SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE
(An Autonomous Institution)
(Approved by AICTE, New Delhi and Affiliated to Pondicherry University)
(Accredited by NAAC with 'A' Grade and Accredited by NBA-AICTE, New Delhi)
Madagadipet, Puducherry

Department of Civil Engineering

Minutes of 6th BoS Meeting

Venue

R&D Lab, Mechanical Block
Sri Manakula Vinayagar Engineering College
Madagadipet, Puducherry – 605 107

Date & Time

21.07.2023 at 10.00 am

Dr.S. SUNDARARAMAN, M.Tech., Ph.D.,
Professor & Head
Department of Civil Engg
Sri Manakula Vinayagar Engg. College
Madagadipet, Puducherry, India

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Department of Civil Engineering

21.07.2023

Minutes of 6th Board of Studies Meeting (UG)

The sixth Board of Studies meeting of Department of Civil Engineering was held on 21st July 2023 at 10:00 a.m in the R&D Lab, Mechanical Block, Sri Manakula Vinayagar Engineering College with Head of the Department in the Chair.

The following members were present for the BoS meeting,

Sl.No	Name of the Member with Designation and official Address	Members as per UGC norms
1	Dr. S.Sundararaman Professor and Head Department of Civil Engineering, SMVEC, Madagadipet – 605107	Chairman
2	Dr R Senthil Professor& HOD Civil, Division of Structural Engineering, Department of Civil Engineering, College of Engg., Guindy, Anna University, Chennai	Subject Expert (Pondicherry University Nominee)
3	Dr.R.Malathy Professor and Dean (Research) Dept. of Civil Engineering, Sona College of Technology, Salem	Subject Expert (Academic Council Nominee)
4	Dr A Rose Enid Teresa Professor and Head Rajalakshmi Engineering College, Chennai	Subject Expert (Academic Council Nominee)
5	Dr.B.Parthiban Assistant Manager – Structural Designer, Fujita Engineering India Pvt. Ltd., Chennai	Representative from Industry
6	Shri. G. Abdul Hakkim Design Engineer Emmarde Steel Private Limited, Puducherry	Alumni Member

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7	Dr. S. Jayakumar Controller of Examinations Professor in Civil Engineering, SMVEC, Madagadipet – 605107	Internal Member
8	Ms.G . Yamuna Assistant Professor, Department of Civil Engineering, SMVEC, Madagadipet – 605107	Internal Member
9	Mr. K. Srinivasan Assistant Professor, Department of Civil Engineering, SMVEC, Madagadipet – 605107	Internal Member
10	Mrs. D.Sathiyasree Assistant Professor, Department of Civil Engineering, SMVEC, Madagadipet – 605107	Internal Member
11	Mrs. D.Jaichithra Associate Professor, Department of English, SMVEC, Madagadipet – 605107	Internal Member
12	Dr.T Sivaranjini Assistant Professor, Department of Physics, SMVEC, Madagadipet – 605107	Internal Member
13	Dr.S.Savithri Professor and Head, Department of Chemistry, SMVEC, Madagadipet – 605107	Internal Member
14	Mr.M.Devanathan Assistant Professor, Department of Mathematics, SMVEC, Madagadipet – 605107	Internal Member

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Agenda of the Meeting

1. Review of 5th BoS Minutes of Meeting
2. To appraise and approve the following chosen Elective Courses,
   a) Professional Elective courses for VIII Semester under Regulation 2019 for the batch 2019 - 2023
   b) Professional & Open Elective courses for IV semester, V semester & VI semester under Regulation 2020 for the batches 2021 - 2025 & 2020 -2024.
3. To appraise and approve on the following chosen Employability Enhancement Courses,
   a) Skill Development courses for II to VI semesters under Regulation 2020 for the batches 2022 - 2026, 2021-2025 & 2020 -2024
   b) Certificate courses for I to VI semesters under Regulation 2020 for the batches 2022 -2026, 2021-2025 & 2020 -2024
   c) NPTEL / MOOC & online certification courses for VI semester & VIII Semester under Regulation 2020 & Regulation 2019 for the batches 2020 – 2024 & 2019 – 2023 respectively
4. To appraise and approve the Academic Calendar for Even Semester 2022 -2023
   a) Quality Circle Meeting (QCM)
   b) Continuous Assessment Test (CAT)
   c) Model Exam and End Semester Examination
   d) Redo / Discontinue students
5. To discuss about the,
   a) Department Advisory Committee (DAC) Meeting
   b) Curriculum Advisory Committee (CAC) Meeting
6. To appraise and approve the Department Research activities
   a) Publications
   b) Ph.D Full time/ Part time program progress
   c) Ph.D admission for the academic year 2023 – 2024
7. To appraise the members on the training activities conducted for Placement & its outcome for the batch 2019 – 2023

8. To appraise and approve the Industry Institute Interaction for the academic year 2022 – 2023
   a) Guest Lecture/Seminar/ Workshop
   b) Industrial Visit
   c) Internship
   d) Value Added Courses
9. To discuss about the Institutional Recognizations, faculty achievements & students achievements for the academic year 2022 – 2023
10. To discuss and approve the panel of examiners
11. To discuss and approve the R2023 Regulation, curriculum and syllabi for I & II Semester under Regulation 2023 for B.Tech. Civil Engineering
12. Any other item with the permission of chair

Minutes of the Meeting

Dr. S. Sundararaman, Chairman, BoS opened the meeting by welcoming the external members and thanked them for their presence in the Board of Studies and the meeting thereafter deliberated on agenda items that had been approved by the Chairman.

BoS / 2023 / CIVIL / UG / 6.1

Chairman BoS, appraised the minutes of 5th BoS, its implementation and then it is confirmed with the approval for the incorporation of minor revisions needed as mentioned below.

S.No	Regulation	Semester	Course code with Name	Unit	Particulars
1	2020	VII	U20CEW701 / Project Phase I	-	In Project Phase I, it would be better to include simple design of RCC detailing & valuation of G+1 floor with concepts of blue print requirements.

The above corrections are approved by BoS members and the details are given in Annexure I.

BoS / 2023 / CIVIL / UG / 6.2

Discussed and approved the following chosen Elective Courses for B.Tech. Civil Engineering program,

S.No	Regulation	Sem	Batch	Category	Course code	Course Name
1	2019	VIII	2019 -2023	Professional Elective	U19CEE80	Structural Dynamics and Earthquake Engineering
2	2019	VIII	2019 -2023	Professional Elective	U19CEE85	Coastal and Offshore Structures
3	2020	IV	2021 -2025	Professional Elective	U20CEE405	Alternative Building Materials and Technologies
4	2020	V	2020 -2024	Professional Elective	U20CEE510	Advanced Design of RCC Structures
5	2020	VI	2020 -2024	Professional Elective	U20CEE614	Municipal Solid Waste Management
6	2020	IV	2021 -2025	Open Elective	U20ADO402	Introduction to Data Science

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7	2020	V	2020 -2024	Open Elective	U20HSO504	Project Management for Engineers
8	2020	VI	2020 -2024	Open Elective	U20EEO603	Conventional and Non – conventional energy sources

The list of professional & open elective courses and syllabi for the chosen course has been attached in Annexure II.

BoS / 2023 / CIVIL / UG / 6.3

Discussed and approved the following chosen Skill Development Courses & Certification Course for B.Tech. Civil Engineering program,

S.No	Regulation	Sem	Batch	Category	Course code	Course Name
1	2020	III	2021 -2025	Skill Development Course	U20CES302	Basic Vasthu
2	2020	IV	2021 -2025	Skill Development Course	U20CES403	Safety in Building Construction
3	2020	V	2020 -2024	Skill Development Course	U20CES504	Career and Professional Skill Development Program – I
4	2020	V	2020 -2024	Skill Development Course	U20CES505	Presentation Skills using ICT
5	2020	VI	2020 -2024	Skill Development Course	U20CES606	Career and Professional Skill Development Program – II
6	2020	VI	2020 -2024	Skill Development Course	U20CES607	Technical Seminar
7	2020	I	2022 -2026	Certification Course	U20CEC113	AutoCAD for Civil

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8	2020	II	2022 -2026	Certification Course	U20CEC274	Python Programming
9	2020	III	2021 -2025	Certification Course	U20CEC387	Total Station
10	2020	IV	2021 -2025	Certification Course	U20CEC456	Internet of Things
11	2020	V	2020 -2024	Certification Course	U20CEC585	STAAD PRO V8i
12	2020	VI	2020 -2024	Certification Course	U20CEC673	Project Management

Discussed and approved the B.Tech. Degree NPTEL / MOOC & online certification courses for VI semester & VIII Semester under Regulation 2020 & Regulation 2019 for the batches 2020 – 2024 & 2019 – 2023 respectively

The list of Skill Development Courses and syllabi for the chosen course, list of Certification Course and List of NPTEL / MOOC has been attached in Annexure III.

BoS / 2023 / CIVIL / UG / 6.4

Discussed and approved the B.Tech. Degree Academic Calendar for Even Semester 2022 - 2023. The board chairman appraised on the schedule for Quality Circle Meeting (QCM), Continuous Assessment Test (CAT), Model Exam and End Semester Examination before the committee. The Redo & Discontinue students' details also appraised to the members.

a) Quality Circle Meeting (QCM)

QCM/Year	I Year	II Year	III Year
QCM 1	09.05.2023	18.04.2023	11.04.2023
QCM 2	16.06.2023	25.05.2023	08.06.2023
QCM 3	26.07.2023	28.06.2023	13.07.2023

b) Continuous Assessment Test (CAT)

CAT/Year	I Year	II Year	III Year
CAT 1	10.05.2023	24.04.2023	12.04.2023
CAT 2	19.06.2023	29.05.2023	12.06.2023

c) Model Exam and End Semester Examination

Particulars	I Year	II Year	III Year
Model Exam	31.07.2023	10.07.2023	17.07.2023
Model Practical	07.08.2023	18.07.2023	24.07.2023
End Semester Exam	04.09.2023	07.08.2023	21.08.2023

d) Redo / Discontinue students

S.No	Name of the Student	Reg. No	Year/Sem	Category
1	Annamalai R	20UCE003	III/V	Redo
2	Degala Vijay Venkata Kumar	21CEL001	II/IV	Discontinue

BoS / 2023 / CIVIL / UG / 6.5

The board chairman appraised on the Department Advisory Committee (DAC) Meeting & Curriculum Advisory Committee (CAC) Meeting to the BoS members.

a) Department Advisory Committee (DAC) Meeting

Particulars	Meeting I	Meeting I
Mode of meeting	Offline	Offline
Date	25.08.2022	29.03.2023
Time	10.30 am	11.00 am
Venue	R&D Lab - Mechanical Block, SMVEC	R&D Lab - Mechanical Block, SMVEC

b) Curriculum Advisory Committee (CAC) Meeting

Mode of meeting	Online
Date	03.03.2023
Time	10.00 am
Platform	Google Meet
Venue / Link details	To join the video meeting, click this link: https://meet.google.com/tah-oszq-qzb Otherwise, to join by phone, dial +1 956-704-1149 and enter this PIN: 935 150 028#

a) Board chairman apprised the members that the faculty & students have published 13 papers in international conferences & journals for the academic year 2022 – 2023.

b) Discussed and approved the Ph.D programme admission process. The board

BoS / 2023 / CIVIL / UG / 6.6	chairman appraised on the details of the Ph.D registered candidates and their CAT Schedule, ESE Result are presented before the BoS members. c) The board chairman appraised on the Ph.D admission notification and entrance exam results for the academic year 2023 – 2024 to the BoS members. **The details of CAT Schedule, Ph.D admission notification and entrance exam results for the academic year 2023 – 2024 have been attached in Annexure IV.**
BoS / 2023 / CIVIL / UG / 6.7	The board chairman appraised on the list of training activities conducted for Placement & stated that 80% of the students placed for the batch 2019 – 2023 to the BoS members. The following training was conducted for the students • Technical Training • Advanced Technical Training • Aptitude, Verbal and Reasoning Training • Company Specific Training • Motivation Program and Mock Interview
BoS / 2023 / CIVIL / UG / 6.8	The board chairman apprised the members that 22 Guest Lecture/Seminar/ Workshop & 3 value added course have been conducted to understand the latest technology in the field of civil engineering. Apart from this, the student's underwent Internship around 20 different companies and 6 Industrial Visits.
BoS / 2023 / CIVIL / UG / 6.9	The board chairman appraised on the Institutional Recognizations, faculty achievements & students' achievements for the academic year 2022 – 2023 to the BoS members. **The details of Institutional Recognizations, faculty achievements & students' achievements for the academic year 2022 – 2023 have been attached in Annexure V.**
BoS / 2023 / CIVIL / UG / 6.10	The revised list of question paper setters and Evaluators (given in **Annexure VI**) was presented and recommended by the BoS members to the Academic Council.

BoS / 2023 / CIVIL / UG / 6.11

With respect to Regulation R-2023, the curriculum for 1 to 8 semesters and syllabi for 1st and 2nd semesters, for B.Tech – Civil Engineering were discussed and the following comments are given by BoS members.

S.No	Regulation	Sem	Course code with Name	Particulars
1	2023	I	U23CEP101 / Civil Engineering Practice Laboratory	In Civil Engineering Practice Laboratory' Foundation Marking can be added.
2	2023	II	U23CET202 / Building Materials and Construction	In 'Building Materials and Construction', modern building materials can be included such as Glasses, UPVC, Tiles etc
3	2023	-	-	The following courses are suggested for International certification courses, a) Building Information Modeling (BIM) b) Drones c) Augmented Reality & Virtual Reality d) Metal Building Software (MBS) Software e) Rebar detailing f) MEP
4	2023	-	-	In Curriculum 2023, in semester VII, it is not necessary to add the names of the software in the course title. Example: Simulation Software Laboratory (ANSYS) & Modeling and Analysis Laboratory (ETABS)

The above corrections are incorporated in the curriculum R2023 (Given in Annexure VII) and I & II Semester syllabi are approved by BoS members (Given in Annexure VIII).

BoS / 2023 / CIVIL / UG / 6.12

- The Board of Studies Members discussed on the conduction of End Semester Theory & Practical Examination which is scheduled on July & August 2023.
- Board of Studies expert members appreciated the efforts taken by the Department of Civil Engineering for bringing out 2 successful candidates in the GATE 2022 & 2023.

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The meeting was concluded at 12:00 pm with vote of thanks by **Dr. S. Sundararaman**, Head of Department,Department of Civil Engineering.

Sl.No	Name of the Member with Designation and official Address	Members as per UGC norms	Signature
1	Dr. S.Sundararaman Professor and Head Department of Civil Engineering, SMVEC, Madagadipet - 605107	Chairman	21/7/23
2	Dr R Senthil Professor& HOD Civil, Division of Structural Engineering, Department of Civil Engineering, College of Engg., Guindy, Anna University, Chennai	Subject Expert (Pondicherry University Nominee)	21/7/23
3	Dr.R.Malathy Professor and Dean (Research) Dept. of Civil Engineering, Sona College of Technology, Salem	Subject Expert (Academic Council Nominee)	21/7/23
4	Dr A Rose Enid Teresa Professor and Head Rajalakshmi Engineering College, Chennai	Subject Expert (Academic Council Nominee)	21/7/2023
5	Dr.B.Parthiban Assistant Manager – Structural Designer, Fujita Engineering India Pvt. Ltd., Chennai	Representative from Industry	21/07/23
6	Shri. G. Abdul Hakkim Design Engineer, Emmarde Steel Private Limited, Puducherry.	Alumni Member	21/7/2023
7	Dr. S. Jayakumar Controller of Examinations, Professor in Civil Engineering, SMVEC, Madagadipet - 605107	Internal Member	21/7/23
8	Ms. G. Yamuna Assistant Professor, Department of Civil Engineering, SMVEC, Madagadipet - 605107	Internal Member	21/7/2023
9	Mr. K. Srinivasan Assistant Professor, Department of Civil Engineering, SMVEC, Madagadipet - 605107	Internal Member	21/7/2023

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10	Mrs. D.Sathiyasree Assistant Professor, Department of Civil Engineering, SMVEC, Madagadipet - 605107	Internal Member	
11	Dr. D.Jaichithra Professor and Head, Department of English, SMVEC, Madagadipet - 605107	Internal Member	
12	Dr.T Sivaranjini Assistant Professor, Department of Physics, SMVEC, Madagadipet - 605107	Internal Member	
13	Dr.S.Savithri Professor and Head, Department of Chemistry, SMVEC, Madagadipet - 605107	Internal Member	
14	Mr.M.Devanathan Assistant Professor, Department of Mathematics, SMVEC, Madagadipet - 605107	Internal Member	

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Dr.S.Sundararaman
HOD/Civil
Chairman –BoS (Civil)

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Annexure I

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U20CEW701	PROJECT PHASE - I	L	T	P	PW	C	Hrs
		0	0	0	4	2	60

Course Objectives

This course should enable the students to

- Encouraged to get hands on experience to work in various area of civil engineering.

Course Outcomes

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

CO1 - Perceive the problems and to find suitable solutions. **(K5)**

KNOWLEDGE LEVEL: **K1** – Remember, **K2** – Understand, **K3** – Apply, **K4** – Analyze and **K5** – Evaluate

Description

The students to work in groups of not more than four members in each group need to plan and design a building as per National Building Code requirements. In addition, each group is required to do literature survey, formulate the problem & form a methodology for the field problems they proposed to carryout in Project Phase II. The student is required to do and form a methodology in arriving at the solution of the problem. Each project shall have an internal guide. The report of each group shall be submitted for evaluation. The evaluation is based on internal review committee and guide for 50 marks. The End Semester Examination for the project work shall consist of an evaluation of the project report by an external examiner, followed by a viva-voce examination conducted by a committee consisting of the external examiner (25 marks) and an internal examiner (25 marks).

COs/POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	-	-	-	-	-	-	-	3	3	3

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

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Annexure II

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PROFESSIONAL ELECTIVE COURSE (R2019)

Professional Elective – V (Offered in Semester VIII)		
Sl. No.	**Course Code**	**Course Title**
1	U19CEE80	Structural Dynamics and Earthquake Engineering
2	U19CEE81	Housing - Planning and Management
3	U19CEE82	Tall Structures
4	U19CEE83	Industrial Waste Disposal and Treatment
5	U19CEE84	Design of Industrial Structures
Professional Elective – VI (Offered in Semester VIII)		
Sl. No.	**Course Code**	**Course Title**
1	U19CEE85	Coastal and Offshore Structures
2	U19CEE86	Pavement Engineering
3	U19CEE87	Repair and Rehabilitation of Structures
4	U19CEE88	Environmental Impact Assessment
5	U19CEE89	Pre- Stressed Concrete Structures

V. Sundararaman

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U19CEE80	STRUCTURAL DYNAMICS AND EARTHQUAKE ENGINEERING	L	T	P	C	Hrs
		3	0	0	3	45

Course Objectives

This course should enable the students to

- Understand the concept of degree of freedom
- Gain the knowledge about the multiple degree of freedom
- Familiar with the basic knowledge on Earthquake Engineering
- Know the basic response of structures to earthquake
- Study the design aspects on earthquake engineering

Course Outcomes

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

CO1 - Understand the concept of degree of freedom **(K3)**
CO2 - Grab the knowledge on Multiple degree of freedom **(K3)**
CO3 - Understand with the basic knowledge on Earthquake Engineering. **(K3)**
CO4 - Know the basic response of structures to earthquake **(K3)**
CO5 - Understand the design on Earthquake Engineering **(K4)**
KNOWLEDGE LEVEL: **K1** – Remember, **K2** – Understand, **K3** – Apply, **K4** – Analyze and **K5** – Evaluate

UNIT I SINGLE DEGREE OF FREEDOM **(9 Hrs)**

Definition of degree of freedom – Degree of freedom – idealization of structure as single degree of freedom system – Formulation of Equations of motion of SDOF system - D'Alembert's principles – effect of damping – free and forced vibration of damped and undamped structures – Response to harmonic and periodic forces.

UNIT II MULTIPLE DEGREE OF FREEDOM **(9 Hrs)**

Formulation of equations of motion of multi degree of freedom (MDOF) system - Eigen values and Eigen vectors – Response to free and forced vibrations - damped and undamped MDOF system – Modal superposition methods.

UNIT III INTRODUCTION TO EARTHQUAKE ENGINEERING **(9 Hrs)**

Elements of Engineering Seismology – Definitions, introduction Seismic hazard, Earthquake phenomenon – Seismotectonic - Seismic Instrumentation- Characteristic of strong earthquake motion – Estimation of earthquake parameters.

UNIT IV RESPONSE OF STRUCTURES TO EARTHQUAKE **(9 Hrs)**

Effect of earthquake on different type of structures – Behaviour of Reinforced Cement Concrete, Steel and Prestressed Concrete Structure under earthquake loading – Pinching effect – Bouchinger Effects – Evaluation of earthquake forces as per IS:1893 – 2002 - Response Spectra – Lessons learnt from past earthquakes.

UNIT V DESIGN METHODOLOGY **(9 Hrs)**

Causes of damage – Planning considerations / Architectural concepts as per IS:4326 – 1993 – Guidelines for Earthquake resistant design – Earthquake resistant design for masonry and Reinforced Cement Concrete buildings – Lateral load analysis – Design and detailing as per IS:13920 – 1993.

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Text Books

1. Chopra, A.K., "Dynamics of Structures: Theory and Applications to Earthquake Engineering", Pearson, 5th Edition, 2017.
2. Clough R.W, and Penzien J, "Dynamics of Structures", 2nd Edition, McGraw- Hill International Edition, 2003.
3. Mario Paz, "Structural Dynamics Theory and Computations", 5th Edition, CBS Publishers, 2012.

Reference Books

1. Kappos, A., "Dynamic Loading and Design of Structures", CRC Press, 2014
2. Craig, R.R., Kurdila, A.J., "Fundamentals of Structural Dynamics", John Wiley and Sons, 2nd Edition, 2011.
3. Bollinger, G.A., "Blast Vibration Analysis", Courier Dover Publications, 2018
4. Dr. K. Jagannadha Rao Er. Srinavas Vasam, "Structural Dynamics And Earthquake Engineering" S.K. Kataria Publisher, 2018
5. Gopinath R, "Structural Dynamics and Earthquake Engineering", Yes Dee Publishing Pvt Ltd, 2021

Web References

1. https://nptel.ac.in/courses/105/106/105106151/
2. https://nptel.ac.in/courses/105/101/105101006/
3. https://nptel.ac.in/courses/105/104/105104189/

COs/POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	2	1	3	3	3	3	3	1	3	3	3	3
CO2	3	3	3	3	1	3	3	3	3	3	1	3	3	3	3
CO3	3	3	3	3	1	3	3	3	3	3	1	3	3	3	3
CO4	3	3	3	2	1	3	3	3	3	3	1	3	3	3	3
CO5	3	3	3	2	1	3	3	3	3	3	1	3	3	3	3

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

U19CEE85 **COASTAL AND OFFSHORE STRUCTURES**

L	T	P	C	Hours
3	0	0	3	45

Course Objectives

This course should enable the students to

- Understand the various components in Harbour and offshore structures.
- Understand the planning and design principles of various components in Docks and harbours.
- Gain knowledge about types, forces, design concepts and foundation for offshore structures.
- Understand about the types of offshore structure.
- Understand about the design and installation of offshore pipelines.

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Course Outcomes

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

CO 1 - Understand the classification of Harbours and details of different ports **(K2)**

CO 2 - Learn the terminology and fundamental concepts of planning **(K2)**

CO 3 - Students able to designing coastal and types of dock structures **(K3)**

CO 4 - Understand the types of offshore structures with different environmental conditions. **(K2)**

CO 5 - Learn the costal foundation and Submarine pipelines **(K2)**

KNOWLEDGE LEVEL: **K1** – Remember, **K2** – Understand, **K3** – Apply, **K4** – Analyze and **K5** – Evaluate

UNIT I GROWTH OF PORTS **(9 Hrs)**

History of Port – Classification of Harbours - Factors affecting the growth of Port. Requirement of a Harbour - General Planning - Site investigation. Description of selected Indian ports.

UNIT II HARBOUR PLANNING (TECHNICAL) **(9 Hrs)**

Harbour entrance - Navigational Channel – Depth of harbour – Turning basin – berthing area – Shipping terminal facilities – Essentials of passenger terminal, dry bulk cargo terminal, Liquid bulk cargo terminals and container terminals. Navigational aids – Light house.

UNIT III HARBOUR STRUCTURES **(9 Hrs)**

Break waters: Types – Selection – Forces and – Design principles of break waters. Berthing structures: Types – Loads – Selection and design principles of berthing structures –Selection and Design principles of Dock fenders and Mooring accessories. Types of dock structures, Dredging.

UNIT VI OFFSHORE STRUCTURE **(9 Hrs)**

Types of offshore structures – selection – function - Physical, environmental and geotechnical aspects of marine and offshore construction – Loads and responses of offshore structures.

