VELALAR COLLEGE OF ENGINEERING AND TECHNOLOGY

(An Autonomous Institution Affiliated to Anna University)

Department of Biomedical Engineering

Minutes of Board of Studies Meeting

Name of the Department : Biomedical Engineering Board: BME
Programme (s) : BE-BME
Date, Time & Venue : 12.05.2023, 10:00 am & Board Room, Ground Floor,Main Building
Meeting Number : 09

Agenda of Meeting

1. Review of Regulations 2018 version - 4 and R2022.
2. Review of B.E.-Biomedical Engineering Curriculum under R2018 Version – 4 and R2022.
3. Review of Fifth to Eighth Semester Syllabus for B.E.-Biomedical Engineering under R2018 Version - 4.
4. Framing of Third and Fourth Semester Syllabus for B.E.-Biomedical Engineering under R2022.
5. Approval of NPTEL & Value Added Courses.
6. Any other matters

The members presented in the Board of Studies Meeting is given in Annexure – 01

The chairperson of the Board of Studies welcomed all the members to the meeting for discussing the ammedments in the Regulations and proposed B.E – Biomedical Engineering Curriculum and syllabus under the Regulation 2018 version – 4 and 2022. The items listed in the agenda are taken for discussion one by one. The minutes of the meeting are as follows:

01 – Review of Regulations 2018 version - 4 and R2022.

Discussion:

- Vision and Mission of the Biomedical Engineering Programme was discussed.
- Relative Grading System has been incorporated from the batch of students 2021-2025 (Regulation R2018 Version – 4 Onwards).
- Instead of three CA test two CA test will be conducted and Continous Assessment pattern has been changed.
- Assessment Pattern for Theory, Practical and Practical Inbuilt Courses has been discussed.

The above changes in Regulation 2018 version-4 and R2022 was approved in the last academic Council meeting.

02-Review of B.E.-Biomedical Engineering Curriculum under R2018 Version - 4 and R2022

Discussion:

- Structure of the programme and categorization of courses has been discussed.
- Adoption of Tamil Courses Heritage of Tamils and Tamils & Technology in the first and second semester respectively.
- For the students admitted in the academic year 2021-22 Heritage of Tamils will be offered in second semester and Tamils & Technology will be offered in third semester.
- Lateral entry students need to complete the mandatory courses offered in first and second semesters in third and fourth semester respectively.
- Since the miniproject offered in sixth semester has 3 credits it will be evaluated through continous assessment and end semester assesment by external expert member.
- Human Values and professional ethics will be offered in 7th semester with 3 credits under the category of Humanities and Social Science (HS).
- Two Professional Electives and one Open Elective will be offered from 5th semester to 7th semester respectively.
- Students need to undergo Internship for 3 months to obtain 2 credits in 8th semester. They can go to internship from 2nd semester onwards, accumulation of those will be considered in the 8th semester.
- Minors / Honours and specialization has been introduced in the curriculum. Students can choose 3 extra courses per semester inorder to obtain 18 credits by studying 6 extra courses from 5th to 7th semester inaddition to Professional Electives.
- The proposed Professional Elective course verticals are Healthcare Devices, Signal and Image Processing, Communication & Networks, Mechanics & Systems, Bio Engineering and Healthcare Management.
- The proposed Minor Degree verticals are Fintech and Block chain, Entrepreneurship, Public Administration, Business Data Analytics, Environmental and Sustainability and Artificial Intelligence.
- Proposed Open Elective courses under R2022 are Biotelemetry, Biometric Systems and their applications, Robotics in Medicine, Healthcare Management Systems, Basics of Bioinformatics, Biology for Engineers, Regulatory requirements in Pharmaceutical Industries, Rapid Prototyping, Radiotherapy Basics and Applications, Nanotechnology and Applications.

Resolution:
It is resolved to recommend the Proposed B.E – Biomedical Engineering Curriculum under R2018 Version-4 and R2022 to the Academic Council for approval.

03. Review of Fifth to Eighth Semester Syllabus for B.E.-Biomedical Engineering under R2018 Version - 4.

Discussion: BOS members suggested the following points in the meeting

- Regulatory standards can be included in Hospital Management.
- 8085 processor can be removed and ARM processor can be included in microprocessor and microcontroller course offered in 5th semester.
- Isolation amplifiers can be included in Medical Instrumentation.
- Packaging need to be included in medical device design. Also it is recommended to combine rapid prototyping and medical device design.
- RTOS can be included in unit 3 of the course Embedded Systems & IOT.
- Applications can be included in the unit 5 of Computer Vision.
- Built in Laboratory for Embedded System & IOT has been suggested.
- NABH,ARB standards can be included in Medical Ethics and Standards.
- Troubleshooting course may have maintenance concepts in the syllabus.
- Biostatistics course may have IPR (Intellectual Property Rights) topics.
- Augumented Reality can be added with Virtual Reality in Medicine.
- It is recommended to include Body Area Networks, Healthcare Analytics, Biomimetics and Forensic Science in Healthcare courses as Professional Electives in the corresponding verticals.
- ICU and Operation Theatre Equipments can be merged with Surgical Assist Devices.
- Concepts of Radiological Imaging Techniques can be merged with Radiological Equipment.
- Medical Therapeutic Equipments can be included Medical Instrumentation I and Medical Instrumentation II proposed in 5th and 6th semester respectively.
- Medical Instrumentation I and II Laboratory can be combined.
- Latest editions need to be checked in all the reference books and text books.
- Optical Concepts and content similarity need to be checked for the courses Biophotonics and Ophthalmology Equipments.

Resolution:
It is resolved to recommend the changes in R2018 version -4 syllabus of the proposed B.E Biomedical Engineering programme and the same is submitted to the Academic Council for approval.

04. Framing of Third and Fourth Semester Syllabus for B.E.-Biomedical Engineering under R2022.

Discussion: Points suggested by the members

- Selection Criteria and Propagation of Errors can be included in the unit 1 of Sensors and Measurements.
- Signal Conditioning System and Advanced Sensors can be included in unit 5 of Sensors and Measurements course.
- Dental & Retinal Implants can be included in the fourth unit of Biomaterials and Artificial Organs course.
- Latest editions need to be checked in all the reference and text books.

Resolution:
It is resolved to recommend the changes in R2022 syllabus of the proposed B.E Biomedical Engineering programme and the same is submitted to the Academic Council for approval.

05. Approval of NPTEL & Value Added Courses.

Discussion:

- Students can opt NPTEL courses form 1st semester onwards.
- Internal Evaluation Committee (IEC) comprises of department NPTEL coordinator, Board of Studies coordinator and Head of the department. IEC will recommend the NPTEL courses that are not covered in the entire curriculum.
- The list of courses recommended to credit transfer for the period of December 2022 to April 2023 was discussed in the meeting.
- Industry Supported Value Added Courses for credit transfer has been discussed in the meeting.
- Students can attend 3 value added courses (each carries one credit) for the excepmtion of one Professional Elective course.

Resolution: It is resolved to recommend the proposed NPTEL and Value Added Courses for B.E Biomedical Engineering programme and the same is submitted to the Academic Council for approval.

The chairperson of Board of Studies agreed and assured to incorporate the changes wherever possible.

The chairperson of Board of Studies thanked all the members for their valuable suggestions and coordination.

12/5/23

Chairperson-BoS

Chairperson - BoS
Dept. of BME - VCET

Annexure - 01

VELALAR COLLEGE OF ENGINEERING AND TECHNOLOGY
(An Autonomous Institution, Approved by AICTE, New Delhi & Affiliated to Anna University)
Thindal (PO), Erode – 638012.
Ph: (0424) 2244201 - 204, **FAX:** 0424 2244205, **Email:** principal@velalarengg.ac.in

Board of Studies Meeting
Attendance

Name of the Department : Biomedical Engineering

Meeting No : 09

Date & Time : 12.05.2023 & 10.00 a.m.

Venue : Board Room, Ground Floor, Main Building, VCET.

Sl.No.	Name	Category	Signature
1.	Dr.S.Mangai	Chairperson	
2.	Dr.B.Padmapriya	University Nominee	
3.	Dr.A.Mythili	Academic Council Nominee	
4.	Dr. R.Vanithamani		
5.	Mr.M.Sathish Kumar	Industry / Corporate Sector	
6.	Dr.S.R.Tiruvalavan		
7.	Mr.S.Jayamaruthi	Alumnus	
8.	Dr.N.Jeyashanthi	Internal Members	
9.	Dr.S.K.Manikandan		
10.	Dr.P.Ravikumar		
11.	Dr.M.Ponni Bala		
12.	Dr.J.Rajalakshmi		
13.	Dr.S.Sudha		
14.	Mrs.C.Radhika		
15.	Mrs.D.Sasipreetha		
16.	Mr.K.Rajaram		

17.	Mr.N.N.Baalakumar	Internal Members	
18.	Mrs.P.Georgia Chris Selwyna		12/5/23
19.	Mrs.S.Maheswari		12/5/23
20.	Mrs.S.Yamuna Devi		12/5/23
21.	Mr.S.Govindaraj		12/5/23
22.	Ms.R.Indhumathi		12/5/23
23.	Mrs.A.Kalyani		12/5/23
24.	Mr.R.Saravanakumar		12/5/23
25.	Mr.V.Loganathan		12/5/23
26.	Mrs.M.Sharmila		AB

12/5/23

Chairperson - BoS (BME)

Chairperson - BoS
Dept. of BME - VCET

VELALAR COLLEGE OF ENGINEERING AND TECHNOLOGY

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Department of Civil Engineering

Minutes of Board of Studies Meeting

Name of the Department	: Civil Engineering	Board: Civil Engineering
Programme (s)	: B.E. CE	
Date, Time & Venue	:12-05-2023, 10.00 a.m.& GD Hall - 01	
Meeting Number	: 08	

Agenda of Meeting

1. Review of Syllabus under R2018 Ver-4.
2. Framing of Verticals for Honors and Minor Degree under R2018 Ver-4.
3. Revision of curriculum under R2022.
4. Framing of Syllabus under R2022 for semester III & IV.
5. Adoption of Tamil Courses
6. Approval of online courses chosen by the students for credit transfer.
7. Any other matters.

The members presented in the Board of Studies Meeting is given in Annexure – 01

The chairman of the Board of Studies welcomed all the members to the meeting for reviewing of syllabusand framing of verticals for honors and minor degree under R2018 Ver-4 and reviewing of curriculum and framing of syllabus under R2022.Theitems listed in the agenda are taken for discussion one by one. The following points were reviewed and approved. The points suggested by the members were as follows:

01 – Review of syllabus under R2018 Ver-4.

Discussion:

1. In the fifth Semester, 21CET53–Foundation Engineering, include topic eccentric footing in Unit 3.
2. In the Sixth semester, 21CET62 – Structural analysis II, include Introduction to Finite Element method in unit 5.
3. In the Seventh Semester, 21CET72 – Estimation and Quantity surveying, Include estimation of commercial building in unit 1.

Resolution: It is resolved to recommend the syllabus under R2018 Ver-4 to the Academic Council for approval.

02 - Framing of Verticals for Honors and Minor Degree under R2018 Ver-4

The courses titled under the Vertical Environment and Sustainability are

1.Sustainable infrastructure Development
2.Sustainable Agriculture and EnvironmentalManagement
3. Sustainable Bio Materials
4.Materials for Energy Sustainability
5.Green Technology
6. Environmental Quality Monitoring and Analysis
7. Integrated Energy Planning for Sustainable Development
8.Energy Efficiency for SustainableDevelopment

shall be offered for the students of Civil and other departments for the awarding Honors and Minor degree.

Resolution: It is resolved to recommend the syllabus under Verticals for Honors and Minor Degree under R2018 Ver-4 to the Academic Council for approval.

03. Revision of curriculum under R2022

The Curriculum R2022 was approved as presented.

04. Framing of Syllabus under R2022 for semester III & IV.

The syllabi for the III & IV semester courses under R2022 were approved as presented.

05. Adoption of Tamil Courses

Discussion

The course titled

1. தமிழர்மரபு(Heritage of Tamils) &
2. தமிழரும்தொழில்நுட்பமும் (Tamils and Technology)

shall be offered for the Civil Engineering students by the Department of Science and Humanities as per recommendations Anna University.

Resolution: It is resolved to recommend the above courses under R2022 to the Academic Council for approval.

06. Approval of online courses chosen by the students for credit transfer.

Discussion: As per R2018 Ver-4 and R2022, students can offer four online learning courses provided through SWAYAM /NPTEL/MOOCS platform for the purpose of two course exemption in seventh semester and two course exemption for minor degree.

Resolution: It is resolved to approve the online courses offered by SWAYAM /NPTEL chosen by the students for credit transfer.

07. Any other Matters

Common points suggested by the members as concluding remarks

1. The Latest edition of text books, reference books and Codebooks shall be prescribed for all the courses.
2. It is suggested to add case studies for the courses such as Prefabricatedstructures, Repair and rehabilitation of structures.
3. Internship of four weeks duration must be allowed to start from the 4^{th} semester onwards and the report is submitted during 8^{th} semester.
4. It is suggested that the project work be carried out either in-house or in industry.

The chairman of Board of Studies thanked to all the members for their valuable suggestions and coordination

Chairman-BoS

Chairperson - BoS
Dept. of CE - VCET

Annexure - 01

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Ph: (0424) 2244201 - 204, **FAX:** 0424 2244205, **Email:** principal@velalarengg.ac.in

Board of Studies Meeting
Attendance

Name of the Department : Civil Engineering
Meeting No : 08
Date & Time : 12-05-2023 & 10.00 AM
Venue : GD Hall -01

Sl.No.	Name	Category	Signature
1.	Dr.E.Ravi	Chairman	
2.	Dr. K.Ramadevi	University Nominee	
3.	Dr.S.P.Jeyapriya	Academic Council Nominee	
4.	Dr.P.Rama Mohan rao		
5.	Er.G.Chandrasekaran	Industry / Corporate Sector	
6.	Er.VArunPrabhu,	Alumnus	
7.	Dr.C.Karthik	Internal Members	
8.	Dr.D.Sakthivel		
9.	Ms.A.Anitha		
10.	Mr.S.Suresh		
11.	Mr.S.C.Sarath Kumar		
12.	Mr.C.Pranesh		
13.	Mr.S.Ramesh Kumar		
14.	Ms.D.Dharani		

Chairman - BoS (Civil)
Chairperson - BoS
Dept. of CE - VCET

VELALAR COLLEGE OF ENGINEERING AND TECHNOLOGY

(An Autonomous Institution Affiliated to Anna University)

(Accredited by NAAC with Grade "A+" & Accredited by NBA under Tier 1)

Department of Computer Science and Engineering

Minutes of Board of Studies Meeting

Name of the Departments: B.E-CSE, B.Tech - AI & DS, B.E - CSE (AI & ML)
Board: Computer Science and Engineering
Date, Time & Venue : 13.05.2023, 09:30 AM, Board Room, VCET
Meeting Number : 09

Agenda of Meeting:

1. Review of the previous meeting minutes.
2. Review and Ratification of Curriculum and Syllabus under R2018 ver.4.
3. Framing of Curriculum and Syllabus for 2nd Year B.E.-CSE & B.Tech. AI&DS under R2022.
4. Framing of Curriculum and Syllabus for 1st Year B.E.-CSE (AI &ML) under R2022.
5. Review of M.E.-Computer Science and Engineering Curriculum and Syllabus under R2022.
6. NPTEL Credit Transfer Subjects & Equivalence Grade.
7. Any other matters.

The list of members present in the Board of Studies Meeting is given in Annexure – 1:

The BoS-Chairperson welcomed all the members to the 9th meeting of Board of Studies. The meeting was started by Presenting the Department Vision, Mission, PEO, POs and PSOs and reviewed the previous meeting minutes. The items listed in the agenda are taken for discussion one by one. The minutes of the meeting are as follows.

1. Review and Ratification of Curriculum and Syllabus under R2018 ver.4.

Discussion

- The Chairman proposed the approval of the new UG Programme B.E.-CSE (AI &ML).
- She also elaborated the directives for registration of Professional Elective Courses from Verticals. The procedure for registration of courses for B.E./ B.Tech (Honours) or Minor as per Regulations 2018 was discussed.
- As per the discussions made in the 8th BoS meeting and considering the inputs from the BoS members, the AICTE model curriculum, curriculum of reputed institutions, stakeholders, the autonomous regulation of the college, the curriculum is presented.
- Dr.S.Russia and Dr.S.Sadesh – BoS coordinator CSE and AI & DS presented the curriculum and the syllabus of the regulation R2018 ver.4 and R2022.
- Dr. P.Varalakshmi and Dr. M.Suguna suggested that Course "Automata Theory and Compiler Design" offered in Semester VI must be offered as separate courses with 4

credits. They suggested to offer "Theory of Computation" and " Compiler design" in subsequent semesters.

- Dr. M.Suguna suggested that the Course "Microprocessor and Microcontroller " can be removed from Semester V and include " Theory of Computation"
- Mr.Shanmugavel Subramani, Industry Expert suggested that courses can be supported with more industry relevant tools such as kaggle, kubernetes and dockers.
- Mr. Roy Antony Arnold, Industry expert suggested to include courses such as
  - ✓ R Programming
  - ✓ Java Fx / Java Spring
  - ✓ Data Visualization tools - Power BI / Tableau

may be included as value added course that are highly recommended in industries in current scenario.

- BoS members insisted on ensuring the prerequisites, credits and related credentials for all the subjects.
- The members suggested for ensuring the latest / reprint editions of Text books for all the courses.

The Proposed verticals for electives and respective syllabus were discussed:

Course Code	Course Title	Discussion and Recommendations by BoS
Vertical I - Data Science		Dr. P.Varalakshmi suggested that the course Neural Networks may be replaced by Social Network Analysis Dr.M.Suguna suggested that the course Computer Vision may be replaced with Data Warehousing and Data Mining.
21CSE01	Exploratory Data Analysis	
21CSE02	Text and Speech Analytics	
21CSE03	Neural Networks	
21CSE04	Information Retrieval	
21CSE05	Computer Vision	
21CSE06	Business Intelligence	
21CSE07	Image and Video Analytics	
21CSE08	Recommender Systems	
Vertical – II Artificial Intelligence and Machine Learning		Dr. P.Varalakshmi Neural Networks may be replaced by Social Network Analysis Mr. Roy Antony Arnold G suggested to replace the Reinforcement Learning with Prompt Engineering.
21CSE09	Knowledge Engineering	
21CSE10	Text and Speech Analytics	
21CSE11	Neural Networks	
21CSE12	Reinforcement Learning	
21CSE13	Computer Vision	
21CSE14	Natural Language Processing	
21CSE15	Cognitive Science and Analytics	
21CSE16	Deep Learning	

2. Framing of Curriculum and Syllabus for Semester III & IV under R-2022 B.E CSE Discussion

- As per the guidelines from Anna University, two courses "Heritage of Tamils & Tamils and Technology" are included in R-2022.

The following courses were presented for the review and approval:-

Semester III	
22CSC31	Foundations of Data Science
22CST32	Data Structures using Python
22CST31	Java Programming
22CSC32	Digital Design and Computer Organization
22CSL31	Java Programming Laboratory
22CSL32	Data Structures using Python Laboratory
Semester IV	
22CSC41	Operating Systems
22CST41	Database Management Systems
22CST42	Design and Analysis of Algorithms
22CSC42	Object Oriented Software Engineering
22CST43	Web Programming
22CSL41	Database Management Systems Laboratory
22CSL42	Web Programming Laboratory

- Mr. Roy Antony Arnold G suggested that in the course "22CSC31- Foundations of Data Science" the installation and exploring the features of python packages need not be included as an experiment.

Resolution

It is resolved to recommend the Syllabus under R-2022 to the Academic Council for approval.

