMS
AND SCIENCE & HUMANITIES)**

COURSE CODE	COURSE TITLE	L	T	P	C
PHD21RMT101	RESEARCH METHODOLOGY	3	1	0	4

Course Category: Foundation Course

a. Preamble:

Today research is of immense importance in every field of life. Hence students need sound initiation in the world of research. Thus, this syllabus is prepared to equip students with the basics of research methodology and also provide them acquaintance with the main ingredients of collection of data, analysis of data, quantitative methods, optimization IPR and report writing.

b. Prerequisite Courses:

This course has no prerequisites

c. Related Courses:

Research and Publication Ethics.

d. Course educational objectives:

To impart knowledge and skills required for research:

- Problem formulation, analysis and solutions.
- Technical paper writing / presentation without violating professional ethics
- Be able to read and interpret statistical information
- Know the basics of different evolutionary algorithms.
- Patent drafting and filing patents.

e. Course Outcomes:

Upon the successful completion of the course, scholar will be able to:

CO Nos.	Course Outcomes	Knowledge level (Based on revised Bloom's Taxonomy)
CO1	Formulate the research problem through fundamentals of research and literature review.	K3
CO2	Identify and apply research design principles and make use of data collection and analysis techniques.	K3
CO3	Apply quantitative methods to solve research problem.	K3
CO4	Analyze the optimization techniques in solving the real problem.	K3
CO5	Interpret the research problem into registering IPR and filing patents.	K2

f. Course Content

UNIT I – INTRODUCTION AND RESEARCH FORMULATION

L-9 + T-2

Introduction to Research: Definitions and Characteristics of Research, Motivation and Objectives, Research Methods vs. Methodology. Types of Research: Descriptive vs. Analytical, Applied vs. Fundamental, Quantitative vs. Qualitative, Conceptual vs. Empirical, Concept of Applied and Basic Research Process, Criteria of Good Research.

Defining and Formulating the Research Problem: Selecting the Problem, Necessity of Defining the Problem, Technique Involved in Defining a Problem.

Literature Review: Objectives of Review of Literature, Importance of Literature Review in Defining a Problem, Primary and Secondary Sources, Reviews, Treatise, Monographs, Patents, Web as a Source, searching in the Web, Critical Literature Review, Identifying Gap Areas from Literature Review and Research Database, Development of Working Hypothesis.

UNIT II – RESEARCH DESIGN, DATA COLLECTION AND ANALYSIS

L-9 + T-4

Research Design: Basic Principles, Need of Research Design, Features of Good Design, Different Research Designs, Experimental Designs, Research Databases, Development of Models, Developing a Research Plan, Exploration, Description, Diagnosis, and Experimentation.

Data Collection and Analysis: Primary and Secondary Data, Methods of Data Collection, Sampling Methods, Data Processing and Analysis Strategies and Tools, Data Analysis with Statistical Packages (Sigma STAT, SPSS for Student's t-test), Testing of Hypothesis (Student's t-test), ANOVA Technique.

UNIT III – QUANTITATIVE METHODS FOR PROBLEM SOLVING

L-9 + T-3

Basic Statistical Distributions and their Applications (No Derivations): Binomial, Poisson, Normal and their Applications in Research Studies. Fundamentals of Statistical Analysis and Inference, Multivariate methods, Concepts of Correlation and Regression Analysis, Fundamentals of Time Series Analysis and Spectral Analysis.

UNIT IV – OPTIMIZATION TECHNIQUES IN SOFT COMPUTING

L-9 + T-4

Optimization Definition, Need and Application, Formulation of Optimization Problems. Introduction to Evolutionary Algorithms, Fundamentals of Genetic Algorithms, Particle Swarm Optimization, Simulated Annealing, Introduction to Neural Networks, Neural Network Based Optimization, Introduction to Fuzzy Sets and Fuzzy Logic, Optimization of Fuzzy Logic.

UNIT V – IPR AND REPORT WRITING

L-9 + T-2

IPR: Intellectual Property Rights and Patent Law, Commercialization, Copy Right, Royalty, Trade Related aspects of Intellectual Property Rights (TRIPS).

Report Writing: Significance of Report Writing, Different Steps in Writing Report, Layout of the Research Report, Types of Reports, Mechanics of Writing a Research Report, Precautions for Writing Research Reports, Oral Presentation, Design of Research Paper, Citation, Plagiarism, Basic Knowledge of funding agencies, Proposal Submission for Funding Agencies.