UNIT V CONSTRUCTION OF OFFSHORE STRUCTURES **(9 Hrs)**

Foundations for offshore structures – Introduction to design and installation of offshore piled platforms, concrete offshore platforms, Moored floating structures and Submarine pipelines

Text Books

1. Narasimhan and S. kathiroli, Harbour and Coastal Engineering (Indian Scenario) Vol - I and Vol – II, NIOT- Chennai
2. Chakrabarti.,S.K., Hand Book of Offshore Engineering (Vols. 1 and 2)" Elsevier Publications
3. Offshore Structures, Marine Foundations and Sediment Processes (v. 2) (Handbook of Coastal and Ocean Engineering), Gulf Publishing Co, 1990

Reference Books

1. Gerwick, C., Construction of Marine and Offshore structures, CRC Press.
2. Alonzo Def. Quinn., Design and construction of Port and Marine structures, McGraw-Hill, 2007
3. Harbour Dock & Tunnel Engineering, R. Srinivasan, Charotar Publishing House pvt. Ltd.; 27th edition
4. C.M. Wang, Large Floating Structures: Technological Advances, Springer; 2015th edition, 2014
5. Angus Mather, Offshore Engineering, Witherby Seamanship International; Third Edition, 2011

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Web References

1. https://nptel.ac.in/courses/114/106/114106025/
2. https://nptel.ac.in/courses/114/106/114106011/
3. https://nptel.ac.in/courses/114/106/114106035/

COs/POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	3	3	3	3	2	2	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	2	2	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	2	2	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	2	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3	2	2	3	3	3

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

V. Sundaramurthy

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PROFESSIONAL ELECTIVE COURSES (R2020)

Professional Elective – I (Offered in Semester IV)		
Sl. No.	**Course Code**	**Course Title**
1	U20CEE401	Engineering Geology
2	U20CEE402	Geographic Information System
3	U20CEE403	Building Services
4	U20CEE404	Renewable Energy Sources
5	U20CEE405	Alternative Building Materials and Technologies
Professional Elective – II (Offered in Semester V)		
Sl. No.	**Course Code**	**Course Title**
1	U20CEE506	Ground Improvement Techniques
2	U20CEE507	Fundamentals of Nano Science
3	U20CEE508	Smart City
4	U20CEE509	Air and Noise Pollution
5	U20CEE510	Advanced Design of RCC Structures
Professional Elective – III (Offered in Semester VI)		
Sl. No.	**Course Code**	**Course Title**
1	U20CEE611	Rock Engineering
2	U20CEE612	Intellectual Property Rights
3	U20CEE613	Shoring scaffolding and Form Work
4	U20CEE614	Municipal Solid Waste Management
5	U20CEE615	Design of Industrial Structures

U20CEE405	ALTERNATIVE BUILDING MATERIALS AND TECHNOLOGIES	L	T	P	C	Hrs
		3	0	0	3	45

Course Objectives

This course should enable the students to

Gain knowledge on energy in building materials
Aware about different types of alternative building materials
Understand the Sustainable materials for construction
Learn about the alternative building technologies
Understand the concepts of equipment for construction and also planning control.

Course Outcomes

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

CO1 – Understand the various energies involved in the construction **(K2)CO2** – Understand the different types alternative materials**(K2)**
CO3 - Identify various eco-friendly materials **(K2)**
CO4 - Recognize suitable alternative building technologies **(K2)**
CO5 - Apply the cost concept involved in the planning of construction **(K3)**
KNOWLEDGE LEVEL: **K1** – Remember, **K2** – Understand, **K3** – Apply, **K4** – Analyze and **K5** – Evaluate

UNIT I INTRODUCTION **(9 Hrs)**

Energy in building materials, Environmental issues concerned to building materials, Embodied energy and life- cycle energy, Global warming and construction industry, Environmental friendly and cost-effective building technologies, Requirements for buildings of different climatic regions.

UNIT II ALTERNATIVE BUILDNG MATERIALS **(9 Hrs)**

Characteristics of building blocks for walls - Stones and Laterite blocks - Bricks and hollow clay blocks - Concrete blocks - Stabilized mud blocks - Fal-G Blocks - Manufacture of stabilized blocks.

UNIT III SUSTAINABLE MATERIALS **(9 Hrs)**

Fibre reinforced concretes – Types: metal and synthetic - Properties and applications - Fibre reinforced plastics – Types: organic and synthetic - Properties and applications. Building materials from agro and industrialwastes - Types of agro wastes - Types of industrial and mine wastes - Properties and applications

UNIT IV ALTERNATIVE BUILDING TECHNOLOGIES **(9 Hrs)**

Alternatives for wall constructions, composite masonry, confined masonry, cavity walls, Ferro cement and ferroconcrete building components, Materials and specifications, Properties, Construction methods, Applications. Top down construction, Mivan Construction Technique, 3D Printing Technology. Alternate Roofing Systems: Concepts, Filler slabs, Composite beam panel roofs.

UNIT V MACHINES & PLANNING CONTROL **(9 Hrs)**

Machines for manufacture of concrete, Equipment for production of stabilized blocks, Moulds and methods of production of precast elements, Cost concepts in buildings, Cost saving techniques in planning, design and construction, Cost analysis: Case studies using alternatives.

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Text Books

1. KS Jagadish, B V Venkatarama Reddy and K S Nanjunda Rao, "Alternative Building Materials and Technologies", New Age International Publishers, 2017.
2. BT Ashwini Manjunath, "Alternative Building Materials and Technology", Medtech Publisher, 2017.
3. Trevor M. Letcher and Janet L. Scott, "Materials for a Sustainable Future", Royal Society of Chemistry,2012

Reference Books

1. S Christian Johnson, "Concrete Technology", Dipti Press, 2017.
2. G.C Sahu and Jayagopal Jena, "Building Materials and Construction", McGraw hill Publication, 2015.
3. B C Punmia and Ashok kumar jain, "Building Construction", Laxmi Publication, 2019.
4. M.S. Shetty, "Concrete Technology (Theory and Practice)", S. Chand & Company Ltd., 2019.
5. S.K. Duggal, "Building Materials", 5th edition, New age International Publication, 2020.

Web Reference

1. https://nptel.ac.in/courses/105/102/105102175/
2. https://nptel.ac.in/courses/105/102/105102195/
3. https://alison.com/course/sustainable-architecture-energy-efficiency-and-quality

COs/POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	-	-	-	-	3	3	2	-	2	1	3	3	2	2
CO2	2	-	-	-	3	2	3	2	-	2	1	3	3	3	2
CO3	3	-	-	-	3	3	3	3	-	2	1	3	3	3	2
CO4	3	-	-	-	3	3	3	3	3	3	1	3	3	3	2
CO5	3	-	-	2	2	3	3	3	3	3	1	3	3	2	2

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

U20CEE510 ADVANCED DESIGN OF RCC STRUCTURES

L	T	P	C	Hrs
3	0	0	3	45

Course Objectives

This course should enable the students to

- Understand the unified analysis of reinforced concrete structures
- Gain knowledge about the design of special reinforced concrete elements
- Understand the concept on yield line theory of slabs and to design flat slabs.
- Understand the design RCC slab culvert and bridge
- Analyze the prestressed concrete sections and design of beams.

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Course Outcomes

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

CO1 - Analyze reinforced concrete structures **(K4)**

CO2 – Design special reinforced concrete elements **(K4)**

CO3 – Create an awareness on yield line theory of slabs and to design flat slabs. **(K2)**

CO4 - Design RCC slab culvert and bridge **(K5)**

CO5 - Analyze prestressed concrete sections and design of beams. **(K5)**

KNOWLEDGE LEVEL: **K1** – Remember, **K2** – Understand, **K3** – Apply, **K4** – Analyze and **K5** – Evaluate

UNIT I INTRODUCTION TO ANALYSIS OF REINFORCED CONCRETE STRUCTURES (9 Hrs)

Introduction to strut-tie model, equilibrium truss model, Bernoulli compatibility truss model, Mohr compatibility truss model, Introduction to nonlinear behavior of structures.

UNIT II DESIGN OF SPECIAL REINFORCED CONCRETE ELEMENTS (WSM) (9 Hrs)

Design of Deep Beams (using C programming), Checking for Local Failures, Detailing of Deep Beams, Design of shear walls, Design of Corbels, Design of Nibs, Design of pile cap. Reinforcement detailing for all design.

UNIT III FLAT SLABS (9 Hrs)

Elements of flat slabs, Codal procedure for design of flat slabs, Behavior of flat slab in shear, One way and two way shear, Equivalent Frame Method, Openings in flat slabs, Effect of pattern loading in flat slabs

UNIT IV YIELD LINE THEORY (9 Hrs)

Design of slabs of various shapes and having various support conditions using yield line analysis approach.

UNIT V DESIGN OF BEAM COLUMN JOINTS (9 Hrs)

Types of joints, Joints in multistoried buildings, Forces acting on joints, Design of joints for strength, Anchorage requirement in joints and detailing of reinforcement in joints.

Text Books

1. Varghese.P.C, "Advanced Reinforced Concrete Design", Pretince-Hall India, 2005..
2. Unnikrishna Pillai.S and Devadas Menon, "Reinforced Concrete Design," Tata MacGraw Hill Publishing Company Limited, Second Edition, New Delhi, 2010
3. Krishnaraju .N, Pranesh .R.N, "Design of Reinforced concrete IS: 456-2000", New age International Publication (P) Ltd., New Delhi, 2003.

Reference Books

1. Krishnaraju .N, "Prestressed Concrete", Tata McGraw-Hill Education, 2008, New Delhi.
2. Punmia.B.C, Ashok Kumar Jain, Arun Kumar Jain, "Limit State Design of Reinforced Concrete", Laxmi Publications, New Delhi, 2007..
3. Johnson Victor.D, "Essentials Of Bridge Engineering", 6/E, Oxford & IBH Publishing Company Pvt. Ltd.,Fourth edition, 2007.
4. IS : 456-2000 - Plain and Reinforced Concrete - Code of Practice
5. SP – 16 - Design Aids for Reinforced Concrete
6. IS : 1343:2012 - Prestressed concrete-code of practice
7. IRC 6-2010 - Standard Specifications and Code of Practice for Road Bridges Section : II Loads And Stresses

Web References

1. https://nptel.ac.in/courses/105/105/105105105/
2. https://nptel.ac.in/courses/105/105/105105104/
3. https://nptel.ac.in/courses/105/106/105106176/

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COs/POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	2	1	3	3	3	3	3	1	3	3	3	3
CO2	3	3	3	3	1	3	3	3	3	3	1	3	3	3	3
CO3	3	3	3	3	1	3	3	3	3	3	1	3	3	3	3
CO4	3	3	3	2	1	3	3	3	3	3	1	3	3	3	3
CO5	3	3	3	2	1	3	3	3	3	3	1	3	3	3	3

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

U20CEE614 MUNICIPAL SOLID WASTE MANAGEMENT

L	T	P	C	Hrs
3	0	0	3	45

Course Objectives

This course should enable the students to

- Impart knowledge on sources and generation of municipal solid waste.
- Gain adequate knowledge in reduction and recycle of waste.
- Understand the concept of collection methods and routes.
- Gain knowledge about the transport method of municipal solid waste
- Impart knowledge of disposal method of waste.

Course Outcomes

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

CO 1 - Understand the nature and characteristics of municipal solid wastes.**(K2)**
CO 2 - Understand the concept of reduction, reuse and recycling of waste. **(K4)**
CO 3 - Plan and design systems for storage, collection, transport, processing and disposal of municipal solid Waste.**(K3)**
CO 4 - Understand the issues on solid waste management from an integrated source.**(K4)**
CO 5 - Design and operate sanitary landfill.**(K5)**
KNOWLEDGE LEVEL: K1 – Remember, **K2** – Understand, **K3** – Apply, **K4** – Analyze and **K5** – Evaluate

UNIT I SOURCES AND CHARACTERISTICS **(9 Hrs)**

Sources and types of municipal solid wastes- Public health and environmental impacts of improper disposal of solid wastes- sampling and characterization of wastes - factors affecting waste generation rate and characteristics –functional Elements of solid waste management – Requirements and salient features of Solid waste management rules (2016) -Role of public and NGO"s- Public Private participation – Elements of integrated Municipal Solid Waste Management Plan.

UNIT II SOURCE REDUCTION, WASTE STORAGE AND RECYCLING **(8 Hrs)**

Waste Management Hierarchy –3R-Reduction, Reuse and Recycling - source reduction of waste – On-site storage methods – Effect of storage, materials used for containers - segregation of solid wastes – Public health and economic aspects of open storage – case studies under Indian conditions – Recycling of Plastics, and Construction/Demolition wastes.

UNIT III COLLECTION AND TRANSFER OF WASTES **(8 Hrs)**

Methods of Residential and commercial waste collection – Collection vehicles – Manpower – Collection routes

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– Analysis of waste collection systems; Transfer stations –location, operation and maintenance- options under Indian conditions – Field problems- solving.

UNIT IV PROCESSING OF WASTES **(12 Hrs)**

Objective(s) of waste processing – Physical Processing techniques and Equipment; Resource recovery from solid waste -composting and biomethanation; Thermal processing options – case studies under Indian conditions.

UNIT V WASTE DISPOSAL **(8 Hrs)**

Land disposal of solid waste- Sanitary landfills – site selection- design and operation of sanitary landfills – Landfill liners– Management of leachate and landfill gas- Landfill bioreactor – Dumpsite Rehabilitation.

Text Books

1. William A. Worrell, P. AarneVesilind (2012) Solid Waste Engineering, Cengage Learning, 2012.
2. John Pitchel (2014), Waste Management Practices-Municipal, Hazardous and industrial – CRC Press,Taylor and Francis, New York.
3. George Tchobanoglouset.al., "Integrated Solid Waste Management", McGraw-Hill Publishers, 1993.
4. B.Bilitewski, G.HardHe, K.Marek, A.Weissbach, and H.Boeddicker, "Waste Management", Springer, 1994.

Reference Books

1. CPHEEO (2014), "Manual on Municipal Solid waste management, Central Public Health and Environmental Engineering Organization. Government of India, New Delhi.
2. George Tchobanoglous and FrankKreith (2002).Handbook of Solid waste management, McGraw Hill, New York.
3. Manual on Municipal Solid Waste Management, CPHEEO, Ministry of Urban Development, Government of India, New Delhi, 2000
4. R.E.Landreth and P.A.Rebers, "Municipal Solid Wastes – problems and Solutions", Lewis Publishers, 1997.

Web References

1. https://nptel.ac.in/courses/120108005/
2. http://cpheeo.gov.in/upload/uploadfiles/files/Part1
3. https://nptel.ac.in/content/storage2/courses/104103022

COs/POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	2	3	3	3	3	3	3	2	3	3	3	3	2
CO2	3	3	2	3	3	3	3	2	3	2	2	3	3	3	3
CO3	3	3	3	2	2	2	3	3	3	3	2	3	3	3	2
CO4	2	3	2	3	2	3	2	3	3	2	2	3	3	3	3
CO5	3	3	3	2	3	3	3	3	3	2	3	3	3	3	2

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

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OPEN ELECTIVE COURSE (R2020)

Open Elective – I (Offered in Semester IV)				
1	U20EEO401	Solar Photovoltaic Fundamental and applications	EEE	ECE, ICE, MECH, CIVIL, Mechatronics, CCE
2	U20EEO402	Electrical Safety	EEE	ECE, ICE, MECH, CIVIL, Mechatronics, CCE, BME, IT, CSE, FT
3	U20ECO401	Engineering Computation with MATLAB	ECE	EEE, ICE, MECH, CIVIL, CCE, BME, AI&DS, Mechatronics
4	U20ECO402	Consumer Electronics	ECE	EEE, ICE, CSE, MECH, IT, CIVIL, CCE, BME, Mechatronics, FT
5	U20CSO401	Web Development	CSE	EEE, ECE, ICE, MECH, CIVIL, BME, Mechatronics
6	U20CSO402	Analysis of Algorithms	CSE	EEE, ECE, ICE, MECH, CIVIL, BME, Mechatronics
9	U20ICO401	Sensors and Transducers	ICE	ECE, CSE, IT, MECH, CIVIL, CCE, AI&DS, FT
11	U20MEO401	Rapid Prototyping	MECH	EEE, ECE, ICE, CIVIL, BME, FT
12	U20MEO402	Material Handling System	MECH	EEE, ICE, CIVIL, Mechatronics
18	U20CCO401	Basic DBMS	CCE	EEE, ECE, MECH, CIVIL, ICE, Mechatronics, BME
19	U20CCO402	Introduction to Communication Systems	CCE	EEE, CSE, IT, MECH, CIVIL, ICE, Mechatronics
20	U20ADO401	Knowledge Representation and Reasoning	AI&DS	EEE, ECE, CSE, IT, ICE, MECH, CIVIL, CCE, BME, Mechatronics
21	U20ADO402	Introduction to Data Science	AI&DS	EEE, ECE, CSE, IT, ICE, MECH, CIVIL, CCE, BME, Mechatronics
Open Elective – II / Open Elective – III				
1	U20HSO501/ U20HSO601	Product Development and Design	MBA	**Common to B. Tech** (Offered in Semester V for **EEE, ECE, ICE, CIVIL, BME, CCE, FT**) (Offered in Semester VI for **CSE, IT, MECH, Mechatronics, AI&DS**)
2	U20HSO502/ U20HSO602	Intellectual Property and Rights	MBA	
3	U20HSO503/ U20HSO603	Marketing Management and Research	MBA	
4	U20HSO504/ U20HSO604	Project Management for Engineers	MBA	
5	U20HSO505/ U20HSO605	Finance for Engineers	MBA	

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Open Elective – II / Open Elective – III (Offered in Semester V for **CSE, IT, MECH, Mechatronics, AI&DS**) (Offered in Semester VI for **EEE, ECE, ICE, CIVIL, BME, CCE, FT**)				
1	U20EEO503/ U20EEO603	Conventional and Non-Conventional Energy Sources	EEE	ECE, ICE, MECH, CIVIL, BME, Mechatronics, CCE, AI&DS, FT
5	U20CSO503/ U20CSO603	Platform Technology	CSE	EEE, ECE, ICE, MECH, CIVIL, CCE, BME, AI&DS
6	U20CSO504/ U20CSO604	Graphics Designing	CSE	EEE, ECE, ICE, MECH, CIVIL, BME, FT
7	U20ITO503/ U20ITO603	Essentials of Data Science	IT	EEE, ECE, ICE, MECH, CIVIL, BME
8	U20ITO504/ U20ITO604	Mobile App Development	IT	EEE, ECE, ICE, MECH, CIVIL, BME, Mechatronics, AI&DS
9	U20ICO503/ U20ICO603	Fuzzy logic and neural networks	ICE	CSE, IT, CIVIL, BME, AI&DS
11	U20MEO504/ U20MEO604	Heating, ventilation and air conditioning system (HVAC)	MECH	EEE, ECE, ICE, CIVIL
12	U20MEO505/ U20MEO605	Creativity Innovation and New Product Development	MECH	EEE, ECE, ICE, CIVIL, BME, Mechatronics
15	U20BMO503/ U20BMO603	Biometric Systems	BME	EEE, ECE, CSE, IT, ICE, CCE, MECH, Mechatronics
16	U20BMO504/ U20BMO604	Medical Robotics	BME	EEE, ECE, CSE, IT, ICE, CCE, MECH, CIVIL , Mechatronics
17	U20CCO503/ U20CCO603	Network Essentials	CCE	EEE, MECH, CIVIL, ICE, Mechatronics, BME
18	U20CCO504/ U20CCO604	Web Programming	CCE	EEE, ECE, MECH, CIVIL, ICE, Mechatronics, BME
19	U20ADO503/ U20ADO603	Principle of Artificial Intelligence and Machine Learning	AI&DS	EEE, ECE, CSE, IT, ICE, MECH, CIVIL, CCE
20	U20ADO504/ U20ADO604	Data science Application of Vision	AI&DS	EEE, ECE, CSE, IT, ICE, MECH, CIVIL, CCE, BME, Mechatronics

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U20ADO402	INTRODUCTION TO DATA SCIENCE (Common to EEE, ECE, CSE, IT, ICE, MECH, CIVIL, CCE, BME, Mechatronics)	L	T	P	C	Hrs
		3	0	0	3	45

Course Objectives

- To learn the basics of data science
- To enable the students to understand the statistics and probability.
- To understand the tools in developing and visualizing data.
- To gain good knowledge in the application areas of data science.
- To inculcate the perceiving, ethics surrounding privacy and acting of data science applications.

Course Outcomes

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

CO1 - Explore the fundamental concepts of data science. **(K2)**

CO2 - To understand the Mathematical Knowledge for Data Science.**(K2)**

CO3 - Visualize and present the inference using various tools. **(K3)**

CO4 - To expose the different opportunities in Industries. **(K3)**

CO5 - Learn to think through the ethics surrounding privacy, data sharing and decision-making. **(K2)**

KNOWLEDGE LEVEL: **K1** – Remember, **K2** – Understand, **K3** – Apply, **K4** – Analyze and **K5** – Evaluate

UNIT I INTRODUCTION TO DATA SCIENCE **(9 Hrs)**

Definition – Big Data and Data Science Hype – Why data science – Getting Past the Hype – The Current Landscape – Who is Data Scientist? - Data Science Process Overview – Defining goals – Retrieving data – Data preparation – Data exploration – Data modeling – Presentation..

UNIT II MATHEMATICAL PRELIMINARIES **(9 Hrs)**

Probability: Probability vs. Statistics – Compound Events and Independence – Conditional Probability – Probability Distribution. Descriptive Statistics: Centrality Measures – Variability Measures - Interpreting Variance – Characterizing Distributions. Correlation Analysis: Correlation Coefficient – The Power and Significance – Detection Periodicities. Logarithms: Logarithms and Multiplying Probabilities – Logarithms and Ratios – Logarithms and Normalizing Skewed Distributions.

UNIT III DATA SCIENCE TOOLS **(9 Hrs)**

Introduction to Data Science Tool – Data Cleaning Tools – Data Munging and Modelling Tools – Data Visualization Tools – Tools for Data Science.

UNIT IV INDUSTRIALIZATION, OPPURTUNITIES AND APPLICATIONS **(9 Hrs)**

Data Economy and Industrialization – Introduction: Data Economy, Data Industry, Data Services – Data Science Application: Introduction, General Application Guidance - Different Domain – Advertising – Aerospace and Astronomy – Arts, Creative Design and Humanities – Bioinformatics – Consulting Services – Ecology and Environment – Ecommerce and Retail - Education – Engineering – Finance and Economy – Gaming.

UNIT V ETHICS AND RECENT TRENDS **(9 Hrs)**

Data Science Ethics – Doing good data science – Owners of the data - Valuing different aspects of privacy - Getting informed consent - The Five Cs – Diversity – Inclusion – Future Trends.

Text Books

1. Davy Cielen, Arno D. B. Meysman, Mohamed Ali, "Introducing Data Science", Manning Publications Co., 1st edition, 2016.
2. Chirag Shah, "A Hands on Introduction to Data Science", Cambridge University Press, 2020.
3. SinanOzdemir, "Principles of Data Science", Packt Publication, 2016.
4. D J Patil, Hilary Mason, Mike Loukides, "Ethics and Data Science", O' Reilly, 1st edition, 2018.

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Reference Books

1. Hector Guerrero, "Excel Data Analysis: Modeling and Simulation", Springer International Publishing, 2nd Edition, 2019.
2. Paul Curzon, Peter W. Mc Owan, "The Power of Computational Thinking", World Scientific Publishing, 2017.
3. Steven S. Skiena, "Data Science Design Manual", Spring International Publication, 2017.
4. Rajendra Akerkar, Priti Srinivas Sajja, "Intelligence Techniques for Data Science", Spring International Publication, 2016.
5. Longbing Cao "Data Science Thinking: The Next Scientific, Technological and Economic Revolution", Spring International Publication, 2018.

Web Resources

1. https://www.youtube.com/watch?v=-ETQ97mXXF0&ab_channel=edureka%21
2. https://www.javatpoint.com/data-science
3. https://www.coursera.org/browse/data-science /

COs/POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	3	2	2	-	-	-	-	-	-	-	-	-	-
CO2	2	2	2	1	1	-	-	-	-	-	-	-	-	-	-
CO3	2	1	3	2	3	-	-	-	-	-	-	-	-	-	-
CO4	1	2	2	1	1	-	-	-	-	-	-	-	-	-	-
CO5	2	1	1	2	1	-	-	1	-	-	-	-	-	-	-

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

U19HSO54 PROJECT MANAGEMENT FOR ENGINEERS

L	T	P	C	Hrs
3	0	0	3	45

Course Objectives

- To understand the various concepts and steps in project management.
- To familiarize the students with the project feasibility studies and project life cycle
- To enable the students to prepare a project schedule
- To understand the risk management and project Control process.
- To learn about the closure of a project and strategies to be an effective project manager.

Course Outcomes

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

CO1 - Interpret the different concepts and the various steps in defining a project. **(K2)**
CO2 - Examining the feasibility of a project. **(K3)**
CO3 - Build a schedule for a Project. **(K6)**
CO4 - Predict the risk associated with a project and demonstrate the project audit. **(K2)**
CO5 - Analyse the project team and outline the Project closure. **(K4)**

UNIT I PROJECT MANAGEMENT CONCEPTS (9 Hrs)

Project: Meaning, Attributes of a project, Project Life cycle, Project Stakeholders, Classification, Importance of project management, Project Portfolio Management System, Different Project Management

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Structure, Steps in Defining the Project, Project Rollup – Process breakdown structure – Responsibility Matrices – External causes of delay and internal constraints

UNIT II PROJECT FEASIBILITY ANALYSIS **(9 Hrs)**

Opportunity Studies, Pre-Feasibility studies, and Feasibility Study: Market Feasibility, Technical Feasibility, Financial Feasibility and Economic Feasibility. Financial and Economic Appraisal of a project, Social Cost Benefit Analysis in India and Project Life Cycle.

UNIT III PROJECT SCHEDULING & NETWORK TECHNIQUES **(9 Hrs)**

Scheduling Resources and reducing Project duration: Types of project constraints, classification of scheduling problem, Resources allocation methods, Splitting, Multitasking, Benefits of scheduling resources, Rationale for reducing project duration, Options for accelerating Project completion

Developing and Constructing the Project Network (Problems), PERT, CPM; Crashing of Project Network,

UNIT IV PROJECT RISK MANAGEMENT AND PROJECT CONTROL **(9 Hrs)**

Project Risk management; Risk concept, Risk identification, Risk assessment, Risk response development, Contingency planning, Contingency funding and time buffers, Risk response control, and Change control management

Budgeting and Project Control Process, Control issues, Tendering and Contract Administration. Steps in Project Appraisal Process and Project Audits

UNIT V PROJECT CLOSURE AND MANAGING PROJECT **(9 Hrs)**

Project Closure: Team, Team Member and Project Manager Evaluations. Managing versus Leading a Project: Qualities of an Effective Project Manager, Managing Project Stakeholders, Managing Project Teams: Five Stage Team Development Model, Situational factors affecting team development and project team pitfalls.