Vertical – III Full Stack Development		Dr.M.Suguna Pointed that the case studies can be removed in Unit I in UI/UX Design. Mr. Roy Antony Arnold G suggested for the replacement of the course "Principles of Programming Languages" with Course on specific framework like Node JS / Angular JS / React JS.
21CSE09	Cloud Computing	
21CSE17	Application Development	
21CSE18	Service Oriented Architecture	
21CSE19	UI/UX Design	
21CSE20	Devops	
21CSE21	Software Testing and Automation	
21CSE22	Principles of Programming Languages	
21CSE23	Python Web Development	
Vertical – IV Cloud Computing and Data Processing Technologies		The experts suggested to replace "Data Warehousing" with "Edge and Fog Computing" The industry experts suggested the course "Software Defined Networks" may be replaced with "Devops and Site Reliability Engineering".
21CSE24	Cloud Computing	
21CSE25	Distributed Computing	
21CSE26	Data Warehousing	
21CSE27	Security and Privacy in cloud	
21CSE28	Software Defined Networks	
21CSE29	Cloud Services Management	
21CSE30	Information Storage Management	
21CSE31	Virtualization	
Vertical – V Emerging Technologies		Dr.C.Gunavathi suggested the course on "Human Computer Interaction" may be offered instead of "Quantum Computing". Dr. P.Varalakshmi suggested that neural networks may be replaced with GUI-Graphical User Interface. Mr.Shanmugavel Subramani suggested to that "Block chain technologies can be offered as " "Fintech and Block Chain Technologies" and subsequently the Fintech module can be included in the syllabus. The experts ensured that "Game development" syllabus must include the study and use game processing engines modules.
21CSE32	Augmented Reality / Virtual Reality	
21CSE02	Quantum Computing	
21CSE03	Neural Networks	
21CSE33	Robotics	
21CSE34	Block chain Technologies	
21CSE35	Game Development	
21CSE36	3D Printing and Design	
21CSE31	Deep Learning	
Vertical – VI Networking and Cyber Security		Dr. P.Varalakshmi Adhoc and Wireless Sensor Networks Dr.C.Gunavathi suggested to replace "Mobile Computing " with "Mobile Communication" Dr. M.Suguna insisted that "Internet of Things" must be included as a separate course.
21CSE37	Ad-hoc Networks	
21CSE38	Mobile Computing	
21CSE39	Ethical Hacking	
21CSE19	Security and Privacy in Cloud	
21CSE40	Software Defined Networks	
21CSE41	Cyber Forensics	
21CSE42	Wireless Sensor Networks	
21CSE43	Information Security	

Resolution: It is resolved to recommend the ratified Syllabus under R-2018 Ver 4 to the Academic Council for approval.

3. Framing of Curriculum and Syllabus for Semester III & IV under R-2022 B.Tech.AI& DS

Discussion

- As per the guidelines from Anna University, two courses "Heritage of Tamils & Tamils and Technology" are included in R-2022

The following courses were presented for the review and approval:-

Semester III	
22ADT31	Foundations of Data Science
22ADC31	Data Structures using Python
22ADT32	Java Programming
22ADC32	Digital Design and Computer Organization
22ADL31	Java Programming Laboratory
22ADL32	Data Science Laboratory
Semester IV	
22ADT41	Design and Analysis of Algorithms
22ADC41	Operating Systems
22ADT42	Database Management Systems
22ADT43	Data Mining and Modeling
22ADT44	Fundamentals of Artificial Intelligence
22ADL41	Artificial Intelligence Laboratory
22ADL42	Database Management Systems Laboratory

- Dr. P.Varalakshmi suggested to include the experiments for implementation of doubly linked list , sorting algorithms in the course "22ADC31 - Data Structures using Python "
- She added that the syllabus for the course "Data Mining and Modeling" may include the topic on "Ensemble Modeling".
- Mr. Roy Antony Arnold G suggested that the students must be practiced to write the unit test cases for each application / Experiment.

Resolution

It is resolved to recommend the Syllabus under R-2022 to the Academic Council for approval.

4. Framing of Curriculum and Syllabus for Semester I & II under R-2022 B.E CSE (AI & ML)

Discussion

BoS members reviewed the curriculum and syllabus of B.E – CSE (AI & ML) I and II Semester under R-2022 and recommended as below:

S.No	Course Code & Title	Recommendation by BoS members
1	22CST11 & Python Programming	• Mr. Roy Antony Arnold G, Industry expert suggested that the students must be given practice to create and use coding repository like GitHub platform in the earlier semesters. • He added that this will help the students to enable an easy access and increased count of repository in their final semesters.
2	22CSL11 & Python Programming Laboratory	

Resolution

It is resolved to recommend the Syllabus under R-2022 to the Academic Council for approval.

5. NPTEL Credit Transfer Subjects & Equivalence Grade.

List of courses that the students can opt for exemption under NPTEL is presented and the same is approved by the members.

- NPTEL Equivalence Grade for credit transfer is approved by the members.

The Board of Studies has approved to offer MSME courses equivalence to open elective courses for the third and final year students.

6. Any other Matters

Framing of Syllabus for FOR B.E. / B. TECH. (HONOURS) / MINOR DEGREE

The following courses were presented for the review and approval:-

Course Code	Course Title	Discussion and Recommendations by BoS
Vertical IV- Business Data Analytics		Mr. Roy Antony Arnold G, Industry expert suggested that the course Marketing and Social Media Web Analytics may be replaced by Digital Marketing and Social Network Analytics and Operation and the course Supply Chain Analytics may be replaced by Supply Chain Analytics
	Statistics for Management	
	Data mining for Business Intelligence	
	Human Resource Analytics	
	Marketing and Social Media Web Analytics	
	Operation and Supply Chain Analytics	
	Financial Analytics	
Vertical – VI Artificial Intelligence		Dr. P.Varalakshmi suggested that the course Neural Networks may be replaced with Data Warehousing and Data Mining. Mr. Roy Antony Arnold G, Industry expert suggested that the course Game Theory may be replaced with Gamification.
	Introduction to Data Science	
	Principles of Artificial Intelligence	
	Neural Networks	
	Machine Learning Techniques	
	Expert Systems	
	Cognitive Science	
	Game Theory	

Resolution

It is resolved to recommend the Syllabus under R-2022 to the Academic Council for approval.

The BoS-Chairperson thanked all the members for their valuable suggestions and contributions.

BoS-Chairperson

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Board of Studies Meeting

Attendance

Name of the Department : **Computer Science and Engineering**
Meeting No : **09**
Date & Time : **13.05.2023 & 9.30 am**
Venue : **Board Room**

Sl.No.	Name, Designation & Address	Category	Signature
1.	Dr.S.Jabeen Begum, Professor & Head/CSE	Chairman	13/5/23
2.	Dr. M.Suguna, Assistant Professor (Sr.Gr), School of Computer Science and Engineering (SCOPE), Vellore Institute of Technology, Chennai Campus.	University Nominee	13/5/23
3.	Dr. P.Varalakshmi, Professor, Department of Computer Technology, Madras Institute of Technology, Anna University, Chennai-600 025.	Academic Council Nominee	13/5/2023
4.	Dr.C.Gunavathi, Professor, School of Computer Science and Engineering, Vellore Institute of Technology, Vellore		13/5/23
5.	Mr. Roy Antony Arnold G, Senior Consultant, Infosys, No.TP 1/1,Techno Park SEZ, Central Avenue, Mahindra World City, Natham Sub Post, Chengalpattu, Chennai.	Industry / Corporate Sector	13/5/23
6.	Mr.Shanmugavel Subramani, Director of Engineering, YUBI(formerly CREDAVENUE), Chennai.	Alumnus	13/05/23
7.	Dr. S. Sadesh, Professor & Head, Department of AI&DS, E-mail: sadeshcse.velalar@gmail.con Mobile: 9940704014	BoS Coordinator Dept. of AI&DS	13/5/23
8.	Dr.S.Russia, Proefessor, Department of CSE, russiavcet@gmail.com 9943005802	BoS Coordinator Dept. of CSE	13/5/23
9.	Dr. V. Latha Jothi, Professor / CSE	Internal Members	13/5/23
10.	Dr. S .Kayalvili, Professor / CSE		13/5/23
11.	Dr.R.Vijayarajeswari, Professor / CSE		13/5/23
12.	Dr. S. Gokulraj, ASP / CSE		13/5/23
13.	Dr.V.Kavitha, ASP / CSE		13/5/23

Sl.No.	Name, Designation & Address	Category	Signature
14.	Ms. M. Mohanasundari, AP / CSE		
15.	Ms. K. Vijaya, AP / CSE		
16.	Ms. C. Kotteeswari, AP / CSE		
17.	Mr. S.Vivekanandan, AP / CSE		
18.	Ms. S. Nithya, AP / CSE		
19.	Ms.M.Thilagarani, AP / CSE		
20.	Ms.R.Vishalakshi, AP / CSE		
21.	Mr.A.P.Gopu, AP / CSE		
22.	Mr.S. Senthilnathan,,AP/CSE		
23.	Ms.I. Nivetha,,AP/CSE		
24.	Ms.R. Vidhya, AP/CSE		
25.	Ms.V. Raaga Varsini, AP/CSE		
26.	Ms.K.Keerthana, AP/AI&DS		

VELALAR COLLEGE OF ENGINEERING AND TECHNOLOGY

(An Autonomous Institution Affiliated to Anna University)

Department of ECE

Minutes of Board of Studies Meeting

Name of the Department	:	**ECE**	Board: **ECE**
Programme (s)	:	**B.E - ECE**	
	:	**M.E – Applied Electronics**	
Date, Time & Venue	:	**13-05-2023 10.30am – Seminar Hall**	
Meeting Number	:	**08**	

Agenda of Meeting

1. Review of Regulation under R2018 Version – 4 and R 2022.
2. Review of Curriculum under R-2022 for B.E-ECE
3. Review of third and fourth semester Syllabus under R-2022
4. Review of B.E – ECE Curriculum and Verticals under R-2018 Version-4
5. Summary of credits.
6. Review of Curriculum under R-2022 for M.E-Applied Electronics
7. Review of third and fourth semester Syllabus under R-2022
8. Summary of credits.
9. Any other matters.

The list of members present in the Board of Studies Meeting is given in Annexure – 01

The Chairperson of the Board of Studies welcomed all the members to the meeting for reviewing the curriculum and syllabi under the Regulations 2018 Version 4 and Regulation 2022. The items listed in the agenda were taken for discussion one by one. The minutes of the meeting are as follows:

01 - Review of Curriculum & Syllabi under R2018 Version 4 (BE-ECE)

Discussion:

The entire curriculum and syllabus from 1st to 8th semesters of BE-ECE under R2018 Version 4 were reviewed.

Regulation 2018 Version 4 has been modified for Relative Grading, B.E / B.Tech (Honors) B.E / B.Tech with Minor degree and introduction of verticals.

Verticals:

It is suggested to replace the course titled "IP based VLSI Design" under the Vertical VI Semiconductor chip design and testing by "CAD for VLSI".

Resolution:

It is resolved to incorporate the changes mentioned by BoS members

02 - Review of Curriculum & Syllabi under R2022 (BE-ECE)

Discussion:

The entire curriculum from 1st to 8th semesters of BE-ECE under R2022 was reviewed. The syllabi of third and fourth semester courses under R2022 of BE-ECE were reviewed.

Semester 1:

1.1 The BOS members suggested to swap the courses "22ECT11 Semiconductor Devices" from first semester to the second semester and the course in the second semester "22ECT21 Electrical and Instrumentation" to first semester.

Semester 2:

1.2 BoS members suggested to remove the following courses from the curriculum and suggested to add "Programming in C" and Programming in C Laboratory" courses.

i. 22PHT23 Physics for Electrical Sciences
ii. 22PHL21 Physics and Chemistry Laboratory II

Semester 3:

1.3 For the course titled "22ECT31 - Signals and Systems", the order of the units 2, 3 and 4 may be shuffled. The topic in Unit2, "signal modeling using Scilab" may be changed as "Signal modeling".

1.4 The course titled "22ECT33 - Digital System Design" can be modified as "22ECT33 - Digital Electronics".

Semester 4:

1.5 The topic "Time response analysis using MATLAB" from the course titled "22ECT42 - Control Systems" can be changed as "Time response analysis" in unit 2 and the topic "Frequency response analysis using MATLAB" can be changed as "Frequency response analysis" in unit 3.

1.6 The topics "Applications of adaptive filtering" and "DSP Architecture" from the course titled "22ECT43 – Digital Signal Processing" may be removed from unit 5. Instead, the topic "Filter Banks" may be included.

1.7 The number of credits in the semester is high and the number of laboratory courses may be reduced. Hence, the combined course "22ECC41 Linear Integrated Circuits and applications" may be changed to "22ECT44 Linear Integrated Circuits and applications"

Resolution:

It is resolved to incorporate the changes mentioned by BoS members.

03- Review of entire Curriculum and syllabi of 3rd and 4th semesters of ME-AE Programme under R2022.

Discussion:

The entire curriculum for 1st to 4th semesters of ME-AE programme under R2022 was reviewed. The syllabi of third and fourth semester courses under R2022 of ME-AE were reviewed.

Resolution:

It is resolved to continue the same curriculum and syllabus under R2022 for ME-AE programme.

The Chairperson of Board of Studies thanked all the members for their valuable suggestions and coordination.

Chairperson-BoS

15/5/23

Annexure - 01

VELALAR COLLEGE OF ENGINEERING AND TECHNOLOGY
(An Autonomous Institution, Approved by AICTE, New Delhi & Affiliated to Anna University)
Thindal (PO), Erode – 638012.
Ph: (0424) 2244201 - 204, **FAX:** 0424 2244205, **Email:** principal@velalarengg.ac.in

Board of Studies Meeting
Attendance

Name of the Department : Electronics and Communication Engineering
Meeting No : 08
Date & Time : 13.05.2023 & 10.30 a.m.
Venue : Seminar Hall

Sl.No.	Name	Category	Signature
1.	Dr.M.Nisha Angeline	Chairperson	13/5/23
2.	Dr. D.Deepa	University Nominee	13/5/23
3.	Dr.P.Palanisamy	External Expert Members	13.5.2023
4.	Dr.S. RenugaDevi		
5.	Mr.B.Sethupathi	Industry / Corporate Sector	
6.	Mr.R. Sridhar		Not Present
7.	Mr. S.S.Gokul Nathan	Alumnus	
8.	Dr. K.R. Valluvan	Internal Members	13.05.23
9.	Prof. P. Jayachandar		13.5.23
10.	Dr.K.Venkatachalam		13/5/23
11.	Dr.S.Mahendra Kumar		13/5/23
12.	Dr.K.SenthilPrakash		13/5/23
13.	Dr.S. Rajan		13/5/23
14.	Dr.V.Gowrishankar		13/5
15.	Dr.M. Parimala Devi		
16.	Mr.P.Senthil Kumar		13.5.23
17.	Ms.S.Aiswarya		13/5/23

Chairperson - BoS/ECE
13/5/23

VELALAR COLLEGE OF ENGINEERING AND TECHNOLOGY

(An Autonomous Institution Affiliated to Anna University)

Department of Electrical and Electronics Engineering

Minutes of Board of Studies Meeting

Name of the Department: Electrical and Electronics Engineering Board: EEE
Programme (s) : BE-EEE
Date, Time & Venue : 13.05.2023, 11:00 am & GD Hall-2, Second Floor, Main Building
Meeting Number : 07

Agenda of Meeting

1. Review of Regulations 2018 version – 4 and R2022.
2. Review of Curriculum under R2018 Version – 4 and R2022.
3. Review of Fifth to Eighth Semester Syllabus under R2018 Version – 4.
4. Framing of Third and Fourth Semester Syllabus under R2022.
5. Approval of NPTEL and Value-Added Courses.
6. Any other matters

The members present in the Board of Studies Meeting is given in Annexure – 01

The chairperson of the Board of Studies welcomed all the members to the meeting for discussing the amendments in the Regulations and proposed B.E – Electrical and Electronics Engineering Curriculum and syllabus under the R2018 version – 4 and R2022. The items listed in the agenda are taken for discussion one by one. The minutes of the meeting are as follows:

01 – Review of Regulations 2018 version – 4 and R2022.

Discussion:

- Vision and Mission of the Electrical and Electronics Engineering Programme was discussed.
- Relative Grading System has been incorporated from the batch of students 2021-2025 (Regulation 2018 Version – 4 onwards).
- Instead of three Continuous Assessment test, two Continuous Assessment test will be conducted and Continuous Assessment pattern has been changed.
- Assessment Pattern for Theory, Practical and Practical Inbuilt Courses has been discussed.

The above changes in Regulation 2018 version – 4 and R2022 was approved in the last academic council meeting.

02 – Review of B.E. – Electrical and Electronics Engineering Curriculum under R2018 Version – 4 and R2022

Discussion:

- Structure of the Programme and categorization of courses has been discussed.
- Adoption of Tamil Courses Heritage of Tamils, Tamils and Technology in the first and second semester respectively.
- For the students admitted in the academic year 2021–22 Heritage of Tamils will be offered in second semester and Tamils and Technology will be offered in third semester.
- Lateral entry students need to complete the mandatory courses offered in first and second semesters in third and fourth semester respectively.
- Since the mini-project offered in sixth semester has 3 credits, it will be evaluated through continuous assessment and end semester assessment by external expert member.
- Universal Human Values and Professional Ethics will be offered in 7^{th} semester with 3 credits under the category of Humanities and Social Science (HS).
- Two Professional Electives and one Open Elective course will be offered from 5^{th} semester to 7^{th} semester respectively.
- Students need to undergo Internship for 3 months to obtain 2 credits in 8^{th} semester. They can go to internship from 2^{nd} semester onwards, accumulation of those will be considered in the 8^{th} semester.
- Minors / Honours and specialization has been introduced in the curriculum. Students can choose 3 extra courses per semester in order to obtain 18 credits by studying 6 extra courses from 5^{th} to 7^{th} semester in addition to Professional Electives.
- The proposed Professional Elective course verticals are Power Engineering, Converters and Drives, Embedded System, Instrumentation Engineering, Electric Vehicle Technology and Diversified Courses.
- The proposed Minor Degree verticals Fintech and Block chain, Entrepreneurship, Public Administration, Business Data Analytics, Environmental and Sustainability and Artificial Intelligence are discussed.
- Proposed Open Elective courses under R2022 are Domestic and Industrial Electrical Installations, Renewable Energy Sources, Electric Vehicles, Energy Auditing and Conservation.
- Improve collaborative research.
- Conduct technical events for the students by inviting industrial experts.

- Identify the students those who are interested in doing projects and research from 2nd year onwards and encourage them to do the same.
- Conduct FDP programmes in thrust areas for the faculty members by inviting industrial experts and Academic experts.
- Introduction of Mentor–Mentee system with Alumnus.

Resolution:

It is resolved to recommend the Proposed B.E – Electrical and Electronics Engineering Curriculum under R2018 Version–4 and R2022 to the Academic Council for approval.

03 – Review of Fifth to Eighth Semester Syllabus for B.E. – Electrical and Electronics Engineering under R2018 Version – 4.

The following corrections are pointed out in the curriculum under R–2022

S. No	Name of Bos Members	Recommendation/Remarks by BoS members
1.	Dr. S.T. Jaya Christa	• Virtual Instrumentation, PLC and Industrial Automation, soft computing techniques can be offered as open elective courses in the Curriculum. • Switched Mode Power Supply Design can be added as Professional elective course in the Curriculum.
2.	Dr. I. Jacob Raglend	• Latest editions need to be checked in all the reference books and text books. • It is recommended to Map the CO with PO and assign high and medium correlation for PO 1 to PO 5.
3.	Mr. N. Vaneeswaran.	• It is recommended to include EV charging system in Renewable energy system laboratory course.

Discussion: BOS members suggested the following points in the meeting

- Latest editions need to be checked in all the text and reference books.
- Pre-requisite course name with code need to be mentioned in the Syllabus.
- It is recommended to define minimum of 5 COs for Laboratory courses.
- It is recommended to define COs with respect to course objectives.
- It is recommended to follow a common notation for CO-PO Mapping in the Mapping Table.

Resolution:
It is resolved to recommend the changes in R2018 version – 4 syllabus of the proposed B.E. – Electrical and Electronics Engineering Programme and the same is submitted to the Academic Council for approval.

04 – Framing of Third and Fourth Semester Syllabus for B.E. – Electrical and Electronics Engineering under R2022.

Discussion: Points suggested by the members

- Latest editions need to be checked in all the text and reference books.
- Pre-requisite course name with code need to be mentioned in the Syllabus.
- MATLAB Programs may be included as case study in Electromagnetic Theory.
- The laboratory components solving methods to be applied in experiments may be included in theory courses.
- It is recommended to Map the COs with POs and assign high and medium correlation for PO 1 to PO 5.
- It is recommended to define minimum of 5 COs for Laboratory courses.
- It is recommended to define Cos with respect to course objectives.
- It is recommended to follow a common notation for CO–PO Mapping in the Mapping Table.
- It is recommended to swap the units in the fourth semester course Transmission and Distribution so that, the continuity between unit 1 to 5 is maintained.