Total: 60 Hours

g. Learning Resources

i. Reference Books:

1. Jeannette Lawrence, Introduction to Neural Networks: Design, Theory, and Applications, California Scientific Software, sixth edition, 1994.
2. Garg, B.L., Karadia, R., Agarwal, F. and Agarwal, An introduction to Research Methodology, RBSA Publishers, U.K., 2002.
3. Fink, A., Conducting Research Literature Reviews: From the Internet to Paper, Sage Publications, 5th edition, 2009.
4. Dr P M Bulakh, Dr P. S. Patki and Dr A S Chodhary, Research Methodology, Expert Trading Corporation Dahisar West, Mumbai, 2010.
5. Paolo Brandimarte, Quantitative Methods: An Introduction for Business Management, John Wiley & Sons, 2011.
6. Douglas C. Montgomery and George C. Runger. Applied Statistics and Probability for Engineers, 5th edition, John Wiley and Sons, Inc., New York, 2011.
7. Panneerselvam, R. Research Methodology, PHI Publications, Second edition, 2014.
8. Priya Rai, R.K. Sharma, P.K. Jain and Akash Singh, Transforming Dimension of IPR Challenges for New Age Libraries, National Law University Delhi Press, 2015.
9. Timothy J. Ross, Fuzzy Logic with Engineering Applications, Wiley publications, 4th Edition, 2016.
10. C.R. Kothari and Gaurav Garg, “Research Methodology: Methods and Techniques”, New Age International (P) Ltd., Publishers, Fourth Multi Colour Edition, 2020.
11. S.C. Gupta and V.K. Kapoor, Fundamentals of Mathematical statistics, Sultan Chand & Sons, New Delhi, 12th Revised Edition, 2020.
12. Lawrence M. Leemis, Mathematical Statistics, Ascended Ideas, UK, 2020.
13. Sukanta Nayak, Fundamentals of Optimization Techniques with Algorithms, Academic Press, 2020.
14. Singiresu S. Rao, Engineering Optimization: Theory and Practice, New Age International Publishers, 5th edition 2020.

ii. Online resources:

1. https://www.soas.ac.uk/cedep-demos/000_P506_RM_3736-Demo/module/pdfs/p506_unit_01.pdf
2. <https://repository.up.ac.za/bitstream/handle/2263/27704/01chapter1.pdf?sequence=2&isAllowed=y>
3. <http://egyankosh.ac.in/bitstream/123456789/41939/1/Unit-4.pdf>
4. <https://www.formpl.us/blog/data-collection-method>
5. <https://www.questionpro.com/blog/data-collection/>
6. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4485510/>
7. <https://www.questionpro.com/blog/quantitative-research/>
8. https://hls.harvard.edu/content/uploads/2011/12/quantitative_methods.pdf
9. <https://libguides.usc.edu/writingguide/quantitative>
10. <https://mech.iitm.ac.in/nspch52.pdf>
11. <https://www.kdd.org/kdd2016/topics/view/optimization-techniques>
12. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3217699/>
13. <https://iare.ac.in/sites/default/files/M.Tech-RM%20%26%20IPR%20%28ECE%29%20PTS.pdf>



SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE

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Madagadipet, Puducherry - 605 107



(COMMON TO ALL ENGINEERING & TECHNOLOGY STREAMS AND SCIENCE & HUMANITIES)

COURSE CODE	COURSE TITLE	L	T	P	C
PHD21RPT102	RESEARCH AND PUBLICATION ETHICS	2	1	1	4

Course Category: Foundation Course

a. Preamble:

Today research is of immense importance in every field of life. Hence students need sound initiation in the world of research. The ethical pursuit of research in humanities, social sciences and other scientific disciplines is essential to the achievement of robust goals and research outcomes within the academe and it promotes systemic contributions in the field of advanced learning and knowledge generation.

b. Prerequisite Courses:

The course is primarily open to all Ph.D. scholars.

c. Related Courses:

Research Methodology

d. Course educational objectives:

To impart knowledge and skills required for research:

- Provide students with the fundamental knowledge of basics of philosophy of science and ethics, research integrity, publication ethics.
- Hands-on sessions are designed to identify research misconduct and predatory publications.
- Indexing and citation databases, open access publications, research metrics (citations, index, Impact Factor etc.).

e. Course Outcomes:

Upon the successful completion of the course, scholar will be able to:

CO Nos.	Course Outcomes	Knowledge level (Based on revised Bloom's Taxonomy)
CO1	Apply theories and methods in ethics, research ethics and scientific conduct.	K3
CO2	Understand the philosophy of science and ethics, research integrity and publication ethics.	K2

CO3	Identify software tools in open access publishing to check publisher copyright, predatory publications and journal suggestions.	K3
CO4	Acquire skills of presenting arguments and results of ethical inquiries and understand the usage of plagiarism tools.	K3
CO5	Utilize the indexing, citation databases and research metrics (citations, h-index, impact Factor, etc.).	K2

f. Course Content

Unit I: PHILOSOPHY, ETHICS AND SCIENTIFIC CONDUCT

L-8 + T-0

Philosophy, Ethics (3 Hrs.): Introduction to philosophy: definition, nature and scope, concept, branches - **Ethics:** definition, moral philosophy, nature of moral judgments and reactions.

Scientific Conduct (5 Hrs.): Ethics with respect to science and research - Intellectual honesty and research integrity - Scientific misconducts: Falsification, Fabrication and Plagiarism (FFP) - Redundant Publications: duplicate and overlapping publications, salami slicing - Selective reporting and misrepresentation of data.

Unit II: PUBLICATION ETHICS

L-7 + T-0

Publication ethics: definition, introduction and importance - Best practices / standards setting initiatives and guidelines: COPE, WAME, etc. - Conflicts of interest - Publication misconduct: definition, concept, problems that lead to unethical behaviour and vice versa, types - Violation of publication ethics, authorship and contributor ship - Identification of publication misconduct, complaints and appeals - Predatory publisher and journals.

Unit III: OPEN ACCESS PUBLISHING

L-0 + T-4

Open access publications and initiatives - SHERPA/RoMEO online resource to check publisher copyright & self-archiving policies - Software tool to identify predatory publications developed by SPPU - Journal finder / journal suggestion tools viz. JANE, Elsevier Journal Finder, Springer, Journal Suggester, etc.

Unit IV: PUBLICATION MISCONDUCT

L-0 + T-2+P-2

Group Discussion (2 Hrs.): a) Subject specific ethical issues, FFP, authorship b) Conflicts of interest c) Complaints and appeals: examples and fraud from India and abroad.

Software tools (2 Hrs.): Use of plagiarism software like Turnitin, Urkund and other open source software tools.

Unit V: DATABASES AND RESEARCH METRICS

L-0 + T-4+P-3

Databases (4 Hrs.): Indexing databases, Citation databases: Web of Science, Scopus, etc.

Research Metrics (3 Hrs.): Impact Factor of journal as per Journal Citations Report, SNIP, SJR, IPP, and Cite Score - Metrics: h-index, g index, i10 Index, altmetrics.

***Units 1 and 2 are to be covered via Theory mode and Units 3, 4 and 5 are to be covered via Tutorial practice mode.**

Total: 30 Hours

g. Learning Resources

i. Reference Books:

1. Sidney Hook, Miro Todorovich, Paul Kurtz, The Ethics of Teaching and Scientific Research. Weldon Beckner ,1978.
2. Barbara H. Stanley; Joan E. Sieber; Gary B. Melton, Research Ethics: A Psychological Approach, University of Nebraska Press, 1996.
3. Anderson B.H, Dursaton and Poole M, Thesis and assignment writing, Wiley Eastern, 1997.
4. Paul Oliver, The Student's Guide to Research Ethics, Open University Press, 2003.
5. Adil E. Shamoo, David B. Resnik, Responsible Conduct of Research, Oxford University Press, 2003.
6. Bird, A, Philosophy of Science. Routledge, 2006.
7. Nicholas H. Steneck. Introduction to the Responsible Conduct of Research. Office of Research Integrity. 2007.
8. Graziano, A., M., and Raulin, M.,L, Research Methods – A Process of Inquiry, Sixth Edition, Pearson, 2007.
9. Bjorn Gustavii, How to write and illustrate scientific papers, Cambridge University Press.2008.
10. Bordens K.S. and Abbott, B.b, Research Design and Methods, Mc Graw Hill, 2008.
11. National Academy of Sciences, National Academy of Engineering and Institute of Medicine. On Being Scientist: A Guide to Responsible Conduct in Research: Third Edition. National Academies Press. 2009.
12. Jeffrey A. Gliner; George A. Morgan Lawrence Erlbaum Associates, Research Methods in Applied Settings: An Integrated Approach to Design and Analysis, Routledge,2009.
13. Resnik, D. B. What is ethics in research & why is it important. National Institute of Environmental Health Sciences, 2011.
14. Joel Lefkowitz, Ethics and Values in Industrial-Organizational Psychology, Routledge ,2017.
15. P. Chaddah, Ethics in Competitive Research: Do not get scooped; do not get plagiarized,2018.
16. Indian National Science Academy (INSA), Ethics in Science Education, Research and Governance. 2019.
17. Kambadur Muralidhar, AmitGhosh Ashok Kumar Singhvi, Ethics in Science Education, Research and Governance. Indian National Science Academy, 2019.