Text Books

1. Erik Larson and Clifford Gray. "Project Management: The Managerial Process". 6th Edn. McGraw Hill Education; 2017.
2. Harold Kerzner. "Project Management: A systems approach to Planning, Scheduling and Controlling. 12th Edn. John Wiley & Sons; 2017

Reference Books

1. Meredith, J.R. & Mantel, S. J. "Project Management- A Managerial Approach". John Wiley.:2017
2. Prasanna Chandra. "Projects: Planning, Analysis, Selection, Financing, Implementation, and Review". 9th Edn. McGraw Hill Education; 2019.
3. B C Punmia by K K Khandelwal. "Project Planning and Control with PERT and CPM". 4th Edn. Laxmi Publications Private Limited; 2016.
4. Hira N Ahuja, S.P.Dozzi, S.M.Abourizk. "Project Management". 2nd Edn. Wiley India Pvt Ltd; 2013.
5. "A guide to Project Management Body of Knowledge". 6th Edn. Project Management Institute; 2017

Web Resources

1. www.pmi.org
2. www.projectmanagement.com
3. https://www.sciencedirect.com/journal/international-journal-of-project-management
4. https://nptel.ac.in/courses/110/107/110107081/
5. https://nptel.ac.in/courses/110/104/110104073/

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COs/POs/PSOs Mapping

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

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

U20EEO603 **CONVENTIONAL AND NON-CONVENTIONAL ENERGY SOURCES**

(Common to ECE, ICE, MECH, CIVIL, BME, Mechatronics)

L	T	P	C	Hrs
3	0	0	3	45

Course Objectives

- To get knowledge on the status of conventional and non-conventional energy resources in world.
- To have a clear idea about the operation of conventional power plant and its associated equipment's.
- To learn about the concept of energy harvesting of solar through thermal and PV module
- To understand the technological basis for harnessing wind energy.
- To get a clear knowledge on power generation using Ocean, Tidal Energy and Bio-Energy

Course Outcomes

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

CO1 – Identify the world and Indian energy scenario and the necessity of renewable energy sources **(K1)**

CO2 – Gain knowledge for the generation of electrical power from various power plants **(K1)**

CO3 – Analyze and compare the various solar harvesting techniques **(K3)**

CO4 – Describe the aerodynamics of wind turbines and calculate their power, energy production**(K1)**

CO5 – Describe the construction and working principle of various equipment's used in Ocean, Tidal Energy and Bio-Energy power plants**(K2)**

UNIT I ENERGY RESOURCES **(9 Hrs)**

Perspective of energy resources – Forms of Energy – Conventional and non-conventional sources of energy– World's energy status - Energy reserves in India. Limitations of Conventional sources of energy efficiency – Renewable Energy Sources – Energy parameters – Energy Intensity - Gross Domestic product.

UNIT II POWER PLANTS **(9 Hrs)**

Thermal power plant – layout, working principle. Gas turbine power plant – layout, working principle. Nuclear power plants: fuels, nuclear fuel cycle, reactors and nuclear waste management. Hydro Electric plants – Types, energy conversion schemes, environmental aspects.

UNIT III SOLAR ENERGY SYSTEMS **(9 Hrs)**

Solar radiation - Principles of solar energy collection –Types of collector – working principles - Characteristics - efficiency - Solar Energy applications – water heaters, air heaters, solar cooling; solar drying and power generation – solar tower concept – solar pump. Photovoltaic (PV) technology – photovoltaic effect – modelling - Characteristics – efficiency of solar cells.

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UNIT IV WIND ENERGY SYSTEMS (9 Hrs)

General theory of wind mills – Types of wind mills – performance of wind machines–wind power – efficiency. Merits and Limitations of Wind energy system – Modes of wind power generation.

UNIT V ALTERNATE ENERGY SYSTEMS (9 Hrs)

Ocean and Tidal energy conversion - working principle of OTEC – Anderson closed cycle OTEC System. Tidal power – tides - tidal range - types of tidal power plants, single basin and double basins schemes. Bio-mass Energy – Biogas plants.

Text Books

1. S. Rao and Dr. B. B. Parulekar, "Energy Technology", Khanna Publication, 3rd Edition, 1999.
2. B. H. Khan, "Non-Conventional Energy Resources", Tata McGraw Hill Education, 2nd Edition, 2009.
3. D. P. Kothari, K. C. Singal, Rakesh Ranjan, "Renewable Energy Sources and Emerging Technologies", PHI, 2011

Reference Books

1. G. D. Rai, "Non-conventional energy sources", Khanna Publication. 4th Edition, 2002.
2. Pulfrey, David. L, "Photo voltaic Power Generation", Van Nostrand reinhold Company, 1983.
3. Abbasik, "Renewable Energy Sources and their Environment", PHI, 2008.
4. Steve Doty, Wayne C. Turner, "Energy Management Handbook", Fairmont Press, 8th Edition, 2012.
5. S.A.Abbasi and N. Abbasi, "Renewable Energy Sources and Their Environmental Impact", PHI, 2001.

Web References

1. https://www.tutorialspoint.com/renewable_energy/index.htm
2. https://nptel.ac.in/courses/112/107/112107291/
3. https://byjus.com/physics/conventional-and-nonconventional-sources-of-energy/
4. https://www.jagranjosh.com/general-knowledge/nonconventional-sources-of-energy-1448698715-1
5. https://wb.gov.in/departments-power-and-non-conventional-energy-sources.aspx

COs / POs and PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO 12	PSO1	PSO2	PSO3
1	3	1	1	2	-	1	2	-	-	-	-	1	-	-	-
2	3	1	1	2	-	1	2	-	-	-	-	1	-	-	-
3	3	1	1	2	-	1	2	-	-	-	-	1	-	-	-
4	3	1	1	2	-	1	2	-	-	-	-	1	-	-	-
5	3	1	1	2	-	1	2	-	-	-	-	1	-	-	-

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

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Annexure III

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EMPLOYABILITY ENHANCEMENT COURSES – (B).SKILL DEVELOPMENT COURSES

Sl. No	Course Code	Course Title
1	U20CES201	Skill Development Course 1 *
		1) MS Office – Word, Excel, Power Point
		2) Measurements and Conversion
		3) Traditional construction in modern age
2	U20CES302	Skill Development Course 2 *
		1) Basic Vasthu
		2) Contour and Leveling
		3) Auto level surveying
3	U20CES403	Skill Development Course 3 *
		1) Safety in building construction
		2) Air Quality Monitoring
		3) Experience with On-Site Construction Observation and Management
4	U20CES504	Skill Development Course 4 : Career and Professional Skill Development Program - I
5	U20CES505	Skill Development Course 5 : Presentation Skills using ICT
6	U20CES606	Skill Development Course 6 : Career and Professional Skill Development Program - II
7	U20CES607	Skill Development Course 7 : Technical Seminar
8	U20CES608	Skill Development Course 8 : NPTEL / MOOC – I
9	U20CES809	Skill Development Course 9 : NPTEL / MOOC - II

U20CES302	SKILL DEVELOPMENT COURSE 2 (Choose any one of the following course)	L	T	P	C	Hrs
		0	0	2	-	30

1. BASIC VASTHU

Course Content:

This would involve introducing vasthu to students using various energy patterns. In this student will be given exposure to selection of land, concepts behind planning, sequence of construction as per vasthu rules and rules for various rooms

2. PLANE TABLE SURVEYING

Course Content:

A plane table is a device used in surveying and related disciplines to provide a solid and level surface on which to make field drawings, charts and maps. This would help the students to prepare a map or plan to represent an area on a horizontal plan using plane table surveying by conducting various experiments involving different methods. The students would be able to acquire practical knowledge on handling the plane table survey instruments.

3. AUTO LEVEL SURVEYING

Course Content:

The students would be given exposure to automatic level and circular spirit level. This would provide knowledge of automatic level and advanced surveying instruments using working principles of survey instruments. The students would develop skills in using circular spirit level and analyses data and to measure the horizontal distances. This would help students to improve skills to set out leveling in the field using automatic level.

U20CES403	SKILL DEVELOPMENT COURSE 3 (Choose any one of the following course)	L	T	P	C	Hrs
		0	0	2	-	30

1. SAFETY IN BUIDING CONSTRUCTION

Course Content:

This would involve training students for safety practices in building construction. The students would be given exercise to use the management tools that will allow structuring a safety plan suited to the project, complying with the local laws and regulations in force

2. AIR QUALITY MONITORING

Course Content:

This would help the students to understand the monitoring and measurement of air pollutants by studying about the air quality and preparation of action plan. Students would be given exposure to various sources of pollutants, measuring and assessing them; and how to manage it.

3. EXPERIENCE WITH ON-SITE CONSTRUCTION OBSERVATION AND MANAGEMENT

Course Content:

This would involve training of students with various drawings and specifications by understanding the construction progress and reports for materials and the concept of testing and inspections. In this students would be given exposure to on-site observations, verification of contractor performance, specialty reports for materials such as concrete and asphalt, pre-final and final inspections

U20CES504	SKILL DEVELOPMENT COURSE 4 (Career and Professional Skill Development Program - I)	L	T	P	C	Hrs
		0	0	2	-	30

1. BASIC APTITUDE & MATHEMATICAL SKILLS:

- Number System – Basics
- Number System – Advanced
- Surds & Indices
- Ratio & Proportion
- Problem On Ages & Partnership

2. APPLIED APTITUDE & MATHEMATICAL SKILLS:

- Average
- Alligations & Mixtures
- Profit & Loss, Discounts
- Percentage
- Time, Speed & Distance
- Problem On Trains
- Boats & Streams
- Time & Work
- Chain Rule
- Pipes & Cisterns
- Calendars

3. ENGINEERING APTITUDE SKILLS:

- Simple & Compound Interest
- Probability
- Permutation & Combination
- Mensuration
- Data Interpretation

U20CES505	SKILL DEVELOPMENT COURSE 5 (Presentation Skills using ICT)	L	T	P	C	Hrs
		0	0	2	0	30

The methodology used is "learning by doing", a hands-on approach, enabling the students to follow their own pace. The teacher, after explaining the project, became a tutor, answering questions and helping students on their learning experience.

CT skills

- Understand ICT workflow in cloud computing.
- Manage multitasking.
- Deal with main issues using technology in class.
- Record, edit and deliver audio and video.
- Automate assessments and results.

Teaching tools

- Different ways to create audiovisual activities.

2.A.7.

- Handle audiovisual editors.
- Collaborative working.
- Individualize learning experience.
- Get instant feedback from students.

Each one of the students will be assigned an ICT Topic and the student has to conduct a detailed study and have to prepare a report, running to 15 or 20 pages for which a demo to be performed followed by a brief question and answer session. The demo will be evaluated by the internal assessment committee for a total of 100 marks. The marks attained for this course is not considered for CGPA calculation.

		L	T	P	C	Hrs
U20CES606	**SKILL DEVELOPMENT COURSE 6** (Career and Professional Skill Development Program - II)	**0**	**0**	**2**	**0**	**30**

1. **LOGICAL REASONING:**
   - Syllogism
   - Coding Inequalities
   - Coding & Decoding
   - Blood Relationship
   - Direction Sense
   - Number Series
   - Odd Man Out
   - Ranking Test
   - Logical Analogy
2. **ANALYTICAL REASONING & CRITICAL REASONING:**
   - Analytical Thinking
   - Seating Arrangement
   - Selection Decision Table – Eligibility Test
   - Numerical Puzzles
   - Data Sufficiency
   - Critical Reasoning
3. **NON VERBAL REASONING:**
   - Cubes & Dices
   - Sequence Oriented, Analogy Oriented, Coding Oriented
   - Figure & Factual Analysis
   - Water & Mirror Image
   - Paper Cutting Problems
4. **FUNCTIONAL GRAMMAR:**
   - Naming &Substituting Words - (Noun &Pronoun)
   - Qualifying Words - (Adverb)
   - Describing Words - (Adjectives)
   - Action Words - (Verb)

- Positioning Words - (Preposition)
- Connecting / Linking Words - (Conjunction)
- Articles
- Tenses

5. **VERBAL APTITUDE – I:**
   - Error Correction & Spotting Errors
   - Error Detection
   - Sentence Correction & Improvement
   - Phrases & Idioms
   - Sentence Completion
   - Cloze Test
   - One Word Substitute
6. **VERBAL APTITUDE – II:**
   - Reading Comprehension
   - Para Jumbled Sentences
   - Vocabulary Development
   - Essay Writing

U20CES607	SKILL DEVELOPMENT COURSE 7 (Technical Seminar)	L	T	P	C	Hrs
		0	0	2	0	30

Course Objectives

- To encourage the students to study advanced engineering developments
- To prepare and present technical reports.
- To encourage the students to use various teaching aids such as overhead projectors, power point presentation and demonstrative models.

Course Outcomes

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

CO1 - Review, prepare and present technological developments.

CO2 - Face the placement interviews.

Method of Evaluation:

- During the seminar session each student is expected to prepare and present a topic on engineering/technology, for duration of about 20 minutes.
- In a session of three periods per week, 8 to 10 students are expected to present the seminar.
- Each student is expected to present atleast twice during the semester and the student is evaluatedbased on that.
- At the end of the semester, he / she can submit a report on his / her topic of seminar and marks aregiven based on the report.
- A Faculty guide is to be allotted and he / she will guide and monitor the progress of the student andmaintain attendance also.
- Evaluation is 100% internal. The marks attained for this course is not considered for CGPA calculation.

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SKILL DEVELOPMENT COURSE 9

U20CES608

(NPTEL / MOOC - I)

Student should register online courses like MOOC / SWAYAM / NPTEL etc. approved by the Department committee comprising of HoD, Programme Academic Coordinator, Class advisor and Subject Experts. Students have to complete the relevant online courses successfully. The list of online courses is to be approved by Academic Council on the recommendation of HoD at the beginning of the semester if necessary, subject to ratification in the next Academic council meeting. The Committee will monitor the progress of the student and recommend the grade (100% Continuous Assessment pattern) based on the completion of course / marks secured in online examinations. The marks attained for this course is not considered for CGPA calculation

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EMPLOYABILITY ENHANCEMENT COURSES – (A).CERTIFICATION COURSES

Sl. No.	Course Code	Course Title
1	U20CECX01	3ds Max
2	U20CECX02	Advance Structural Analysis of Building using ETABS
3	U20CECX13	AutoCAD for Civil
4	U20CECX22	Bridge Analysis
5	U20CECX56	Internet of Things
6	U20CECX57	Introduction to C Programming
7	U20CECX58	Introduction to C++ Programming
8	U20CECX59	IoT using Python
9	U20CECX73	Project Management
10	U20CECX74	Python Programming
11	U20CECX85	STAAD PRO V8i
12	U20CECX87	Total Station

CERTIFICATION COURSE

L	T	P	C	Hrs
0	0	4	-	50

Students shall choose an International certification course offered by the reputed organizations like Google, Microsoft, IBM, Texas Instruments, Bentley, Autodesk, Eplan and CISCO, etc. The duration of the course is 40 - 50 hours specified in the curriculum, which will be offered through Centre of Excellence.

Pass /Fail will be determined on the basis of participation, attendance, performance and completion of the course. If a candidate Fails, he/she has to repeat the course in the subsequent years. Pass in this course is mandatory for the award of degree.

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DEPARTMENT OF CIVIL ENGINEERING
NPTEL COURSE LIST

Sl.No.	List of Subjects
1	Geotechnical Engineering - II Foundation Engineering
2	Landscape Architecture and Site Planning - Basic Fundamentals
3	Electronic Waste Management - Issues and Challenges
4	Plastic Waste Management
5	Architectural Conservation and Historic Preservation
6	Geosynthetics and Reinforced Soil Structures
7	Applied Environmental Microbiology
8	Digital Land Surveying And Mapping (DLS&M)
9	Geographic Information Systems
10	Basic Construction materials
11	Remote Sensing: Principles and Applications
12	Introduction to Civil Engineering Profession
13	Maintenance and Repair of Concrete Structures
14	Mechanical Characterization of Bituminous Materials
15	Geotechnical Engineering - I
16	Safety in Construction
17	Natural Hazards
18	Development and Applications of Special Concretes
19	Principles of Construction Management
20	Construction Methods and Equipment Management
21	Scheduling Techniques in Projects
22	Advanced Soil Mechanics
23	Introduction to Accounting and Finance for Civil Engineers
24	Water and Waste water treatment
25	Soil Structure Interaction
26	Geology and Soil Mechanics
27	Geomorphology
28	Water supply Engineering
29	Hydraulic Engineering
30	Structural Dynamics
31	Advanced Foundation Engineering
32	Rock Engineering
33	Urban Transportation Systems Planning
34	Environmental Remediation of Contaminated Sites
35	Geotechnical Engineering Laboratory

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V. Sundaravarma

SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE
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(Accredited by NAAC with 'A' Grade and Accredited by NBA-AICTE, New Delhi)
Madagadipet, Puducherry

DEPARTMENT OF CIVIL ENGINEERING

MOOC COURSE LIST

Sl.No.	List of Subjects
1	Construction Project Management
2	Python fundamentals for beginners
3	Risk and safety in civil engineering
4	Energy literacy training
5	Architecture urban design
6	Autodesk certified professional: AutoCAD for Design and Drafting exam prep
7	Transportation, Sustainable Buildings, Green Construction
8	AI for everyone: Master the basics
9	Python Basics for Data Science
10	Introduction to Engineering Mechanics
11	Construction Project Management
12	Python fundamentals for beginners
13	Risk and safety in civil engineering
14	Energy literacy training
15	Architecture urban design
16	Autodesk certified professional: AutoCAD for Design and Drafting exam prep
17	Transportation, Sustainable Buildings, Green Construction
18	AI for everyone: Master the basics
19	Python Basics for Data Science
20	Introduction to Engineering Mechanics

V. Sundaramurthy

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Annexure IV

2.A.7.51

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Ph.D ADVANCE COURSE CAT SCHEDULE

SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE
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(Accredited by NBA-AICTE, New Delhi, Accredited by NAAC with "A" Grade)
Madagadipet, Puducherry - 605 107

OFFICE OF THE CONTROLLER OF EXAMINATIONS

SMVEC/CoE/Circular/2023-24/001

05/06/2023

CIRCULAR

I wish to state that the Continuous Assessment Test [CAT] for advanced courses for the research scholars admitted in the year 2021 is as follows. The research scholars are requested to take the test seriously since CAT carries 30marks in the Continuous Assessment Marks [CAM].

Sl.No	Date	CAT	Course	Duration
1	10/06/2023	CAT1	Course 1#	10 am to 12 noon
2	24/06/2023		Course 2#	10 am to 12 noon
3	08/07/2023	CAT2	Course 1#	10 am to 12 noon
4	22/07/2023		Course 2#	10 am to 12 noon
5	12/08/2023	CAT3	Course 1#	10 am to 12 noon
6	19/08/2023		Course 2#	10 am to 12 noon

Course 1 and 2 as fixed in the 1st DC meeting

5/6/23

Dr. S. JAYAKUMAR, M.Tech., Ph.D.,
Controller of Examinations
Sri Manakula Vinayagar Engineering College
(An Autonomous Institution)
Madagadipet, Puducherry-605 107

Copy to

1) Dean Research
2) All Research Supervisors
3) All Research Scholars [admitted in 2021]

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Ph.D ADMISSION NOTIFICATION

SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE
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Madagadipet, Puducherry - 605 107

RESEARCH AND DEVELOPMENT CELL

NOTIFICATION

Ph. D Common Entrance Test

13-03-2023

Warm Greetings from SMVECI

In continuation with the application, you have submitted to pursue Ph. D Programme in our institution, I am pleased to inform you that it has been planned to conduct the **Ph.D. Entrance Exam- 2022** through **OFFLINE MODE** on **09th April 2023, Sunday.** The schedule and question pattern of the entrance examination are mentioned below.

Date of Entrance Examination:

Name of the Course	Date of Exam	Venue	Duration of Exam
Ph. D Programme	09-04-2023	Sri Manakula Vinayagar Engineering College (SMVEC), Madagadipet.	10:00 AM to 12.00 PM

Entrance Exam Pattern:

Total Questions	Total Marks	Subjects	Marking scheme	Medium of Paper
100	400	Research Methodology and Concerned subject as per the programme	+4 marks for each correct answer and -1 mark for each wrong answer	English only

The other details pertaining to the admission into Ph. D programme will be periodically updated in the institution website **www.smvec.ac.in.**

The candidates are requested to contact the following in-charges in the respective discipline if they have any queries related to appearing in the Common Entrance Test.

Name of the contact person	Dept.	Phone Number	Email
Dr. K. Velmurugan, Dean - Research	MECH, CIVIL, MBA	9585516718	research@smvec.ac.in
Dr. P. Raja, HOD –ECE	ECE, EEE	9443407745	hodece@smvec.ac.in
Dr.K. Premkumar, HOD - CSE	CSE, IT	9842127679	premkvpt@gmail.com
Dr.T.Jayavarthanan, Professor-Physics	Physics, Chemistry, English, Maths	9894320888	jayavarthanan@smvec.ac.in

14/3/23

Controller of Examination

Dr. S. JAYAKUMAR, M.Tech., Ph.D.,
Controller of Examinations
Sri Manakula Vinayagar Engineering College
(An Autonomous Institution)
Madagadipet, Puducherry-605 107.

Director cum Principal

Dr. V.S.K Venkatachalapathy, M.E., Ph.D.,
Director cum Principal
Sri Manakula Vinayagar Engineering College
(An Autonomous Institution)
Madagadipet, Puducherry - 605 107.

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Ph.D ENTRANCE EXAM RESULTS

SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE
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Madagadipet, Puducherry - 605 107

CONTROLLER OF EXAMINATIONS

SMVEC/CoE/R&D/PhD-ResDeptInt/2022-23/001

13/05/2023

Ph.D ENTRANCE EXAM 2022-23 RANK LIST

Dear Sir/ Madam,

Sub: Intimation of Candidates Selected in Ph.D Entrance Examination 2022 – Reg.,

******

We are very happy to inform the results for the Ph.D Entrance Examinations which is held on 9th April 2023. The details of eligible candidate for a personal interview in your respective department is as follows. The date and other details regarding the personal interview will be informed you later. In this regard you are also requested to contact the Dean (R&D) for proceeding further related to the admission procedure to be followed as per the guidelines of UGC, Pondicherry University and Ph.D Regulations 2021 of our institution.

Sl. No	Register Number	Name of the Candidate	Mark Secured	Rank
Department of Electrical and Electronics Engineering				
1	22EEE005	K. Thangaraj	267	1
2	22EEE004	R. Ragupathy	242	2
3	22EEE008	J. Muruganandham	236	3
4	22EEE003	C. Adrien Perianayagam	231	4
5	22EEE006	I. Shivasankkar	225	5
6	22EEE010	K. Murugan	222	6
7	22EEE001	R. Manikandan	215	7
8	22EEE007	A. Janagiraman	206	8
9	22EEE002	V. Ilanthirayane	49	*NE
10	22EEE009	D. Dhinagaran	-14	*NE
Department of Electronics and Communication Engineering				
1	22EEC014	D. Mary Getsy	240	1
2	22EEC020	R. Gayathri	224	2
3	22EEC011	J. Suganya	220	3
4	22EEC013	P. Srividdhya	218	4
5	22EEC017	B. Menaga	217	5
6	22EEC019	V. M. Navaneetha Krishnan	208	6
7	22EEC021	V. Logisvary	206	7
8	22EEC012	Aravind	45	*NE
9	22EEC016	S. Kalaimani	28	*NE
10	22EEC015	C. Janani	19	*NE
11	22EEC018	S. Ganesan	5	*NE

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Department of Computer Science and Engineering/ Information Technology				
1	22ECS026	S. Subasree	239	1
2	22ECS027	K. Devika	226	2
3	22ECS023	R. Suresh	225	3
4	22ECS030	T. Sivaranjani	223	4
5	22ECS022	R. Ezhumalai	220	5
6	22ECS024	R.Suganya	218	6
7	22ECS029	M. Subathra	215	7
8	22ECS033	S. Thulasidass	210	8
9	22ECS032	A. Moshika	209	9
10	22ECS031	V. Gomathi	207	10
11	22ECS028	G. Keerthiraaj	20	*NE
Department of Mechanical Engineering				
1	22EME038	C. Subramaniyan	234	1
2	22EME040	M. Gunasekar	227	2
3	22EME041	K. Navanitha Krishnan	226	3
4	22EME037	G. Palanivel	225	4
5	22EME039	S. Sivanandam	215	5
6	22EME035	M. Santhoshkumar	214	6
7	22EME044	R. Sathish Babu	208	7
8	22EME045	K. Dhandapani	205	8
9	22EME036	K. Saravanan	56	*NE
10	22EME042	S. Arul Pradeep	27	*NE
11	22EME046	V. Saruhasan	15	*NE
Department of Civil Engineering				
1	22ECE052	K. Srinivasan	333	1
2	22ECE051	G. Yamuna	309	2
3	22ECE048	D. Sathiyasree	275	3
4	22ECE050	A. Kalyani	220	4
5	22ECE049	S. Azhagarsamy	212	5
6	22ECE055	S. Rethinakumar	207	6
7	22ECE054	S. Karthikeyan	202	7
8	22ECE053	K. Stalin	77	*NE
Department of Mathematics				
1	22EMA068	M. Sugasini	253	1
2	22EMA069	R. Rajesh	238	2
3	22EMA072	S. P. Lavanya	212	3
4	22EMA067	M. Karthiga	206	4
5	22EMA074	R. Meena	76	*NE
6	22EMA071	A. Lydia Mary Juliette Rayen	56	*NE
7	22EMA073	S.Sri kiruthiga Devi	54	*NE
8	22EMA070	R. Chandra Prabha	50	*NE

2.A.7, 56

Department of English				
1	22EEN062	S. Renuka Devi	285	1
2	22EEN064	P. Yamini	270	2
3	22EEN061	K. Iswarya	259	3
4	22EEN059	K. Ambika	232	4
5	22EEN065	P. Arundhathi	218	5
6	22EEN066	L. M. Ramya	212	6
7	22EEN060	A. Mohamed Anwarullah	75	*NE
8	22EEN063	V. Chelvi	75	*NE
Department of Management Studies				
1	22EMS057	T. Chandramohan	268	1
2	22EMS058	S. S. Gayathri	234	2
3	22EMS056	G. Sindhuja	22	*NE

*NE - Not Eligible

Eligible Cut-off as per UGC norms is 200 marks (i.e. 50% of mark)

13/5/23

Dean (R&D)

Dr. K. VELMURUGAN, M.E., Ph.D.,
Dean- Research & Development
Sri Manakula Vinayagar Engineering College
(An Autonomous Institution)
Madagadipet, Puducherry-605 107

13/5/23

Controller of Examinations

Dr. S. JAYAKUMAR, M.Tech., Ph.D.,
Controller of Examinations
Sri Manakula Vinayagar Engineering College
(An Autonomous Institution)
Madagadipet, Puducherry-605 107

Director cum Principal

Dr. V.S.K Venkatachalapathy, M.E., Ph.D.,
Director cum Principal
Sri Manakula Vinayagar Engineering College
(An Autonomous Institution)
Madagadipet, Puducherry - 605 107.