Resolution:
It is resolved to recommend the changes in R2022 syllabus of the proposed B.E – Electrical and Electronics Engineering Programme and the same is submitted to the Academic Council for approval.

05 – Approval of NPTEL & Value Added Courses.

Discussion:

- Students can opt NPTEL courses form 1st semester onwards.
- Internal Evaluation Committee (IEC) comprises of department NPTEL coordinator, Board of Studies coordinator and Head of the department. IEC will recommend the NPTEL courses that is not covered in the entire curriculum.
- The list of courses recommended to credit transfer for the period of December 2022 to April 2023 was discussed in the meeting.

- Industry Supported, Certified Value-Added Courses for credit transfer has been discussed in the meeting.
- Students can attend 3 Value-Added courses (each carries one credit) for the exemption of one Professional Elective course.

Resolution:
It is resolved to recommend the proposed NPTEL and Value–Added Courses for B.E. – Electrical and Electronics Engineering Programme and the same is submitted to the Academic Council for approval.

The chairperson of Board of Studies agreed and assured to incorporate the changes wherever possible.

The chairperson of Board of Studies thanked all the members for their valuable suggestions and coordination.

13/5/23.

Chairperson-BoS

Annexure - 01

VELALAR COLLEGE OF ENGINEERING AND TECHNOLOGY
(An Autonomous Institution, Approved by AICTE, New Delhi & Affiliated to Anna University)
Thindal (PO), Erode – 638012.
Ph: (0424) 2244201 - 204, **FAX:** 0424 2244205, **Email:** principal@velalarengg.ac.in

Board of Studies Meeting
Attendance

Name of the Department : Electrical and Electronics Engineering
Meeting No : 08
Date & Time : 13.05.2023 & 11.00 AM
Venue : II floor Conference Hall, Main Building.

Sl.No.	Name	Category	Signature
1.	Dr.P.Sakthivel	Chairman	
2.	Dr. S.T. Jaya Christa	University Nominee	
3.	Dr. I Jacob Raglend	External Expert Members	
4.	Antony Prem	Industry / Corporate Sector	Absent
5.	K.Kumarasamy		Absent.
6.	N. Vaneeswaran	Alumnus	
7.	Dr.M.Sreedhar	Internal Members	
8.	Dr.C.Gokul		
9.	Dr.K.Vanchinathan		
10.	S.Saravanan		
11.	P.Rajasekaran		
12.	M.Chitra		
13.	V.Sabarivelu		

13/5/23.

Chairman - BoS (EEE)

VELALAR COLLEGE OF ENGINEERING AND TECHNOLOGY
(An Autonomous Institution Affiliated to Anna University)
Department of Mechanical Engineering

Minutes of Board of Studies Meeting

Name of the Department : Mechanical Engineering Board: Mechanical
Programme (s) :B.E. Mechanical Engineering
Date, Time & Venue :13.05.2023, 10.00a.m.&Board Room
Meeting Number : 08

Agenda of Meeting

1. Review of Syllabus under R2018 Ver-4 (Sem V-VIII).
2. Framing of Verticals for Honors and Minor Degree under R2018 Ver-4.
3. Revision of curriculum under R2022.
4. Framing of Syllabus under R2022 for semester III & IV.
5. Adoption of Tamil Courses (Heritage of Tamils & Tamils and Technology)
6. Approval of NPTEL & Industry supported Courses
7. Any other matters.

The members presented in the Board of Studies Meeting is given below

S.No	Name	Position	Signature
1.	Dr. R. Kumaravelan	Chairperson	13/5/23
2.	Dr. S.P. Asok	University Nominee	13.5.23
3.	Dr. N. Alagumurthi	Academic Nominee	
4.	Dr. K. Jayabal	Academic Expert	13/05/23
5.	Mr. Natarajaperumal Vasudevaraju	Industry Expert	
6.	Mr. C. Nandagopalan	Industry Expert	ABSENT
7.	Mr. P. Shrinesh	Alumnus	
8.	Dr. M. Jayaraman	Internal Members	
9.	Dr. S. Velumani		13/5/23
10.	Dr. R. Prakash		13.5.23

S.No	Name	Position	Signature
11.	Mr. K. Ramakrishnan	Internal Members	
12.	Mr. M. Gopi		
13.	Mr. D. Senthil Kumar		
14.	Mr. D. Kesavan		
15.	Mr. T.C.R. Dinesh		
16.	Mr. V. Mohankumar		
17.	Mr. A. Manojkumar		
18.	Mr. E. Ajaikumar		
19.	Mr. A.T. Navin Prasad		
20.	Mr. G. Raja		
21.	Mr. S. Karvendhan		

The chairman of the Board of Studies welcomed all the members to the meeting for framing of curriculum and syllabus for V to VIII semesters under regulation R2018 Ver-4, Verticals for Honours and Minor Degree under R2018 Ver-4,framing of curriculum under R2022 and the syllabus for III and IV semesters under the Regulation 2022 and Framing of Verticals for Honours and Minor Degree under R2022.The items listed in the agenda are taken for discussion one by one. The minutes of the meeting are as follows:

01 – Review of Syllabus under R2018 Ver-4 (Sem V-VIII).

Discussion:

1. The courses and their syllabus for the semesters V, VI, VII & VIII were presented.
2. The verticals for professional electives (SIX verticals) and their syllabus were also presented.
3. It is suggested to change the title of the sixth vertical (Diversified courses) as Inter / Multi-disciplinary courses and it is incorporated.

4. The course code for Tamil courses can be changed as HS instead of MC and it is changed.
5. The course titled 'Design and Fabrication Project 'shall be offered in PSI category instead of PC and it is incorporated.

Resolution:

The points specified in 1, 2, 3, 4 and 5 have been approved.

Semester 5

a. 21MET51-Machine Design
   The syllabus was approved as presented.
b. 21MET52-Automobile Engineering
   The syllabus was approved as presented.
c. 21MET53-Metrology and Measurements
   The syllabus was approved as presented.
d. 21MEL51-Computer Aided Design Laboratory
   The syllabus was approved as presented.
e. 21MEL52-Dynamics and Metrology Laboratory
   The syllabus was approved as presented.

Semester 6

a. 21MET61-Design of Transmission Systems
   The syllabus was approved as presented.
b. 21MET62-Heat and Mass Transfer
   The syllabus was approved as presented.
c. 21MET63-Finite Element Analysis
   The syllabus was approved as presented.
d. 21MEL61-Design and Fabrication Project
   The syllabus was approved as presented.
e. 21MEL62-Simulation and Analysis Laboratory
   The syllabus was approved as presented.
f. 21MEL63-Heat and Mass Transfer Laboratory
   The syllabus was approved as presented.

Semester 7 & 8

a. 21MET71-Total Quality Management
   The syllabus was approved as presented.
b. 21MEC72-Mechatronics
   The syllabus was approved as presented.
c. 21MEL81-Internship
   The syllabus was approved as presented.
d. 21MEL82-Project Work
   The syllabus was approved as presented.

02- Framing of Verticals for Honours and Minor Degree under R2018 Ver-4.

1. **Verticals for Honours.**
    a. Vertical 1: Design Engineering
    b. Vertical 2: Manufacturing Engineering
    c. Vertical 3: Industrial Engineering
    d. Vertical 4: Industrial Management
    e. Vertical 5: Thermal Engineering
    f. Vertical 6: Inter / Multi-disciplinary courses

The syllabus for the verticals for Professional Electives has been presented.

RESOLUTION:

The syllabus for the verticals for Professional Electives same has been approved.

2. **Verticals for Minor Degree.**

VERTICAL 2: ENTREPRENEURSHIP

a. Foundations of Entrepreneurship
b. Team Building and Leadership Management for Business
c. Creativity and Innovation in Entrepreneurship
d. Principles of Marketing Management for Business
e. Human Resource Management for Entrepreneurs
f. Financing New Business Ventures

The syllabus for the above vertical for Minor Degree has been presented.

RESOLUTION:

The syllabus for the verticals for Professional Electives same has been approved as presented.

3. **Enrollment for B.E. / B. Tech. (HONOURS)) / MINOR DEGREE (OPTIONAL)**
    a. A student can also optionally register for additional courses (totaling 18 credits) and become eligible for the award of B.E. / B. Tech. (Honours) or Minor Degree.
    b. ONLY those students who have passed all the courses in the first attempt and have a CGPA of 7.50 and above at the end of 4th Semester are eligible to enroll for Honours / Minor Degree.
    c. For B.E. / B. Tech. (Honours), a student shall register for the additional courses (18 credits) from 5^{th} semester onwards. These courses shall be from the same vertical or a combination of different verticals of the same programme of study only.
    d. For Minor Degree, a student shall register for the additional courses (18 credits) from 5th semester onwards. All these courses have to be in a particular vertical meant for Minor degree.

4. **The rules for the B.E. / B. Tech. (Honours) are given below:**
    a. B.E./B.Tech. Honours (specialisation in the same discipline): The student should have earned additionally a minimum of 18 credits from a vertical of the same programme.
    b. B.E / B.Tech. Honours: The students should have earned additional courses (minimum of 18 credits) from more than one vertical of the same programme.

RESOLUTION:

The points specified in 3 and 4 was approved by the committee (The guidelines from the Anna University shall be scrupulously followed)

03- Revision of curriculum under R2022.

Discussion:

1. The entire curriculum was presented.
2. The verticals for professional electives (SIX verticals) and their syllabus were also presented.
3. It is suggested to change the title of the sixth vertical (Diversified courses) as Inter / Multi-disciplinary courses and it is incorporated.

Resolution:

The points specified in 1, 2 and 3 have been approved.

04-Framing of Syllabus under R2022 for semester III & IV.

The syllabi for the following courses were approved with the following modifications:

Semester III

a. 22MET31-Manufacturing Processes
    i. For the text and reference books standard authored books may be prescribed with latest edition.
b. 22MET32-Fluid Mechanics and Machinery

    The syllabus was approved as presented.
c. 22MET33-Engineering Thermodynamics

    The syllabus was approved as presented.
d. 22MET34-Kinematics of Machinery

    The syllabus was approved as presented.
e. 22MEL31-Manufacturing Processes Laboratory

    The syllabus was approved as presented.
f. 22MEL32-Fluid Mechanics and Machinery Laboratory

    The syllabus was approved as presented.

Semester IV

a. 22MET41-Machining Processes

The syllabus was approved as presented.

b. 22MET42-Strength of Materials

The syllabus was approved as presented.

c. 22MET43-Thermal Engineering

The syllabus was approved as presented.

d. 22MET44-Dynamics of Machinery

i. In Unit II, the title shall be specified as Balancing of masses and also include balancing of reciprocating engine.

ii. In Unit V , Include some other syllabus instead of Governors.

e. 22MEC45-Engineering Materials and Metallurgy

The syllabus was approved as presented.

f. 22MEL41-Machining Processes Laboratory

The syllabus was approved as presented.

g. 22MEL42-Thermal Engineering Laboratory

i. In list of experiments include single cylinder engine and multi cylinder for retardation test.

Resolution:

The points specified above have been modified by the members and committee approved the same.

05-Adoption of Tamil Courses (Heritage of Tamils & Tamils and Technology)

As per the direction of Anna University, Tamil courses were included in curriculum. BoS chairman requested for approval and the committee approved the TWO Tamil courses.

06-Approval of NPTEL & Industry supported Courses.

a. The list of online courses offered by SWAYAM NPTEL presented to the board was approved. It is also suggested to ensure the content of the online course should not be repeated anywhere in the courses offered under R2018 Ver-4 and R2022 by VCET.

b. Internal Committee for NPTEL may be framed to coordinate and to ensure minimum overlapping of syllabus.

06 – Any other matters

Common points suggested by the members as Concluding Remarks

a. Textbooks and reference books shall be prescribed with latest edition.
b. Mandatory courses shall be shown separately in curriculum like Theory, Practical & Mandatory courses in each semester.
c. Department Vision, Mission, PO, PEO and PSO are presented , the committee reviewed and approved the same.

The Chairman of Board of Studies agreed and assured to incorporate the changes wherever possible.

Finally, the chairman of Board of Studies thanked all the members for their valuable suggestions and coordination.

13/5/23

Chairman-BoS

Chairperson - BoS
Dept. of ME - VCET

VELALAR COLLEGE OF ENGINEERING AND TECHNOLOGY
(An Autonomous Institution, Approved by AICTE, New Delhi & Affiliated to Anna University)
Thindal post, Erode – 638012.
Ph: (0424) 2244201 - 204, FAX: 0424 2244205, Email: principal@velalarengg.ac.in

Board of Studies (BoS) Meeting

Attendance

Name of the Department : Mechanical Engineering

Meeting No : 08

Date & Time : 13.05.2023 & 10.00 a.m.

Venue : Board Room

The names of members present in the Board of Studies is given below

S.No	Name	Position	Signature
1.	Dr. R. Kumaravelan	Chairman	13/5/23
2.	Dr. S.P. Asok	University Nominee	13.5.23
3.	Dr. N. Alagumurthi	Academic Nominee	13/5/2023
4.	Dr. K. Jayabal	Academic Expert	13/05/23
5.	Mr. Natarajaperumal Vasudevaraju	Industry Expert	
6.	Mr. C. Nandagopalan	Industry Expert	ABSENT
7.	Mr. P. Shrinesh	Alumnus	
8.	Dr. M. Jayaraman	Internal Members	
9.	Dr. S. Velumani		13/5/23
10.	Dr. R. Prakash		13-5-23
11.	Mr. K. Ramakrishnan		13/5/23
12.	Mr. M. Gopi		13/5/23

S.No	Name	Position	Signature
13.	Mr. D. Senthil Kumar	Internal Members	
14.	Mr. D. Kesavan		
15.	Mr. T.C.R. Dinesh		
16.	Mr. V. Mohankumar		
17.	Mr. A. Manojkumar		
18.	Mr. E. Ajaikumar		
19.	Mr. A.T. Navin Prasad		
20.	Mr. G. Raja		
21.	Mr. S. Karvendhan		

13/5/23

Chairman - BoS (Mech)

Chairperson - BoS
Dept. of ME - VCET

VELALAR COLLEGE OF ENGINEERING AND TECHNOLOGY

(An Autonomous Institution Affiliated to Anna University)

Department of Medical Electronics (MDE)

Minutes of Board of Studies Meeting

Name of the Department	:**Medical Electronics**	Board: **MDE**
Programme (s)	:**BE –Medical Electronics**	
Date, Time & Venue	:**12.05.2023, 10.30am & GD Hall-03**	
Meeting Number	:**06**	

Agenda of Meeting

1. Review of B.E.-Medical Electronics Curriculum under R 2018 Version-4.
2. Review of Fifth to Eight Semester Syllabus for B.E.-Medical Electronics under R 2018 Version-4.
3. Framing of B.E.-Medical Electronics Curriculum under R2022.
4. Framing of Third to Fourth Semester Syllabus for B.E.-Medical Electronics under R2022.
5. Summary of Credits.
6. Any other matters.

The members presented in the Board of Studies Meeting is given in Annexure – 01

The chairman of the Board of Studies welcomed all the members to the meeting for discussing proposed B.E.-Medical Electronics Curriculum and syllabus under the Regulation 2022 and Regulation 2018 version 4. The following points were proposed. The points suggested by the members were as follows:

01- Review of B.E.-Medical Electronics Curriculum and syllabus under R 2018 Version-4.

- The BoS members reviewed the curriculum of 1st to 8 th semesters and syllabi of 5th to 8th semester for B.E.-Medical Electronics Programme.
- Summary of Medical Electronics was explained and discussed with BoS members. It was compatible with AICTE model curriculum at present and the schemes verified.
- Value added Courses for each domain was reviewed by the Board of Studies members for B.E.-Medical Electronics Programme.
- Verticals for Minor degree and Honors degree are discussed and resolved.
- NPTEL Courses were reviewed and resolved with the letter grades and grade points.
- Medical Waste Management and Medical Device Design courses shall be included under verticals Healthcare Management and Medical System Design respectively.
- For the course "Biostatistics", Epidemical reading and interpreting of epidemical studies topic shall be included.

- For the course "Speech and Audio Signal Processing", Mechanics Of Speech And Audio topic shall be included in Unit-1.

Resolution:

It is resolved to recommend the curriculum and syllabus of 1st to 8th semesters of B.E.-Medical Electronics Programme under R2018 Version 4.0, value added practical courses, NPTEL Courses,Professional Elective verticals, verticals for the registration of courses for B.E./B.Tech (Honours) and Minor degree, evaluation methods and Question Paper Pattern to the Academic Council for approval.

02- Review of Curriculum and Summary under R2022

- The BoS members reviewed the curriculum of 1st to 8 th semesters and syllabi of 3rd and 4th semester for B.E.-Medical Electronics Programme under R2022.
- Summary of Medical Electronics was explained and discussed with BoS members. It was compatible with AICTE model curriculum at present and the schemes verified.
- Value added Courses for each domain was reviewed by the Board of Studies members for B.E.-Medical Electronics Programme.

03-Framing of B.E.-Medical Electronics Curriculum under R 2022

Discussion:

- C Programming theory and Laboratory course shall be included in semester-3.
- Signal processing in Healthcare course shall be included in Semester-4 . This course shall be considered with theory and laboratory component combined course.
- Radiological Equipment course shall be included in Semester-4.
- Healthcare Aanlytics course shall be included in Semester-6.
- Healthcare 4.0, Medical System Design, Innovation and Product Development, Healthcare Management, Signal and Image Processing, ICT for Healthcare verticals are suggested for professional Elective courses for Semester 5,6 and 7.
- AI in Healthcare, ICU and OT Equipment,Medical Device Regulations, Cyber Security for Medical Systems, AI for Rare Diseases, BioSignal Processing, Cloud Computing for Healthcare Courses shall be included in the concerned verticals.
- Hospital Waste Management, Hospital Information System, IoT Applications in Healthcare are proposed in Open Electives offered to other departments.
- Verticals for Minor degree and Honors degree are discussed and resolved.

- NPTEL Courses were reviewed and resolved with the letter grades and grade points.

Resolution:

It is resolved to recommend the above mentioned courses, value added practical courses,NPTEL Courses, evaluation methods and Question Paper Pattern in R2022 curriculum incorporating Relative Grading system for the proposed B.E.-Medical Electronics programme and the same is submitted to the Academic Council for approval.

It is also resolved to recommend the above mentioned courses and verticals for the registration of courses for B.E./B.Tech (Honours) or Minor degree under R2022.

04 - Framing Third and Fourth Semester Syllabus for B.E.-Medical Electronics.

Semester -3

- For the course "BioSciences for Medical Engineering", board members recommended to include Immunological techniques in Unit-5.

- For the course "Signal processing in Healthcare", board members recommended to include Signals and systems, Digital processing and Introduction to Biosignal processing topics in consecutive units.
- Summary of Medical Electronics was explained and discussed with BoS members. It was compatible with AICTE model curriculum at present and the schemes verified.

The chairman of Board of Studies thanked all the members for their valuable suggestions and coordination.

BoS- Chairman(MDE)

12/12/2023

Chairperson - BoS
Department of MDE, VCET

Annexure - 01

VELALAR COLLEGE OF ENGINEERING AND TECHNOLOGY
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Thindal (PO), Erode – 638012.
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Board of Studies Meeting
Attendance

Name of the Department : B.E. MEDICAL ELECTRONICS
Meeting No : 06
Date & Time : 12.05.2023 & 10:30 am
Venue : GD Hall-03, Second Floor, VCET

Sl.No.	Name	Category	Signature
1.	Dr.V.Chandrasekaran	Chairman	
2.	Dr. Vijay Jeyakumar	University Nominee	
3.	Dr. Judith Justin	External Expert Members	
4.	Dr.P.Manimegalai		
5.	Mr.B.Kannan	Industry / Corporate Sector	ABSENT.
6.	Mr.D.Satheesh	Alumnus	
7.	Dr.M.Pravin Kumar	Internal Members	
8.	Ms.S.B.Abitha		
9.	Mr.P.Prakash		
10.	Ms K. Vanitha		
11.	Ms.M.Thenarasi		
12.	Mr. S. Surender		
13.	Ms. P.Poornima		

Chairman - BoS (MDE)

VELALAR COLLEGE OF ENGINEERING AND TECHNOLOGY

(An Autonomous Institution Affiliated to Anna University)

Department of Information Technology

Minutes of Board of Studies Meeting

Name of the Department: Information Technology Board: Information Technology
Programme : B.Tech -Information Technology
Date, Time & Venue : 11.05.2023, 09:00 am, Distributed System Lab, 1st Floor, Main Block, VCET
Meeting Number : 08

Agenda of Meeting

- Ratification of syllabus under R-2018 Ver.4, Professional Elective based on verticals.
- Framing of Curriculum and Syllabus for R-2022 2nd Year B.Tech IT.
- Framing of Syllabus for R-2022 2nd Year Semester -4 one course -B.E (BME,ECE, EEE & MDE)
- Any other matters

The list of members present in the Board of Studies Meeting is given in Annexure – 1

The Chairperson / BoS welcomed all the members to the 8th meeting of Board of Studies for the ratification of syllabus under R-2018 Ver.4 and Framing of Curriculum and Syllabus for R-2022 2nd Year B.Tech IT and started the meeting by Presenting the Department Vision, Mission, PEO, POs and PSOs. The items listed in the agenda are taken for discussion one by one. The minutes of the meeting are as follows

01 . Review of Ratification of syllabus under R-2018

Discussion

- BoS members reviewed the Curriculum and its components for R 2018 Ver.4 and its syllabus of all semester courses, professional electives, open electives and value-added courses under the Regulations 2018 ver.4
- The Syllabi for the following courses are approved as presented.