ii. Online resources:

1. https://www.enago.co.kr/academy/wp-content/uploads/2018/05/Research_Ethics.pub_V2.pdf
2. <https://www.frontiersin.org/about/policies-and-publication-ethics>
3. https://www.researchgate.net/publication/340807930_RESEARCH_AND_PUBLICATION_ETHICS
4. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5508450/>
5. <https://www.iieta.org/Journals/IJSDP/Publication%20Ethics%20and%20Malpractice%20Statement>
6. <http://ignca.gov.in/short-term-certification-course/research-and-publication-ethics/>

Course Objectives

- To get expertise about the design of ANN and Fuzzy set theory.
- To familiarize with the analysis and implementation of ANN and Fuzzy logic for modelling and control of non-linear system.
- To get familiarize with the MAT-LAB tool box.
- To impart the knowledge of various optimization techniques and hybrid schemes with the ANFIS tool box.
- To familiarize about machine learning and its applications

Course Outcomes

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

CO1- Familiarize with the basic architectures of ANN and Fuzzy sets.

CO2- Design and implement ANN architectures, algorithms and know their limitations.

CO3- Identify and work with different operations on the Fuzzy sets.

CO4- Develop ANN and Fuzzy logic based models and control schemes for non-linear systems.

CO5- Apply the machine learning algorithms for an applications

UNIT-I OVERVIEW OF ARTIFICIAL NEURAL NETWORK (ANN) AND FUZZY LOGIC

Review of Fundamentals- Biological neuron, Artificial neuron, Activation function, Single layer Perceptron- Limitations- Multi layer Perceptron- Back propagation algorithm (BPA); Fuzzy set theory- Fuzzy sets- Operation on Fuzzy sets- Scalar cardinality, Fuzzy cardinality, union and intersection, complement (yager and sugeno), Equilibrium points, aggregation, projection, composition, fuzzy relation- Fuzzy membership functions.

UNIT-II NEURAL NETWORKS FOR MODELLING AND CONTROL

Generation of training data- Optimal architecture- Model validation- Control of non-linear system using ANN- Direct and Indirect neuro control schemes- Adaptive neuro controller- Case study- Familiarization of Neural Network Control Tool Box.

UNIT-III FUZZY LOGIC FOR MODELLING AND CONTROL

Modelling of non-linear systems using fuzzy models (Mamdani and Sugeno)- TSK model- Fuzzy Logic controller- Fuzzification- Knowledge base- Decision making logic- Defuzzification- Adaptive Fuzzy systems- Case study- Familiarization of Fuzzy logic Tool Box- Fuzzification and rule base using ANN- Neuro Fuzzy Systems- ANFIS- Case study- Familiarization of ANFIS Tool Box.

UNIT-IV GENETIC ALGORITHM

Basic concept of Genetic algorithm and detail algorithmic steps, adjustment of free parameters- Solution of typical control problems using genetic algorithm- Concept on some other search techniques like Tabu search, Ant-Colony search and Particle Swarm Optimization- Optimization of membership function and rule base using Genetic Algorithm and Particle Swarm Optimization.

UNIT V INTRODUCTION TO MACHINE LEARNING

Basics of machine Learning –Types of Machine Learning - Data Pre-processing and Feature Engineering – Introduction to Regression Algorithms – Linear Regression –Multivariate Linear Regression – Applications.

Text Books

1. Lawrence Fausatt, "Fundamental of Neural Networks", Prentice Hall of India, New Delhi, 1994.
2. Timothy J.Ross, "Fuzzy Logic with Engineering Applications", Wiley, 3rd Edition, 2010.
3. David E.Goldberg, "Genetic Algorithms in Search, Optimization and Machine Learning", Pearson Education, 2009.