2.A.7.57

Annexure V

2.A.7. 59

2.A.T.60

INSTITUTIONAL RECOGNIZATIONS

- Our Institution is positioned in the Band of 151 – 300 in the NIRF innovation Category
- India Today Ranked 213 th position in best private Colleges – Engineering
- Best Engineering College in Puducherry with a rating of AAA by Careers 360
- Principal Excellence Award-2022 by Eduskills in collaboration with AICTE to our Director Dr.V.S.K. Venkatachalapathy
- Best Performing Institute Award-2022(South Zone) by Eduskills in collaboration with AICTE
- Academic Partner Excellence Awards 2022 by ICT Academy of Tamilnadu
- Best Engineering College in Puducherry with the rating of AAA by Careers 360
- DataQuest Ranked 59 th position among the top 100 Government T-Schools Overall (Government and Private) and 48th position among the top 100 Government T-Schools Private in India
- India Today Ranked 165 th position in Top -200 best private Colleges – Engineering

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DEPARTMENT OF CIVIL ENGINEERING

FACULTY ACHIEVEMENTS

Dr. S. Jayakumar /Controller of Examination & Professor in Civil Engineering received the 20 years of Academic Excellence award 2022

8.A.7.62

புதுச்சேரி PUDUCHERRY KINGMAKER Tamil Weekly RNI No: TNTAM /2016/70731

கிங் மேக்கர்

24-02-2023

PUDUCHERRY KINGMAKER

மணக்குள விநாயகர் பொறியியல் கல்லூரி ஆண்டு விழா

உள்துறை அமைச்சர் நமச்சிவாயம் பங்கேற்பு

ஸ்ரீ மணக்குள விநாயகர் பொறியியல் கல்லூரியில் ஆண்டு விழா. ஸ்பார்க் 2023 மாண்புமிகு உள்துறை அமைச்சர் ஆ நமச்சிவாயம் அவர்கள் கலந்து கொண்டு சிறப்பு செய்தார் , தொடர்ந்து பல்வேறு துறைகளில் சிறந்து விளங்கிய பேராசிரியர்களுக்கு அமைச்சர் அவர்கள் நினைவு பரிசு வழங்கி பாராட்டினார்.

Mr. K. Srinivasan / Assistant Professor received the Best faculty award 2022

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Details of faculty attended UHV Program – I and Certificate Received

Sl. No	Faculty Name	Designation
1	Mrs. A. Kalyani	Assistant Professor
2	Mr. K. Srinivasan	Assistant Professor
3	Ms. G. Yamuna	Assistant Professor
4	Mrs.D. Sathiyasree	Assistant Professor
5	Mr.S.Azghagarsamy	Assistant Professor

Details of faculty attended FDP and Conference Details

Sl. No	Name of the Faculty	No of FDP attended	No of Conference attended
1	Dr.S.Sundararaman	02	02
2	Mrs. A. Kalyani	03	02
3	Mr. K. Srinivasan	04	02
4	Mr.S.Azghagarsamy	03	02
5	Ms. G. Yamuna	03	02
6	Mrs.D. Sathiyasree	03	02

Details of NPTEL Mentor

Sl. No	Name of the Staff	Event Name	Awards
1	Mr.K.Srinivasan	NPTEL	Mentor
2	Mrs.A.Kalyani	NPTEL	Mentor

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DEPARTMENT OF CIVIL ENGINEERING

STUDENT'S EVENT PARTICIPATION DETAILS

ACADEMIC YEAR-2022 – 2023

Sl. No	Name of the Student	Event Name (Technical/Sports/ Cultural)	Date	Conducted by	Prize Details/ Participation
1.	LOKESHWARAN.V	Short film	11.06.2022	Manakula Vinayagar Institute of Technology	1st Prize
2.	AGILA.P	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
3.	SAGUNDHALA PRIYADHARSHINI.M	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
4.	SHANMUGAPRIYA. C	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
5.	HARITHA. K	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
6.	NANDINI.R	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
7.	VIJAI SREI .K	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation

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8.	ILAKKYA.M.S	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
9.	KEERTHANA .V	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
10.	THARSINEE.K	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
11.	SIVAGURU.M	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
12.	DHEENA DAYALAN.S	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
13.	GOPINATH .V	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
14.	SRIRAM.B	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
15.	SHANTHAKUMAR K	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
16.	NAVEEN PRASAD.R	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
17.	PREMKUMAR.V	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation

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18.	DILIP KUMAR.K	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
19.	VISHWA. B	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
20.	THAMIZHSELVAN. M	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
21.	DIWAGAR. V	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
22.	SASIKUMAR R	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
23.	SREE SHANKAR RAMAN.G	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
24.	KABILAN.K	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
25.	LOGESH.G	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
26.	ROHITH. J.V.K.	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
27.	HARISH. K	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation

28.	KESAVAMOORTHY.B	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
29.	DAVAKUMAR. D	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
30.	ESHWARAN. A	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
31.	NAVEEN KUMAR.A.R	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
32.	MOULEESWAR M	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
33.	SRIRAM. S	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
34.	BHARATH. M	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
35.	DEEPAN.M	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
36.	THIRUNAVOOKARASU. B	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
37.	MOTHILAL K	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation

38.	ABBAS F	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
39.	HARIHARAN G	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
40.	EVANICK RYAN. A	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
41.	ACHUTHAN A K	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
42.	PRADEEP P	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
43.	SHASIDHAR P	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
44.	DHARANIDHARRAN T	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
45.	FEROZE XAVIOUR S	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
46.	GOKUL M	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
47.	ANNAMALAI R	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation

48.	DHANUSHKUMAR V	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
49.	LEKHA D	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
50.	PRITHIGHA B	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
51.	VASUMATHI N	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
52.	KEERTHANA S	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
53.	THIRISHA N	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
54.	KIRUSHNA PIRIYA R	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
55.	JAYASRI S	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
56.	KAMALA HARINI B	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
57.	MONIKKA K	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation

58.	SHOBAA B	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
59.	HARINE DEVI R	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
60.	GURUPREYAA R	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
61.	VENKATESH S	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
62.	DEEPAK M	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
63.	SRIRAM M	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
64.	ROSHAN R	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
65.	AMIRTHAVARSHAN R	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
66.	GOUDHAM R	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
67.	PAVITHRAN N	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation

68.	SABARINATHAN S P	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
69.	PRAPANJAN S	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
70.	HAREESH P	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
71.	VINOTHKUMAR V	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
72.	SANJAY VENKATRAMAN K	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
73.	CHANDRALATHAN S	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
74.	MURALITHARAN M	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
75.	SRI DHARAN B S	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
76.	KABILAN A	Technical-Project Expo	14.09.2022	Sri Manakula Vinayagar Engineering college	Participation
77.	BHARATH. M	ARCHI - MEDES	22.09.2022	SRM Institute of Science and Technology	2nd Prize

78.	DAVAKUMAR D	Technical - Paper Presentation	22.09.2022	SRM Institute of Science and Technology	Participated
79.	KESAVAMOORTHY.B	Technical - Paper Presentation	22.09.2022	SRM Institute of Science and Technology	Participated
80.	KEERTHANA. V	Technical - Paper Presentation	22.09.2022	SRM Institute of Science and Technology	Participated
81.	LOGESH G	PLA(N)TO	22.09.2022	SRM Institute of Science and Technology	Participated
82.	LOGESH G	Technical - Paper Presentation	22.09.2022	SRM Institute of Science and Technology	Participated
83.	SRIRAM. S	Technical - Paper Presentation	22.09.2022	SRM Institute of Science and Technology	Participated
84.	NAVEEN KUMAR.A.R	Technical - Paper Presentation	22.09.2022	SRM Institute of Science and Technology	Participated
85.	THAMIZHSELVAN. M	ARCHI - MEDES	22.09.2022	SRM Institute of Science and Technology	Participated
86.	VISHWA	ARCHI - MEDES	22.09.2022	SRM Institute of Science and Technology	Participated
87.	SHANTHAKUMAR.K	Technical - Paper Presentation	22.09.2022	SRM Institute of Science and Technology	Participated
88.	THAMIZHSELVAN. M	Technical - Paper Presentation	22.09.2022	SRM Institute of Science and Technology	Participated
89.	VISHWA	Technical - Paper Presentation	22.09.2022	SRM Institute of Science and Technology	Participated

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90.	ILAKKYA. M.S.	Technical - Paper Presentation	22.09.2022	SRM Institute of Science and Technology	Participated
91.	SHANMUGAPRIYA. C	Technical - Paper Presentation	22.09.2022	SRM Institute of Science and Technology	Participated
92.	THARSINEE K	Technical - Paper Presentation	22.09.2022	SRM Institute of Science and Technology	Participated
93.	AGILA	Technical - Paper Presentation	30.09.2022	CK College of Engineering and Technology	1st prize
94.	AGILA	Scavenger Hunts	30.09.2022	CK College of Engineering and Technology	Participated
95.	BHARATH. M	Technical Quiz	30.09.2022	CK College of Engineering and Technology	Participated
96.	BHARATH. M	Code Cracking	30.09.2022	CK College of Engineering and Technology	3RD Price
97.	BHARATH. M	Parallel Analogy	30.09.2022	CK College of Engineering and Technology	Participated
98.	DAVAKUMAR D	Scavenger Hunts	30.09.2022	CK College of Engineering and Technology	Participated
99.	DAVAKUMAR D	Technical - Paper Presentation	30.09.2022	CK College of Engineering and Technology	Participated
100.	KEERTHANA. V	Technical - Paper Presentation	30.09.2022	CK College of Engineering and Technology	Participated
101.	LOGESH G	Parallel Analogy	30.09.2022	CK College of Engineering and Technology	Participated

102.	LOGESH G	Code Cracking	30.09.2022	CK College of Engineering and Technology	Participated
103.	LOGESH G	Scavenger Hunts	30.09.2022	CK College of Engineering and Technology	Participated
104.	LOGESH G	Technical - Paper Presentation	30.09.2022	CK College of Engineering and Technology	Participated
105.	NAVEEN KUMAR.A.R	Technical - Paper Presentation	30.09.2022	CK College of Engineering and Technology	Participated
106.	NAVEEN KUMAR.A.R	Code Cracking	30.09.2022	CK College of Engineering and Technology	Participated
107.	NAVEEN KUMAR.A.R	Scavenger Hunts	30.09.2022	CK College of Engineering and Technology	Participated
108.	SHANMUGAPRIYA C	Technical - Paper Presentation	30.09.2022	CK College of Engineering and Technology	1st prize
109.	SHANMUGAPRIYA C	Scavenger Hunts	30.09.2022	CK College of Engineering and Technology	Participated
110.	SRIRAM B	Technical Quiz	30.09.2022	CK College of Engineering and Technology	Participated
111.	SRIRAM B	Parallel Analogy	30.09.2022	CK College of Engineering and Technology	Participated
112.	SRIRAM B	Code Cracking	30.09.2022	CK College of Engineering and Technology	Participated
113.	SRIRAM B	Scavenger Hunts	30.09.2022	CK College of Engineering and Technology	Participated

114.	SRIRAM S	Technical - Paper Presentation	30.09.2022	CK College of Engineering and Technology	Participated
115.	SRIRAM S	Scavenger Hunts	30.09.2022	CK College of Engineering and Technology	Participated
116.	THAMIZHSELVAN. M	Parallel Analogy	30.09.2022	CK College of Engineering and Technology	Participated
117.	THAMIZHSELVAN. M	Scavenger Hunts	30.09.2022	CK College of Engineering and Technology	Participated
118.	THAMIZHSELVAN. M	Technical - Paper Presentation	30.09.2022	CK College of Engineering and Technology	Participated
119.	THARSINEE K	Parallel Analogy	30.09.2022	CK College of Engineering and Technology	Participated
120.	THARSINEE K	Technical - Paper Presentation	30.09.2022	CK College of Engineering and Technology	Participated
121.	VIJAI SREI K	Parallel Analogy	30.09.2022	CK College of Engineering and Technology	Participated
122.	VISHWA.R	Technical - Paper Presentation	30.09.2022	CK College of Engineering and Technology	Participated
123.	VISHWA.R	Scavenger Hunts	30.09.2022	CK College of Engineering and Technology	Participated
124.	VISHWA.R	Parallel Analogy	30.09.2022	CK College of Engineering and Technology	Participated
125.	SHANTHAKUMAR.K	Parallel Analogy	30.09.2022	CK College of Engineering and Technology	Participated

126.	SHANTHAKUMAR.K	Technical - Paper Presentation	30.09.2022	CK College of Engineering and Technology	Participated
127.	LEKHA D	Youth Talk	29.09.2022	ICT Academy	Selected for Pre-final
128.	MURALITHARAN M	Youth Talk	29.09.2022	ICT Academy	Participated
129.	HARINE DEVI R	Youth Talk	29.09.2022	ICT Academy	Participated
130.	SHOBAA B	Youth Talk	29.09.2022	ICT Academy	Participated
131.	LOKESHWARAN V	Youth Talk	29.09.2022	ICT Academy	Participated
132.	SATHISH KUMAR I	Youth Talk	29.09.2022	ICT Academy	Participated
133.	SWETHA ANIL	Youth Talk	29.09.2022	ICT Academy	Participated
134.	VASANTH P M	Youth Talk	29.09.2022	ICT Academy	Participated
135.	DEEPAN.M	CII Puducherry Innovation Contest 2022	17.10.2022 - 19.10.2022	Pondicherry University	Participated
136.	LOGESH G	CII Puducherry Innovation Contest 2022	17.10.2022 - 19.10.2022	Pondicherry University	Participated
137.	NAVEEN KUMAR.A.R	CII Puducherry Innovation Contest 2022	17.10.2022 - 19.10.2022	Pondicherry University	Participated
138.	NAVEEN PRASAD. R	CII Puducherry Innovation Contest 2022	17.10.2022 - 19.10.2022	Pondicherry University	Participated
139.	LOKESHWARAN V	IEI Technical - Paper Presentation	07.12.2022 - 08.12.2022	Sri Manakula Vinayagar Engineering college	Participated
140.	SATHISH KUMAR I	IEI Technical - Paper Presentation	07.12.2022 - 08.12.2022	Sri Manakula Vinayagar Engineering college	Participated

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141.	VASANTH P M	IEI Technical - Paper Presentation	07.12.2022 - 08.12.2022	Sri Manakula Vinayagar Engineering college	Participated
142.	AGILA	IEI Technical - Paper Presentation	07.12.2022 - 08.12.2022	Sri Manakula Vinayagar Engineering college	1st Prize
143.	SHANMUGA PRIYA. C	IEI Technical - Paper Presentation	07.12.2022 - 08.12.2022	Sri Manakula Vinayagar Engineering college	1st Prize
144.	LOGESH G	IEI Technical - Paper Presentation	07.12.2022 - 08.12.2022	Sri Manakula Vinayagar Engineering college	Participated
145.	NAVEEN KUMAR.A.R	IEI Technical - Paper Presentation	07.12.2022 - 08.12.2022	Sri Manakula Vinayagar Engineering college	Participated
146.	DEEPAN.M	IEI Technical - Paper Presentation	07.12.2022 - 08.12.2022	Sri Manakula Vinayagar Engineering college	Participated
147.	EVANICK RYAN A	Workshop - Nano material technology to 3D printing	04.01.2023 - 10.01.2023	Sathyabama Institute of Technology	Participated
148.	SHASIDHAR P	Workshop - Nano material technology to 3D printing	04.01.2023 - 10.01.2023	Sathyabama Institute of Technology	Participated

Annexure VI

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Madagadipet, Puducherry - 605 107

DEPARTMENT OF CIVIL ENGINEERING

DETAILS OF EXAMINER

Specialization	Structural Engineering

S.No	Name of the Examiner	Designation & Institution Name	Mobile No	Mail ID
1.	Dr. M. Uma Maguesvari	Associate Professor, Department of Civil Engineering, Rajalakshmi Engineering College, Chennai – 602105.	9443444595	umamaguesvari@gmail.com
2.	Dr.P.Revathi	Associate Professor, Department of Civil Engineering, Puducherry Technological University, Pondicherry - 605014	9487527159 9944427159	revathi@pec.edu
3.	Dr. S. Syed Ibrahim	Assistant Professor, Department of Civil Engineering, Sree Dattha Institute of Engineering and Science, Sheriguda, Hyderabad - 501510.	8247443197	syed_ibms@yahoo.co.in
4.	Dr. K. Rex	Professor and Head, Department of Civil Engineering, Agni College of Technology, Chennai – 600130.	9381026207	rex_lk@rediffmail.com
5.	Dr. K. Thulasirajan	Associate Professor, Department of Civil Engineering, Annamacharya Institute of Technology, Andhra Pradesh – 516126	9486851632	kthulasirajan@gmail.com
6.	Dr. A. K. Kaliluthin	Associate Professor, Department of Civil Engineering, Crescent Institute of Science & Technology, Chennai - 600048	9486075577	kalil@crescent.education

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Specialization	Structural Engineering			
S.No	Name of the Examiner	Designation & Institution Name	Mobile No	Mail ID
7.	Dr. P. V. Premalatha	Principal, Department of Civil Engineering, Oxford Engineering College, Pirattiyur, Trichy - 620009	9944579386	pvpremalatha@yahoo.co.in
8.	Dr. Srinivasa Rao Naraganti	Associate Professor, Department of Civil Engineering, J.B Institute of Engineering and Technology, Hyderabad, Telangana - 500075	6281776979	srininarajbiet@gmail.com
9.	Dr. Mohan	Professor, Department of Civil Engineering, Bharath Institute of Higher Education and Research, Chennai- 600126	9444642646	mohansjm@yahoo.com
10.	Dr.R.Anuradha	Professor, Department of Civil Engineering, SNS College of Technology, Coimbatore, Tamil Nadu 641035	9843263653	anuradhastalin@gmail.com
11.	Dr. N.Pannirselvam	Associate Professor, Department of Civil Engineering, SRM Institute of Science and Technology, Chennai- 603 203	9976379998	pannirsn@srmist.edu.in
12.	Dr. P.Subashree	Assistant Professor, Department of Civil Engineering, Hindusthan College of Engineering and Technology, Coimbatore- 641050	6379559740	subasri03@gmail.com
13.	Dr.J.Rex	Associate Professor, Department of Civil Engineering, Malla Reddy Engineering College (Autonomous), Hyderabad- 500100	9994348591	rexdindigul@gmail.com
14.	Dr. T.Subbulakshmi	Assistant Professor, Department of Civil Engineering, CK College of Engineering and Technology, Cuddalore, Tamil Nadu 607003	9677443918	subbulakshmicivil88@gmail.com
15.	Dr. S.Natarajan	Associate Professor, Department of Civil Engineering, Madha Engineering College, Kundrathur, Chennai-69	9080096539	Sera.natraj1@gmail.com
16.	Dr. S.Eswari	Associate Professor, Department of Civil Engineering, Puducherry Technological University, Pondicherry	9443560804	eswaripec@ptuniv.edu.in

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Specialization	Structural Engineering			
S.No	**Name of the Examiner**	**Designation & Institution Name**	**Mobile No**	**Mail ID**
17.	Dr. L.K.Rex	Professor, Department of Civil Engineering Meenakshi College of Engineering, West K.K. Nagar, Chennai - 600078	9381026207	rex_lk@rediffmail.com lkrex2009@gmail.com
18.	Dr.S.Kotteeswaran	Associate Professor, Department of Civil Engineering Jaya Engineering College Tiruninarvur, Avadi	9751103627	skotteeswaranme1992@gmail.com
19.	Dr.T.Udaya Banu	Associate Professor and Head, Department of Civil Engineering, DMI College of Engineering College,Chennai.	7358602529	banurai2007@gmail.com
20.	Dr. S.Natarajan	Associate Professor, Department of Civil Engineering, Madha Engineering College, Kundrathur, Chennai.	9080096539	sera.natraj1@gmail.com
21.	Dr.S.Thirugnansambandam	Professor, Department of Civil & Structural Engineering, Annamalai University, Annamalai Nagar, Tamil Nadu – 608002	9443046146	agstsai@gmail.com

Specialization	Construction Engineering and Management			
S.No	**Name of the Examiner**	**Designation & Institution Name**	**Mobile No**	**Mail ID**
1.	Dr.S.Prakash Chandar	Assistant Professor, Senior Grade, Department of Civil Engineering, SRM Institute of Science and Technology, Chennai- 603 203	9962042224	prakashs@srmist.edu.in
2.	Dr. R. Venkata Krishnaiah	Professor, Department of Civil Engineering, Bharath Institute of Higher Education and Research, Chennai-600126	9840261276	venkatapec@gmail.com

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3.	Dr. A. Krishnamoorthy	Professor, Department of Civil Engineering, Adhiparasakthi engineering college, Melmaruvathur, Tamil Nadu- 603319	9994140410	krish_moor2006@yahoo.com
4.	Dr.Karthikeyan	Professor, Department of Civil Engineering, Dhanalakshmi Srinivasan Engineering College, Perambalur, Tamil Nadu	9994271151	mkartik2009@gmail.com
5.	Dr. P. Suresh kumar	Professor, Department of Civil Engineering University College of Engineering, Panruti - 607 106	9487920989	erpsuresh@rediffmail.com

Specialization	**Environmental Engineering**			
S.No	**Name of the Examiner**	**Designation & Institution Name**	**Mobile No**	**Mail ID**
1.	Dr.S.Pradeepkumar	Assistant Professor, Department of Civil Engineering, VNR Vignana Jyothi Institute of Engineering and Technology, Hyderabad.	9843672986	structuralpradeep@gmail.com
2.	Dr. B. Sri Muruganandam	Associate Professor, Department of Civil Engineering, Vellore Institute of Technology, Vellore	9791177668	bsrimuruganandam@vit.ac.in
3.	Dr.C.M Vivek Vardhan	Associate Professor, Department of Civil Engineering, Malla Reddy Engineering College (Autonomous), Maisammaguda, Hyderabad	9985963959	vivekvardhan2@gmail.com
4.	Dr G.Prabhakaran	Professor, Department of Civil Engineering, Siddharth institute of Engineering and Technology, Puttur, Andra Pradesh	9047088680	gprabhadhana@gmail.com
5.	Dr. G. Senthilkumar	Associate Professor, Department of Civil Engineering, Annamalai University, Annamalainagar - 608002 Tamil Nadu	9842354814	cdm.gsk@gmail.com
6.	Dr. V. Damodharan	Associate Professor, Department of Civil Engineering, Annamalai University, Annamalainagar – 608002, Tamil Nadu	9443665709	damucivil75@gmail.com

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7.	Dr.R.Jayasankar	Associate Professor, AVC College of Engineering, Mannampandal, Mayiladuthurai - 609 305	9443986091	jayasankarcivil@avccengg.net
8.	Dr.S.Sudalai	Associate Professor, Centre for Pollution Control and Environmental Engineering, School of Engineering and Technology, Pondicherry University. Puducherry- 605014	9894788723	ssudalai.cpe@gmail.com
9.	Dr.K.Deepa	Associate Professor, Chennai Institute of Technology, Kundrathur, Chennai - 69	9962774264	deepadavidprasannan@gmail.com

Specialization	**Concrete Technology**			
S.No	**Name of the Examiner**	**Designation & Institution Name**	**Mobile No**	**Mail ID**
1.	Dr. R.Sakthivel	Assistant Professor, Department of Civil Engineering, Hindusthan College of Engineering and Technology, Coimbatore, Tamil Nadu - 641050	9944332228	srisakthi2010@gmail.com
2.	Dr. S.Kandasamy	Assistant Professor, Department of Civil Engineering, Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Avadi, Chennai- 600 062	8190965230	skandasamyisha@gmail.com
3.	Dr. V. Subathra Devi	Associate Professor, Department of Civil Engineering, Saveetha Engineering College, Chennai- 602105	9791076767	subidevi@gmail.com

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Specialization	Geotechnical Engineering			
S.No	Name of the Examiner	Designation & Institution Name	Mobile No	Mail ID
1.	Dr. P.T. Ravichandran	Professor, Department of Civil Engineering, SRM Institute of Science and Technology, Chennai- 603 203	9840798450	ptrsrm6@gmail.com
2.	Dr.N.Ilavarasan	Assistant Professor, Department of Civil Engineering, University College of Engineering, BIT Campus, Anna University, Tiruchirappalli- 620 024	9865082422	k13071981k@gmail.com

Specialization	Remote Sensing and GIS			
S.No	Name of the Examiner	Designation & Institution Name	Mobile No	Mail ID
1.	Dr.R.M.Narayanan	Professor, Department of Civil Engineering, Dr.M.G.R Educational and Research Institute, Chennai- 600095	9884336912	narayanan.rm@drmgrdu.ac.in
2.	Dr.S.Karuppasamy	Associate Professor, Department of Civil Engineering, SRM Institute of Science and Technology, Chennai-603203	9791695481	karuppas@srmist.edu.in

Specialization	Water and Wastewater Management			
S.No	Name of the Examiner	Designation & Institution Name	Mobile No	Mail ID
1.	Dr. P. Sivarajan	Associate Professor, Department of Civil Engineering, Annamalai University, Annamalainagar - 608002 Tamil Nadu	9443669336	sivarajan.au@gmail.com

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Specialization	Fluid Mechanics and Machinery			
S.No	**Name of the Examiner**	**Designation & Institution Name**	**Mobile No**	**Mail ID**
1.	Dr. Arivumangai	Assistant Professor, Department of Civil Engineering, Dr. MGR Educational & Research Institute, Chennai-600095	9443486831	arivu_civil@yahoo.co.in

Specialization	Water Resources Engineering			
S.No	**Name of the Examiner**	**Designation & Institution Name**	**Mobile No**	**Mail ID**
1.	Dr. Jailakshmi Menon	Associate Professor, Department of Civil Engineering, Saveetha Engineering College, Chennai- 602105	9940066459	jailakshmiunni@gmail.com
2.	Dr.N.Senthil Kumar	Assistant Professor, Department of Civil Engineering, Vellore Institute of Technology, Vellore- 632014	9003378135	n.senthilkumar@vit.ac.in

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Annexure VII

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SRI MANAKULA VINAYAGAR
ENGINEERING COLLEGE
(An Autonomous Institution)

Puducherry

B.TECH.