PROFESSIONAL ELECTIVE COURSES: VERTICALS		
S.No.	**Course Code**	**Course Title**
VERTICAL 1: DATA SCIENCE		
1	21ITE01	Exploratory Data Analysis
2	21ITE02	Recommender Systems
3	21ITE03	Neural Networks and Deep Learning
4	21ITE04	Text and Speech Analysis
5	21ITE05	Business Analytics
6	21ITE06	Image and Video Analytics
7	21ITE07	Computer Vision
8	21ITE08	Big Data Analytics
VERTICAL 2: FULL STACK DEVELOPMENT FOR IT		
1	21ITE09	Cloud Computing
2	21ITE10	Service Oriented Architecture
3	21ITE11	Cloud Services Management
4	21ITE12	UI and UX Design
5	21ITE13	Software Testing and Automation
6	21ITE14	Web Application Security
7	21ITE15	DevOps

8	21ITE16	Principles of Programming Languages
VERTICAL 3: CLOUD COMPUTING AND DATA CENTER TECHNOLOGIES		
1	21ITE09	Cloud Computing
2	21ITE17	Virtualization
3	21ITE11	Cloud Services Management
4	21ITE18	Data Warehousing
5	21ITE19	Storage Technologies
6	21ITE20	Software Defined Networks
7	21ITE21	Stream Processing
8	21ITE22	Security and Privacy in Cloud
VERTICAL 4: CYBER SECURITY AND DATA PRIVACY		
1	21ITE23	Essentials of Ethical Hacking
2	21ITE24	Digital and Mobile Forensics
3	21ITE25	Social Network Security
4	21ITE26	Cyber Security
5	21ITE27	Engineering Secure Software Systems
6	21ITE28	Cryptocurrency and Blockchain Technologies
7	21ITE29	Modern Cryptography
8	21ITE22	Security and Privacy in Cloud
VERTICAL 5: CREATIVE MEDIA		
1	21ITE30	Augmented Reality/Virtual Reality
2	21ITE31	Multimedia and Animation
3	21ITE32	Video Creation and Editing
4	21ITE12	UI and UX Design
5	21ITE33	Digital Marketing
6	21ITE34	Visual Effects
7	21ITE35	Game Development
8	21ITE36	Multimedia Data Compression and Storage
VERTICAL 6: ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING		
1	21ITE37	Knowledge Engineering
2	21ITE38	Soft Computing
3	21ITE03	Neural Networks and Deep Learning
4	21ITE04	Text and Speech Analysis
5	21ITE39	Natural Language Processing
6	21ITE40	Game Theory
7	21ITE41	Cognitive Science
8	21ITE42	Ethics and AI

- ✓ "Distributed Computing" course is included in Semester-7 and "Microprocessor and Microcontroller" is shifted from Semester-5 to Semester-6. The same is approved.
- ✓ The mandatory courses Professional Ethics & Universal Human Values-2 is integrated as "Human Values and Professional Ethics" in semester-7. The same is approved.
- ✓ List of Courses under each verticals for minor degree were presented.
- ✓ Syllabi for the vertical named "Fintech and Block Chain" for minor degree course is approved as presented.

Resolution

It is resolved to recommend the ratified Syllabus under R-2018 ver.4 to the Academic Council for approval.

02. Framing of Curriculum and Syllabus for Semester III & IV under R-2022 B.Tech IT

- ✓ As per the guidelines from Anna University, two courses "Heritage of Tamils & Tamils and Technology" are included in R-2022.

- ✓ The Syllabi for the following courses were approved as presented

Semester III:

- ✓ Object Oriented Programming using Java
- ✓ Data Structures using Python
- ✓ Digital Principles and Computer Organization
- ✓ Foundations of Data Science
- ✓ Object Oriented Programming Laboratory
- ✓ Data Structures Laboratory

Semester IV:

- ✓ Artificial Intelligence and Machine Learning
- ✓ Database Management Systems
- ✓ Embedded Systems and IoT
- ✓ Design and Analysis of Algorithms
- ✓ Operating Systems
- ✓ Database Management Systems Laboratory
- ✓ Operating Systems Laboratory

03. Framing of Syllabus for Semester IV under R-2022 B.E (BME)

- ✓ Data Structures using C
- ✓ Data Structures using C laboratory

Framing of Syllabus for Semester III under R-2022 B.E (MDE) & Semester II under R-2022 B.E (ECE)

- ✓ C Programming
- ✓ C Programming Laboratory

Framing of Syllabus for Semester IV under R-2022 B.E (ECE)

- ✓ Data Structures using Python
- ✓ Data Structures laboratory

Framing of Syllabus for Semester V under R 2018 Ver.4 -B.E (ECE) & Semester IV under R-2022 B.E (EEE)

- ✓ Object Oriented Programming using Java
- ✓ Object Oriented Programming Laboratory

Resolution

It is resolved to recommend the Syllabus under R-2022 to the Academic Council for approval.

04. Any other matters

- ✓ List of courses that the students can opt for exemption under NPTEL is presented and the same is approved by the members.
- ✓ The Board of Studies has approved to offer MSME courses equivalence to open elective courses for the third and final year students.

The Chairperson of Board of Studies thanked all the members for their valuable suggestions and contribution.

Chairperson-BoS

Chairperson BoS
Dept of IT VCET

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Board of Studies Meeting
Attendance

Name of the Department : Information Technology
Meeting No. : 08
Date & Time : 11.05.2023, 09:00 A.M.
Venue : Distributed System Lab, 1st Floor, Main Block, VCET.

Sl.No.	Name	Category	Signature
1.	Dr. V. K. Manavalasundaram	Chairman	
2.	Dr. V. Vijilesh	University Nominee	
3.	Dr. V. Kavitha	Academic Council Members	
4.	Dr. C. Sathiya Kumar		
5.	Mr. S. Elangathir	Industrial Expert	
6.	Mr. M. Vijayendhiran	Alumnus	
7.	Dr. R. Mynavathi	Internal Faculty Members	
8.	Dr. K. Ganesh Kumar		
9.	Dr. S. Viveka		
10.	Dr. R .Menaka		
11.	Ms.T. Nithya		
12.	Mr.C. Saravanan		
13.	Mr. K. Gopalakrishnan		
14.	Ms.V.Leela		

11/5/23
Chairman - BoS (IT)
Chairperson - BoS
Dept of IT VCET

VELALAR COLLEGE OF ENGINEERING AND TECHNOLOGY, (AUTONOMOUS)

Department of Science and Humanities

Members of Board of Studies

Date: 16.05.2023

Sl.No	Name, Designation & Address	Category	Signature
1.	Dr.M. Eswaramurthi, Professor of Mathematics, Head of Department, Department of Science and Humanities, VCET. Email id:meswaramurthi@gmail.com 94871 49205	Chairman	16/5/23
2.	Dr.A.Anne Dorothy, Assistant Professor(SG)&Head, Department of English, Saveetha Engineering College, Thandalam, Chennai-602105. Email id: annedorathya@saveetha.ac.in Mobile:9994380829	University Nominee & Subject Expert English	16/5/2023
3	Dr.Sai Sundara Krishnan.G, Professor , Department of Applied Mathematics and Computational Sciences, PSG College of Technology Peelamedu Coimbatore-641001 Email id:ssk.amcs@psgtech.ac.in Mobile:9944139613	External Member &Subject Expert Mathematics	16/5/23
4	Dr.P.N.Palanisamy, Professor & Head, Department of Chemistry, Kongu Engineering College, Perundurai-638052. Email id:drpnp@kongu.ac.in Mobile:9488644390	External Member &Subject Expert Chemistry	16/5/23
5	Dr.K.Tamilarasan, Professor & Head, Department of Physics, Kongu Engineering College, Perundurai-638052. Email id:dr.k.tamilarasan@gmail.com Mobile:9842966128	External Member &Subject Expert Physics	
6.	Dr.C.S.Gowri, Professor of Mathematics	Internal Member	16/5/23
7	Dr.K.Rathi, Professor of Mathematics	Internal Member	16/5/23
8	Dr.S.Senthilraj, Asst. Prof. (Sl.Gr.)/ Mathematics	Internal Member	16/5/23
9	Dr.Deepa Jananakumar, Professor and Co-ordinator/Physics	Internal Member	16/5/23

10	Dr.N.Thangaraj, Professor/Physics	Internal Member	
11	Dr.S.Ranjitha Assoc.Prof/Physics	Internal Member	
12	Dr.K.Manikandan , Professor and Co-ordinator/Chemistry	Internal Member	
13	Dr.S.Kalaiselvi Assoc.Prof/ Chemistry	Internal Member	
14	Dr.S.Hemalatha Professor and Co-ordinator/English	Internal Member	
15	Ms.B.S.Gomathi Assoc.Prof/English	Internal Member	
16	Ms.V.Suguna Asst.Prof/English	Internal Member	

Date : 16.05.2023

Chairman-BoS

Professor and Head
Department of Science and Humanities
Malar College of Engineering and Technology
Thindal, Erode - 638 012.

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Minutes of Board of Studies (BoS) Meeting

Name of the Department	Science and Humanities
Names of the Programmes	**B.E. / B.Tech**
Meeting No	09
Date & Time	16.05.2023 & 10.30 a.m.
Venue	VCET Campus (Board Room)

Agenda of Meeting

1. Review of Syllabus under R2022 semester I & II
2. Framing of Syllabus under R2022 for semester III, IV and higher semesters
3. Approval for the Mandatory courses and review the Syllabus
4. Any other matters.

The members presented in the Board of Studies is given in Annexure-I

1. Chairman/ BoS welcomed all members for the 9th meeting of Board of Studies.

2. Chairman / BoS introduced the members.

The Chairman of the Board of Studies welcomed all the members to the 9th meeting convened for framing the new syllabus to various courses and ratifications under Regulation 2022 for higher semesters. The members of Board of Studies went through the syllabus unit by unit and the following recommendations were made:

01 – Review of Syllabus under R2022

Discussion: The Board reviewed the syllabus of Communicative English and Professional English and the following ratification were made in the above two subjects.

Communicative English

1. Based on the feedback collected from the students, the following topics have been removed from all the units.

- In Unit-l, the topics 'Politeness Strategies' from Speaking and Telephone Messages from Reading have been removed.
- In Unit II, the topic 'Habit Formation' and Changing Habits' has been removed from Reading.
- In Unit III, the topic 'Reading Problems and Solution' has been removed from Reading
- In Unit IV, the redundant topic 'Reading Motivational Essays on famous Engineers and Technologists' has been removed from Reading.
- In Unit- V, 'Training Facilities and Conference Facilities' from Speaking and 'Designing a Website' from Writing have been removed.

2. Instead of Business Communication, Personal Letters has been added.

Professional English

1. Business letters has been shifted from Communicative English to Professional English.
2. Transcoding Tables and Bar Chart have been retained in Communicative English and Transcoding Pie Chart and Flow Chart have been shifted to Professional English.
3. In Unit –I, Podcasts, Evaluative Listening and the redundant topic Listening and filling a graphic organizer from Listening and Marketing a Product from speaking have been removed.
4. In Unit –IV, the redundant topic error correction has been removed.
5. Redundant topics from Communicative English and Professional English has been removed.

02-Framing of Curriculum under R2022.

The proposed curriculum for R2022 is approved with the following modifications / suggestions:

Department of Mathematics

Item - 01

Discussion: The Board of Studies members went through the proposed syllabus of all Mathematics courses for the semesters I, II, III and IV of all programmes.

Resolution: It is resolved to recommend the courses to the Academic Council for its approval.

Item- 02

Discussion: The Board of Studies members went through the proposed syllabi of Mathematics and the following suggestions are made:

Department of Mathematics –R-2022 - I and II Semester

All the nine Engineering Programmes are grouped into 3 clusters as given below:

Group A – BME,ECE,EEE and MDE

Group B – CSE,IT and AI & DS

Group C – MECH and CIVIL

Different courses for Mathematics were prescribed for different clusters.

- In the course 22MAT21-Calculus and Complex Analysis (Common to BME, ECE, EEE and MDE),it has been suggested to change the title for unit 2 as "Differentiation of Vectors" and for unit 3 as "Integration of Vectors". The ratification has been carried out without change.
- The board accepted the existing syllabus for the other courses offered in first and second semesters and suggested to continue without change.

Department of Mathematics –R-2022 - III and IV Semester

Departments of ECE, EEE, MDE and MECH Programmes requested to offer a mathematics courses with selected topics from the courses previously offered in III and IV semesters.

BME, CIVIL, CSE, IT, AIDS Programmes have Mathematics courses in both III and IV semesters.

The following changes are suggested by the Subject Expert and the suggestions are incorporated

22MAT31- Transform Techniques and Their Applications

- Suggested to change the order of the topics given in unit III Fourier Series
- Suggested to rephrase title of unit III as "Solution of Boundary Value Problems using Fourier Series" instead of "Applications of Fourier Series in Boundary Value Problems".
- Suggested to remove the third reference book "Engineering Mathematics" by BabuRam
- Suggested to include the book titled "Advanced Engineering Mathematics "by Erwin Kreyszig in Text book section and the book "Higher Engineering Mathematics by Grewal BS in reference book section.

22MAT32- Transform Techniques and Probability Theory

- Suggested to change the title of the course from "22MAT32 Transform Techniques and Random Processes" to "22MAT32 Transform Techniques and Probability Theory"
- Unit 4 - Random Process is removed and Probability Theory is introduced.

  Title with contents has been changed from Random process to Probability Theory
- Unit 5-"Spectral Densities and Linear Systems with Random Inputs" is

  removed and "Standard distributions" is introduced.
- Title with contents has been changed from Spectral Densities and Linear Systems

  with Random Inputs to Standard Distributions

22MAT33- Transform Techniques and Numerical Methods

- Suggested to rename Unit 3 as " Z-transforms" and unit 4 as "Solution of Algebraic and Transcendental Equations"
- Suggested to remove Gauss Elimination and Gauss Seidel Methods and Suggested to include Crout's methods in unit 4
- suggested to remove the reference books, P.Kandasamy, K.Thilagavathy, K.Gunavathi, "Numerical methods", S.Chand and Company Pvt.Ltd,New Delhi,3rd Edition,2013 and Sankara Rao. K., "Numerical methods for Scientists and Engineers", Prentice Hall of India Private, 3rd Edition, New Delhi, 2011

22MAT34- Discrete Mathematics

- **The board accepted the proposed syllabus without any change**

22MAT35- Differential Equations and Transforms

- It is suggested to rephrase the course name as 'Differential equations and Transforms' for third semester Civil..
- It is suggested to have Partial Differential Equations as unit III and Fourier Series as unit IV.
- Unit V – The title is rephrased as Solution of Boundary Value Problems using Fourier Series

22MAT41- Probability and Random Processes

- It is suggested to include Axioms of Probability, Conditional Probability, Weibull distribution in Unit I and suggested to remove moments and moment generating functions from Unit 1.
- It is suggested to include the text books

  (i) Jay L. Devore.,"Probability and Statistics for Engineering and the Sciences", 8th Edition, Cengage Learning 2016.

  (ii) Saeed Ghahramani., "Fundamentals of Probability with Stochastic Processes", 3rd Edition, Cengage Learning 2016.

22MAT42- Optimization Techniques and Queueing Theory

- It is suggested to rephrase the title of Unit III as Network Models
- It is suggested to include the text book

  Hamdy A.Taha, "Operations Research", 8th Edition, Pearson Prentice Hall , Chennai,2007

22MAT43 – Numerical Methods

- It is suggested to rephrase the title of unit IV as Numerical Solution to Ordinary Differential Equations instead of Initial Value Problems for Ordinary Differential Equations
- It is suggested to rephrase the title of unit V as Numerical Solution to Partial Differential Equations instead of Boundary Value Problems in Partial Differential Equations
- It is suggested to remove the following books from the list of reference books.

(i) P.Kandasamy,K.Thilagavathy,K.Gunavathi,"Numerical methods",S.Chand and Company Pvt.Ltd,New Delhi,3rd Edition,2013.

(ii) Sankara Rao. K., "Numerical methods for Scientists and Engineers", Prentice Hall of India Private, 3rd Edition, New Delhi, 2011

22MAT44 – Differential Equations and Scientific Computing

- It is suggested to rename the title of course as **"Differential Equations And Scientific Computing"** instead of **"Differential Equations And Computational Methods".**
- It is suggested to remove unit III - Testing of Hypthesis
- It is suggested to add the unit Numerical Solution to Partial Differential Equations as Unit V.

Resolutions:

The points specified above have been incorporated in the syllabi and approved by the Board.

Discussion on the mandatory courses for all the UG programmes:

22MCT05 - Aptitude and Logical Reasoning

- It is suggested to rephrase the titles of all the 5 units.
- It is suggested to include the reasoning topics like Seating Arrangements, Coding and Decoding, etc.
- It is suggested to make Logical Reasoning topics as a separate unit.

22HS3152 - Heritage of Tamil and 22HSP252 - Tamils and Technology

In Tamil Paper, Heritage of Tamil and Tamils and Technology, the board approved the syllabi without any change.

21MCT12 – Human Values and Professional Ethics

In Universal Human Values and Professional Ethics, the title of the course has been modified as Human Values and Professional Ethics.

22MCT08-Indian Constitution and Traditional Knowledge

No change has been done.

The board approved the syllabi without any change.

Resolutions:

The points specified above have been incorporated in the syllabi and approved by the Board.

Department of English

Item - 01

Discussion: The members of the Board of Studies went through the proposed syllabus for III & IV semesters.-

Resolution: It is resolved to recommend the courses to the Academic Council for its approval.

English for professionals (III/IV Semester)

1. In Unit I, Summarizing activity is added along with listening.
2. In Unit II, Note making is added along with reading.
3. In Unit IV, instead of three minute presentation, group presentation is added.

Communication Skills Laboratory (V/VI Semester)

1. In unit I, Cultural Interest, Attitude and Opinion and functional language were removed and Cloze Test was added.
2. In Unit II, Attitude and Opinion was added.
3. In unit III, MCQs of the same topics have been added.
4. Redundant topics in II & III year have been removed and a few new topics were added.
5. In Unit V, functional language was added.

Resolutions:

The points specified above have been incorporated in the syllabi and approved by the Board.

Department of Physics

Item - 01.

Discussion: The Board reviewed the syllabus for the following courses under Regulations 2022.

22PHT11 - Engineering Physics (Common to all the branches – First Semester)

22PHT21 - Materials Science (Mech. and Civil – Second Semester)

22PHT22 - Physics for Information Sciences (IT and CSE – Second Semester)

22PHT23 - Physics for Electrical Sciences (EEE and ECE – Second Semester)

22PHL11 - Physics Laboratory I (Common to all the branches – First Semester)

22PHL21 - Physics Laboratory II (Common to all the branches – Second Semester)

Resolution:

It is resolved to recommend the above courses to the Academic Council for its approval.

Item- 02

Discussion: The board has approved the above courses with no changes in the syllabi under R2022.

Department of Chemistry

Item - 01.

Discussion: The Board reviewed the syllabus for the following courses under Regulations 2022.