Reference Books

1. Jacek.M.Zurada, "Introduction to Artificial Neural Systems", Jaico Publishing House, 1999.
2. Yung C. Shin and Chengying Xu, "Intelligent System-Modelling, Optimization and Control", CRC Press, 2009.
3. Driankov, Hellendroon, "Introduction to Fuzzy Control", Springer-Verlag Berlin, 2nd Edition, 1996.

Web References

1. <https://nptel.ac.in/courses/111/105/111105100/>
2. <https://nptel.ac.in/courses/110/106/110106062/>
3. <https://nptel.ac.in/noc/courses/noc19/SEM2/noc19-ma23/>
4. <https://nptel.ac.in/noc/courses/noc20/SEM1/noc20-ma22/>
5. https://www.tutorialspoint.com/statistics/probability_density_function.htm

Course Objectives

- To familiarize with the fundamental concept of electric vehicle
- To overview the energy storage technologies used for electric and hybrid vehicle.
- To determine various electric drives suitable for electric vehicles.
- To understand about the different power converter topologies used in electric vehicle
- To understand the concept of hybrid and electric vehicle architecture, component sizing and electric motor drive.

Course Outcomes

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

CO1 - Summarize the basics of electric vehicle and its working principle.

CO2 - Combine the different energy storage technologies and its implementation in hybrid vehicle.

CO3 - Develop the hybrid electric vehicle with different power converter topology.

CO4 - Review the working of different configurations of electric vehicle and its concepts

CO5 - Describe the working of different configurations of hybrid vehicles.

UNIT I INTRODUCTION TO EV

History of hybrid and electric vehicles - social and environmental importance - impact of modern drive - trains on energy supplies - Fundamentals of vehicle propulsion and Braking: Dynamic Equation - Power train tractive effort - Vehicle Power Plant and Transmission Characteristics - Vehicle Performance.

UNIT II HYBRID VEHICLE

Classification - Series and Parallel HEVs - Series-Parallel Combination - Advantages and disadvantages Internal Combustion Engines: Reciprocating Engines - Gas Turbine Engine- Design of an HEV: Hybrid Drive train - Sizing of Components.

UNIT III ELECTRIC PROPULSION DRIVE SYSTEMS

Electric drives used in EV/HEV: Induction motor drives - DC motor drives - Permanent magnet motor drives - their Configuration - SRM Drives.

UNIT IV ELECTRIC VEHICLE

Configurations of EV - advantages - EV transmission configuration: Transmission components - gear ratio - EV motor sizing - EV market.

UNIT V ELECTRIC VEHICLE STORAGE TECHNOLOGY

Battery Types - Parameters - Technical characteristics – modelling and equivalent circuit - Methods of battery charging - Fuel cells: Types - Fuel cell electric vehicle – Ultra capacitors - Hydrogen storage systems – Flywheel technology.

Text Books

1. Mehrdad Ehsani, Yimin Gao, Sebastien E.Gay, Ali Emadi, "Modern Electric, Hybrid Electric and Fuel Cell Vehicles", CRC Press, 3rd Edition, 2019.
2. Iqbal Hussain, "Electric and Hybrid Vehicles – Design Fundamentals", CRC Press, 2nd Edition, 2011.

Reference Books

1. K. T. Chau, "Electric vehicle machines and drives: Design, analysis and application", John Willey and Sons Singapore pte. Ltd., 1st Edition, 2015.
2. J. Larminie and J. Lowry, "Electric vehicle technology explained", John Willey & Son Ltd., 2nd Edition, 2012.

Web References

1. <https://nptel.ac.in/courses/108103009/>
2. <https://www.evgo.com/why-evs/types-of-electric-vehicles/>
3. <https://www.electrichybridvehicletechnology.com/>
4. <http://www.ieahev.org/>
5. <https://www.sae.org/learn/content/acad06/>
6. <https://www.intechopen.com/books/electric-vehicles-modelling-and-simulations>



Annexure - V

SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE

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Ph. D Course Work Evaluation Pattern

The Ph.D. candidate shall take the course work examination consisting of written Papers of 3 hours duration each and a maximum mark of 100 for each Paper.