CIVIL ENGINEERING

ACADEMIC REGULATIONS 2023
(R - 2023)

CURRICULUM

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COLLEGE VISION AND MISSION

Vision

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

Mission

MI: Quality Education

To provide comprehensive academic system that amalgamates the cutting edge technologies with best practices.

M2: Research and Innovation

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

M3: Employability and Entrepreneurship

To inculcate the employability and entrepreneurial skills through value and skill based training.

M4: Ethical Values

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

DEPARTMENT VISION AND MISSION

Vision

We envision a world where the civil engineering department will be a home to an intellectual community with good quality education embedded with practical knowledge by inculcating research, strong social commitment and ethical values from its students, staffs and alumni.

Mission

M1: Quality Education

To fulfill the requirements of construction industry, Civil Engineering profession and rural community through dissemination of technical services.

M2: Practical Knowledge

To impart quality and real-time education to the students with the knowledge & skills needed for Civil Engineering practice

M3: Work Efficiency

To encourage research, development and consultancy through sustained interaction with industry & research organization.

M4: Societal issues

To develop graduates to compete at the global level to deal with modern issues.

M5: Moral & Ethical

To insist ethical values and professionalism among the students.

PROGRAMME OUTCOMES (POs)

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct investigations of complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of and need for sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

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PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PEO1: Fundamental Knowledge

To gain a thorough fundamental knowledge, problem solving skills, engineering experimental abilities, and design capabilities for a civil engineering career.

PEO2: Knowledge and Skills

To establish the knowledge and skills necessary for identifying and assessing design alternatives and the related social, economic, environmental, and public safety impacts.

PEO 3: Societal Implications

To develop the ability to deal effectively with ethical and professional issues, taking into account the broader societal implications of civil engineering

PEO 4: Competent Professionals

To create competent professionals who are trained in the design and development of Civil Engineering systems to engulf research and development activities

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO 1: Practical Knowledge

Inculcating practical knowledge in planning, analysis, design and construction management without much exploiting natural resources.

PSO 2: Critical Thinking

Imparting effective communicational skills, leadership attributes towards the team work and developing critical thinking abilities to find solutions for civil engineering problems of multi-disciplinary nature.

PSO 3: Challenging Employment

Ability to take up any challenging employment, entrepreneurship, research and development for sustainable civil society as a civil engineering graduate.

STRUCTURE FOR UNDERGRADUATE ENGINEERING PROGRAM

Sl. No	Course Category	Breakdown of Credits
1	Humanities and Social Sciences including Management courses (HS)	15
2	Basic Science Courses (BS)	20
3	Engineering Science Courses (ES)	28
4	Professional Core Courses (PC)	66
5	Professional Electives Courses (PE)	18
6	Open Electives Courses (OE)	9
7	Project Work and Internship (PA)	13
8	Ability Enhancement Courses (AEC*)	-
9	Mandatory Courses (MC*)	-
Total		**169**

SCHEME OF CREDIT DISTRIBUTION – SUMMARY

Sl.No	AICTE Suggested Course Category	Credits per Semester								Total Credits
		I	II	III	IV	V	VI	VII	VIII	
1	Humanities and Social Science Courses (HS)	3	5	1	1	2	-	-	3	15
2	Basic Sciences Courses (BS)	7	4	5	4	-	-	-	-	20
3	Engineering Sciences Courses (ES)	11	5	4	4	4	-	-	-	28
4	Professional Core Courses (PC)	1	7	13	10	8	15	12	-	66
5	Professional Electives Courses (PE)	-	-	-	3	3	3	3	6	18
6	Open Electives Courses (OE)	-	-	-	-	3	3	3	-	9
7	Project Work (PA)	-	-	-	-	1	1	2	8	12
8	Internship (PA)	-	-	-	-	-	-	1	-	1
9	Ability Enhancement Courses (AEC*)	-	-	-	-	-	-	-	-	0
10	Mandatory courses (MC*)	-	-	-	-	-	-	-	-	0
Total		22	21	23	22	21	22	21	17	169

**** AEC and MC are not included for CGPA calculation***

HONOURS DEGREE PROGRAMME:

The student is permitted to opt for earning an *honours degree* in the same discipline of engineering in addition to the degree in his/her own discipline. To earn an honours degree the student is required to earn an additional 18 - 20 credits (over and above the total 170 credits prescribed in the curriculum) starting from fourth semester onwards by completing 5 additional courses offered in respective semesters. A student is eligible to exercise this option if he/she has passed all the courses offered upto third semester in the first attempt itself and has earned a CGPA / GPA* (*for lateral entry) of not less than 8.0. The prescribed courses offered for Honours degree are given in **Annexure V.**

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SEMESTER – I										
Sl. No.	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
Theory										
1	U23MATC01	Engineering Mathematics - I	BS	3	1	0	4	25	75	100
2	U23BSTC01	Physical Science for Engineers	BS	3	0	0	3	25	75	100
3	U23ESTC01	Basics of Civil and Mechanical Engineering	ES	3	0	0	3	25	75	100
4	U23ESTC02	Engineering Mechanics	ES	2	1	0	3	25	75	100
5	U23ESTC03	Basics of Electrical and Electronics Engineering	ES	3	0	0	3	25	75	100
Theory cum Practical										
6	U23ENBC01	Communicative English I	HS	2	0	2	3	50	50	100
Practical										
7	U23ESPC01	Basics of Electrical and Electronics Engineering Laboratory	ES	0	0	2	1	50	50	100
8	U23ESPC02	Design Thinking and IDEA Lab	ES	0	0	2	1	50	50	100
9	U23CEP101	Civil Engineering Practice Laboratory	PC	0	0	2	1	50	50	100
Ability Enhancement Course										
10	U23CEC1XX	Certification Course – I**	AEC	0	0	4	-	100	-	100
Mandatory Course										
11	U23CEM101	Induction Programme	MC	2 Weeks			-	-	-	-
							22	425	575	1000

***** Certification courses are to be selected from the list given in Annexure III***

SEMESTER – II										
Sl. No.	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
Theory										
1	U23MATC02	Engineering Mathematics - II	BS	3	1	0	4	25	75	100
2	U23CSTC01	Programming in C	ES	3	0	0	3	25	75	100
3	U23CET201	Mechanics of Solids I	PC	2	1	0	3	25	75	100
4	U23CET202	Building Materials and Construction	PC	2	1	0	3	25	75	100
5	U23HSTC01	UHV 2 (Universal Human Value)	HS	2	0	0	2	25	75	100
Theory cum Practical										
6	U23ENBC02	Communicative English II	HS	2	0	2	3	50	50	100
Practical										
7	U23CSPC01	Programming in C Laboratory	ES	0	0	2	1	50	50	100
8	U23ESPC03	Engineering Graphics using AutoCAD	ES	0	0	2	1	50	50	100
9	U23CEP202	Strength of Materials Laboratory	PC	0	0	2	1	50	50	100

Ability Enhancement Course										
10	U23CEC2XX	Certification Course – II**	AEC	0	0	4	0	100	-	100
Mandatory Course										
11	U23CEM202	Sports Yoga and NSS	MC	0	0	2	0	100	-	100
							21	525	575	1100

SEMESTER – III										
Sl. No.	**Course Code**	**Course Title**	**Category**	**Periods**			**Credits**	**Max. Marks**		
				L	**T**	**P**		**CAM**	**ESM**	**Total**
Theory										
1	U23MATC03	Probability and Statistics	BS	3	1	0	4	25	75	100
2	U23ADTC01	Programming in Python	ES	3	0	0	3	25	75	100
3	U23CET303	Fluid Mechanics and Machinery	PC	3	0	0	3	25	75	100
4	U23CET304	Construction Technique, Equipment and Practices	PC	3	0	0	3	25	75	100
5	U23CET305	Mechanics of Solids II	PC	2	1	0	3	25	75	100
Theory cum Practical										
6	U23CEB301	Surveying and Geomatics	PC	2	0	2	3	50	50	100
Practical										
7	U23ENPC01	General Proficiency I	HS	0	0	2	1	50	50	100
8	U23MAPC01	Engineering Mathematics Laboratory	BS	0	0	2	1	50	50	100
9	U23ADPC01	Programming in Python Laboratory	ES	0	0	2	1	50	50	100
10	U23CEP303	Fluid Mechanics and Machines Laboratory	PC	0	0	2	1	50	50	100
Ability Enhancement Course										
11	U23CEC3XX	Certification Course – III**	AEC	0	0	4	0	100	-	100
12	U23CES301	Skill Enhancement Course - I*	SEC	0	0	2	0	100	-	100
Mandatory Course										
13	U23CEM303	Climate Change	MC	2	0	0	0	100	-	100
							23	675	625	1300

**** Skill Development Courses are to be selected from the list given in Annexure IV***

SEMESTER – IV										
Sl. No	**Course Code**	**Course Title**	**Category**	**Periods**			**Credits**	**Max. Marks**		
				L	**T**	**P**		**CAM**	**ESM**	**Total**
Theory										
1	U23MATC04	Numerical Methods and Optimization	BS	3	1	0	4	25	75	100
2	U23CSTC03	Data Structures	ES	3	0	0	3	25	75	100
3	U23CET406	Geotechnical Engineering- I	PC	2	1	0	3	25	75	100
4	U23CET407	Design of RC Elements	PC	2	1	0	3	25	75	100
5	U23CEE4XX	Professional Elective - I#	PE	3	0	0	3	25	75	100
Theory cum Practical										
6	U23CEB402	Concrete Technology	PC	2	0	2	3	50	50	100

Practical										
7	U23ENPC02	General Proficiency II	HS	0	0	2	1	50	50	100
8	U23CSPC02	Data Structures Laboratory	ES	0	0	2	1	50	50	100
9	U23CEP404	Geotechnical Engineering Laboratory	PC	0	0	2	1	50	50	100
Ability Enhancement Course										
10	U23CEC4XX	Certification Course – IV**	AEC	0	0	4	0	100	-	100
12	U23CES402	Skill Enhancement Course - II*	SEC	0	0	2	0	100	-	100
Mandatory Course										
13	U23CEM404	Right to Information and Good Governance	MC	2	0	0	0	100	-	100
							22	625	575	1200

 # Professional Electives are to be selected from the list given in Annexure I

SEMESTER – V										
Sl. No.	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
Theory										
1	U23HSTC02	Research Methodology	HS	2	0	0	2	25	75	100
2	U23ITTC03	Programming in Java	ES	3	0	0	3	25	75	100
3	U23CET508	Geotechnical Engineering- II	PC	2	1	0	3	25	75	100
4	U23CET509	Water supply and Wastewater Engineering	PC	3	0	0	3	25	75	100
5	U23CEE5XX	Professional Elective - II#	PE	3	0	0	3	25	75	100
6	U23XXO5XX	Open Elective – I$	OE	3	0	0	3	25	75	100
Practical										
7	U23ITPC03	Programming In Java Laboratory	ES	0	0	2	1	50	50	100
8	U23CEP505	Water and Wastewater Engineering Laboratory	PC	0	0	2	1	50	50	100
9	U23CEP506	REVIT Architecture Laboratory	PC	0	0	2	1	50	50	100
Ability Enhancement Course										
10	U23CEC5XX	Certification Course – V**	AEC	0	0	4	0	100	-	100
Project Work										
11	U23CEW501	Micro Project	PA	0	0	2	1	100	-	100
Mandatory Course										
12	U23CEM505	Essence of Indian Traditional Knowledge	MC	2	0	0	0	100	-	100
							21	600	600	1200

$Open electives are to be selected from the list given in Annexure II

SEMESTER – VI										
Sl. No	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
				L	T	P		CAM	ESM	Total
Theory										
1	U23CET610	Design of Steel Structures	PC	2	1	0	3	25	75	100
2	U23CET611	Structural Analysis	PC	2	1	0	3	25	75	100
3	U23CET612	Transportation Engineering	PC	3	0	0	3	25	75	100
4	U23CEE6XX	Professional Elective - III#	PE	3	0	0	3	25	75	100
5	U23XXO6XX	Open Elective – II$	OE	3	0	0	3	25	75	100

Theory cum Practical										
6	U23CEB603	Instrumentation and sensor Technologies for Civil Engineering Application	PC	2	0	2	3	50	50	100
Practical										
7	U23CEP607	STAAD PRO V8i Laboratory	PC	0	0	2	1	50	50	100
8	U23CEP608	Transportation Engineering Laboratory	PC	0	0	2	1	50	50	100
9	U23CEP609	Survey Camp	PC	0	0	0	1	50	50	100
Project Work										
10	U23CEW602	Mini Project	PA	0	0	2	1	100	-	100
Ability Enhancement Course										
11	U23CEC6XX	Certification Course – VI**	AEC	0	0	4	0	100	-	100
Mandatory Course										
12	U23CEM606	Gender Equality	MC	2	0	0	0	100	-	100
							22	625	575	1200

SEMESTER – VII										
Sl. No	**Course Code**	**Course Title**	**Category**	**Periods**			**Credits**	**Max. Marks**		
				L	**T**	**P**		**CAM**	**ESM**	**Total**
Theory										
1	U23CET713	Construction Management	PC	3	0	0	3	25	75	100
2	U23CET714	Hydrology and Water Resource Engineering	PC	3	0	0	3	25	75	100
3	U23CET715	Prefabricated Structures	PC	3	0	0	3	25	75	100
4	U23CEE7XX	Professional Elective – IV#	PE	3	0	0	3	25	75	100
5	U23XXO7XX	Open Elective – III$	OE	3	0	0	3	25	75	100
Practical										
6	U23CEP710	Simulation Software Laboratory	PC	0	0	2	1	50	50	100
7	U23CEP711	Estimation Costing and Valuation Engineering	PC	0	0	2	1	50	50	100
8	U23CEP712	Modelling and Analysis Laboratory	PC	0	0	2	1	50	50	100
Project Work										
9	U23CEW703	Project Phase – I	PA	0	0	4	2	50	50	100
10	U23CEW704	Internship / Inplant Training	PA	0	0	2	1	100	-	100
							21	425	575	1000

SEMESTER – VIII										
Sl. No.	**Course Code**	**Course Title**	**Category**	**Periods**			**Credits**	**Max. Marks**		
				L	**T**	**P**		**CAM**	**ESM**	**Total**
Theory										
1	U23HSTC03	Entrepreneurship and Business Management	HS	3	0	0	3	25	75	100
2	U23CEE8XX	Professional Elective – V#	PE	3	0	0	3	25	75	100
3	U23CEE8XX	Professional Elective – VI#	PE	3	0	0	3	25	75	100

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Project Work										
4	U23CEW805	Project Phase – II	PA	0	0	16	8	50	100	150
							17	125	325	450

Annexure – I

PROFESSIONAL ELECTIVE COURSES

Professional Elective – I (Offered in Semester IV)		
Sl. No.	**Course Code**	**Course Title**
1	U23CEE401	Composite Structures
2	U23CEE402	Renewable Energy Sources
3	U23CEE403	Building Services
4	U23CEE404	Remote Sensing and GIS
5	U23CEE405	Alternative Building Materials and Technologies
Professional Elective – II (Offered in Semester V)		
Sl. No.	**Course Code**	**Course Title**
1	U23CEE506	Advanced Design of RCC Structures
2	U23CEE507	Air and Noise Pollution
3	U23CEE508	Sustainable and Lean Construction
4	U23CEE509	Airport and Harbor Engineering
5	U23CEE510	Green Building Technology
Professional Elective – III (Offered in Semester VI)		
Sl. No.	**Course Code**	**Course Title**
1	U23CEE611	Advanced Structural Analysis
2	U23CEE612	Pollution Control and Monitoring
3	U23CEE613	Buildings Codes and Requirement
4	U23CEE614	Traffic engineering and Management
5	U23CEE615	Urban Planning and Development
Professional Elective – IV (Offered in Semester VII)		
Sl. No.	**Course Code**	**Course Title**
1	U23CEE716	Structural Health Monitoring
2	U23CEE717	Municipal Solid Waste Management
3	U23CEE718	Quality Control and assurance in Construction
4	U23CEE719	Tunneling Engineering
5	U23CEE720	Architecture and Town Planning

Professional Elective – V (Offered in Semester VIII)		
Sl. No.	**Course Code**	**Course Title**
1	U23CEE821	Precast Structures
2	U23CEE822	Industrial Waste Disposal and Treatment
3	U23CEE823	Construction Safety
4	U23CEE824	Intelligent Transport System
5	U23CEE825	Interior Design
Professional Elective – VI (Offered in Semester VIII)		
Sl. No.	**Course Code**	**Course Title**
1	U23CEE826	Pre- Stressed Concrete Structures
2	U23CEE827	Environmental Impact Assessment
3	U23CEE828	Natural Disaster and Mitigation
4	U23CEE829	Bridge Engineering
5	U23CEE830	Smart City

Annexure – II

OPEN ELECTIVE COURSES OFFERED BY CIVIL ENGINEERING

S. No	Course Code	Course Title
Open Elective – I		
1	U23CEOC01	Energy and Environment
2	U23CEOC02	Building Science and Engineering
Open Elective – II		
1	U23CEOC03	Disaster Management
2	U23CEOC04	Air Pollution and Solid Waste Management
Open Elective – III		
1	U23CEOC05	Energy Efficient Buildings
2	U23CEOC06	Global Warming and Climate Change

Annexure - III

ABILITY ENHANCEMENT COURSES–(A) CERTIFICATION COURSES

S. No	Course Code	Course Title	Certified By
1	U23XXCX01	Adobe Photoshop	Adobe
2	U23XXCX02	Adobe Animate	Adobe
3	U23XXCX03	Adobe Dreamweaver	Adobe
4	U23XXCX04	Adobe After Effects	Adobe
5	U23XXCX05	Adobe Illustrator	Adobe

6	U23XXCX06	Adobe InDesign	Adobe
7	U23XXCX07	Autodesk AutoCAD -ACU	Autodesk
8	U23XXCX08	Autodesk Inventor - ACU	Autodesk
9	U23XXCX09	Autodesk Revit - ACU	Autodesk
10	U23XXCX10	Autodesk Fusion 360 - ACU	Autodesk
11	U23XXCX11	Autodesk 3ds Max - ACU	Autodesk
12	U23XXCX12	Autodesk Maya - ACU	Autodesk
13	U23XXCX13	Cloud Security Foundations	AWS
14	U23XXCX14	Cloud Computing Architecture	AWS
15	U23XXCX15	Cloud Foundation	AWS
16	U23XXCX16	Cloud Practitioner	AWS
17	U23XXCX17	Cloud Solution Architect	AWS
18	U23XXCX18	Data Engineering	AWS
19	U23XXCX19	Machine Learning Foundation	AWS
20	U23XXCX20	Robotic Process Automation / Medical Robotics	Blue Prism
21	U23XXCX21	Advance Programming Using C	CISCO
22	U23XXCX22	Advance Programming Using C ++	CISCO
23	U23XXCX23	C Programming	CISCO
24	U23XXCX24	C++ Programming	CISCO
25	U23XXCX25	CCNP Enterprise: Advanced Routing	CISCO
26	U23XXCX26	CCNP Enterprise: Core Networking	CISCO
27	U23XXCX27	Cisco Certified Network Associate - Level 2	CISCO
28	U23XXCX28	Cisco Certified Network Associate- Level 1	CISCO
29	U23XXCX29	Cisco Certified Network Associate- Level 3	CISCO
30	U23XXCX30	Fundamentals Of Internet of Things	CISCO
31	U23XXCX31	Internet Of Things / Solar and Smart Energy System with IoT	CISCO
32	U23XXCX32	Java Script Programming	CISCO
33	U23XXCX33	NGD Linux Essentials	CISCO
34	U23XXCX34	NGD Linux I	CISCO
35	U23XXCX35	NGD Linux II	CISCO
36	U23XXCX36	Advance Java Programming	Ethnotech
37	U23XXCX37	Android Programming / Android Medical App Development	Ethnotech
38	U23XXCX38	Angular JS	Ethnotech
39	U23XXCX39	Catia	Ethnotech
40	U23XXCX40	Communication Skills for Business	Ethnotech
41	U23XXCX41	Coral Draw	Ethnotech
42	U23XXCX42	Data Science Using R	Ethnotech
43	U23XXCX43	Digital Marketing	Ethnotech
44	U23XXCX44	Embedded System Using C	Ethnotech
45	U23XXCX45	Embedded System with IOT / Arduino	Ethnotech
46	U23XXCX46	English For IT	Ethnotech
47	U23XXCX47	Plaxis	Ethnotech
48	U23XXCX48	Sketch Up	Ethnotech
49	U23XXCX49	Financial Planning, Banking and Investment Management	Ethnotech
50	U23XXCX50	Foundation Of Stock Market Investing	Ethnotech
51	U23XXCX51	Machine Learning / Machine Learning for Medical Diagnosis	Ethnotech
52	U23XXCX52	IOT Using Python	Ethnotech

53	U23XXCX53	Creo (Modelling & Simulation)	Ethnotech
54	U23XXCX54	Soft Skills, Verbal, Aptitude	Ethnotech
55	U23XXCX55	Software Testing	Ethnotech
56	U23XXCX56	MX-Road	Ethnotech
57	U23XXCX57	CLO 3D	Ethnotech
58	U23XXCX58	Solid works	Ethnotech
59	U23XXCX59	Staad Pro	Ethnotech
60	U23XXCX60	Total Station	Ethnotech
61	U23XXCX61	Hydraulic Automation	Festo
62	U23XXCX62	Industrial Automation	Festo
63	U23XXCX63	Pneumatics Automation	Festo
64	U23XXCX64	Agile Methodologies	IBM
65	U23XXCX65	Block Chain	IBM
66	U23XXCX66	Devops	IBM
67	U23XXCX67	Artificial Intelligence	ITS
68	U23XXCX68	Cloud Computing	ITS
69	U23XXCX69	Computational Thinking	ITS
70	U23XXCX70	Cyber Security	ITS
71	U23XXCX71	Data Analytics	ITS
72	U23XXCX72	Databases	ITS
73	U23XXCX73	Java Programming	ITS
74	U23XXCX74	Networking	ITS
75	U23XXCX75	Python Programming	ITS
76	U23XXCX76	Web Application Development (HTML, CSS, JS)	ITS
77	U23XXCX77	Network Security	ITS & Palo alto
78	U23XXCX78	MATLAB	MathWorks
79	U23XXCX79	Azure Fundamentals	Microsoft
80	U23XXCX80	Azure AI (AI-900)	Microsoft
81	U23XXCX81	Azure Data (DP -900)	Microsoft
82	U23XXCX82	Microsoft 365 Fundamentals (SS-900)	Microsoft
83	U23XXCX83	Microsoft Security, Compliance and Identity (SC-900)	Microsoft
84	U23XXCX84	Microsoft Power Platform (PI-900)	Microsoft
85	U23XXCX85	Microsoft Dynamics Fundamentals 365 – CRM	Microsoft
86	U23XXCX86	Microsoft Excel	Microsoft
87	U23XXCX87	Microsoft Excel Expert	Microsoft
88	U23XXCX88	Securities Market Foundation	NISM
89	U23XXCX89	Derivatives Equinity	NISM
90	U23XXCX90	Research Analyst	NISM
91	U23XXCX91	Portfolio Management Services	NISM
92	U23XXCX92	Cyber Security	Palo alto
93	U23XXCX93	Cloud Security	Palo alto
94	U23XXCX94	PMI – Ready	PMI
95	U23XXCX95	Tally – GST & TDS	Tally
96	U23XXCX96	Advance Tally	Tally
97	U23XXCX97	Associate Artist	Unity
98	U23XXCX98	Certified Unity Programming	Unity
99	U23XXCX99	VR Development	Unity

Annexure - IV

ABILITY ENHANCEMENT COURSES–(B) SKILL ENHANCEMENT COURSES

Sl. No	Course Code	Course Title
1	U23CES301	Skill Development Course 1 *
		1) MS Office – Word, Excel, Power Point
		2) Measurements and Conversion
		3) Experience with On-Site Construction Observation and Management
2	U23CES402	Skill Development Course 2 *
		1) Basic Vasthu
		2) Safety in building construction
		3) Air Quality Monitoring

Annexure - V

Honours Programme - Green Technology and Sustainable Engineering

COURSE DETAILS											
Sl. No.	Semester	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
					L	T	P		CAM	ESM	Total
Theory											
1	IV	U23CEH401	Energy, Environment and Renewable Energy Technologies	PC	3	1	0	4	25	75	100
2	V	U23CEH502	Bioenergy and Conversion Systems	PC	3	1	0	4	25	75	100
3	VI	U23CEH603	Bioprocess Engineering for Biofuels	PC	3	1	0	4	25	75	100
4	VII	U23CEH704	Alternate Materials for Sustainable Technology	PC	3	1	0	4	25	75	100
5	VIII	U23CEH805	Green Management	PC	3	1	0	4	25	75	100
Total								**20**	**125**	**375**	**500**

Equivalent NPTEL courses##			
1	Renewable Energy Engineering: Solar, Wind and Biomass Energy Systems	**3**	**12 WEEK Course**
2	Biomass Conversion and Biorefinery	**3**	
3	Aspects of Biochemical Engineering	**3**	
4	Sustainable Materials and Green Buildings	**3**	
5	Environment Management	**3**	

The student shall be given an option to earn 3 credits through one equivalent 12 week NPTEL course instead of any one course listed for honours degree programme that should be completed before the commencement of eighth semester. The equivalent courses are subject to change based on its availability as per NPTEL course list.