22CYT11- Engineering Chemistry (Common to all the branches – First Semester)

22MCT03 - Environmental Science and Engineering (Common to all the branches – Second Semester)

22PHL11- Physics and Chemistry Laboratory I (Common to all the branches – First Semester)

22PHL21- Physics and Chemistry Laboratory II (Common to all the branches – Second Semester)

Resolution:

It is resolved to recommend the above courses to the Academic Council for its approval.

Item- 02

Discussion: The board has approved the above courses with no changes in the syllabi under R2022.

The Chairman of Board of Studies agreed and assured to incorporate the changes wherever possible.

Finally, the chairman of Board of Studies thanked all the members for their valuable suggestions and coordination.

Chairman BOS

Professor and Head
Department of Science and Humanities
Velalar College of Engineering and Technology
Thindal, Erode - 638 012.

22ENT11	COMMUNICATIVE ENGLISH *(Common to all B.E./B. Tech Programmes)* *(Students admitted during 2023- 24 onwards)*	L T P C 3 0 0 3

Preamble :

Communicative English is a life skill necessary for all students of Engineering and Technology. The course Communicative English aims at developing Communication Skills in English which is essential for the learner to handle English language for a variety of everyday purposes through acquisition of basic grammar and vocabulary along with LSRW skills.

UNIT 1	INTRODUCTION TO FUNDAMENTALS OF COMMUNICATION	9

Listening: Listening for General Information - Specific Details – Conversations - Telephone Conversation - Listening to Voicemail and Messages – Gap Filling **Speaking**: Self Introduction – Expressing Opinions - Introducing a Friend - Telephone Conversation - Leave a Message - **Reading:** Reading Brochures and Pamphlets **Writing:** Writing Reviews - Book/Movie – Writing about Oneself **Grammar & Vocabulary:** Parts of Speech - Tenses - Contextual Meaning of Words - Abbreviations and Acronyms.

UNIT 2	EXPRESSING CASUAL CONVERSATIONS	9

Listening: Information about Hotels and Accommodation - Recipes and Food Items - Listening to Conversations Asking for and Giving Directions – Making an Enquiry **Speaking:** Talking about Daily Routine - Talking about Food - Making Conversation using Asking for and Giving Directions - Making an Enquiry - Role Plays - Dialogues **Reading**: International Recipes - Reading a Print Interview and Answering Comprehension Questions **Writing**: E- Mail to a Friend – E-Mails about Food and Recipes, Inviting Dignitaries, Accepting and Declining Invitations **Grammar & Vocabulary**: Evaluations and Comparisons with Adjectives - Word Formation.

UNIT 3	CLARIFICATIONS AND RECOMMENDATIONS	9

Listening: Listening to Short Talks and Fill a table – Gap Filling Exercises - Note Taking **Speaking:** Group Discussion - Agreeing and Disagreeing - Tips and Strategies for GD **Reading:** Articles - Essays drawn from various sources - Note Making **Writing:** Writing Recommendations - Giving Instructions – Itinerary - Process Description **Grammar & Vocabulary**: Prepositions - Modifiers - Phrasal Verbs.

UNIT 4	PUBLIC SPEAKING AND BUSINESS COMMUNICATION	9

Listening: Listening to Speeches by Famous People and Identifying the Central Message of the Speech - Answering Multiple Choice Questions **Speaking**: Welcome Address - Vote of Thanks - Special Address on Specific Topic **Reading**: Life and Achievements of Famous People **Writing:** Checklists – Personal Letters **Grammar & Vocabulary**: Modal Verbs and Probability - Collocations – Fixed Expressions - Semi-Fixed Expressions.

UNIT 5	WRITING DEFINITIONS AND PRODUCT DESCRIPTIONS	9

Listening: Listening to Product Description - Labeling and Gap Filling Exercises - Seeking help with Office Equipment - Job Details **Speaking:** Describe a Product - Compare and Contrast with other Products - Buying a Product - Selling a Product - Cancelling and Fixing Appointments - Hotel Accommodation **Reading:** Reading Graphical Material for Comparison - Tables - Pie Charts **Writing:** Writing Definitions – Single Line Definition and Extended Definition - Compare and Contrast Paragraphs - Clarifying an Error in the Bill **Grammar & Vocabulary**: Types of Questions - Use of Discourse Markers – One Word Substitution.

TOTAL: 45 PERIODS

TEXT BOOK:

1. Richards, Jack. C with Jonathan Hull and Susan Proctor New Interchange: English for International Communication. (Level 1, Student's Book) Cambridge University Press, New Delhi: 2017.

REFERENCES:

1. M Ashraf Rizvi, "Effective Technical Communication", McGraw-Hill, 2nd Edition, New Delhi, 2018.
2. Sanjay Kumar and Pushp Lata, "Communication Skills: A Workbook, Oxford University Press, 2020.

3.	J K Gangal, "A Practical course in Spoken English", PHI Learning Pvt. Ltd., 1st Edition, Delhi, 2014.
e. RESOURCES :	
1.	https://learnenglish.britishcouncil.org
2.	https://www.usingenglish.com

Course Outcomes: Upon completion of the course, students will be able to:

CO1	Converse and read fluently using basic grammar components.
CO2	Communicate through writing without any grammatical errors.
CO3	Write clear, coherent and organized passages adhering to instructions.
CO4	Speak effectively in real-time and business situations.
CO5	Enhance vocabulary through listening and reading.

Cos/POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO 1	-	-	-	-	1	3	-	-	2	3	-	1	-	-
CO 2	-	-	-	-	1	3	-	-	2	3	-	1	-	-
CO 3	-	-	-	-	1	3	-	-	2	3	-	1	-	-
CO 4	-	-	-	-	1	3	-	-	2	3	-	1	-	-
CO 5	-	1	-	-	1	1	-	-	2	3	-	1	-	-
Mapping Average	-	1	-	-	1	2.6	-	-	2	3	-	1	-	-

1 - Slight (Low), 2 - Moderate (Medium), 3 - Substantial (High).

Chairperson - BoS
Dept. of English - VCET

22ENT21	PROFESSIONAL ENGLISH *(Common to all B.E./B. Tech Programmes)* *(Students admitted during 2023- 24 onwards)*	L T P C 3 0 0 3

Preamble:

The course Professional English aims at developing LSRW skills which are essential for the learners to communicative effectively and appropriately in professional contexts through acquisition of grammar and vocabulary.

UNIT 1	ANALYTICAL READING	9

Listening: Listening to Anecdotes - Stories - Event Narration – Documentaries and Interviews with Celebrities - Advertisements - Listening and Gap Filling Exercises **Speaking**: Conversation Skills – Initiating - Turn Taking - Closing – Explaining how something works - Persuasive Speech Techniques **Reading:** Reading Advertisements - User Manuals - Analytical Reading - Deductive and Inductive Reasoning **Writing**: Professional E-mails – E-mail Etiquette – Compare and Contrast Essays **Grammar & Vocabulary**: Prepositional Phrases –Same Word used as Different Parts of Speech.

UNIT 2	SUMMARISING	9

Listening: Listening to Lectures - Talks and Completing Gap Filling Exercises on Science and Technology – Listening Technical Information from Podcasts **Speaking**: Summarizing - Oral Reporting – Narrating Personal Experiences – Events – Interviewing a Celebrity **Reading:** Reading Scientific and Technical Articles - Texts **Writing:** Lab Reports - Summary Writing. **Grammar & Vocabulary**: Impersonal Passive Voice - Purpose Expressions.

UNIT 3	DESCRIBING VISUAL MATERIALS	9

Listening: Listening to the Panel Discussion **Speaking**: Speaking at Formal Situations –Mini Presentation and Making Recommendations **Reading:** Reading Journal Articles - Speed Reading - Interpretation of Graphics – Flow Chart - Bar Chart **Writing**: Data Commentaries - Describing Visual Materials – Mechanics of Writing - Writing Complaints to Editorial Columns **Grammar & Vocabulary:** Subject-Verb Agreement – Pronouns - Relative Pronouns - Numerical Adjectives.

UNIT 4	WRITING E-MAILS AND JOB APPLICATION LETTERS	9

Listening: Listening to Model Interviews **Speaking**: Speaking at Interviews – Role Play Practice **Reading:** Reading Job Advertisements and Company Profile - Statement of Purpose (SOP) **Writing:** Filling up the Job Application – Cover Letter – Résumé Preparation – Internship Application **Grammar & Vocabulary:** 'If' Conditionals – Infinitives – Gerunds - Compound Nouns.

UNIT 5	REPORT WRITING	9

Listening: Viewing a Model Group Discussion **Speaking**: Participating in a Group Talk – **Reading:** Cause and Effect Essays – Business Letters **Writing:** Types of Reports - Report Format - Industrial Accident Report - Industrial Visit Report – Feasibility Report - Designing and Reporting Surveys – Writing Discursive Essays **Grammar & Vocabulary:** Reported Speech – Idioms and Phrases.

TOTAL: 45 PERIODS

TEXT BOOK:

1.	'English for Engineers and Technologists' Volume 1 published by Orient Black Swan Limited .2019.

REFERENCES:

1.	Richards, Jack. C with Jonathan Hull and Susan Proctor New Interchange: English for International Communication. (Level2, Student's Book) Cambridge University Press, New Delhi: 2017.
2.	Sanjay Kumar and Pushp Lata, "Communication Skills: A Workbook , Oxford University Press, 2020.
3.	J K Gangal, "A Practical course in Spoken English", PHI Learning Pvt. Ltd., 1st Edition, Delhi, 2014.

e. RESOURCES :

1.	www.eslgold.com
2.	www.usingenglish.com

Course Outcomes: Upon completion of the course, students will be able to:

CO1	Read for gathering and understanding information using narrative techniques.
CO2	Develop and demonstrate listening skills for academic and professional purposes.
CO3	Apply apt vocabulary and construct grammatically correct sentences in professional situations.
CO4	Face interviews with communicative competence and confidence with a good knowledge of career skills.
CO5	Enhance writing skills for essays and for preparing reports.

Mapping of COs with POs and PSOs

Cos/POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO 1	-	-	-	-	1	3	-	-	2	3	-	1	-	-
CO 2	-	-	-	-	1	3	-	-	2	3	-	1	-	-
CO 3	-	1	-	-	1	3	-	-	2	3	-	1	-	-
CO 4	-	-	-	-	1	3	-	-	2	3	-	1	-	-
CO 5	-	-	-	-	1	1	-	-	2	3	-	1	-	-
Mapping Average	-	1	-	-	1	2.6	-	-	2	3	-	1	-	-

1 - Slight (Low), 2 - Moderate (Medium), 3 - Substantial (High).

Chairperson - BoS
Dept. of English - VCET

22MCL04	ENGLISH FOR PROFESSIONALS (Third / Fourth Semester)	L T P C 0 0 2 0

Preamble :

Communicative English is a life skill necessary for all students of Engineering and Technology. The course Essential English for Professionals aims at enabling the learners to communicate effectively and appropriately in professional contexts by exposing them to LSRW tasks.

UNIT 1	**LISTENING**	**5**
Listening to Casual Conversation- Note-Taking on TED Talks – Summarizing		
UNIT 2	**READING**	**7**
Poem - Robert Frost's Road Not Taken- Decision Making- Biographies of Famous Personalities - Reading and Note Making on News Articles		
UNIT 3	**WRITING**	**5**
Letter Writing - Letters Seeking Permission- Letters Seeking Apology - Letters Requesting Certificates – Analytical Writing		
UNIT 4	**SPEAKING**	**9**
Watching Presentations - Presentation Techniques - Group Presentation - Group Discussion		
UNIT 5	**VERBAL ABILITY**	**4**
Parajumbles - Sentence Completion - Identifying Common Errors		

TOTAL: 30 PERIODS

REFERENCES:

1. M Ashraf Rizvi "Effective Technical Communication", Tata McGraw-Hill, 2st Edition, New Delhi, 2018.
2. Meenakshi Raman and Sangeetha Sharma., "Technical Communication: English Skills for Engineers" Oxford University Press, 1st Edition, New Delhi, 2008.

e. RESOURCES :

1. https://agendaweb.org/listening/audio-books-mp3.html
2. https://www.ndtv.com/world-news
3. http://learnenglishteens.britishcouncil.org/skills/reading
4. https://www.bbc.com/

Course Outcomes: Upon completion of the course, students will be able to:

CO1	Analyze the given listening material and answer the questions correctly employing listening techniques.
CO2	Analyze the given reading material and answer the questions correctly employing reading techniques.
CO3	Write within the stipulated time syntactically and semantically correct sentences to present ideas in the form of essays and letters.
CO4	Take part effectively in group discussion, conforming to professional norms and to give extemporaneous presentation.
CO5	Identify within the stipulated time syntactically and semantically correct sentences for a variety of language exercises.

Cos/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO 1	-	-	-	-	3	-	-	-	-	3	-	-	-	-
CO 2	-	-	-	-	-	-	-	-	-	3	-	-	-	-
CO 3	-	-	-	-	-	-	-	-	3	3	-	1	-	-
CO 4	-	-	-	-	-	-	-	-	3	3	-	1	-	-
CO 5	-	-	-	-	-	-	-	-	-	3	-	1	-	-
Mapping Average	-	-	-	-	3	-	-	-	3	3	-	1	-	-

1 - Slight (Low), 2 - Moderate (Medium), 3 - Substantial (High).

S. Hemalatha

Chairperson - BoS
Dept. of English - VCET

22MCL07	**Communication Skills Laboratory** (Fifth / Sixth Semester)	**L T P C** **0 0 2 0**

Preamble :

Communication Skill is a life skill necessary for all students of Engineering and Technology. The course Communicative Skills Laboratory aims at developing effective oral and written communication to facilitate their success in competitive examinations, and recruitment screening thereby ensuring professional success and progress.

UNIT 1	**RECEPTIVE SKILLS**	**6**

LISTENING & READING – Developing Listening & Reading Skills - Comprehension and Analysis – Listening & Reading for Main Idea - Specific Information - Cloze Test- Rearranging words and sentences

UNIT 2	**PRODUCTIVE SKILLS**	**8**

SPEAKING & WRITING - Group Discussion skills – Structure – Types - Techniques - Keywords -Vital qualities - Attitude and Opinion - Emails and Paragraph Writing - Expository and Persuasive Paragraphs

UNIT 3	**ENGLISH FOR NATIONAL AND INTERNATIONAL EXAMINATIONS**	**4**

Orientation to International English Language Testing System (IELTS) and other Competitive Examinations – MCQs

UNIT 4	**CAREER SKILLS**	**6**

Different types of Interview formats - Answering Questions – FAQ's - Mock Interviews - Body Language - Team Work – Up-skilling - Managing Time - Managing Stress - Negotiation Skills - Networking - Job Application Letter and Resume preparation

UNIT 5	**VERBAL ABILITY**	**6**

Synonyms and Antonyms - Idioms and Phrases - Sentence Construction and Improvement- Paraphrasing - Functional Language — Contextual Vocabulary

TOTAL: 30 PERIODS

REFERENCES:

1.	M Ashraf Rizvi "Effective Technical Communication", Tata McGraw-Hill, 2st Edition, New Delhi, 2018.
2.	Koneru Aruna 'Professional Communication' MC Graw Hill Education, Chennai, 2008.
3.	Upadhyay Meenakshi & Arun Sharma 'Comprehension Interpersonal & Communication Skills for General Studies Civil Services Preliminary Examination' MC Graw Hill Education, New Delhi, 2012.

e. RESOURCES :

1.	https://www.teachingenglish.org.uk/article/email-writing
2.	http://www.oxforddictionaries.com/words/writing-job-applications
3.	https://www.fresherslive.com/online-test/verbal-ability-test/questions-and-answers
4.	www.cambridgeenglish.org

Course Outcomes: Upon completion of the course, students will be able to:

CO1	Respond quickly and correctly to questions from different types of scripts, exhibiting good comprehension and analyzing skills
CO2	Participate effectively in formal group discussions and prepare professional e mails, persuasive and expository paragraphs to establish and meet organizational needs and goals.
CO3	Fare well in IELTS and other English language assessment segments of competitive examinations within the stipulated time.
CO4	Write effective résumés, and face interviews with communicative competence and confidence, with a good knowledge of career skills .
CO5	Select appropriate vocabulary and idiomatic expressions, identify errors in syntax, and arrange sentences to make meaningful paragraphs, without any aid.

Cos/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO 1	-	-	-	-	3	-	-	-	-	3	-	-	-	-
CO 2	-	-	-	-	-	-	-	-	3	3	-	-	-	-
CO 3	-	-	-	-	-	-	-	-	-	3	-	1	-	-
CO 4	-	-	-	-	-	-	-	-	3	3	-	1	-	-
CO 5	-	-	-	-	-	-	-	-	-	3	-	1	-	-
Mapping Average	-	-	-	-	3	-	-	-	3	3	-	1	-	-

1 - Slight (Low), 2 - Moderate (Medium), 3 - Substantial (High).

Chairperson - BoS
Dept. of English - VCET

22MAT21	CALCULUS AND COMPLEX ANALYSIS	L	T	P	C
	(Common to B.E.- BM, EC, EE and MD Programmes in second semester)	3	1	0	4

Pre-requisites : Matrices and Differential Equations

Preamble

Vector calculus is a form of mathematics that is focused on the integration of vector fields. An Engineer should know the Transformations of the Integrals, as Transformation of Line Integral to surface and then to volume integrals. Complex Integration approach is very useful to evaluate many improper integrals of a real variable.

UNIT 1 INTEGRAL CALCULUS **9+3**

Double and Triple Integrals in Cartesian coordinates – Evaluation of Double Integrals by Change of order of Integration – Applications of Multiple Integrals to find Area and Volume

UNIT 2 DIFFERENTIATION OF VECTORS **9+3**

Del Operator – Del applied to scalar point function: Gradient and its applications to find unit normal vector, Directional derivative and Angle between two surfaces – Del applied to vector point function: Divergence, Curl and their applications to find Irrotational and Solenoidal vector fields — Vector operator identities (Statement only) - Simple Problems.

UNIT 3 INTEGRATION OF VECTORS **9+3**

Line, Surface and Volume integrals – Vector Integral Theorems (without proof): Green's theorem in a plane – Gauss Divergence Theorem – Stoke's theorem – Simple applications involving squares, rectangles, cubes and rectangular parallelepipeds.

UNIT 4 ANALYTIC FUNCTIONS **9+3**

Functions of a complex variable – Limit and continuity of f(z) – Derivative of f(z) – Cauchy-Riemann equations – Analytic functions – Harmonic and orthogonal properties of analytic function – Construction of analytic functions by Milne's method – Conformal mapping -Translation w=z+k, Magnification and Rotation w=kz, Inversion and Reflection w=1/z and bilinear transformation.

UNIT 5 COMPLEX INTEGRATION **9+3**

Statement and applications of Cauchy's integral theorem and Cauchy's integral formula (excluding proof) –Power series expansions: Taylor's series and Laurent's series – Singularities – Residues– Cauchy Residue theorem (excluding proof) – Evaluation of real definite integrals as contour integrals (around unit circle, semi-circle excluding poles on the real axis).

Lecture : 45, Tutorial : 15, Total : 60

TEXT BOOKS:

1. Kreyszig Erwin, "Advanced Engineering Mathematics", John Wiley and Sons, 10th Edition, New Delhi, 2016.
2. George B, Thomas, Joel Hass, Christopher Heil and Maurice D. Weir "Thomas' Calculus". Pearson 14 th Edition, 2018

REFERENCES:

1. N.P.Bali,Manish Goyal, "Engineering Mathematics",Lakshmi Publications(PVT) Ltd,4 th edition,2014.
2. Grewal B.S., "Higher Engineering Mathematics" 43rd Edition,Khanna Publishers, New Delhi, 2014.

e-Resources:

1. https://nptel.ac.in/courses/111105122 "Integral and Vector Calculus", Prof. Hari Shankar Mahato, Department of Mathematicss, IIT Kharagpur.
2. https://nptel.ac.in/courses/111103070 "Complex Analysis" Prof. P. A. S. Sree Krishna, Department of Mathematics, IIT Guwahati.

Course Outcomes: Upon completion of this course, students will be able to:

CO1 Apply multiple integrals to determine area and volume in Cartesian coordinates.
CO2 Apply the concepts of vector calculus in vector differentiation.
CO3 Apply the concepts of vector calculus in vector integration.
CO4 Represent the analytic functions using conformal mapping and bilinear transformation.
CO5 Classify the singularities and evaluate complex integration.