Sl. No	Course	Title of the Course	Credits	Max.Marks		
				CAM	ESM	Total
1	I	Research Methodology	4	-	100	100
2	II	Research and Publication Ethics	4	-	100	100
3	III	Advanced Course	4	40	60	100
4	IV	Advanced Course	4	40	60	100

Table 1 Weightage of Assessment for Mandatory Courses

Title of the Course	Part-A 10X2=20 Marks)	Part-B (5X16=80 Marks)	Total (100 Marks)	Minimum Pass Mark
Research Methodology	10 Questions – Equally Distributed– Each carries TWO Marks.	5 Questions – 2 Questions from each Unit – Internal Choice – All Questions carries 16 Marks each	Part A – 20 Marks and Part B – 80 Marks Total Marks – 100 Marks	60
Research and Publication Ethics	10 Questions – Equally Distributed– Each carries TWO Marks.	5 Questions – 2 Questions from each Unit – Internal Choice – All Questions carries 16 Marks each	Part A – 20 Marks and Part B – 80 Marks Total Marks – 100 Marks	60

For each of the Mandatory courses, the candidates have to appear for an End Semester Examination in each subject conducted by the Controller of examinations for **100 marks**. The passing minimum is **60 marks in the end semester examination**.

Scheme of Evaluation for Advanced Course:

The advanced course is done under the guidance of the Supervisor. For the Continuous assessment marks (**CAM**) the following two components are used for evaluation.

Sl. No	Components	Marks
1	5 Seminars	20
2	3 Test	20
Total CAM		40

Pattern for Seminar Evaluation:

Sl. No	Component	Syllabus	Maxi Marks
1	Seminar - 1	From unit 1	4
2	Seminar - 2	From unit 2	4
3	Seminar - 3	From unit 3	4
4	Seminar - 4	From unit 4	4
5	Seminar - 5	From unit 5	4

Total Marks	20
--------------------	-----------

Table 2 Weightage of Assessment for Advanced Courses

Sl. No	Test	Portion for Test	Test Marks	Duration of Test	Weightage for Internal Marks
1	CAT – 1	2 Units (Unit 1 and 2)	30	1 ½ hours	10***
2	CAT – 2	2 Units (Unit 3 and 4)	30	1 ½ hours	
3	CAT – 3	5 Units (Unit 1 to 5)	60	3 hours	10
Continuous Assessment for advanced courses					20

***A minimum of two tests (CAT 1 and 2) to be conducted for advanced course and, out of them, the best one is to be considered for computation of internal assessment marks.

Question Paper Pattern– Advanced Course Theory

Question paper pattern for CAT and ESE is shown in Table 3 (a) and (b) respectively.

Table 3 (a) Question Paper pattern for CAT 1 and 2

Part-A (5X2=10) 2 Mark Questions	Part-B (2X10=20) 10 Mark Questions	Total Marks (30)
5 (At least two questions from each unit)	2 (out of 4 Questions and at least two questions from each unit)	30

Table 3 (b) Question Paper pattern for CAT 3 and End Semester Examination

Part-A (5X2=10) 2 Mark Questions	Part-B (5X10=50) 10 Mark Questions	Total Marks (60)	Minimum Pass Mark
5 (At least one question from each unit)	5 (at least one question from each unit)	60	30

For each of the courses, the maximum internal mark awarded is **40 marks**. All the candidates have to appear for an **external (Semester) examination** in each subject conducted by the Controller of examinations for **60 marks**. The passing minimum is **30 marks** in the semester examination. The overall passing minimum is **60 marks**.

Research Work Proposal

- ❖ All the above course works of the scholar are to be undertaken as per the academic norms and shall be evaluated by the norms of the Institution.
- ❖ No change in the prescribed course works shall be made without the approval of the DC. The changes in course content/syllabus and grades shall be approved by the Academic Council.
- ❖ Only courses taken after the date of provisional registration shall count towards this requirement. Any courses already passed by the candidate prior to the registration shall not be counted for this purpose.
- ❖ The Ph.D. scholar has to obtain a minimum of 60%, of marks or it's equivalent grade or 6.0 CGPA on 10-point scale in the course work in order to be eligible to continue in the program and to submit the dissertation / thesis.

- ❖ The supervisors are requested to submit the CAT examinations papers [viz. CAT1, CAT2, CAT3] and PPT of all 5 seminars to the Dean Research through the concerned head of the department.
- ❖ The attendance sheet of all the CAT and seminar should be submitted with the signature of the scholar to the Dean Research with the endorsement of the supervisor and concerned head of the department.