Annexure VIII

SEMESTER I

Department	Mathematics	Programme: B.Tech.						
Semester	I	Course Category Code: BS				End Semester Exam Type: TE		
Course Code	U23MATC01	Periods/Week			Credit	Maximum Marks		
		L	T	P	C	CAM	ESE	TM
Course Name	Engineering Mathematics – I	3	1	-	4	25	75	100
(Common to ALL Branches Except CSBS)								

Prerequisite	Basic Mathematics	
Course Outcome	On completion of the course, the students will be able to	BT Mapping (Highest Level)
	CO1 Understand the concept of Eigen values and Eigen vectors, Diagonalization of a Matrix	K3
	CO2 Solve higher order differential equations	K3
	CO3 Understand the different types of partial differential equations	K3
	CO4 Know about the Applications of double and triple integrals	K3
	CO5 Gain the knowledge about Vector Calculus and its Applications	K3

UNIT – I	Matrices	Periods:12
Rank of a Matrix – Systems of Linear Equations – Characteristic equation – Cayley Hamilton Theorem – Eigen values and Eigen vectors of a real Matrix – Diagonalization of Matrices.		CO1

UNIT – II	Differential Equations (Higher Order)	Periods:12
Linear Differential equations of higher order with constant coefficients – Euler's linear equation of higher order with variable coefficients – Method of Variation of parameters.		CO2

UNIT – III	Functions of Several Variables	Periods:12
Partial derivatives – Total derivatives – Maxima and Minima of two variables – Lagrange's Method of multipliers.		CO3

UNIT – IV	Multiple Integrals	Periods:12
Multiple Integrals – Change of order of integration (Cartesian form). Applications: Area as a double integral (Cartesian form) – Volume as a triple integral (Cartesian form).		CO4

UNIT – V	Vector Calculus	Periods:12
Gradient – Divergence and Curl – Directional derivatives – Irrotational and Solenoidal vector fields – Properties (Statement only) – Gauss Divergence Theorem and Stoke's Theorem (without proofs).		CO5

Lecture Periods: 45	Tutorial Periods: 15	Practical Periods: -	Total Periods: 60

Text Books

1. M.K. Venkataraman, "Engineering Mathematics", The National Publishing Company, 2nd Edition Chennai, 2016.
2. N. P Bali and Manish Goyal, "A Text Book of Engineering Mathematics", Lakshmi Publications, New Delhi, 9th Edition, 2018.
3. S.Narayanan and T.K. Manickavasagam Pillay," Differential Equations and Its Applications", Viswanathan. S, Printers & Publishers Pvt Ltd, 2009.

Reference Books

1. G. Balaji, "Matrices and Calculus (Engineering Mathematics – I)" Balaji Publications, 9th Edition June 2023
2. A. Singaravelu, "Engineering Mathematics – I", Meenakshi publications, 1998.
3. Erwin Kreyszig, "Advanced Engineering Mathematics ", Wiley, 10th Edition, 2019.
4. B.V. Ramana," Higher Engineering Mathematics", Tata McGraw – Hill, New Delhi, 6th Edition, 2018.
5. C W. Evans, "Engineering Mathematics", A Programmed Approach, 3rd Edition, 2019.

Web References

1. http://www.yorku.ca/yaoguo/math1025/slides/chapter/kuttler-linearalgebra –slides- systems of equation-handout.pdf
2. http://www.math.cum.edu/~wn0g/2ch6a.pdf
3. https://nptel.ac.in/courses/122/104/122104017/
4. https://nptel.ac.in/courses/111/106/111106051/
5. https://nptel.ac.in/courses/111/108/111108081/

COs/POs/PSOs Mapping

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

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

Evaluation Methods

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	CAT 1	CAT 2	Model Exam	Assignment*	Attendance		
Marks	5	5	5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

Department	Physics / Chemistry	Programme: B.Tech.						
Semester	I	Course Category Code: BS				End Semester Exam Type: TE		
Course Code	U23BSTC01	Periods/Week			Credit	Maximum Marks		
		L	T	P	C	CAM	ESE	TM
Course Name	**Physical Science for Engineers**	**3**	**-**	**-**	**3**	**25**	**75**	**100**
	(Common to all Branches)							
Prerequisite	Physics of 12th standard or equivalent / Chemistry of 12th standard or equivalent.							

Course Outcomes	On completion of the course, the students will be able to	BT Mapping (Highest Level)
CO1	Understand the basic of properties of magnetic, dielectric and superconductors.	K2
CO2	Identify the wave nature of the particles, physical significance of wave functions	K3
CO3	Understand the basic principles of laser and fiber optics communication	K2
CO4	Understand and familiar with the water treatment.	K2
CO5	Understand the electrode potential for its feasibility in electrochemical reaction and uses of various batteries.	K2
CO6	Understand the specific operating condition under which corrosion occurs and suggest a method to control corrosion.	K2

SECTION A - PHYSICS

UNIT-I	Magnetic, Dielectric and Superconducting Materials	Periods: 8
Introduction to magnetic materials, Ferromagnetism- Domain theory-Types of energy-Hysteresis-Hard and Soft magnetic materials-ferrites-Dielectric materials-Types of polarization – Langevin-Debye equation-Frequency effects on polarization-Dielectric breakdown- Ferroelectric materials-Superconducting materials and their properties.		CO1

UNIT-II	Quantum Mechanics	Periods: 7
Matter Waves - de Broglie Wavelength - Uncertainty Principle –Physical Significance of wave functions - Schrodinger wave Equation - Time Dependent - Time Independent - Application to Particle in a One Dimensional Box - Tunnel Diode.		CO2

UNIT-III	Laser and Fiber Optics	Periods: 7
Lasers - Principles of Laser - Spontaneous and Stimulated Emissions - Einstein's Coefficients - Population Inversion and Laser Action – components of laser - Types of Lasers - NdYAG, CO_2 laser, GaAs Laser Fiber Optics - Principle and Propagation of light in optical fiber - Numerical aperture and acceptance angle - Types of optical fibers (material, refractive index, mode)		CO3

SECTION B – CHEMISTRY

UNIT-IV	Water and Its Treatment	Periods: 8
Water: Sources and impurities, Water quality parameters: Definition and significance of-color, odour, turbidity, pH, hardness, alkalinity, TDS, COD and BOD. Desalination of brackish water: Reverse osmosis-disadvantages of using hard water in boiler - Treatment of boiler feed water: Internal treatment (phosphate, colloidal, sodium aluminate and Calgon conditioning) and External treatment–Ion exchange demineralization and zeolite process.		CO4

UNIT-V	Electrochemical Cells and Storage Devices	Periods: 8
Galvanic cells, single electrode potential, standard electrode potential, electrochemical series. EMF of a cell and its measurement. Nernst equation. Electrolyte concentration cell. Reference electrodes-hydrogen, calomel and Ag/AgCl. Batteries and fuel cells: Types of batteries-alkaline battery-lead storage battery- nickel-cadmium battery- fuel cell H_2 -O_2 fuel cell-applications.		CO5

UNIT-VI	Corrosion	Periods: 7
Corrosion –Introduction - factors – types – chemical, electrochemical corrosion (galvanic, differential aeration), corrosion control – material selection and design aspects – electrochemical protection – sacrificial anode method and impressed current cathodic method. Uses of inhibitors, metallic coating – anodic coating, cathodic coating. Metal cladding, Electroplating of Copper and electroless plating of nickel.		CO6

Lecture Periods: 45	Tutorial Periods:-	Practical Periods:-	Total Periods: 45

Text Books

1. V Rajendran, "Engineering Physics", 2nd Edition, TMH, New Delhi 2011.
2. S.S Dara – "A text book of Engineering Chemistry" - 15th Edition, 2021. S.Chand Publications.
3. C.Jain, Monica Jain, —"Engineering Chemistry " 17th Ed. Dhanpat Rai Pub. Co., New Delhi, (2015).

Reference Books

1. R.Murugeshan, "Modern Physics", S. Chand &Co, New Delhi 2006.
2. William D Callister Jr., "Material Science and Engineering", 6th Edition, John Wiley and sons, 2009.
3. Jain & Jain "Engineering chemistry", 23rd Edition, DhanpatRai Publishing Company. 2022
4. Mars Fontana "Corrosion Engineering", July 2017
5. JinaRedlin, "Handbook of Electrochemistry", March 28, 2005

Web References

1. https://www.sciencedaily.com/terms/materials_science.htm.

2.A.7.109

2. https://www.acs.org/content/acs/en/careers/college-to-career/chemistry-careers/materials science.html.
3. https://study.com/academy/lesson/semiconductors-superconductors-definition-properties.html
4. https://mechanicalc.com/reference/engineering-materials
5. http://ndl.ethernet.edu.et/bitstream/123456789/89589/1/%5BPerez_N.%5D_Electrochemistry_and_corrosion%28BookZZ.org%29.pdf

COs/POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	2	2	-	-	-	-	-	-	-	-	-	-	-
2	3	2	3	2	-	-	-	-	-	-	-	-	-	-	-
3	3	2	3	2	-	-	-	-	-	-	-	-	-	-	-
4	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-
5	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-
6	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-

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

Evaluation Methods

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	CAT 1	CAT 2	Model Exam	Assignment*	Attendance		
Marks	5	5	5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

Department	Civil / Mechanical	Programme : B.Tech.						
Semester	I	Course Category Code: ES			End Semester Exam Type: TE			
Course Code	U23ESTC01	Periods / Week			Credit	Maximum Marks		
		L	T	P	C	CAM	ESE	TM
Course Name	Basics of Civil and Mechanical Engineering	3	-	-	3	25	75	100

(Common to EEE, ECE, ICE, MECH, Civil, Mechatronics Branches)

Prerequisite	Basic Science	
Course Outcomes	**On completion of the course, the students will be able to**	BT Mapping (Highest Level)
	CO1 Understand the types of buildings and materials.	**K2**
	CO2 Summarize on the various components of buildings and surveying concepts	**K2**
	CO3 Identify the various infrastructure facilities	**K2**
	CO4 To familiarize the working principles of IC engines and automobile systems	**K2**
	CO5 To understand about the power generation systems and its components	**K1**
	CO6 To acquire knowledge about the various machining process.	**K2**

SECTION A - CIVIL ENGINEERING

UNIT - I	Buildings and Buildings Materials	Periods: 08
Buildings – Definition – Classification according to NBC-plinth area, Floor area, carpet area, floor space index - Development of Smart cities - Green building, Benefits from green building. Building Materials - stone, brick, cement, cement mortar, concrete, steel, Timber - their properties and uses		CO1

UNIT - II	Buildings Components and Surveying	Periods: 08
Various Buildings Components and their functions. Foundation: function and types - Brick masonry, Stone Masonry and its types – Floors, Roofs and its types. Surveying: Objects – Classification – Principles – Measurements of Distances and areas – Leveling		CO2

UNIT - III	Basic Infrastructure	Periods: 07
Roads and Bridges – types, components advantage and disadvantages. Railways - Permanent way and its elements. Sources of Water - Quality of Water- Domestic sewage Treatment – Rain Water harvesting – Dams - site selection for dam construction, types of dams.		CO3

SECTION B – MECHANICAL ENGINEERING

UNIT- IV	Internal and External Combustion Systems	Periods: 08
IC engines – Classification – Working principles – Diesel and Petrol Engines: Two stroke and four stroke engines – merits and demerits. Steam generators (Boilers) – Classification – Constructional features (of only low-pressure boilers) – Boiler mountings and accessories – Merits and demerits – Applications.		CO4

UNIT- V	Power Generation Systems, Refrigeration and Air Conditioning System	Periods: 07
Power plants: Thermal – Nuclear, Hydraulic, Solar, Wind, Geothermal, Wave, Tidal and Ocean Thermal Energy Conversion systems - Functions, Applications - Schemes and layouts (Description only) Refrigeration and Air Conditioning System: Terminology of Refrigeration and Air Conditioning. Principle of vapour compression and absorption system – Layout of typical domestic refrigerator – Window and Split type room Air conditioner.		CO5

UNIT- VI	Manufacturing Process	Periods: 07
Lathe - types, Specifications, Operations of a centre lathe. Casting - Pattern making, Allowances, Green sand and dry sand moulding, casting defects. Welding - Arc and Gas welding process, brazing and soldering (process description only).		CO6

Lecture Periods: 45	Tutorial Periods: -	Practical Periods: -	Total Periods: 45

Text Books

1. Dr. S. Jayakumar, "Basic Civil Engineering", Aagash Nekaa Publications, 2011
2. G Shanmugam, MS Palanichamy, Basic Civil and Mechanical Engineering, McGraw Hill Education, 1st Edition, 2018.
3. Palanikumar, K. Basic Mechanical Engineering, ARS Publications, 2010.

Reference Books

1. M.P. Poonia, S.C. Sharma and T.R. Banga, Basic Mechanical Engineering, Khanna Publishing House 2018.
2. S.S.Bhavikatti, Basic Civil engineering, New Age International Ltd. 2018.
3. V. Rameshbabu, Basic Civil & Mechanical Engineering, VRB Publishers Private Limited, January 2017.
4. Serope Kalpakjian, Steven Schmid, Manufacturing Engineering and Technology, 7th Edition, Pearson Publication, 2014.
5. Gopi Satheesh, Basic Civil engineering, Pearson Publications, 3rd Edition, 2015.

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1. https://nptel.ac.in/courses/112107291/

2.A.7.111

V. Sudheerama

2.	https://nptel.ac.in/courses/112/103/112103262/
3.	https://ocw.mit.edu/courses/mechanical-engineering/2-61-internal-combustion-engines-spring-2017/ lecture-notes/
4.	https://nptel.ac.in/courses/105102088/
5.	https://nptel.ac.in/courses/105104101/

COs/POs/PSOs Mapping

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

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

Evaluation Methods

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	CAT 1	CAT 2	Model Exam	Assignment*	Attendance		
Marks	5	5	5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

Department	Mechanical Engineering	Programme : **B.Tech.**						
Semester	I	Course Category Code: **ES**			End Semester Exam Type: **TE**			
Course Code	**U23ESTC02**	Periods/Week			Credit	Maximum Marks		
		L	T	P	C	CAM	ESE	TM
Course Name	**Engineering Mechanics**	**2**	**1**	**-**	**3**	**25**	**75**	**100**

(Common to EEE, ECE, MECH, CIVIL, Mechatronics Branches)

Prerequisite	Engineering Physics		
Course Outcomes	**On completion of the course, the students will be able to**		BT Mapping (Highest Level)
	CO1	Recognize the basics of equilibrium of particles in 2D and 3D	**K2**
	CO2	Review the requirements of equilibrium of rigid bodies in 2D and 3D.	**K2**
	CO3	Solve problem related to friction force.	**K3**
	CO4	Compute the center of mass and moment of inertia of surfaces and solids.	**K3**
	CO5	Predict displacement, velocity and acceleration of dynamic particles.	**K3**

UNIT- I	**Basics and Statics Of Particles**	**Periods: 09**
Introduction - Units and Dimensions - Vectorial representation of forces and moments – Coplanar Forces - Lami's theorem, Parallelogram and triangular Law of forces -Resolution of forces - Equilibrium of a particle - Principle of transmissibility - Equivalent system of force - Free body diagram		**CO1**
UNIT- II	**Equilibrium of Rigid Bodies**	**Periods: 09**
Types of supports and their reactions -requirements of stable equilibrium - Moments and Couples -Moment of a force about a point and about an axis -Vectorial representation of moments and couples - Scalar components of a moment - Varignon's theorem - Equilibrium of Rigid bodies in two dimensions – Forces in space -Equilibrium of a particle in space - Equivalent systems of forces - Equilibrium of Rigid bodies in three dimensions (Descriptive only).		**CO2**
UNIT - III	**Structural Analysis of Trusses and Friction**	**Periods: 09**
Trusses - Definition of a truss - Simple Trusses - Analysis of Trusses - Method of joints - Method of sections - Friction force - Laws of sliding friction - equilibrium analysis of simple systems with sliding friction -wedge friction- Rolling resistance.		**CO3**
UNIT - IV	**Properties of Surfaces and Solids**	**Periods: 09**
Determination of centroid of areas, volumes and mass - Pappus and Guldinus theorems - moment of inertia of plane and areas- Parallel axis theorem and perpendicular axis theorem, radius of gyration of area- product of inertia- mass moment of inertia.		**CO4**
UNIT - V	**Dynamics of Particles**	**Periods: 09**
Displacements, Velocity and acceleration, their relationship - Relative motion - Curvilinear motion - Newton's law - Work Energy Equation of particles -Impulse and Momentum -Impact of elastic bodies.		**CO5**

Lecture Periods: 30	**Tutorial Periods: 15**	**Practical Periods: -**	**Total Periods: 45**

Text Books

1. Beer, and Johnston Jr. E.R. "Vector Mechanics for Engineers", McGraw-Hill Education India Pvt Ltd., 11th Edition, 2016.
2. J.L. Meriam & L.G. Karidge, Engineering Volume I and Engineering Mechanics: Dynamics, 8th edition, Wiley student edition, 2016.
3. R.C, Hibbeller, "Engineering Mechanics", Prentice hall, 14th edition, 2016.

Reference Books

1. Arthur P. Boresi and Richard J. Schmidt, "Engineering Mechanics: Statics and Dynamics", Thomson Asia
2. Private Limited, Singapore, 2010.
3. D.P.Sharma "Engineering Mechanics", Dorling Kindersley India Pvt. Ltd, New Delhi, 2010
4. S.Rajasekaran, Sankarasubramanian, G., Fundamentals of Engineering Mechanics, Vikas Publishing House Pvt., Ltd., 2012.
5. S.S.Bhavikatti and K.G. Rajashekarappa, Engineering Mechanics, New Age International(P) Ltd, New Delhi, 7th Edition, 2019.

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V. Rudraraman

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1. http://nptel.iitm.ac.in/video.php?subjectId=112103108
2. http://www.nptel.iitm.ac.in/courses/Webcourse-contents/IIT-KANPUR/Engineeringmechanics/Table of Contents.html
3. https://nptel.ac.in/courses/112/106/112106286/
4. https://www.coursera.org/learn/engineering-mechanics-statics
5. https://nptel.ac.in/courses/122/104/122104014/

COs/POs/PSOs Mapping

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

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

Evaluation Methods

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	CAT 1	CAT 2	Model Exam	Assignment*	Attendance		
Marks	5	5	5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

Department	EEE and ECE	Programme: B.Tech.						
Semester	I	Course Category : ES				End Semester Exam Type: TE		
Course Code	U23ESTC03	Periods/Week			Credit	Maximum Marks		
		L	T	P	C	CAM	ESE	TM
Course Name	Basics of Electrical and Electronics Engineering	3	-	-	3	25	75	100

(Common to CSE, IT, MECH, CIVIL, MCTR, CCE, AI&DS, FT and CSBS Branches)

Prerequisite	Mathematics and Physics	
Course Outcomes	On completion of the course, the students will be able to	BT Mapping (Highest Level)
	CO1 Apply the basic concepts and various laws in DC circuits.	K3
	CO2 Analyze the AC circuits and develop resonance conditions for transmitter and receiver circuits.	K3
	CO3 Gain the knowledge of power system components, importance of electrical safety measures and real time applications of transformer and motor.	K2
	CO4 Understand the operator of semiconductor diode and its applications.	K2
	CO5 Explain the characteristics and operation of BJT and FET.	K2
	CO6 Relate and Explain Different Communication Systems.	K2

Section A – Electrical Engineering

UNIT - I	DC Circuits	Periods: 8	
Concept of Potential Difference, Current, Resistance, Inductance and Capacitance, Work, Power, Energy, Current and Voltage sources - ideal and practical sources - concept of dependent and independent sources, Ohm's law, Kirchhoff's law, Series parallel combination of R, L, C components, Voltage Divider and Current Divider Rules, Mesh and Nodal analysis, Star/Delta transformation, Network Theorems - Superposition, Thevenin, Norton and Maximum Power Transfer.			CO1
UNIT - II	**AC Circuits**	**Periods: 8**	
AC waveform definitions - form factor, peak factor, R-L, R-C, RLC series circuit, R-L-C parallel circuit, phasor representation in polar and rectangular form, concept of impedance, admittance, active, reactive, apparent and complex power, power factor, Resonance in series and parallel circuits, band-width and quality factor, Three Phase balanced AC Circuits (Y-Δ and Y-Y) - Power Measurement – Two Wattmeter method.			CO2
UNIT - III	**Electrical Safety and Electrical Machines**	**Periods: 7**	
Layout of electrical power system and its functions, Wiring Accessories, Types of domestic wiring, Necessity of earthing, insulators and cables, Safety devices - fuse, relay and circuit breaker - Sensors and its types. Faraday's Law of electromagnetic induction, Fleming's Right and Left hand rule - DC Generator and DC Motor - construction, principle, load test and performance characteristics - Auto transformer, Single phase transformer- construction, principle, load test - Single phase capacitor start and run induction motor – Load test.			CO3

Section B – Electronics Engineering

UNIT - IV	Semiconductor Diodes And Applications	Periods: 7	
Introduction semiconductor materials – Doping - Intrinsic and Extrinsic Semiconductor – PN junction diode, structure, characteristics - diffusion and depletion capacitance - Rectifier, Half wave and Full wave rectifier - zener diode characteristics - zener diode as regulator – Light Emitting Diode (LED) - Solar Cell.			CO4
UNIT - V	**Transistors**	**Periods: 7**	
Bipolar Junction Transistor - construction – operation - Common Base, Common Emitter, Common collector Configuration –characteristics – Biasing - numerical application. Junction Field Effect Transistor (JFET), Metal oxide semiconductor Field Effect Transistor, EMOSFET-DMOSFET operation characteristics - Numerical application.			CO5
UNIT - VI	**Communication Systems**	**Periods: 8**	
Need for Modulation – Block diagram of analog communication System - AM, FM, PM Definitions and Waveforms – Comparison of digital and analog communication system- Block diagram of digital communication system – Electromagnetic Spectrum. Wired and wireless Channel – Block diagram of communication systems – satellite communication – Cellular Mobile Communication – Fibre Optical Communication System.			CO6

Lecture Periods: 45	Tutorial Periods:-	Practical Periods:-	Total Periods: 45

Text Books

1. R. K. Rajput, "Basic Electrical and Electronics Engineering", University Science Press, 2nd Edition, 2017.
2. Dr. R. Saravanakumar, Dr.V. Jegathesan, Dr. K. Vinoth Kumar, Dr. K. Kowsalya, "Basic Electrical and Electronics Engineering", Wiley Publisher, 2nd Edition, 2022.
3. R. Muthusubramaniam, S. Salivahanan and K. A. Mureleedharan, "Basic Electrical Electronics and Computer Engineering", Tata McGraw Hill, 2018.

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Reference Books

1. A. Sudhakar and S. P. Shyam Mohan, "Circuits and Networks: Analysis and Synthesis", Tata McGraw Hill Publishing Company Ltd., New Delhi, 4th Edition, 2017.
2. D. P. Kothari and I. J. Nagrath, "Electric Machines", Tata McGraw Hill, New Delhi, 5th Edition, 2017.
3. B. L. Theraja, A. K. Theraja, "A Textbook of Electrical Technology – Volume - II", S Chand & Co. Ltd., New Delhi, 23rd Edition, 2009.
4. David. A. Bell, "Electronic Devices and Circuits", PHI Learning Private Ltd, India, 4th Edition, 2020
5. Wayne Tomasi, "Electronic Communication Systems- Fundamentals Theory Advanced", Pearson Education, 6th Edition, 2018.

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1. https://nptel.ac.in/courses/108/108/108108076/
2. https://www.electrical4u.com/
3. https://nptel.ac.in/courses/108/102/108102146/
4. https://onlinecourses.nptel.ac.in/noc21_ee55/
5. https://nptel.ac.in/courses/117/102/117102059

COs/POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	3	-	2	-	-	-	-	-	-	1	3	2	-
2	3	3	3	-	2	-	-	-	-	-	-	1	3	2	-
3	3	3	3	-	2	-	-	-	-	-	-	1	3	2	-
4	3	3	3	-	2	-	-	-	-	-	-	1	3	2	-
5	3	3	3	-	2	-	-	-	-	-	-	1	3	2	-
6	3	3	3	-	2	-	-	-	-	-	-	1	3	2	-

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

Evaluation Methods

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	CAT 1	CAT 2	Model Exam	Assignment*	Attendance		
Marks	5	5	5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

Department	English			Programme: B.Tech.				
Semester	I			Course Category : HS			End Semester Exam Type:TE	
Course Code	U23ENBC01	Periods/Week			Credit	Maximum Marks		
		L	T	P	C	CAM	ESE	TM
Course Name	Communicative English - I	2	-	2	3	50	50	100

(Common to ALL Branches except CSBS)

Prerequisite	Basics of English Language	
Course Outcomes	**On completion of the course, the students will be able to**	BT Mapping (Highest Level)
	CO1 Understand the communication flow in organization and its objectives	K2
	CO2 Write the technical contents with grammatically precise sentences	K2
	CO3 Articulate with correct pronunciation and overcome vernacular impact in speaking	K3
	CO4 Express opinions confidently in formal and informal communicative contexts	K2
	CO5 Attend interview with assertiveness	K3

UNIT- I	**Workstead Communication**	**Periods:10**
Communication, Definition, Process, Channels, Barriers, Strategies for Effective Communication,Verbal and Nonverbal Communication - Listening, Types, Barriers, Enhancing Listening Skills - Bibliography: Book, Journal and Internet References		**CO1**
UNIT- II	**Common Errors In Writing And Comprehension Strategies**	**Periods:10**
Subject Verb Agreement, Misplaced Modifiers, Squinting Modifiers, Dangling Modifier, Fused Sentence, Comma Splice, Sentence Fragment - Reading Comprehension: Technical passage, Strategies: Skimming, Scanning, Intensive and Extensive Reading, Prediction, and Contextual Meaning		**CO2**
UNIT- III	**Phonetics**	**Periods:10**
Pronunciation Guidelines to consonants and vowels, Sounds Mispronounced, Silent and Non-silent Letters, Intonation, Spelling Rules and Words often misspelled, Mother Tongue Influence (MTI), Various Techniques for Neutralization of Mother Tongue		**CO3**
UNIT- IV	**Communication Practice-I**	**Periods:15**
List of Exercises **Listening**: Self Introduction videos **Speaking**: Self-Introduction, Extempore, and Role Play **Reading**: Non-Technical Comprehension Passage **Writing:** Common Errors in Writing		**CO4**
UNIT-V	**Interpersonal Communication-I**	**Periods:15**
List of Exercises **Listening:** Speech Sounds, Interview Videos **Speaking**: Debate, Structured Group Discussion, and Conversation **Reading**: Commonly Confused Words **Writing:** Transcription		**CO5**

Lecture Periods:30	**Tutorial Periods:-**	**Practical Periods:30**	**Total Periods:60**

Text Books

1. Richa Mishra , RatnaRao, "A textbook of English Language Communication Skills", Macmillan Publishers India Private Ltd., Revised Edition 2021.
2. Rizvi M. Ashraf, "Effective Technical Communication", New Delhi: Tata-McGraw-Hill Publishing Company Limited, 4th Edition, 2010.
3. Balasubramanian T, "English Phonetics for Indian students workbook", 2nd Edition, Trinity Press, 2016.