Mapping of COs with POs and PSOs

COs/POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO 1	3	3	1	1	-	-	-	-	-	-	-	1	-	-
CO 2	3	3	1	1	-	-	-	-	-	-	-	1	-	-
CO 3	3	3	1	1	-	-	-	-	-	-	-	1	-	-
CO 4	3	3	1	1	-	-	-	-	-	-	-	1	-	-
CO 5	3	3	1	1	-	-	-	-	-	-	-	1	-	-

1 - Slight (Low), 2 - Moderate (Medium), 3 - Substantial (High).

Chairperson - BoS
Dept. of Maths- VCET

Dr.M.ESWARAMURTHI M.Sc.,M.Phil.,Ph.D.,
Professor and Head
Department of Mathematics
Velalar College of Engineering and Technology
Thindal, Erode - 638 012.

22MAT31 TRANSFORM TECHNIQUES AND THEIR APPLICATIONS L T P C

(B.E. Bio Medical Engineering Programme in Third Semester) **3 1 0 4**

Pre-requisites:

22MAT11 Matrices and Differential Equations, 22MAT21 Calculus and Complex Analysis

Preamble:

Transform methods, like Laplace and Fourier are frequently used for analyzing the dynamical behavior of engineering and physical systems, based on their transfer function, and frequency response or the solutions of their corresponding differential equations. This course aims to provide sufficient knowledge to engineering students in the specific mathematical techniques such as Laplace Transform, Fourier series, Fourier transform and Z-transform.

UNIT 1 LAPLACE TRANSFORM *9+3*

Laplace Transform: Conditions for existence – Transform of elementary functions – Basic properties - Transform of periodic functions. Inverse Laplace transform: Inverse Laplace transform of elementary functions – Partial fraction method – Convolution theorem (Statement only) – Applications: Solution of linear ODE of second order with constant coefficients using Laplace Transform.

UNIT 2 FOURIER SERIES *9+3*

Odd and even functions - Dirichlet's conditions – General Fourier series – Half range sine series – Half range cosine series – Parseval's identity – Harmonic Analysis.

UNIT 3 SOLUTION OF BOUNDARY VALUE PROBLEMS USING FOURIER SERIES *9+3*

One dimensional wave equation: Transverse vibrations of a string – One dimensional equation of heat conduction – Steady state temperature distribution in a rod – Two dimensional steady state temperature distributions in a plate.

UNIT 4 FOURIER TRANSFORM *9+3*

Statement of Fourier integral theorem – Fourier transform pair – Fourier sine and cosine transforms – Properties – Convolution theorem – Parseval's identity.

UNIT 5 Z TRANSFORM *9+3*

Z-transforms - Elementary properties – Inverse Z-transform (using Partial Fraction and Residues) – Convolution theorem - Formation of difference equations – Applications: Solution of difference equations using Z-transform.

Lecture: 45; Tutorial: 15; Total: 60

TEXT BOOKS:

1. Erwin Kreyszig, "Advanced Engineering Mathematics", Tenth edition, Wiley Dream Tech India (P) Ltd. (2016).
2. Bali.N.P and Manish Goyal, "A Textbook of Engineering Mathematics", 7th Edition, University Press India (P) Ltd, Hyderabad (2015).

REFERENCES:

1. Ramana.B.V., "Higher Engineering Mathematics", First edition, Tata Mc-GrawHill Publishing Company limited, New Delhi, 2016
2. Grewal, B.S, "Higher Engineering Mathematics", 43rd Edition, Khanna publishers, Delhi (2016)

e-Resources:

1. http://nptel.ac.in/courses/111105035/27 , "Advanced Engineering Mathematics", Prof. Jitendra Kumar, Department of Mathematics, Indian Institute of Technology, Kharagpur
2. http://nptel.ac.in/courses/111106046, "Fourier Series", Prof.R.Radha, and Prof S. Thangavelu, Department of Mathematics, Indian Institute of Technology Madras, Chennai

Course Outcomes: Upon completion of the course, students will be able to:

CO1 Solve linear second order ordinary differential equations with constant coefficients using the properties of Laplace Transform.

CO2 Compute the trigonometric form of the Fourier series for periodic waveforms satisfying the Dirichlet's conditions and using them to evaluate infinite series.

CO3 Compute the analytical solution for the given physical model for the specified initial and boundary conditions in one dimensional and two dimensional distributions using Fourier Series.

CO4 Compute the Fourier transform of non-periodic waveforms using Fourier Transform properties.

CO5 Solve the difference equations of first and second order using Z-transform techniques.

Mapping of COs with POs and PSOs

Cos/POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO1	3	3	1	1	-	-	-	-	-	-	-	1	-	-
CO2	3	3	1	1	-	-	-	-	-	-	-	1	-	-
CO3	3	3	1	1	-	-	-	-	-	-	-	1	-	-
CO4	3	3	1	1	-	-	-	-	-	-	-	1	-	-
CO5	3	3	1	1	-	-	-	-	-	-	-	1	-	-

1- Slight (Low), 2-Moderate (Medium), 3-Substantial (High)

Chairperson - BoS
Dept. of Maths- VCET

Dr.M.ESWARAMURTHI M.Sc.,M.Phil.,Ph.D.,
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22MAT32	TRANSFORM TECHNIQUES AND PROBABILTY THEORY (Common to B.E. Electronics and Communication Engineering and Medical Electronics Programmes in Third Semester)	L	T	P	C
		3	1	0	4

Pre-requisites :

22MAT11-Matrices and Differential Equations , 22MAT21- Calculus and Complex analysis

Preamble

This course aims to provide sufficient knowledge to engineering students in the specific mathematical techniques such as Fourier series, Fourier transforms and Z transforms. Probability theory is used extensively in the design of modern communication systems in order to understand the behavior of noise in the system.

UNIT 1 FOURIER SERIES **9+3**

Dirichlet's conditions – General Fourier series – Odd and even functions – Half range sine series – Half range cosine series – Parseval's identity – Harmonic Analysis

UNIT 2 FOURIER TRANSFORMS 9+3

Statement of Fourier integral theorem – Fourier transforms pair – Fourier sine and cosine transforms – Properties – Convolution theorem – Parseval's identity.

UNIT 3 Z TRANSFORMS 9+3

Z-transforms – Elementary properties – Inverse Z-transform (using Partial Fraction and Residues) – Convolution theorem - Formation of difference equations – Solution of difference equations using Z-transform.

UNIT 4 PROBABILITY THEORY 9+3

Sample space – Events – axioms of probability – conditional probability – Baye's theorem – Random variables: Discrete and continuous random variables – Moments.

UNIT 5 STANDARD DISTRIBUTIONS 9+3

Discrete distributions: Binomial, Poisson and Geometric distributions – Continuous distributions: Uniform, Exponential, Weibull and Normal distributions.

Lecture : 45; Tutorial : 15; Total : 60

TEXT BOOKS:

1. Bali.N.P and Manish Goyal, "A Textbook of Engineering Mathematics", 7th Edition, University Press India (P) Ltd, Hyderabad (2015).
2. Grewal, B.S, "Higher Engineering Mathematics", 43rd Edition, Khanna publishers, Delhi (2016)
3. Ibe.O.C., "Fundamentals of Applied Probability and Random Processes", Elsevier, 2nd Edition 2014.
4. Walpole, S.C., Myers, R.H., Myers,.S.L., and Ye.K., "Probability and Statistics for Engineers and Statistics",9th Edition, Pearson Education India,2013.

REFERENCES:

1. Ramana.B.V., "Higher Engineering Mathematics", First edition, Tata Mc-GrawHill Publishing Company limited, New Delhi, 2016
2. Erwin Kreyszig, "Advanced Engineering Mathematics", Tenth edition, Wiley Dream Tech India (P) Ltd. 2016
3. Johnson R.A.,and Gupta.C.B., 'Miller and Freund's Probability and Statistics for Engineers," 8th Edition,Pearson Education India,2015.
4. Peebles. P.Z., "Probability, Random Variables and Random Signal Principles", Tata Mc Graw Hill, 4th Edition, New Delhi, 2002

e-Resources:

1. https://archive.nptel.ac.in/courses/111/106/111106111/ " Transform techniques for Engineers" Dr. Srinivasa Rao Manam, Department of Mathematics, IIT Madras.

2. http://nptel.ac.in/courses/117105085/7, "Probability and Random Variables", Prof. M. Chakraborty, Department of Electronics and Electrical Communication Engineering, Indian Institute of Technology, Kharagpur.

Course Outcomes: Upon completion of this course, students will be able to:

CO1 Compute the trigonometric form of the Fourier series for periodic waveforms satisfying the Dirichlet's conditions and using them to evaluate infinite series.

CO2 Compute the Fourier transform of non-periodic waveforms using Fourier Transform properties.

CO3 Solve the difference equations of first and second order using Z-transform techniques.

CO4 Understand conditional probability and solve the problems of Baye's theorem. Compute the probability and moments of one dimensional random variables.

CO5 Model and solve the real life problems using discrete and continuous distributions.

Mapping of COs with POs and PSOs

Cos/POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO 1	3	3	1	1	-	-	-	-	-	-	-	1	-	-
CO 2	3	3	1	1	-	-	-	-	-	-	-	1	-	-
CO 3	3	3	1	1	-	-	-	-	-	-	-	1	-	-
CO 4	3	3	1	1	-	-	-	-	-	-	-	1	-	-
CO 5	3	3	1	1	-	-	-	-	-	-	-	1	-	-

1 - Slight (Low), 2 - Moderate (Medium), 3 - Substantial (High).

Chairperson - BoS
Dept. of Maths- VCET

Dr.M.ESWARAMURTHI M.Sc.,M.Phil.,Ph.D.,
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22MAT33	TRANSFORM TECHNIQUES AND NUMERICAL METHODS (B.E. Electrical and Electronics Engineering programme in third semester)	L	T	P	C
		3	1	0	4

Pre-requisites : 22MAT11-Matrices and Differential Equations , 22MAT21- Calculus and Complex analysis

Preamble: *The aim of this course is to learn Transform techniques, which is essential for many engineering applications. The course is designed to aid students in understanding the behavior of frequent transforms used in signal processing, such as the Laplace and Z transforms. Additionally, it aims to acquaint students with a range of numerical analysis techniques, such as the numerical solution of differential equations, and the solution of linear systems of equations.*

UNIT 1 FOURIER SERIES **9+3**

Dirichlet's conditions – General Fourier series – Odd and even functions – Half range sine series – Half range cosine series – Parseval's identity – Harmonic Analysis.

UNIT 2 LAPLACE TRANSFORMS **9+3**

Laplace transform: Sufficient conditions – Transform of elementary functions – Basic Properties— Transform of periodic functions. Inverse Laplace transform: Standard results – Statement of Convolution theorem and its applications – Solution of linear second order ODE with constant coefficients using Laplace transformation techniques.

UNIT 3 Z TRANSFORMS **9+3**

Z-transforms - Elementary properties – Inverse Z-transform (using Partial Fraction and Residues) –Convolution theorem - Formation of difference equations – Solution of difference equations using Z-transform.

UNIT 4 SOLUTION OF ALGEBRAIC AND TRANSCENDENTAL EQUATIONS **9+3**

Algebraic and Transcendental equations – Newton Raphson method – System of Simultaneous equations – Direct Methods : Gauss Jordan and Crout's methods – Iterative method : Gauss Seidel

UNIT 5 NUMERICAL SOLUTIONS TO ORDINARY DIFFERENTIAL EQUATIONS **9+3**

Single step methods: Euler's methods - Modified Euler's method- Fourth order Runge – Kutta method for solving first order equations – Multistep method : Milne's predictor and corrector methods for solving first order equations

Lecture : 45 ; Tutorial :15 ; Total : 60

TEXT BOOKS:

1. Kreyszig Erwin, "Advanced Engineering Mathematics", John Wiley and Sons, 10th Edition, New Delhi, 2016.
2. Grewal B.S., "Higher Engineering Mathematics" 43rd Edition, Khanna Publishers, New Delhi, 2014
3. Grewal. B.S., and Grewal. J.S.,"Numerical methods in Engineering and Science", Khanna Publishers, 10th Edition, New Delhi, 2014.
4. Gerald. C.F and Wheatley. P. O., "Applied Numerical Analysis", Pearson Education, Asia, 7th Edition, New Delhi, 2013.

REFERENCES:

1. Ramana B.V, "Higher Engineering Mathematics", Tata McGraw Hill Publishing Company, 26th Reprint, New Delhi, 2016
2. N.P.Bali,ManishGoyal, "Engineering Mathematics",Lakshmi Publications(PVT) Ltd, 4th Edition, 2014.
3. Chapra. S.C., and Canale. R.P, "Numerical Methods for Engineers", 7th Edition, McGraw Hill Education India Private Limited,2016.

e-Resources:

1. nptel.ac.in/courses/111/106/111106111/ " Transform Techniques for Engineers", Dr.Srinivasa Rao Manam, Department of Mathematics, Indian Institute of Technology Madras, Chennai
2. https://nptel.ac.in/courses/111106139, Laplace Transform, Prof. Indrava Roy, IIT Madras
3. nptel.ac.in/courses/111/107/111107105/, "Numerical Methods", Dr.Ameeya Kumar Nayak and Dr.Sanjev Kumar, Department of Mathematics, Indian Institute of Technology, Roorkee.
4. nptel/courses/video/111107105/L01, "Numerical Methods", Dr.Ameeya Kumar Nayak and Dr.Sanjev Kumar, Department of Mathematics, Indian Institute of Technology, Roorkee.

Course Outcomes: Upon completion of this course, students will be able to:

CO1 Compute the trigonometric form of the Fourier series for periodic waveforms satisfying the Dirichlet's conditions and using them to evaluate infinite series.

CO2 Solve linear second order ordinary differential equations with constant coefficients using the properties of Laplace transform.

CO3 Solve the difference equations of first and second order using Z-transform techniques.

CO4 Compute the real root of the algebraic and transcendental equations and solve the system of linear equations numerically.

CO5 Compute the numerical solutions for the Initial value problems involving ordinary differential equations using single step and multi-step methods.

Mapping of COs with POs and PSOs

Cos/POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO 1	3	3	1	1								1		
CO 2	3	3	1	1								1		
CO 3	3	3	1	1								1		
CO 4	3	3	1	1								1		
CO 5	3	3	1	1								1		

1 - Slight (Low), 2 - Moderate (Medium), 3 - Substantial (High).

Chairperson - BoS
Dept. of Maths- VCET

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22MAT34	DISCRETE MATHEMATICS	L	T	P	C
	(B.E CSE & B.TECH – IT & AI&DS- Third Semester))	3	1	0	4

Pre-requisites : 22MAT12-Matrices and Differential calculus , 22MAT22-Probability and Statistics

Preamble : Discrete Mathematics is a branch of mathematics involving discrete elements that uses algebra and arithmetic. It is increasingly being applied in the practical fields of computer science. Propositional calculus is a formal system whose expressions represent formal objects which can be used in the design of combinational digital circuits. The predicate logic is a part of artificial intelligence which is applicable in the field of robotics, medicine and it is used in intelligent database in order to solve some complex problems. Combinatorics is a fundamental mathematical discipline which provides a foundation in counting techniques that can be applied to algorithm analysis. Graph is a formal way to represent a network. Many problems in computer system can be analyzed using models based on graphs. Concepts of Groups provide the background essential to the study of finite state machines, switching theory and logic design.

UNIT 1 PROPOSITIONAL CALCULUS **9+3**

Propositions –Logical connectives–Compound propositions-Conditional and biconditional propositions –Truth tables–Tautologies and contradictions–Contra positive–Logical equivalences and implications –Normal forms–Principal conjunctive and disjunctive normal forms–Rules of inference.

UNIT 2 PREDICATE CALCULUS **9+3**

Predicates–Statement functions –Variables-Free and bound variables–Quantifiers –Universe of discourse–Logical equivalences and implications for quantified statements–Theory of inference –The rules of universal specification and generalization.

UNIT 3 COMBINATORICS **9+3**

Mathematical induction – Strong induction and well ordering – The basics of counting – The pigeonhole principle – Permutations and combinations – Recurrence relations – Solving linear recurrence relations – Generating functions – Inclusion and exclusion principle and its applications

UNIT 4 GRAPHS **9+3**

Graphs and graph models – Graph terminology and special types of graphs – Matrix representation of graphs and graph isomorphism – Connectivity – Euler and Hamilton paths.

UNIT 5 GROUP THEORY **9+3**

Groups – Subgroups – Permutation groups –Normal subgroup and cosets – Lagrange's theorem – Homomorphism –First fundamental theorem of homomorphism- -Cayley's Theorem.

TOTAL : 60 PERIODS

TEXT BOOKS:

1. Kenneth H.Rosen, "Discrete Mathematics and its Applications", 7th Edition, Tata Mc Graw Hill Private Limited, New Delhi, Special Indian Edition, 2014
2. Tremblay J.P. and Manohar R, "Discrete Mathematical Structures with Applications to Computer Science", Tata Mc Graw Hill Pub. Co. Ltd, New Delhi, 47th Reprint, 2015.

REFERENCES:

1. Ralph.P.Grimaldi., "Discrete and Combinatorial Mathematics: An Applied Introduction", 5th Edition, Pearson Education(Singapore) Private Limited, New Delhi, 8th Impression 2016
2. Thomas Koshy., "Discrete Mathematics with Applications", Elsevier Academic Press, UK, Reprinted 2014.
3. Narsingh Deo, "Graph Theory with Applications to Engineering and Computer Science", Learning Private Limited, Delhi, 2016.
4. Bernard Kolman, Robert Busby, Sharon C. Ross "Discrete Mathematical Structures" 6th Edition,Pearson Education(Singapore) Private Limited, New Delhi, 2014.

e-RESOURCES:

1. http://nptel.ac.in/courses/106106094/1, "Propositional Logic" , http://nptel.ac.in/courses/106106094/3, "Predicate Calculus" and https://nptel.ac.in/courses/106106094/40 "Lattices" Dr.Kamala Krithivasan, Department of Computer Science and Engineering, Indian Institute of Technology, Madras.
2. http://nptel.ac.in/courses/111107058/20, "Graph Theory", and http://nptel.ac.in/courses/111107058/38, "Inroduction to Recurrence Relations" , Dr.Sugata Gangopadhyay, Department of Mathematics, Indian Institute of Technology, Roorkee.

Course Outcomes: Upon completion of this course, students will be able to:

CO1 Construct and check the validity of mathematical arguments using propositional calculus

CO2 Compute the logical structures of ordinary language statements using predicate calculus.

CO3 Compute combinatorial problems by applying Pigeonhole Principle, Permutations and Combinations and solve Linear Recurrence Relations using Generating functions

CO4 Determine whether the graphs are Hamiltonian and/or Eulerian and check Isomorphism between graphs

CO5 Classify the given set as Semigroup, Monoid or Group by using the properties of groups.

Mapping of COs with POs and PSOs

Cos/POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO 1	3	3	1	1								1		
CO 2	3	3	1	1								1		
CO 3	3	3	1	1								1		
CO 4	3	3	1	1								1		
CO 5	3	3	1	1								1		

1 - Slight (Low), 2 - Moderate (Medium), 3 - Substantial (High).

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22MAT35	DIFFERENTIAL EQUATIONS AND TRANSFORMS	L	T	P	C
	(B.E. Civil Engineering programme in third semester)	3	1	0	4

Pre-requisites : 22MAT13-Matrices and Calculus , 22MAT23-Vector Calculus and Complex analysis

Preamble: The laws of nature are expressed as differential equations. Scientists and Engineers must know how to model the real world phenomena in terms of differential equations, to solve those equations and interpret the solutions. This course focuses on differential equations which are significantly used in Engineering problems.

UNIT 1 ORDINARY DIFFERENTIAL EQUATIONS **9+3**

Linear higher order differential equations with constant coefficients – Particular Integrals for the types: e^{ax}, cosax or sinax, x^n – Method of variation of parameters – Applications of differential equations: Simple harmonic motion – bending of beams (Differential equations and associated conditions need to be given).

UNIT 2 LAPLACE TRANSFORMS **9+3**

Laplace transform: Sufficient conditions – Transform of elementary functions – Basic Properties— Transform of periodic functions. Inverse Laplace transform: Standard results –Partial fraction method-Statement of Convolution theorem and its applications – Solution of linear second order ODE with constant coefficients using Laplace transformation techniques.

UNIT 3 PARTIAL DIFFERENTIAL EQUATIONS **9+3**

Formation of partial differential equations – Solving partial differential equations of first order: Clairaut's form, Lagrange's linear equation – Solving Linear partial differential equations of second and higher order with constant coefficients of homogeneous type - Particular Integrals for the types:
$e^{ax+by}, x^m y^n, \sin(ax+by) \text{ or } \cos(ax+by)$.

UNIT 4 FOURIER SERIES **9+3**

Dirichlet's conditions – General Fourier series – Odd and even functions – Half range sine series – Half range cosine series – Parseval's identity – Harmonic Analysis.

UNIT 5 SOLUTION OF BOUNDARY VALUE PROBLEMS USING FOURIER SERIES **9+3**

One dimensional wave equation –Transverse vibrations of a string – One dimensional equation of heat conduction –Steady state temperature distribution in a rod. Two dimensional steady state temperature distributions in a finite plate.

Lecture : 45 ; Tutorial :15 ; Total : 60.

TEXT BOOKS:

1. Kreyszig Erwin,"Advanced Engineering Mathematics",John Wiley and Sons, 10th Edition, New Delhi, 2016.
2. Grewal B.S., "Higher Engineering Mathematics" 44rd Edition, Khanna Publishers, New Delhi, 12th reprint, 2021.

REFERENCES:

1. Ramana B.V, "Higher Engineering Mathematics", Tata McGraw Hill Publishing Company, 26th Reprint, New Delhi, 2016
2. N.P.Bali, ManishGoyal, "Engineering Mathematics",Lakshmi Publications(PVT) Ltd,5th edition.

e-Resources :

1. https:/ /nptel/courses/video/111106111/L02.html ,Lecture on Transform techniques for Engineers,Fourier series examples,by Dr.Srinivasa Rao Manam,Department of Mathematics,IIT,Madras.
2. . https://archive.nptel.ac.in/courses/122/107/122107037/ Lecture on one dimensional wave equation,by Prof.P.N.Agarwal,Department of Mathematics,IIT,Madras.

Course Outcomes: Upon completion of this course, students will be able to:

CO1 Solve linear differential equations with constant coefficients and apply them in solving real world problems.

CO2 Solve linear second order ordinary differential equations with constant coefficients using the properties of Laplace transform.

CO3 Compute the solution for the standard forms of linear partial differential equations of first order and solve homogeneous partial differential equations of first and higher order with constant coefficients.

CO4 Compute the trigonometric form of the Fourier series for periodic waveforms satisfying the Dirichlet's conditions and using them to evaluate infinite series.

CO5 Compute the analytical solution for the given physical model under the specified initial and boundary conditions in one dimensional and two dimensional distributions using Fourier series.

Mapping of COs with POs and PSOs

Cos/POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO 1	3	3	1	1								1		
CO 2	3	3	1	1								1		
CO 3	3	3	1	1								1		
CO 4	3	3	1	1								1		
CO 5	3	3	1	1								1		

1 - Slight (Low), 2 - Moderate (Medium), 3 - Substantial (High).

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22MAT41	PROBABILITY AND RANDOM PROCESSES	L	T	P	C
	(B.E. Bio Medical Engineering Programme in fourth Semester)	3	1	0	4

Pre-requisites:

22MAT11 Matrices and Differential Equations, 22MAT21 Calculus and Complex Analysis,22MAT31 Transform Techniques and their Applications

Preamble

Probability theory is used extensively in the design of modern communication systems in order to understand the behavior of noise in the system. It is concerned with the study of one dimensional random variables. The concept of random process deals with time varying function and plays a vital role in modeling physical phenomenon. The language of signal coding is primarily that of random processes and linear systems. The response of an LTI system to random signals plays an important role in signal analysis.

UNIT 1 ONE DIMENSIONAL RANDOM VARIABLES **9+3**

Axioms – conditional Probability –Discrete and continuous random variables – Distributions: Discrete distributions – Binomial, Poisson – Continuous distributions –Uniform, Exponential ,Normal and Weibull(introduction only) distributions.

UNIT 2 TWO DIMENSIONAL RANDOM VARIABLES 9+3

Joint distributions – Marginal and conditional distributions – Covariance – Correlation and Linear regression

UNIT 3 RANDOM PROCESSES 9+3

Classification – Stationary process – First order , Second order Stationary Process , SSS Process , WSS Process – Markov Process – Poisson Process

UNIT 4 CORRELATION AND SPECTRAL DENSITIES 9+3

Auto correlation functions – Cross correlation functions – Properties – Power spectral density – Cross spectral density – Properties (Excluding Proof)

UNIT 5 LINEAR SYSTEMS WITH RANDOM INPUTS 9+3

Linear time invariant system – System transfer function – Linear systems with random inputs – Autocorrelation and Cross correlation functions of input and output.

Lecture : 45; Tutorial : 15; Total : 60

TEXT BOOKS:

1. Ibe.O.C., "Fundamentals of Applied Probability and Random Processes", Elsevier, 2nd Edition 2022.
2. Hwei Hsu, " Probability, Random Variables and Random Processes", Tata Mc Graw Hill Edition, New Delhi, 3rd Edition 2018

REFERENCES:

1. Jay L. Devore .,"Probability and Statistics for Engineering and the Sciences", 8th Edition, Cengage Learning 2016.
2. Saeed Ghahramani., "Fundamentals of Probability with Stochastic Processes", 3rd Edition, Cengage Learning 2016.
3. Ronald E.Walpole , Raymond H. Myers, Sharon L. Myers, Keying ye., " Probability and Statistics for Engineers and Scientists", 9th Edition, Pearson Education, 2011.
4. Peebles. P.Z., "Probability, Random Variables and Random Signal Principles", Tata Mc Graw Hill, 4th Edition, New Delhi, 2012.

e-Resources:

1. http://nptel.ac.in/courses/117105085/7, "Probability and Random Variables", Prof. M. Chakraborty, Department of Electronics and Electrical Communication Engineering, Indian Institute of Technology, Kharagpur.
2. http://nptel.ac.in/courses/111102014/, "Stochastic Processes", Prof. Dr. S. Dharmaraja , Department of Mathematics, Indian Institute of Technology, Delhi

Course Outcomes: Upon completion of this course, students will be able to:

CO1 Compute moments and moment generating functions of one dimensional random variables and solve the problems involving discrete and continuous distributions.

CO2 Measure the degree of relationship between the two dimensional random variables using correlation and regression.

CO3 Classify the first and second order stationary processes and solve the problems involving Markov and Poisson processes.

CO4 Solve problems involving correlation and spectral densities of random processes.

CO5 Analyze the response of random inputs to linear time invariant systems

Mapping of COs with POs and PSOs

Cos/POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO 1	3	3	1	1	-	-	-	-	-	-	-	1	-	-
CO 2	3	3	1	1	-	-	-	-	-	-	-	1	-	-
CO 3	3	3	1	1	-	-	-	-	-	-	-	1	-	-
CO 4	3	3	1	1	-	-	-	-	-	-	-	1	-	-
CO 5	3	3	1	1	-	-	-	-	-	-	-	1	-	-

1 - Slight (Low), 2 - Moderate (Medium), 3 - Substantial (High).

Chairperson - BoS
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22MAT42	OPTIMIZATION TECHNIQUES AND QUEUEING THEORY (Common to B.E. Computer Science and Engineering , B.Tech Artificial Intelligence and Data Science and B.Tech Information Technology Programmes in fourth semester)	L	T	P	C
		3	1	0	4

Pre-requisites : 22MAT12-Matrices and Differential Calculus , 22MAT22- Probability and Statistics

Preamble: *Optimization Techniques is a discipline to aid decision making and improving efficiency of the system by applying advanced analytical methods. Simplex Algorithm is a powerful method for solving linear programming problems. The Transportation and Assignment problems deal with assigning sources and jobs to destinations and machines and minimize the Transportation cost. PERT and CPM are techniques of project management useful in the basic managerial functions of planning, scheduling and control. Queuing theory provides a rich and useful set of mathematical models for the analysis and design of service process for which there is contention for shared resources.*

UNIT 1 LINEAR PROGRAMMING PROBLEM **9+3**

Introduction to Optimization Techniques,General mathematical formulation for Linear Programming Problem-Canonical and Standard form of LPP,Solution of LPP by graphical Method, simplex method and Big-M method.

UNIT 2 TRANSPORTATION AND ASSIGNMENT PROBLEM **9+3**

Transportation Models– Balanced and unbalanced Problems – Initial Basic feasible solution by N-W Corner Rule, Least cost and Vogel's approximation methods. Check for optimality. Solution by MODI method. Case of Degeneracy. Assignment Models – Balanced and Unbalanced Problems. Solution by Hungarian method

UNIT 3 NETWORK MODELS **9+3**

Introduction - determining the critical path, project scheduling by Critical Method (CPM),Programme Evaluation and Review Technique (PERT) .

UNIT 4 QUEUEING THEORY **9+3**

Markovian queues – Single server with infinite capacity–Multiple server with infinite capacity – Single server with finite capacity – Multiple server with finite capacity –Little's formula.

UNIT 5 ADVANCED QUEUEING MODELS **9+3**

M/G/1 queue – PollaczekKhinchin formula - M/D/1 and M/EK/1 as special cases – Series queues without blocking – Open Jackson networks

LECTURE : 45 TUTORIAL : 15 TOTAL : 60 PERIODS

TEXT BOOKS:

1. Hamdy A.Taha, "Operations Research", 8th Edition, Pearson Prentice Hall , Chennai,2007
2. D.Gross,JohnF.Shortle, James M.Thompson and C.M.Harris,"Fundamentals of Queueing Theory", Wiley India Pvt Ltd,4thReprint,2013.

REFERENCES:

1. A. Ravindran, Don T. Phillips, James J. Solberg, "Operations Research: Principles and Practice", 2nd Edition, Wiley India Edition, New Delhi, 2007.

2. Trivedi.K.S., "Probability and Statistics with Reliability, Queueing and Computer Science Applications", 2nd Edition, Wiley Dream Tech. India (P) Ltd,New Delhi,2013.

e-RESOURCES:

1. https://onlinecourses.nptel.ac.in/noc22_ma48/preview "OPERATION RESEARCH " by Dr. Kusum Deep, Department of Mathematics, Indian Institute of Technology Roorkee, India
2. http://nptel.ac.in/courses/112106131/30"Queueing Models",Prof. G. Srinivasan, Department of Management Studies Indian Institute of Technology,Chennai.

Course Outcomes: Upon completion of this course, students will be able to:

CO1 Formulate the LPP and solve the LPP using graphical method, simplex method and Big M method.

CO2 Solve Balanced and Unbalanced transportation and assignment Problems and get the optimal solutions.

CO3 Construct and use the terminology of project management (PM) as established by CPM and PERT.

CO4 Identify and solve the queueing systems with finite and infinite population using Markovian queueing models.

CO5 Identify and solve the Non Markovian queueing system, series queues and Open Jackson Networks using Markovian queueing models.

Mapping of COs with POs and PSOs

Cos/POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO 1	3	3	1	1								1		
CO 2	3	3	1	1								1		
CO 3	3	3	1	1								1		
CO 4	3	3	1	1								1		
CO 5	3	3	1	1								1		

1 - Slight (Low), 2 - Moderate (Medium), 3 - Substantial (High).

Chairperson - BoS
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22MAT43	NUMERICAL METHODS	L T P C
	(B.E. Civil Engineering programme in fourth semester)	3 1 0 4

Pre-requisites: 22MAT13 – Matrices and Calculus, 22MAT23 – Vector Calculus and Complex Analysis, 22MAT35 - Differential Equations and Transforms

Preamble: The primary objective of the course is to develop the basic understanding of numerical techniques. Numerical analysis is concerned with finding numerical solutions to solve algebraic, transcendental, and differential equations, and to calculate derivatives and integral problems.

UNIT 1 SOLUTION OF EQUATIONS AND EIGENVALUE PROBLEMS **9+3**

Solution of algebraic and transcendental equations -Newton Raphson method – Solution of linear system of equations- Gauss elimination –Pivoting- Gauss Jordon method - Iterative methods of Gauss Jacobi and Gauss-Seidel methods – Eigen value of a matrix by power method .

UNIT 2 INTERPOLATION AND APPROXIMATION **9+3**

Interpolation with unequal intervals-Lagrangian's interpolation – Newton's divided difference interpolation –Interpolation with equal intervals -Newton's forward and backward difference formulas.

UNIT 3 NUMERICAL DIFFERENTIATION AND INTEGRATION **9+3**

Approximation of derivatives using interpolation polynomials –Numerical integration using Trapezoidal and Simpson's 1/3 rules –Evaluation of double integrals by Trapezoidal and Simpsons's 1/3 rules.

UNIT 4 NUMERICAL SOLUTION TO ORDINARY DIFFERENTIAL EQUATIONS **9+3**

Single step methods: Euler's methods-Modified Euler's method- Fourth order Runge – Kutta method for solving first order equations – Multistep methods- Milne's predictor and corrector methods for solving first order equations.

UNIT 5 NUMERICAL SOLUTION TO PARTIAL DIFFERENTIAL EQUATIONS **9+3**

Finite difference techniques for the solution of One Dimensional heat flow equation by explicit and implicit (Crank Nicholson) methods – One dimensional wave equation by explicit method-Two dimensional Laplace equations on rectangular domain.

Lecture : 45; Tutorial : 15; Total :60

TEXT BOOKS:

1. Chapra. S.C., and Canale. R.P, "Numerical Methods for Engineers", 7th Edition, McGraw Hill Education India Private Limited,2016.
2. Gerald. C.F and Wheatley. P. O., "Applied Numerical Analysis", Pearson Education, Asia, 7th Edition, New Delhi, 2013.

REFERENCES:

1. Grewal. B.S., and Grewal. J.S.,"Numerical methods in Engineering and Science", Khanna Publishers, 10th Edition, New Delhi, 2014.

e-RESOURCES:

1. http://nptel.ac.in/courses/111105038/2, "Numerical Solution of Ordinary and Partial differential Equations", Prof. G. P. Raja Shekhar, Department of Mathematics, Indian Institute of Technology, Kharagpur
2. http://nptel.ac.in/courses/122102009/16, "Numerical Methods and Computation", Prof. S.R.K Iyengar , Department of Mathematics, Indian Institute of Technology ,New Delhi.

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Course Outcomes: Upon completion of the course, students will be able to:

CO1 Compute the real root of the algebraic and transcendental equations and solve the system of linear equations numerically.

CO2 Construct an Interpolation polynomial that approximates the given data table to determine the intermediate values.

CO3 Perform differentiation and integration for the functions using numerical techniques.

CO4 Compute the numerical solutions for the Initial value problems involving ordinary differential equations using single step and multi step methods.

CO5 Compute the numerical solution for the Boundary value problems involving partial differential equations using implicit and explicit methods.

Mapping of Cos with Pos and PSOs

Cos/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	1	1								1		
CO2	3	3	1	1								1		
CO3	3	3	1	1								1		
CO4	3	3	1	1								1		
CO5	3	3	1	1								1		

1 – Slight (Low), 2 – Moderate (Medium), 3 – Substantial (High)

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22MAT44 DIFFERENTIAL EQUATIONS AND SCIENTIFIC COMPUTING L T P C

(B.E Mechanical Engineering Programme in Fourth Semester) 3 1 0 4

Pre-requisites: 22MAT13 – Matrices and Calculus, 22MAT23 – Vector Calculus and Complex Analysis

Preamble

This course aims at providing the necessary basic concepts of order differential equations, partial differential equations and numerical techniques. Computational methods aim for getting numerical solution for algebraic, transcendental equations, boundary value problems and initial value problems.

UNIT 1 ORDINARY DIFFERENTIAL EQUATIONS 9+3

Linear higher order differential equations with constant coefficients – Particular Integrals for the types: $e^{ax}, cosax\ or\ sinax,\ x^n$ – Method of variation of parameters – Applications of differential equations: Simple harmonic motion – bending of beams (Differential equations and associated conditions need to be given).

UNIT 2 PARTIAL DIFFERENTIAL EQUATIONS 9+3

Formation of partial differential equations – Solving partial differential equations of first order: Clairaut's form, Lagrange's linear equation – Solving Linear partial differential equations of second and higher order with constant coefficients of homogeneous type - Particular Integrals for the types:
$e^{ax+by}, x^m y^n, (ax+by)\ or\ cos\ cos\ (ax+by)$.

UNIT 3 SOLUTION OF EQUATIONS AND EIGENVALUE PROBLEMS 9+3

Algebraic and Transcendental equations-Newton Raphson method – System of Simultaneous equations – Gauss elimination method – pivoting – Gauss Jordan methods – Iterative methods of Gauss Jacobi and Gauss Seidel — Eigenvalues of a matrix by power method.

UNIT 4 NUMERICAL SOLUTION OF ORDINARY DIFFERENTIAL EQUATIONS 9+3

Taylor's series - Euler's method — Fourth order Runge - Kutta method for solving first order equations – Milne's predictor corrector methods for solving first order equations.

UNIT 5 NUMERICAL SOLUTION TO PARTIAL DIFFERENTIAL EQUATIONS 9+3

Finite difference techniques for the solution of One Dimensional heat flow equation by explicit and implicit (Crank Nicholson) methods – One dimensional wave equation by explicit method-Two dimensional Laplace equations on rectangular domain.

Lecture : 45, Tutorial : 15, Total : 60

TEXT BOOKS:

1. Grewal. B.S., "Numerical Methods in Engineering and Science", 10th Edition, Khanna Publishers, New Delhi, 2014.
2. Grewal B.S., "Higher Engineering Mathematics" 44th Edition, Khanna Publishers, New Delhi, 2014

REFERENCES:

1. Chapra. S.C., and Canale. R.P, "Numerical Methods for Engineers", 7thEdition, McGraw Hill Education India Private Limited,2016.
2. Gerald. C.F., and Wheatley. P.O. "Applied Numerical Analysis" 7th Edition, Pearson Education India, 2013.
3. Ramana B.V, "Higher Engineering Mathematics", Tata McGraw Hill Publishing Company, 26thReprint, New Delhi, 2016

e-Resources:

1. https://archive.nptel.ac.in/courses/111/106/111106100/01 ," Introduction to Ordinary Differential Equations", Module-IV, Dr. Srinivasa Rao Manam, Department of Mathematics, Indian Institute of Technology , Madras.

2. https://archive.nptel.ac.in/courses/111/106/111106100/21, " Differential Equations", Module-IV, Dr.Srinivasa Rao Manam, Department of Mathematics, Indian Institute of Technology , Madras.
3. https://archive.nptel.ac.in/courses/127/106/127106019/10 , "Numerical Methods for Engineers" Prof. NiketKaisare , Department of Mathematics, Indian Institute of Technology , Madras.

Course Outcomes: Upon completion of this course, students will be able to:

CO1 Solve linear differential equations with constant coefficients and apply them in solving real world problems.

CO2 Compute the solution for the standard forms of linear partial differential equations of first order and solve homogeneous partial differential equations of first and higher order with constant coefficients.

CO3 Compute the real root of the algebraic and transcendental equations and solve the system of linear equations numerically.

CO4 Solve the ordinary differential equations using Taylor's series, Euler's method and Runge-Kutta method.

CO5 Compute the numerical solution for the Boundary value problems involving partial differential equations using implicit and explicit methods.

Mapping of COs with POs and PSOs

Cos/POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO 1	3	3	1	1	-	-	-	-	-	-	-	1	-	-
CO 2	3	3	1	1	-	-	-	-	-	-	-	1	-	-
CO 3	3	3	1	1	-	-	-	-	-	-	-	1	-	-
CO 4	3	3	1	1	-	-	-	-	-	-	-	1	-	-
CO 5	3	3	1	1	-	-	-	-	-	-	-	1	-	-

1 - Slight (Low), 2 - Moderate (Medium), 3 - Substantial (High).

Chairperson - BoS
Dept. of Maths- VCET

Dr.M.ESWARAMURTHI M.Sc.,M.Phil.,Ph.D.,
Professor and Head
Department of Mathematics
Velalar College of Engineering and Technology
Thindal, Erode - 638 012.

22HST21	TAMILS AND TECHNOLOGY	L	T	P	C
		1	0	0	1

UNIT 1 WEAVING AND CERAMIC TECHNOLOGY **3**

Weaving Industry during Sangam Age – Ceramic technology – Black and Red Ware Potteries (BRW) – Graffiti on Potteries.