Reference Books

1. N.P.Sudharshana, C. Savitha," English for Engineers", Cambridge University Press, 2018.
2. Raman, Meenakshi, and Sharma, Sangeetha, "Technical Communication - Principles and Practice", 3rd Edition, Oxford University Press, 2017.
3. Comfort, Jeremy,etal., "Speaking Effectively: Developing Speaking Skills for Business English", Cambridge University Press, Cambridge, Reprint 2011.
4. Wren & Martin, "High School English Grammar and Composition", S Chandh &Co. Ltd, 2015.
5. Boove, Courtland L, "Business Communication Today", Pearson Education, New Delhi,2002.

Web References

1. https://lemongrad.com/subject-verb-agreement-rules/
2. https://opentextbc.ca/advancedenglish/chapter/misplaced-and-dangling-modifiers/
3. https://www.hitbullseye.com/Reading-Comprehension-Tricks.php
4. https://www.softwaretestinghelp.com/how-to-crack-the-gd/

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5. https://worldscholarshipvault.com/neutralize-mother-tongue-interference/

COs/POs/PSOs Mapping

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

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

Evaluation Methods

Theory						
Assessment	Continuous Assessment Marks (CAM)				End Semester Examination (ESE) Marks	Total Marks
	CAT 1	CAT 2	Model Exam	Attendance		
Marks	5	5	5	5	75	60
	20(to be weighted for 10 marks)				(to be weighted for 50 marks)	

Practical				
Continuous Assessment Internal Evaluation		End Semester Internal Evaluation		Total Marks
30(to be weighted for 10 marks)		30 marks		40
Listening (L)*	10	Listening (L)*	10	
Speaking(S)	5	Speaking(S)	5	
Reading(R)*	10	Reading(R)*	10	
Writing(W)*	5	Writing(W)*	5	

- **LRW components of Practical can be evaluated through Language Lab Software**

Department	EEE and ECE	Programme: B.Tech.						
Semester	I	Course Category : ES			End Semester Exam Type: LE			
Course Code	U23ESPC01	Periods / Week			Credit	Maximum Marks		
		L	T	P	C	CAM	ESE	TM
Course Name	Basics of Electrical and Electronics Engineering Laboratory	0	0	2	1	50	50	100

(Common to CSE, IT, MECH, CIVIL, MCTR, CCE, AI&DS, FT, CSBS Branches)

Prerequisite: Mathematics and Physics

Course Outcomes

	On completion of the course, the students will be able to	BT Mapping (Highest Level)
CO1	Build the different wiring for domestic and commercial applications.	K3
CO2	Design and analyze the domestic power distribution.	K3
CO3	Estimate the performance of transformer and motors by conducting load test.	K3
CO4	Describe characteristics of semiconductor diode and utilize it for different applications	K5
CO5	Relate the characteristics of various transistor	K2
CO6	Understand Rectifiers and Regulators	K2

List of Experiments

Section– A Electrical Experiments

Demonstration on Power Sources, Ammeter, Voltmeter, Wattmeter and Energy meter are Pre-requisite for conducting this Electrical Engineering Lab.

1. Electrical safety precautions and study of tools, accessories, electrical joints and electrical symbols.
2. Domestic Wiring Practice
   - Staircase wiring
   - Doctor's room wiring
   - Godown wiring
   - Wiring of Ceiling fan, LED lamps and Iron Box.
3. Design of Domestic power distribution.
4. Measurement of 3-phase power using two wattmeter method
5. Load test on DC shunt motor.
6. Load test on single phase transformer.
7. Load test on single phase Induction Motor.

Section – B Electronics Experiments

1. Study of Electronic components and equipment: Resistor, Capacitor
2. Measurement of AC signal parameter (Peak-Peak, rms period, frequency) using CRO.
3. VI Characteristics of PN junction diode, Zener diode
4. Input and output characteristics of Common Emitter configuration of BJT
5. Characteristics of JFET
6. Measurement of Ripple factor of HWR, FWR
7. Voltage Regulator using Zener Diode

Lecture Periods: -	Tutorial Periods: -	Practical Periods: 30	Total Periods: 30

Reference Books

1. S. Gowri, T. Jeyapoovan Nadar, "Engineering Practices Lab Manual", Vikas Publishing House Private Limited, New Delhi, 5th Edition, 2014.
2. A. Sudhakar and S. P. Shyam Mohan, "Circuits and Networks: Analysis and Synthesis", Tata McGraw Hill Publishing Company Ltd., New Delhi, 5th Edition, 2017.
3. D. P. Kothari and I.J. Nagrath, "Electric Machines", Tata McGraw Hill, New Delhi, 5th Edition, 2017.
4. Edward Hughes, John Hiley, Keith Brown, Ian McKenzie Smith, "Electrical and Electronics Technology", Pearson Education Limited, New Delhi, 12th Edition, 2016.
5. S.K. Sahdev, "Fundamentals of Electrical Engineering and Electronics", Dhanpat Rai and Co, 2017.

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1. http://eie.sliet.ac.in/laboratories/basic-electrical-engineering-lab/
2. https://www.electronics-tutorials.ws/accircuits/series-circuit.html
3. https://www.allaboutcircuits.com/textbook/experiments/

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4. https://www.electronicshub.org/measurements-of-ac-current/
5. http://www.electronics-tutorials.ws

COs/POs/PSOs Mapping

COs	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	3	-	-	1	-	-	3	-	-	1	3	2	-
2	3	2	3	-	-	1	-	-	3	-	-	1	3	2	-
3	3	2	3	-	-	1	-	-	3	-	-	1	3	2	-
4	3	2	3	-	-	1	-	-	3	-	-	1	3	2	-
5	3	2	3	-	-	1	-	-	3	-	-	1	3	2	-
6	3	2	3	-	-	1	-	-	3	-	-	1	3	2	-

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

Evaluation Methods

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	Performance in Practical classes			Model Practical Examination	Attendance		
	Conduction of Practical	Record work	viva				
Marks	15	5	5	15	10	50	100

Department	Mechanical Engineering	Programme : B.Tech.						
Semester	I	Course Category Code: ES			End Semester Exam Type: LE			
Course Code	U23ESPC02	Periods/Week			Credit	Maximum Marks		
		L	T	P	C	CAM	ESE	TM
Course Name	Design thinking and IDEA Lab	-	-	2	1	50	50	100
(Common to ALL Branches)								
Prerequisite	Basic Knowledge of Science							

Course Outcomes	On completion of the course, the students will be able to	BT Mapping (Highest Level)
CO1	Demonstrate a comprehensive understanding of the tools and inventory associated with the IDEA Lab.	K2
CO2	Develop proficiency in ideation techniques to generate creative and innovative solutions for various design challenges and problems	K3
CO3	Acquire practical knowledge of mechanical and electronic fabrication processes, including hands-on experience with machinery, tools, and techniques used in the manufacturing and assembly of physical components.	K3
CO4	Cultivate the skills necessary for developing innovative and desirable products, including the ability to integrate user needs, market trends, and technological advancements into the design process.	K4
CO5	Apply iterative design methodologies to refine and improve solutions based on feedback, user testing, and evaluation of functional, aesthetic, and usability aspects	K4

Design process: Traditional design, Design thinking, Existing sample design projects, Study on designs around us, Compositions/structure of a design, Innovative design: Breaking of patterns, Reframe existing design problems, Principles of creativity Empathy: Customer Needs, Insight-leaving from the lives of others/standing on the shoes of others, Observation

Design team-Team formation, Conceptualization: Visual thinking, Drawing/sketching, New concept thinking, Patents and Intellectual Property, Concept Generation Methodologies, Concept Selection, Concept Testing, Opportunity identification Prototyping: Principles of prototyping, Prototyping technologies, Prototype using simple things, Wooden model, Clay model, 3D printing; Experimenting/testing.

Sustainable product design, Ergonomics, Semantics, Entrepreneurship/business ideas, Product Data Specification, Establishing target specifications, Setting the final specifications. Design projects for teams.

List of Lab Activities and Experiments

1. Schematic and PCB layout design of a suitable circuit, fabrication and testing of the circuit.
2. Machining of 3D geometry on soft material such as softwood or modelling wax.
3. 3D scanning of computer mouse geometry surface. 3D printing of scanned geometry using FDM or SLA printer.
4. 2D profile cutting of press fit box/casing in acrylic (3 or 6 mm thickness)/cardboard, MDF (2 mm) board using laser cutter & engraver.
5. 2D profile cutting on plywood /MDF (6-12 mm) for press fit designs.
6. Familiarity and use of welding equipment.
7. Familiarity and use of normal and wood lathe.
8. Embedded programming using Arduino and/or Raspberry Pi.
9. Design and implementation of a capstone project involving embedded hardware, software and machined or 3D printed enclosure.
10. Discussion and implementation of a mini project.
11. Documentation of the mini project (Report and video).

Lecture Periods: -	Tutorial Periods: -	Practical Periods: 30	Total Periods: 30

Text Books

1. Tim Brown, Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation, HarperCollins Publishers Ltd
2. Workshop / Manufacturing Practices (with Lab Manual), Khanna Book Publishing.

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Reference Books

1. Ulrich and Eppinger, Product Design and Development, 3rd Edition, McGraw Hill, 2004
2. The Big Book of Maker Skills: Tools & Techniques for Building Great Tech Projects. Chris Hackett. Weldon Owen; 2018.
3. The Total Inventors Manual (Popular Science): Transform Your Idea into a Top-Selling Product. Sean Michael Ragan, Weldon Owen; 2017.
4. The Art of Electronics. 3rd edition. Paul Horowitz and Winfield Hill. Cambridge University Press.
5. Practical Electronics for Inventors. 4th edition. Paul Sherz and Simon Monk. McGraw Hill.
6. Make Your Own PCBs with EAGLE: From Schematic Designs to Finished Boards. Simon Monk and Duncan Amos. McGraw Hill Education.
7. Programming Arduino: Getting Started with Sketches. 2nd edition. Simon Monk. McGraw Hill.
8. Venuvinod, PK., MA. W., Rapid Prototyping – Laser Based and Other Technologies, Kluwer
9. Chapman W.A.J, "Workshop Technology", Volume I, II, III, CBS Publishers and Distributors, 5th Edition,2002.

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1. https://onlinecourses.nptel.ac.in/noc23_mg72

COs/POs/PSOs Mapping

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

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

Evaluation Methods

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	Performance in practical classes			Model Practical Examination	Attendance		
	Conduction of practical	Record work	viva				
Marks	15	5	5	15	10	50	100

Department	Civil Engineering	Programme: B.Tech.					
Semester	I	Course Category Code: PC			*End Semester Exam Type: LE		
Course Code	U23CEP101	Periods / Week			Credit	Maximum Marks	
		L	T	P	C	CAM	ESE	TM
Course Name	Civil Engineering Practice Laboratory	0	0	2	1	50	50	100

Prerequisite	Basics of Civil and Mechanical Engineering	
Course Outcome	On completion of the course, the students will be able to	BT Mapping (Highest Level)
CO1	Make a carpentry joint in the given wooden pieces	K4
CO2	Prepare a welding joint in the given material	K4
CO3	Make a fitting work in the given material	K4
CO4	Prepare a different types of bonds in the brick	K4
CO5	Prepare a basic connections involved in plumbing	K4

List of Experiments:

Carpentry Work

1. Lap joint
2. Butt joint
3. T Joint

Welding Work

4. Lap joint
5. Butt joint
6. T Joint

Fitting Work

7. V fitting
8. T fitting

9. Different types of brick bonds using the concept of line, plumb bob, right angle and water level
10. Different types of pipe joints using plumbing accessories
11. Study on tools used in carpentry, welding and fitting works
12. Setting out of foundation for Single Room Building

Lecture Periods: 0	Tutorial Periods: 0	Practical Periods: 3 0	Total Periods: 30

Reference Books

1. David H. Phillips 'Welding Engineering - An Introduction', second edition, Wiley; 2nd edition (February 21, 2023)
2. DK, 'Woodworking - The Complete Step-by-Step Manual', April 7, 2020
3. George Lister Sutcliffe, 'Sanitary Fittings and Plumbing (Classic Reprint)', Forgotten Books (23 April 2018)
4. K. C. JOHN, 'Mechanical workshop practice's. PHI Learning Pvt. Ltd., 27-Aug-2010

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1. https://archive.nptel.ac.in/courses/112/103/112103263/
2. https://archive.nptel.ac.in/courses/124/105/124105013/
3. https://archive.nptel.ac.in/courses/105/106/105106197/
4. https://web.uettaxila.edu.pk/CMS/AUT2013/ieWPbs/notes/Workshop%20Practice%20(Fitting%20Shop).pdf
5. https://www.govinfo.gov/content/pkg/GOVPUB-C13-f181dc241045a63f3355422ecf6a04eb/pdf/GOVPUB-C13-f181dc241045a63f3355422ecf6a04eb.pdf

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COs/POs/PSOs Mapping

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

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

Evaluation Method

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	Performance in practical classes			Model Practical Examination	Attendance		
	Conduction of practical	Record work	viva				
Marks	15	5	5	15	10	50	100

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U23CEC1XX	CERTIFICATION COURSE - I	L	T	P	C	Hrs
		0	0	4	-	50

Students shall choose an International certification course offered by the reputed organizations like Google, Microsoft, IBM, Texas Instruments, Bentley, Autodesk, Eplan and CISCO, etc. The duration of the course is 40 - 50 hours specified in the curriculum, which will be offered through Centre of Excellence.

Pass /Fail will be determined on the basis of participation, attendance, performance and completion of the course. If a candidate fails, he/she has to repeat the course in the subsequent years. Pass in this course is mandatory for the award of degree.

Department	Civil Engineering	Programme: B.Tech.						
Semester	I	Course Category : MC			End Semester Exam Type: -			
Course Code	U23CEM101	Periods / Week			Credit	Maximum Marks		
		L	T	P	C	CAM	ESE	TM
Course Name	Induction Programme	-	-	-	Non-Credit	-	-	-
Prerequisite	-							

Course Outcomes	On completion of the course, the students will be able to	BT Mapping (Highest Level)
	CO1 Develop holistic attitude and harmony in the individual, family, and Society	K2
	CO2 Acquire grammar skills and capable to write and speak English confidently	K2
	CO3 Understand the basic concepts in Mathematics and Programming	K2
	CO4 Know about the art and culture, language and literature of this vast secular nation	K2
	CO5 Identify the inherent talent and develop it professionally	K3

UNIT-I	Universal Human Values	Periods: 12

Welcome and Introductions - Getting to know each other, Aspirations and Concerns - Individual Academic and Career, Expectations of Family, Peers, Society, Nation, Fixing one's Goals, Self-Management - Self-confidence, Peer Pressure, Time Management, Anger, Stress Personality Development, Self-improvement, Health - Health issues, Healthy diet, Healthy lifestyle, Hostel life, Relationships - Home sickness, Gratitude towards Parents, Teachers and others Ragging and interaction, Competition and Cooperation, Peer Pressure, Society - Participation in Society, Natural Environment - Participation in Nature, Sum Up - Role of Education, Need for a Holistic Perspective, Self-evaluation and Closure - Sharing and feedback. **CO1**

UNIT-II	Proficiency in English	Periods: 12

Communication skills - Prognostic test on Grammar - Synonyms, Antonyms, Tenses, Sentence Completion, Idioms and Phrases, One- word Substitution, Homophones, Homonyms, Use of Prepositions, Subject-verb Agreement - Writing - Paragraph writing, Letter writing, Essay writing, Story Development. **CO2**

UNIT-III	Bridge Course in Mathematics and C Programming	Periods: 12

Mathematics:

Fundamentals of differential and integral calculus: Theory and Practice, Limit of function - Fundamental results on limits - Continuity of a function - Concept of differentiation - Concept of derivative - Slope of a curve -Differentiation Techniques - Derivatives of elementary functions from first principle - Derivatives of inverse functions - Logarithmic differentiation - Method of substitution - Differentiation of parametric functions -Differentiation of implicit functions - Higher order derivatives. Integrals of functions containing linear functions - Method of integration (Decomposition method, method of substitution, integration by parts) - Definite integrals. Simple definite integrals - Properties of Definite integrals - Reduction formulae - Area and volume - Length of curve - surface area of a solid. **CO3**

C Programming:

Features of C and its basic Structure - Keywords - constants - variables - operators - Data types - Formatted input and output statements - Control and Looping statement - Arrays - Functions - Strings - writing simple C programs.

UNIT-IV	Literary Activities	Periods: 12

Team building activities - Quiz - Oral Exercises - Group discussion, Debate, Extempore, Role play, சிறப்பு சொற்பொழிவு - தமிழர் மரபு மற்றும் தமிழர் தொழில்நுட்பம். **CO4**

UNIT-V	Creative Arts	Periods: 12

Introduction to painting and renowned artworks - Documentary and Short films - Music - Vocal, Instrumental - Dance - Classical, Cinematic - Mimicry - Mime. **CO5**

Lecture Periods: 60	Tutorial Periods: -	Practical Periods: -	Total Periods: 60

Reference Books

1. R.R Gaur, R. Asthana, G.P. Bagaria," A Foundation Course in Human Values and Professional Ethics", Excel Books, New Delhi, 2nd Revised Edition, 2019.
2. Kumar Mohan R, "English Grammar for all (Functional and Applied Grammar)", Unicare Academy, 2022.
3. Seely, John," Oxford A-Z of Grammar and Punctuation, Oxford Publication, 2013.
4. B.V. Ramana," Higher Engineering Mathematics", Tata McGraw – Hill, New Delhi, 6th Edition, 2018.
5. Dr. A. Singaravelu, "Engineering Mathematics - I", Meenakshi publications, Tamil Nadu, 2019.

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6. E. Balagurusamy, "PROGRAMMING IN ANSI C", Mc Graw Hill, 8th Edition, 2019.
7. Dr.K.K.Pillay,"Social Life of Tamils", A joint publication of TNTB & ESC and RMRL
8. R.Balakrishnan, "Journey of Civilization",Roja muthiah research publishers, 1st Edition 2019
9. தமிழக வரலாறு - மக்களும் பண்பாடும், பிள்ளை, கே. கே. , சென்னை : உலகத் தமிழாராய்ச்சி நிறுவனம் , 2002.
10. கணினித்தமிழ் - முனைவர் இல.சுந்தரம், விகடன் பிரசுரம்.
11. கீழடி - வைகை நதிக்கரையில் சங்க கால நகர நாகரிகம், தமிழக தொல்லியல் துறை

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1. http://www.newsociety.com/Books/S/Slow-isBeautiful
2. https://www.aplustopper.com/formal-letter/
3. https://www.javatpoint.com/c-programming-language-tutorial
4. http://www.math.cum.edu/~wn0g/2ch6a.pdf
5. https://education.nsw.gov.au/teaching-and-learning/curriculum/creative-arts

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SEMESTER II

Department	**Mathematics**	Programme : **B.Tech.**						
Semester	**II**	Course Category Code : **BS**			End Semester Exam Type :**TE**			
Course Code	**U23MATC02**	Periods/Week			Credit	Maximum Marks		
		L	T	P	C	CAM	ESE	TM
Course Name	**Engineering Mathematics – II**	**3**	**1**	**-**	**4**	**25**	**75**	**100**
(Common to ALL Branches Except CSBS, FT)								
Prerequisite	Basic Mathematics							

Course Outcome		**On completion of the course, the students will be able to**	BT Mapping (Highest Level)
	CO1	Convert a periodic function into series form.	**K2**
	CO2	Compute Fourier transforms of various functions.	**K3**
	CO3	Solve Differential Equations using Laplace transforms.	**K3**
	CO4	Apply inverse Laplace transform of simple functions.	**K3**
	CO5	Solve difference equations using Z – transforms.	**K3**

UNIT – I	**Fourier Series**	**Periods:12**
Dirichlet's conditions – General Fourier series – Odd and Even functions – Half-Range sine series and cosine series – Change of intervals – Parseval's Identity.		**CO1**

UNIT – II	**Fourier Transforms**	**Periods:12**
Fourier Transforms and its inverse – Properties of Fourier Transform (without proof) – Fourier sine and cosine Transforms and their properties (excluding proof).		**CO2**

UNIT – III	**Laplace Transforms**	**Periods:12**
Laplace transforms of elementary functions and Periodic functions – Basic properties (excluding proof) – Laplace transforms of derivatives and integrals – Initial and final value theorems.		**CO3**

UNIT – IV	**Inverse Laplace Transforms**	**Periods:12**
Definition of inverse Laplace Transforms – Convolution theorem (excluding proof) – Solutions of Linear Ordinary Differential Equations of second order with constant coefficients.		**CO4**

UNIT – V	**Z – Transforms**	**Periods:12**
Z-transforms – Elementary Properties – Inverse Z-transforms (using partial fraction and Residues) – Solution of difference equations using Z - transform.		**CO5**

Lecture Periods: 45	**Tutorial Periods: 15**	**Practical Periods: -**	**Total Periods: 60**

Text Books

1. T. Veerarajan, "Engineering Mathematics", Tata McGraw Hill, New Delhi, 3rd Edition, 2011.
2. C. P. Gupta, Shree Ram Singh. M. Kumar, "Engineering Mathematics for semester I & II", Tata McGraw Hill, New Delhi, 2nd Edition, 2016.
3. H.K. Dass, "Advanced Engineering Mathematics", S. Chand, New Delhi, 22nd Edition 2019.

Reference Books

1. N.P. Bali and Dr. Manish Goyal, "A TEXTBOOK OF ENGINEERING MATHEMATICS", UNIVERSITY SCIENCE PRESS, India, 8th Edition, 2016.
2. P. Siva Ramakrishna Das and C. Vijayakumari, "Engineering Mathematics", Pearson India Education services Pvt. Ltd, India 1st 2017.
3. Erwin Kreyszig, "Advanced Engineering Mathematics", John Wiley & Sons, New Delhi, 10th Edition, 2019.
4. G. Balaji, "Engineering Mathematics - Transforms and Partial Differential Equations", G. Balaji Publishers, 18th Edition, 2022.
5. B.V. Ramana, "Higher Engineering Mathematics", Tata McGraw Hill, New Delhi, 2017.

Web References

1. https://nptel.ac.in/courses/111105121/
2. https://nptel.ac.in/courses/111105035/
3. https://nptel.ac.in/courses/11110711

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4. https://swayam.gov.in/nd1_noc20_ma17/preview
5. https://nptel.ac.in/courses/111/103/111103021/

COs/POs/PSOs Mapping

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

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

Evaluation Methods

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	CAT 1	CAT 2	Model Exam	Assignment*	Attendance		
Marks	5	5	5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

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Department	**Computer Science and Engineering**	Programme: **B.Tech.**						
Semester	**II**	Course Category Code: **ES**			End Semester Exam Type: **TE**			
Course Code	**U23CSTC01**	Periods / Week			Credit	Maximum Marks		
		L	T	P	C	CAM	ESE	TM
Course Name	**Programming in C**	**3**	**-**	**-**	**3**	**25**	**75**	**100**
(Common to All Branches)								
Prerequisite	NIL							

Course Outcome		On completion of the course, the students will be able to	BT Mapping (Highest Level)
	CO1	Comprehend the basics of Computers.	**K2**
	CO2	Illustrate the concepts of control structures and looping.	**K2**
	CO3	Implement programs using arrays and functions.	**K3**
	CO4	Demonstrate programs using Structure and Pointers.	**K3**
	CO5	Build the programs using Union and File management Operations.	**K3**

UNIT-I	**Introduction**	**Periods: 09**	
Generation and Classification of Computers - Block Diagram of a Computer –Categories of Software – Network Structure - Number System – Binary – Decimal – Conversion – Algorithm – Pseudo code – Flow Chart.			**CO1**
UNIT-II	**C Programming Basics**	**Periods: 09**	
Introduction to ' C' Programming – Basic structure of a 'C' program – compilation and linking processes – Constants, Variables – Data Types – Expressions using operators in 'C' – Managing Input and Output operations – Decision Making and Branching – Looping statements.			**CO2**
UNIT-III	**Arrays and Functions**	**Periods: 09**	
Arrays – Initialization – Declaration – One dimensional and Two dimensional arrays. String- String operations – String Arrays. Simple programs- sorting- searching – matrix operations- Function – definition of function – Declaration of function – Pass by value – Pass by reference – Recursion			**CO3**
UNIT-IV	**Structure and Pointers**	**Periods: 09**	
Structure Introduction – Structure definition – Structure declaration – Structure within a structure –Self Referential Structure. Pointers - Definition – Initialization – Pointers arithmetic – Pointers and arrays -Pointer to Function –Pointer and Structure- Simple programs.			**CO4**
UNIT-V	**Unions and Files**	**Periods: 09**	
Union Introduction - Programs Using Structures and Unions – Introduction to File - File Operations - File Input and Output Functions - Random Access to Files - File System Functions - Command Line Arguments- Storage Classes - Pre-Processor Directives- Dynamic Memory Functions.			**CO5**

Lecture Periods: 45	**Tutorial Periods:**	**Practical Periods: -**	**Total Periods: 45**

Text Books

1. Balagurusamy. E, "Programming in ANSI C", Tata McGraw Hill, 8thEdition,2019.
2. YashvantKanetkar, "Let us C", BPB Publications, 16th Edition, 2017
3. Herbert Schildt," C: The Complete Reference", McGraw Hill, FourthEdition,2014

Reference Books

1. Vikas B. Agarwal Jyoti P. Mirani, "Computer Fundamentals , Nirali Prakashan Aug-2019,
2. Ashok N Kamthane, "Computer Programming", Pearson education, Second Impression,2012.
3. VikasVerma, "A Workbook on C ", Cengage Learning, Second Edition,2012.
4. P.Visu, R.Srinivasan and S.Koteeswaran, "Fundamentals of Computing and Programming", Fourth Edition, Sri Krishna Publications, 2012.
5. PradipDev, ManasGhoush, "Programming in C", Second Edition, Oxford University Press, 2011.