UNIT 2 DESIGN AND CONSTRUCTION TECHNOLOGY **3**

Designing and Structural construction House & Designs in household materials during Sangam Age - Building materials and Hero stones of Sangam age – Details of Stage Constructions in Silappathikaram - Sculptures and Temples of Mamallapuram - Great Temples of Cholas and other worship places - Temples of Nayaka Period - Type study (Madurai Meenakshi Temple)- Thirumalai Nayakar Mahal - Chetti Nadu Houses, Indo - Saracenic architecture at Madras during British Period.

UNIT 3 MANUFACTURING TECHNOLOGY **3**

Art of Ship Building - Metallurgical studies - Iron industry - Iron smelting, steel -Copper and gold Coins as source of history - Minting of Coins – Beads making-industries Stone beads -Glass beads - Terracotta beads -Shell beads/ bone beats - Archeological evidences - Gem stone types described in Silappathikaram.

UNIT 4 AGRICULTURE AND IRRIGATION TECHNOLOGY **3**

Dam, Tank, ponds, Sluice, Significance of Kumizhi Thoompu of Chola Period, Animal Husbandry - Wells designed for cattle use - Agriculture and Agro Processing - Knowledge of Sea - Fisheries – Pearl - Conche diving - Ancient Knowledge of Ocean - Knowledge Specific Society.

UNIT 5 SCIENTIFIC TAMIL & TAMIL COMPUTING **3**

Development of Scientific Tamil - Tamil computing – Digitalization of Tamil Books – Development of Tamil Software – Tamil Virtual Academy – Tamil Digital Library – Online Tamil Dictionaries – Sorkuvai Project.

Total : 15

TEXT-CUM-REFERENCE BOOKS

1. தமிழகவரலாறு – மக்களும்பண்பாடும் – கே.கே.பிள்ளை (வெளியீடு: தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்)
2. கணினித்தமிழ் – முனைவர் இல. சுந்தரம். (விகடன் பிரசுரம்).
3. கீழடி – வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு)
4. பொருநை – ஆற்றங்கரை நாகரிகம். (தொல்லியல் துறை வெளியீடு)
5. Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print)
6. Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies.
7. Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies).
8. The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.)
9. Keeladi - 'Sangam City C ivilization on the banks of river Vaigai' (Jointly Published by: Department ofArchaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)
10. Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Published by: The Author)
11. Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)
12. Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) – Reference Book.

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22HST11	HERITAGE OF TAMILS	L	T	P	C
		1	0	0	1

UNIT 1 LANGUAGE AND LITERATURE **3**

Language Families in India - Dravidian Languages – Tamil as a Classical Language - Classical Literature in Tamil – Secular Nature of Sangam Literature – Distributive Justice in Sangam Literature - Management Principles in Thirukural - Tamil Epics and Impact of Buddhism & Jainism in Tamil Land - Bakthi Literature Azhwars and Nayanmars - Forms of minor Poetry - Development of Modern literature in Tamil - Contribution of Bharathiyar and Bharathidhasan.

UNIT 2 HERITAGE - ROCK ART PAINTINGS TO MODERN ART – SCULPTURE **3**

Hero stone to modern sculpture - Bronze icons - Tribes and their handicrafts - Art of temple car making - - Massive Terracotta sculptures, Village deities, Thiruvalluvar Statue at Kanyakumari, Making of musical instruments - Mridhangam, Parai, Veenai, Yazh and Nadhaswaram - Role of Temples in Social and Economic Life of Tamils.

UNIT 3 FOLK AND MARTIAL ARTS **3**

Therukoothu, Karagattam, Villu Pattu, Kaniyan Koothu, Oyillattam, Leatherpuppetry, Silambattam, Valari, Tiger dance - Sports and Games of Tamils.

UNIT 4 THINAI CONCEPT OF TAMILS **3**

Flora and Fauna of Tamils & Aham and Puram Concept from Tholkappiyam and Sangam Literature - Aram Concept of Tamils - Education and Literacy during Sangam Age - Ancient Cities and Ports of Sangam Age - Export and Import during Sangam Age - Overseas Conquest of Cholas.

UNIT 5 CONTRIBUTION OF TAMILS TO INDIAN NATIONAL MOVEMENT AND INDIAN CULTURE **3**

Contribution of Tamils to Indian Freedom Struggle - The Cultural Influence of Tamils over the other parts of India – Self-Respect Movement - Role of Siddha Medicine in Indigenous Systems of Medicine – Inscriptions & Manuscripts – Print History of Tamil Books.

Total : 15

TEXT-CUM-REFERENCE BOOKS

1. தமிழகவரலாறு – மக்களும்பண்பாடும் – கே.கே.பிள்ளை (வெளியீடு:தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்)
2. கணினித்தமிழ் - முனைவர் இல. சுந்தரம். (விகட ன் பிரசுரம்).
3. கீழடி – வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு)
4. பொருநை – ஆற்றங்கரை நாகரிகம். (தொல்லியல் துறை வெளியீடு)
5. Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print)
6. Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies.
7. Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies).
8. The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.)
9. Keeladi - 'Sangam City Civilization on the banks of river Vaigai' (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)
10. Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Publishedby: The Author)
11. Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)
12. Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) – Reference Book.

22MCT08 INDIAN CONSTITUTION AND TRADITIONAL KNOWLEDGE L T P C
3 0 0 0

PREAMBLE: The course provides basic information on Indian Constitution and Indian Traditional knowledge. This is essential for all citizens and especially for engineers so that they become aware of Indian polity and governance. This also reminds the citizen about their obligation, adherence and upkeeping of Constitutional rights.

Course Outcomes: Upon completion of the course, students will be able to:

1. Outline the evolution of Indian constitution and Federal structure
2. List the functions of Centre, States and District Administrations
3. Elaborate the roles of Panchayatiraj
4. Explain the powers and roles of Election Commission
5. Illustrate the Indian traditional knowledge and elucidate their recovery

UNIT 1 **6**

Constitution' meaning of the term, Indian Constitution:Sources and constitutional history, Features: Citizenship, Preamble, Fundamental Rights and Duties, Directive Principles of State Policy - Structure of the Indian Union: Federalism, Centre- Staterelationship, President: Role, power and position, PM and Council of ministers, Cabinet and Central Secretariat, Lok Sabha, Rajya Sabha

UNIT 2 **6**

Governor: Role and Position, CM and Council ofministers, State Secretariat: organisation, Structure andFunctionsDistrict's Administration head: Role and Importance,Municipalities: Introduction, Mayor and role of ElectedRepresentative, CEO of Municipal Corporation,

UNIT 3 **6**

Panchayatraj: Introduction, PRI: Zila Panchayat, Elected officials and their roles, CEO Zila Panchayat: Position and role, Blocklevel: Organizational Hierarchy (Different departments),Village level: Role of Elected and Appointed officials,Importance of grass root democracy

UNIT 4 **6**

Election Commission: Role and Functioning, Chief Election Commissioner and Election Commissioners, StateElection Commission: Role and Functioning, Institute and Bodies for the welfare of SC/ST/OBC and women

UNIT 5 **6**

BasicstructureofIndianKnowledgeSystem-Modern Science and Indian Knowledge - PhilosophicalTradition - Indian Linguistic Tradition (Phonology, morphology, syntax and semantics) - IndianArtisticTradition

TEXT BOOKS:TOTAL: 30 PERIODS

1. M.Rajaram, Indian Constitution, New Age International, 2009
2. V.Sivaramakrishnan (Ed.) Cultural Heritage of India (CourseMaterial),Bharatiya Vidya Bhavan, Mumbai. 5th Edition,2014

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22MCT02

UNIVERSAL HUMAN VALUES

(Common to All B.E/ B.TECH programmes)

L T P C
0 0 2 0

Preamble:

Universal Human Values is a life skill necessary for all to develop physical health and factors for strengthening life force. This course aims to expose the students in the areas of mediation and impart the knowledge on social virtues and morals.

Course Outcomes: Upon completion of the course, students will be able to:

1. Demonstrate the knowledge on physical health
2. Discuss the various factors for strengthening life force
3. Classify mind waves and explain the benefits of meditation
4. Explain individual and social virtues
5. Identify and explain the importance of morals.

UNIT 1 Physical Health **6**

SKY – Introduction – Education as a means for youth empowerment – Greatness of Education – Yoga for Youth Empowerment – Simplified Physical Exercises: Explanation – Hand, Leg, Breathing and Eye exercises – Kapalabathi, Makarasanam, Massaging, Acupressure and Relaxation practices –Yogasanas- Explanation – Benefits.

UNIT 2 Strengthening Life Forces **6**

Reasons for Diseases: Natural Reasons (Hereditary, Planetary Position, Natural Calamities and Climatic changes) – Artificial Reasons (Food, Thought, Deed). Philosophy of Kayakalpa: Physical Body –Life Force – Biomagnetism – Mind. Maintaining Youthfulness – Postponing Aging – Transformation of Food into seven Body constituents.

UNIT 3 Wellness of Mind **6**

Classification of Mind Waves – Beta, Alpha, Theeta, Delta – Agna Meditation – Benefits. Shanthi Mediation – Benefits. Thuriya Meditation – Benefits. Blessing and its Benefits: Auto Suggestion – Blessing the family and others – Blessings the World – Divine Protection.

UNIT 4 Virtues **6**

Individual Virtues: Self Control – Self Confidence – Speaking Truth – Contentment – Humility – Mind Control. Tolerance – Adjustment – Sacrifice – Forgiveness. Cleanliness (Body, Dress, Surrounding)-External, Mental, Inner Cleanliness. **Societal Virtues** :Ahimsa – Services, Patriotism – Equality, Respecting the parents and elders – Caring for them – Respecting Teachers. Punctuality – Time Management.

UNIT 5 Morals **6**

Importance of introspection: I and Mine (Ego, Possessiveness), Six Temperaments: Greed – Anger – Miserliness – Immoral Sexual Passion – Inferior Superior complex – Vengeance. Maneuvering the Six Temperaments: Contentment – Tolerance – Charity – Chastity – Parity – Forgiveness. Five important Benefits of Meditation: Perspicacity – Magnanimity – Adaptability – Receptivity – Creativity. (Enhancing memory) (Effective Examination Preparation)

TOTAL : 30 PERIODS

TEXT BOOKS:

1. "Yoga for Youth Empowerment" compiled by Vethathiri Maharishi Institute for Spiritual and Institutional Education, Aliyar, Pollachi, 1st Edition 2016.
2. "Yoga for Human Excellence", compiled by Vethathiri Maharishi Institute for Spiritual and Institutional Education, Aliyar, Pollachi 1st Edition 2009.

e-RESOURCE:

1. www.online.vethathiri.edu.in "online in (Virtual) Programme on Yoga and Human Excellence".

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22MCT12 **HUMAN VALUES AND PROFESSIONAL ETHICS** **L T P C**

(Common to all B.E/B.Tech Programmes) **3 0 0 3**

Preamble:

Universal Human Values is a life skill necessary for all students of Engineering and Technology. The course aims to identify the values and skills, and to realize the need, basic guidelines, content and process of value education. Professional Ethics For Engineers deals with the human values, integrity and work ethics in the common world. This course is mainly concerned about the theories of ethics, which form the basis for the understanding and responsibility of the various groups encountered in Engineering.

Course Outcomes: Upon completion of the course, students will be able to:

1. Relate the significance of value inputs in a classroom and start applying them in their life and profession.
2. Distinguish between values and skills, happiness and accumulation of physical facilities, the Self and the Body, Intention and Competence of an individual.
3. Interpret the value of harmonious relationships based on the trust and respect in their life and profession.
4. Discuss the ethical issues related to Engineering.
5. Discuss Engineer's work in the context of its impact on society.

UNIT 1 INTRODUCTION TO UNIVERSAL HUMAN VALUES **9**

Understanding the need, basic guidelines, content and process for Value Education. Self Exploration–Mechanism for self exploration. Continuous Happiness and Prosperity- Basic Human Aspirations and its requirements for fulfillment of Human Aspirations understanding and living in harmony at various levels.

UNIT 2 HARMONY IN ONESELF, FAMILY AND SOCIETY **9**

Understanding human being as a co-existence of the sentient 'I' and the material 'Body'. Understanding the needs of Self ('I') and 'Body' - Sukh and Suvidha. Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer). Understanding harmony in the Family- the basic unit of human interaction. Understanding values in human-human relationships. Trust and Respect- values of relationship. Difference between intention and competence. Difference between respect and differentiation

UNIT 3 HOLISTIC UNDERSTANDING OF HARMONY ON PROFESSIONAL ETHICS **9**

Natural acceptance of human values. Definitiveness of Ethical Human Conduct. Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order. Competence in Professional Ethics. Ability to utilize the professional competence for augmenting universal human order, Ability to identify the scope and characteristics of people-friendly and eco-friendly production systems, technologies and management models.

UNIT 4 ENGINEERING ETHICS **9**

Senses of Engineering Ethics– Variety of moral issues – Types of inquiry – Moral dilemmas – Moral autonomy – Kohlberg's theory – Gilligan's theory – Consensus and controversy – Models of professional roles –Professional responsibility - Moral reasoning - Theories about right action – Self interest – Self respect – Duty ethics – Customs and religion.

UNIT 5 ENGINEERING AS SOCIAL EXPERIMENTATION **9**

Engineering as experimentation – Engineers as responsible experimenters – Role of codes- Codes of Ethics – Sample code of Ethics like ASME, ASCE, IEEE, Institution of Engineers (India), Indian Institute of Materials Management, Institution of Electronics and Telecommunication Engineers (IETE) – A balanced outlook on law - Safe exits -The Bhopal gas tragedy and Challenger case study

TOTAL : 45 PERIODS

TEXT BOOKS:

1. Gaur R R, Sangal R, Bagaria G P, "A Foundation Course in Human Values and Professional Ethics". 2009
2. Govindarajan M, Natarajan S and Senthil Kumar V. S, "Engineering Ethics", PHI Learning Pvt. Ltd, New Delhi, 2017.

REFERENCES:

1. Banerjee B P, "Foundations of Ethics and Management", Excel Books. 2005.
2. Bajpai B L, "Indian Ethos and Modern Management", New Royal Book Co., Lucknow. Reprinted 2008.
3. Subramanian R, "Professional Ethics", Oxford university press, 2017.

e-RESOURCES:

1. https://www.uhv.org.in/
2. https://nptel.ac.in/courses/109/106/109106117/

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VELALAR COLLEGE OF ENGINEERING AND TECHNOLOGY

(An Autonomous Institution Affiliated to Anna University)

Department of Management Studies (MBA)

Minutes of Board of Studies Meeting

Name of the Department : Management Studies
Programme (s) : MBA Board: MBA
Date, Time & Venue : 13.05.2023, 10.00 a.m. & MBA Seminar Hall, VCET with External Members
Meeting Number : 08

Agenda of Meeting

1. Review of Curriculum and Regulation under R2022
2. Review of Syllabus under R2022
3. Framing of Syllabus under R2022 for Semester- 3 & Semester- 4
4. Any other matters

The members who were present in the Board of Studies Meeting is given in Annexure – 01

The Chairman of the Board of Studies welcomed all the members to the meeting for review of the Curriculum and Syllabus for 3rd and 4th Semesters under the Regulation 2022. The items listed in the agenda were taken for discussion one by one. The minutes of the meeting are as follows:

01 - Review of Curriculum & Syllabus under R2022

Discussion:

1. The Board Members recommended bringing eight courses per elective in the MBA programme.

2. Board of Studies discussed to bring the additional courses as per industry expectations and the interest of the students.

Resolution:

1. The above recommended new courses were brought up from five courses to eight courses in each Elective in the syllabus and curriculum of MBA programme.

2. The Board members recommendation, industry expectations and the interest of the students to bring additional courses like NPTEL were brought in the MBA programme.

02 - Ratification of Syllabus for 3rd and 4th Semesters under R2022

Discussion:

1. In the course 23MSE02 Product and Brand Management, in the Unit-II, the topic Brand Management has to be included.

2. Syllabus modifications with title and contents for the courses 22MSE12- Talent Management and 22MSE12 - Financial Derivatives have to be done in Unit-3.

3. The Board of Studies recommended inclusion of topics on the course contents in 22MSE01 – Retail Marketing, 22MSE43- Logistics Management, 22MSE15 –Event Management, 22MSE10 –Banking and Financial Services, 22MSE62 Resort Planning and Development and 22MSE31 - Multi Media Technologies.

Resolution:

1. In view of current changes in the Course 23MSE02 Product and Brand Management, in the Unit-II, the topic Brand Management has been added.

2. Syllabus modifications and updates with title and contents for the courses 22MSE12- Talent Management and 22MSE12 - Financial Derivatives have been done at Unit-3.

4. Inclusions of the contents have been done for the courses 22MSE01 – Retail Marketing, 22MSE43- Logistics Management, 22MSE15 –Event Management, 22MSE10 –Banking and Financial Services 22MSE62 Resort Planning and Development and 22MSE31 - Multi Media Technologies.

The Chairman, Board of Studies thanked all the members for their valuable suggestions.

Chairman-BoS

VELALAR COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)
Department of Management Studies (MBA)

Members of Board of Studies

Date: 13.05.2023

Sl.No.	Name, Designation & Address	Category
1.	Dr.T.Vetrivel, Professor & Head, Dept. of Management Studies, Email: vetreemba@gmail.com Mobile No: 98436 58303	Chairman
2.	Dr. R.Deepa, Associate Professor - Management Studies, PSG Institute of Management, PB No.1668, Peelamedu, Coimbatore - 641 004 Email: deepa@psgim.ac.in Mobile No: 9843691919	University Nominee
3.	Dr.P.Vidhya Priya, Professor & Head, Department of Management Studies, Kongu Engineering College, Perundurai, Erode - 638060 Email: vidyapriya@kongu.ac.in Mobile No: 9787742193	Academic Council Nominee
4.	Dr.R.Subramaniya Bharathy, Associate Professor, Department of Management Studies, Periyar University, Salem - 636011 Email: bharathyprims@gmail.com Mobile No: 9865265208	
5.	Mr.N.Sampathkumar, DGM – Training and Development, Roots Industries India Limited, RKG Industrial Estate, Ganapathy, Coimbatore - 641006 Email: sampath@roots.co.in Mobile No: 9994343303	Industry / Corporate Sector
6.	Mr.P.Vijayakumar, Director and CEO, Tavira services Pvt Ltd 3/370, Bangalow Thottam, Sanyasi Koondu, Salem - 636015 E. Mail: ceo@tavira.co.in Mobile No: 9566088356	
7.	Mr.K.S.Sabhapathi, Lead Manager - PMO, Wipro Technologies, Chennai Email: raghusabha@gmail.com Mobile No: 9952362202	Alumnus
8.	Dr. D. Muthukrishnaveni, Professor - Management Studies	Internal Members
9.	Dr. S. Kumar, Assoc. Professor - Management Studies	
10.	Dr. K.T. Kalaiselvi, Assoc. Professor - Management Studies	
11.	Dr. A. Kannammal, Assoc. Professor - Management Studies	
12.	Dr. N. Balachandran, Asst. Professor - Management Studies	
13.	Ms. L.Rasiga Priya Asst. Professor - Management Studies	

Chairman - BoS

Annexure - 01

VELALAR COLLEGE OF ENGINEERING AND TECHNOLOGY
(An Autonomous Institution, Approved by AICTE, New Delhi & Affiliated to Anna University)
Thindal (PO), Erode – 638012.
Ph: (0424) 2244201 - 204, **FAX:** 0424 2244205, **Email:** principal@velalarengg.ac.in

Board of Studies Meeting
Attendance

Name of the Department : Management Studies (MBA)
Meeting No : 08
Date & Time : 13.05.2023 & 10.00 a.m.
Venue : MBA Seminar Hall with External Members

Sl.No.	Name	Category	Signature
1.	Dr.T.Vetrivel	Chairman	
2.	Dr. R.Deepa	University Nominee	
3.	Dr.P.Vidhya Priya	Academic Council Nominee	
4.	Dr.R.Subramaniya Bharathy		
5.	Mr.N.Sampathkumar	Industry / Corporate Sector	
6.	Mr.P.Vijayakumar		
7.	Mr.K.S.Sabhapathi	Alumnus	
8.	Dr.D.Muthukrishnaveni	Internal Faculty Members	
9.	Dr. S. Kumar		
10.	Dr. K.T. Kalaiselvi		
11.	Dr. A. Kannammal		
12.	Dr.N.Balachandran		
13.	Ms. L.Rasiga Priya		

Chairman - BoS (MBA)