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1. https://www.programiz.com/c-programming
2. https://www.geeksforgeeks.org/c-language-set-1-introduction/
3. https://www.tutorialspoint.com/cprogramming
4. https://www.assignment2do.wordpress.com/.../solution-programming-in-ansi-c
5. https://nptel.ac.in/courses/106/104/106104128/

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COs/POs/PSOs Mapping

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

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

Evaluation Methods

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	CAT 1	CAT 2	Model Exam	Assignment*	Attendance		
Marks	5	5	5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

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Department	Civil Engineering	Programme: B.Tech.						
Semester	II	Course Category Code: CC			*End Semester Exam Type: TE			
Course Code	U23CET201	Periods / Week			Credit	Maximum Marks		
		L	T	P	C	CAM	ESE	TM
Course Name	Mechanics of Solids – I	2	1	0	3	25	75	100

Prerequisite	Engineering Mechanics	
Course Outcome	**On completion of the course, the students will be able to**	BT Mapping (Highest Level)
	CO1 Understand the concepts of stress and strain in simple and composite bars	**K2**
	CO2 Determine the shear force and bending moment diagrams of a beam and find the maximum shear/moment and their locations	**K3**
	CO3 Analyze the bending stresses in beams	**K3**
	CO4 Analyze the shear stresses in beams and the critical load on columns	**K3**
	CO5 Evaluate the stresses and deformation in shafts and springs	**K3**

UNIT-I	**Stress, Strain and Deformation of bodies**	**Periods: 09**	
Rigid Bodies and Deformable Solids – Stability, Strength, Stiffness – Tension, Compression and Shear Stresses – Strain, Elasticity, Hooke's Law, Limit of Proportionality, Modulus of Elasticity, Stress-Strain Curve, Lateral Strain – Deformation of Simple and Compound Bars – Temperature Stresses – Shear Modulus, Bulk Modulus, Poisson's Ratio – Relationship between Elastic Constants – Volumetric Strain			**CO1**
UNIT-II	**Transverse Loading on Beams**	**Periods: 09**	
Beams – Types of Supports – Types of Load – Concentrated, Uniformly Distributed, Uniformly Varying Load, Combination of above Loading – Sign Conventions – Relationship between Load, Shear Force and Bending Moment – Bending Moment Diagram and Shear Force Diagram for Cantilever, Simply Supported and Over Hanging Beams			**CO2**
UNIT-III	**Bending Stress in Beams**	**Periods: 09**	
Theory of Simple or Pure Bending – Assumptions – Expression for bending stress – Neutral Axis and Moment of Resistance – Section Modulus and its Various shapes – Bending stress distribution for Symmetrical sections like Rectangular Section, Solid Circular Section and Hollow Circular Section, I-Section and T-Section			**CO3**
UNIT-IV	**Shear Stress and Theory of Column**	**Periods: 09**	
Variation of Shear Stress – Shear stress distribution for Symmetrical sections like Rectangular section, Solid Circular Section, I-Section and T-Section - Column and strut – Classification of columns - Slenderness ratio – Buckling load and factor - Effective length – Various end conditions - Euler's theory, assumptions, formula and limitations - Rankine's formula – Crippling load and Safe load.			**CO4**
UNIT-V	**Torsion and Springs**	**Periods: 09**	
Theory of simple torsion – Assumptions – Torsional Rigidity - Stresses and Deformation in Circular (Solid and Hollow) Shafts – Shafts fixed at both ends – Modulus of Rupture – Power transmitted to shaft – Helical Springs (Closed coiled and Open coiled) – Leaf Springs – Deflection of Springs			**CO5**

Lecture Periods: 45	**Tutorial Periods: 15**	**Practical Periods: -**	**Total Periods: 60**

Text Books

1. R.K.Bansal, "A Textbook of Strength of Materials", Sixth Edition, Laxmi Publications, New Delhi, 2018
2. R.K.Rajput, "Strength of Materials", Sixth Edition, S. Chand Publications, New Delhi 2015
3. B.C. Punmia, Ashok Kumar Jain and Arun Kumar Jain, "Mechanics of Materials", Laxmi Publications, 2017

Reference Books

1. S.Ramamrutham, R. Narayan, "Theory of Structures", Dhanpat Rai and Co., 11sth Edition, January 2020
2. S. Jose and Dr. Sudhi Mary Kurian, " Mechanics of Solids", Pentagon Educational Services, 2nd Edition, 2018.
3. Junnarkar, S.B. and Shah, H.J., "Mechanics of structures, Vol.I, II", 24rd Edition, Charotar Publishing House, India, 2015.
4. Subramanian R. "Strength of materials", 3rd Edition, Oxford University Press, New Delhi, 2016.
5. R. P. Rethaliya," Mechanics of Solids", Shree Hari Publications, January 2021

Web References

1. https://nptel.ac.in/courses/105/102/105102090/
2. https://nptel.ac.in/courses/105/104/105104160/
3. https://nptel.ac.in/courses/105/106/105106116/
4. https://nptel.ac.in/content/storage2/courses/105105104/pdf/m10l21.pdf
5. https://nptel.ac.in/content/storage2/courses/112105125/pdf/Module-2_Lesson-1.pdf

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COs/POs/PSOs Mapping

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

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

Evaluation Method

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	CAT 1	CAT 2	Model Exam	Assignment*	Attendance		
Marks	10		5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

Department	Civil Engineering			Programme: B.Tech.				
Semester	II			Course Category Code: CC			*End Semester Exam Type: TE	
Course Code	U23CET202			Periods / Week			Credit	Maximum Marks
				L	T	P	C	CAM	ESE	TM
Course Name	Building Materials and Construction			2	1	0	3	25	75	100
Prerequisite	Basics of Civil Engineering									
Course Outcome	On completion of the course, the students will be able to							BT Mapping (Highest Level)		
	CO1	Identify the building materials and processing of timber and its defects						K2		
	CO2	Prevent dampness, waterproofing and damp proofing materials used in the construction						K2		
	CO3	Apply various types of temporary structures and its applications in construction						K2		
	CO4	Provide efficient, safe, accessible and sustainable movement within buildings						K2		
	CO5	Exhibit the knowledge of building finishes and form work requirements						K2		
UNIT-I	Modern Construction Materials						Periods: 09			
Modern materials – Neoprene, Thermocole, decorative panels and laminates, Architectural glass and ceramics, Ferrocement, PVC, Polymer base materials, Fibre reinforced plastics – Timber – Seasoning of Timber – Timber based materials - Preservation and treatment of timber								CO1		
UNIT-II	Temporary Structures						Periods: 09			
Introduction- Classification of Temporary structures – Scaffoldings – Technical terms used – Brick layers, Mason's, Needle, suspended, Ladder and Tubular Scaffolding – Shoring – Pile and Pit Method — Underpinning – Method of underpinning – Centering and Shuttering								CO2		
UNIT-III	Vertical Transportation						Periods: 09			
Definition – Technical terms – Requirements of good stairs – Types of stairs - Straight, Dog Legged, Open Newel, Quarter Turn, Bifurcated, Geometrical and Spiral stairs – Lifts – Ramps – Escalators								CO3		
UNIT-IV	Paints, Varnishes and Distempers						Periods: 09			
Paints – Varnish – Distemper – Purpose, Types, Ingredients and Defects, Preparation and applications to new and old plastered surfaces, wooden and steel surfaces								CO4		
UNIT-V	Damp Proofing , Waterproofing and Anti Termite Treatment						Periods: 09			
Definition of technical terms – Defects – Sources – Prevention – Damp proofing and terrace water proofing methods – Pre and Post construction anti termite treatment								CO5		
Lecture Periods: 45		Tutorial Periods:		Practical Periods: -			Total Periods: 45			

Text Books

1. S. K. Duggal, "Building Materials", (Fifth Edition), New Age Publishers, 2019
2. B. C. Punmia, Ashok Kumar Jain, Arun Kumar Jain, "Building Construction, Laxmi Publications Pvt Ltd., New Delhi, 2008
3. S.C. Rangawala "Building Construction", Charotar Publishing House Pvt. Ltd., India, 2022

Reference Books

1. S.S.Bhavikatti, "Building Materials", Vikas Publishing House, January 2012
2. P.C. Varghese, "Building Materials", Prentice-Hall of India Pvt. Ltd., New Delhi, 2nd Edition 2015
3. Arora . S.P. Bindra S.P . A Test book of Building Construction, Dhanpat rai & Co, New Delhi, 2010.
4. Sushil Kumar, "Building Construction", Standard Publishers Distributors, 20th Edition
5. M L Gambhir, "Building Materials", McGraw Hill Education; 1st edition, 2017

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1. https://onlinecourses.nptel.ac.in/noc21_ce10/preview
2. https://nptel.ac.in/courses/105/102/105102088/
3. https://nptel.ac.in/courses/124/105/124105013/
4. https://nptel.ac.in/courses/105/106/105106053/
5. https://www.nerolac.com/blog/what-is-damp-proofing-and-difference-from-waterproofing

COs/POs/PSOs Mapping

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

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

Evaluation Method

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	CAT 1	CAT 2	Model Exam	Assignment*	Attendance		
Marks	10		5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

Department	**Civil Engineering**	Programme: **B. Tech.**						
Semester	**II**	Course Category Code: **HS**			End Semester Exam Type: **TE**			
Course Code	**U23HSTC01**	Periods / Week			Credit	Maximum Marks		
		L	T	P	C	CAM	ESE	TM
Course Name	**Universal Human Values - II**	**2**	**-**	**-**	**2**	**25**	**75**	**100**
(Common to all Branch)								
Prerequisite	UHV - I							

Course Outcomes	On completion of the course, the students will be able to	BT Mapping (Highest Level)
	CO1 Evaluate the significance of value inputs in formal education and start applying them in their life and profession	**K2**
	CO2 Distinguish between values and skills, happiness and accumulation of physical facilities, the Self and the Body, Intention and Competence of an individual, etc.	**K2**
	CO3 Analyze the value of harmonious relationship based on trust and respect in their life and profession	**K2**
	CO4 Examine the role of a human being in ensuring harmony in society and nature.	**K2**
	CO5 Apply the understanding of ethical conduct to formulate the strategy for ethical life and profession.	**K2**

UNIT - I	**Introduction to Value Education**	**Periods: 06**
Right Understanding, Relationship and Physical Facility (Holistic Development and the Role of Education) - Understanding Value Education - Self-exploration as the Process for Value Education - Basic Human Aspirations - Happiness and Prosperity - Current Scenario- Method to Fulfil the Basic Human Aspirations		**CO1**
UNIT - II	**Harmony in the Human Being**	**Periods: 06**
Understanding Human being as the Co-existence of the Self and the Body-Distinguishing between the Needs of the Self and the Body-The Body as an Instrument of the Self-Understanding Harmony in the Self-Harmony of the Self with the Body-Programme to ensure self-regulation and Health		**CO2**
UNIT - III	**Harmony in the Family and Society**	**Periods: 06**
Harmony in the Family - Basic Unit of Human Interaction- 'trust' - Foundational Value in Relationship - 'Respect' - as the Right Evaluation - Other Feelings, Justice in Human-to-Human Relationship - Understanding Harmony in the Society-Vision for the Universal Human Order.		**CO3**
UNIT - IV	**Harmony in the Nature / Existence**	**Periods: 06**
Understanding Harmony in the Nature-Interconnectedness, self-regulation and Mutual Fulfilment among the Four Orders of Nature - Realizing Existence as Co-existence at All Levels - Holistic Perception of Harmony in Existence		**CO4**
UNIT - V	**Implications of the Holistic Understanding - A Look At Professional Ethics**	**Periods: 06**
Natural Acceptance of Human Values - Definitiveness of (Ethical) Human Conduct - Basis for Humanistic Education, Humanistic Constitution and Universal Human Order-Competence in Professional Ethics-Holistic Technologies, Production Systems and Management Models-Typical Case Studies-Strategies for Transition towards Value - based Life and Profession		**CO5**

Lecture Periods: 30	**Tutorial Periods: -**	**Practical Periods: -**	**Total Periods: 30**

Text Book

1. R. R. Gaur, R. Asthana, G. P. Bagaria, "A Foundation Course in Human Values and Professional Ethics", Excel Books, 2nd Revised Edition, New Delhi, 2019.

Reference Books

1. A Nagraj, Jeevan Vidya Prakashan, Amarkantak, "Jeevan Vidya: EkParichaya", 2013.
2. A.N. Tripathi, "Human Values", New Age International Publishers, New Delhi, 3rd Edition, 2019.
3. Annie Leonard, "The Story of Stuff", Free Press, Reprint Edition, 2011.
4. Mohandas Karam chand Gandhi, "The Story of My Experiments with Truth – Mahatma Gandhi Autobiography", Finger print Publisher, 2009.
5. E. F Schumacher, "Small is Beautiful", Vintage Publisher, 1993.
6. Cecile Andrews, "Slow is Beautiful", New Society Publishers, 2006.
7. J C Kumarappa, "Economy of Permanence", Sarva Seva Sangh Prakashan, 2017.

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8. Pandit Sunderlal, "Bharat Mein Angreji Raj", Prabhat Prakashan Publisher, 2021.
9. Dharampal, "Rediscovering India", Stosius Inc/Advent Books Division Publisher, 1983.
10. Mohandas K. Gandhi, "Hind Swaraj or Indian Home Rule", Gyan Publishing House, 2023.
11. Maulana Abdul Kalam Azad, "India Wins Freedom", Orient BlackSwan Publisher, 1st Edition, 1988.
12. Life of Vivekananda, "Romain Rolland (English)", Advaita Ashrama Publisher, India, 4th Edition, 2010.
13. Mahatma Gandhi, "Romain Rolland (English)", Srishti Publishers & Distributors, 2020.

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1. https://www.uhv.org.in/uhv-ii
2. http://www.storyofstuff.com
3. https://www.youtube.com/channel/UCQxWr5QB_eZUnwxSwxXEkQw
4. https://fdp-si.aicte-india.org/8dayUHV_download.php
5. https://www.youtube.com/watch?v=8ovkLRYXIjE

COs/POs/PSOs Mapping

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

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

Evaluation Methods

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	CAT 1	CAT 2	Model Exam	Assignment*	Attendance		
Marks	10		5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

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Department	English			Programme: B.Tech.			
Semester	II			Course Category : HS		End Semester Exam Type:TE	
Course Code	U23ENBC02	Periods/Week			Credit	Maximum Marks	
		L	T	P	C	CAM	ESE	TM
Course Name	**Communicative English - II**	**2**	**-**	**2**	**3**	**50**	**50**	**100**

(Common to ALL Branches except CSBS)

Prerequisite	Basics of English Language	
Course Outcomes	**On completion of the course, the students will be able to**	BT Mapping (Highest Level)
	CO1 Draft effective written communication in professional environment	**K2**
	CO2 Apply the mechanics of creative writing with precision and clarity	**K3**
	CO3 Acquire language skills professionally to groom the overall personality through sensitizing various etiquettes in real time situation	**K2**
	CO4 Develop language fluency and gain self-confidence	**K3**
	CO5 Express thoughts and ideas with clarity and focus	**K2**

UNIT-I	**Business Correspondence**	**Periods:10**	
	Business Writing: Circular, Agenda, Memoranda, Notice, Instruction, Minutes, Email Writing ,Report Writing- Official and Demi Official Letters : Applying for Educational / Car / Home Loans / Joining Report, Leave Letter, Industrial Visit, In plant Training, Letter to the Editor, Calling for a quotation, Placing Order, Letter of Complaints, Letter seeking Clarification, Resume', Job Application Letter, Bio-data, CV		**CO1**
UNIT-II	**Functional Writing Skills**	**Periods:10**	
	Four Modes of Writing, Sentence Structure , Art of condensation: Summary Writing and Note Making, Use of phrase and clause in sentence, Principles of paragraph writing, Techniques of Essay Writing, Jumbled Sentence, Paraphrasing		**CO2**
UNIT-III	**Etiquettes**	**Periods:10**	
	Etiquette: Meaning, Kinds: Corporate Etiquette, Meeting Etiquette, Telephone Etiquette, Email Etiquette, Social Media Etiquette, Dining Etiquette, Communication Etiquette		**CO3**
UNIT-IV	**Communication Practice-II**	**Periods:15**	
	List of Exercises **Listening:** Letter writing tips **Speaking:** Just a Minute, Impromptu Speech, Contemporary Issues **Reading:** Variety of examples for Modes of Writing **Writing:** Different types of letters		**CO4**
UNIT-V	**Interpersonal Communication-II**	**Periods:15**	
	List of Exercises **Listening:** Videos on different types of Etiquettes **Speaking:** Team Presentation, Negotiation Skills **Reading:** Phrases and Clauses **Writing:** Free writing on any given topic, Paraphrasing Practice		**CO5**

LecturePeriods:30	**Tutorial Periods: -**	**Practical Periods:30**	**Total Periods:60**

Text Books

4. PC Das, "Letter Writing including Official and Business Letters", New Central Book Agency, 2020.
5. Kumar, Sanjay, Pushpalatha," Communication Skills". Oxford University Press, 2018.
6. Raman, Meenakshi&Sangeetha Sharma," Communication Skills", New Delhi: OUP,2018.

Reference Books

6. Sahukar, Nimeran , Bhalla, Prem,, "The book of Etiquettes and Manners".PustakMahal Publisher, New Delhi; 1st Edition 2009.
7. Gerson Sharon J, Steven M. Gerson, "Technical Writing Process and Product", Pearson Education Pvt. Ltd. 3rd Edition, 2009.
8. Grussendorf, Marion, "English for Presentations". Oxford University Press, Oxford, 2007.
9. Seely John, "The Oxford Guide to Writing and Speaking", Oxford University Press, 2006.
10. R.C. Sharma, Krishna Mohan, "Business Correspondence and Report Writing", Tata McGraw Hill &Co.Ltd., New Delhi, 2001.

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6. https://www.indeed.com/career-advice/finding-a-job/how-to-write-an-application-letter
7. https://owlcation.com/humanities/Four-Types-of-Writing
8. https://targetstudy.com/languages/english/paragraph-writing.html
9. https://www.businessnewsdaily.com/8262-email-etiquette-tips.html
10. https://www.youtube.com/watch?v=UOceysteljo

COs/POs/PSOs Mapping

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

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

Evaluation Methods

Theory						
Assessment	Continuous Assessment Marks (CAM)				End Semester Examination (ESE) Marks	Total Marks
	CAT 1	CAT 2	Model Exam	Attendance		
Marks	5	5	5	5	75	60
	20(to be weighted for 10 marks)				(to be weighted for 50 marks)	

Practical				
Continuous Assessment Internal Evaluation		End Semester Internal Evaluation		Total Marks
30(to be weighted for 10 marks)		30 marks		
Listening (L)*	10	Listening (L)*	10	40
Speaking(S)	5	Speaking(S)	5	
Reading(R)*	10	Reading(R)*	10	
Writing(W)*	5	Writing(W)*	5	

- **LRW components of Practical can be evaluated through Language Lab Software**

Department	Computer Science and Engineering			Programme: **B.Tech.**				
Semester	II			Course Category Code: **ES**			End Semester Exam Type: **LE**	
Course Code	U23CSPC01			Periods / Week			Credit	Maximum Marks
				L	T	P	C	CAM / ESE / TM
Course Name	**Programming in C Laboratory**			**0**	**0**	**2**	**1**	**50 / 50 / 100**
(Common to All Branches)								
Prerequisite	NIL							
Course Outcome	**On completion of the course, the students will be able to**							BT Mapping (Highest Level)
	CO1	Implement logical formulations to solve simple problems leading to specific applications.						**K3**
	CO2	Execute C programs for simple applications making use of basic constructs, arrays and strings.						**K3**
	CO3	Experiment C programs involving functions, recursion, pointers, and structures.						**K3**
	CO4	Demonstrate applications using sequential and random access file processing.						**K3**
	CO5	Build solutions for online coding challenges.						**K3**

List of Exercises

1. Write a C program to find the Area of the triangle.
2. Develop a C program to read a three digit number and produce output like
   1 hundreds
   7 tens
   2 units
   For an input of 172.
3. Write a C program to check whether a given character is vowel or not using Switch – Case statement.
4. Write a C program to Print the numbers from 1 to 10 along with their squares.
5. Demonstrate do—While loop in C to find the sum of 'n' numbers.
6. Find the factorial of a given number using Functions in C.
7. Write a C program to check whether a given string is palindrome or not?
8. Write a C program to check whether a value is prime or not?
9. Develop a C program to swap two numbers using call by value and call by reference.
10. Construct a C program to find the smallest and largest element in an array.
11. Implement matrix multiplication using C program.
12. Write a C program to perform various string handling functions like strlen, strcpy, strcat, strcmp.
13. Develop a C program to remove all characters in a string except alphabets.
14. Write a C program to find the sum of an integer array using pointers.
15. Write a C program to find the Maximum element in an integer array using pointers.
16. Construct a C program to display Employee details using Structures
17. Write a C program to display the contents of a file on the monitor screen.
18. Write a File by getting the input from the keyboard and retrieve the contents of the file using file operation commands.
19. Write a C program to create two files with a set of values. Merge the two file contents to form a single file
20. Write a C program to pass the parameter using command line arguments.

Lecture Periods: -	**Tutorial Periods: -**	**Practical Periods: 30**	**Total Periods: 30**

Reference Books

1. Zed A Shaw,"Learn C the Hard Way: Practical Exercises on the Computational Subjects You Keep Avoiding (Like C)", Addison Wesley,2016.
2. Anita Goel and Ajay Mittal, "Computer Fundamentals and programming in C",Pearson Education,First edition, 2011.
3. Maureen Sprankle,Jim Hubbard," Problem Solving and Programming Concepts," Pearson,9th Edition, 2011.
4. Yashwanth Kanethkar, "Let us C", BPB Publications,13th Edition,2008.
5. B.W.Kernighan and D.M. Ritchie, "The C Programming Language", Pearson Education, 2nd Edition, 2006.

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2. https://www.geeksforgeeks.org/c-programming-language/
3. http://cad-lab.github.io/cadlab_data/files/1993_prog_in_c.pdf
4. https://www.tenouk.com/clabworksheet/clabworksheet.html
5. https://fresh2refresh.com/c-programming/

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COs/POs/PSOs Mapping

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

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

Evaluation Methods

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	Performance in practical classes			Model Practical Examination	Attendance		
	Conduction of practical	Record work	viva				
Marks	15	5	5	15	10	50	100

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Department	Mechanical	Programme : B.Tech.						
Semester	II	Course Category Code: ES			End Semester Exam Type: LE			
Course Code	U23ESPC03	Periods/Week			Credit	Maximum Marks		
		L	T	P	C	CAM	ESE	TM
Course Name	Engineering Graphics Using AutoCAD	-	-	2	1	50	50	100
(Common to all Branches)								
Prerequisite	Nil							

Course Outcomes	On completion of the course, the students will be able to	BT Mapping (Highest Level)
CO1	Familiarize with the fundamentals and standards of engineering graphics.	K3
CO2	Perform drawing of basic geometrical constructions and multiple views of objects.	K2
CO3	Visualize the isometric and perspective sections of simple solids.	K3
CO4	Connect side view associate on front view.	K4
CO5	Correlate sectional views and lateral surface developments of various solids.	K4

List of Experiments

1. Study of capabilities of software for Drafting and Modeling – Coordinate systems (absolute, relative, polar, etc.) – Creation of simple figures like polygon and general multi-line figures.
2. Drawing a Title Block with necessary text and projection symbol.
3. Drawing 2D sketch by applying modify tools like fillet, mirror, array, etc.,
4. Drawing front view and top view of simple solids like prism, pyramid, cylinder, cone, etc., and Dimensioning.
5. Drawing front view, top view and side view of objects from the given pictorial views (eg. Simple stool, V-block, Mixie Base).
6. Drawing a plan of residential building (Two bed rooms, kitchen, hall, etc.)
7. Drawing sectional views of prism, pyramid, cylinder, cone, etc,
8. Drawing lateral surface development of prism, pyramid, cylinder, cone, etc,
9. Drawing isometric projection of simple objects.
10. Creating 3D model of simple object and obtaining 2D multi-view drawings.
11. Note: Plotting of drawings must be made for each exercise and attached to the records written by Students.

Lecture Periods: -	Tutorial Periods: -	Practical Periods: 30	Total Periods: 30

Reference Books

1. James D. Bethune, Engineering Graphics with AutoCAD A Spectrum book 1st Edition, Macromedia Press, Pearson, 2020.
2. NS Parthasarathy and Vela Murali, Engineering Drawing, Oxford university press, 2015.
3. M.B Shah, Engineering Graphics, ITL Education Solutions Limited, Pearson **Education** Publication, 2011.
4. Bhatt N.D and Panchal V.M, Engineering Drawing: Plane and Solid Geometry, Charotar Publishing House, 2017.
5. Jeyapoovan T, Engineering Drawing and Graphics Using AutoCAD, Vikas Publishing House Pvt Ltd., 7th Edition, New Delhi, 2016.
6. C M Agrawal, Basant Agrawal, Engineering Graphics, McGraw Hill, 2012.
7. Dhananjay A. Jolhe, Engineering Drawing: With An Introduction To CAD McGraw Hill, 2016.
8. James Leach, AutoCAD 2017 Instructor, SDC Publications, 2016.

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1. http://vlabs.iitb.ac.in/vlabs-dev/labs/mit_bootcamp/egraphics_lab/labs/index.php
2. http://www.nptelvideos.in/2012/12/computer-aided-design.html
3. https://mech.iitm.ac.in/meiitm/course/cad-in-manufacturing/
4. https://autocadtutorials.com
5. https://dwgmodels.com

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COs/POs/PSOs Mapping

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

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

Evaluation Method

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	Performance in practical classes			Model Practical Examination	Attendance		
	Conduction of practical	Record work	viva				
Marks	15	5	5	15	10	50	100

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Department	Civil			Programme: B.Tech.			
Semester	II			Course Category Code: PC		*End Semester Exam Type: LE	
Course Code	U23CEP202	Periods / Week			Credit	Maximum Marks	
		L	T	P	C	CAM	ESE	TM
Course Name	Strength of Materials Laboratory	0	0	2	1	50	50	100

Prerequisite	Mechanics of Solids - I	
Course Outcome	On completion of the course, the students will be able to	BT Mapping (Highest Level)
	CO1 Conduct tension and torsion test on steel and find out its properties.	(K3)
	CO2 Find out hardness of material and use it to its efficiency.	(K3)
	CO3 Find out the ductile properties of materials.	(K3)
	CO4 Conduct compression tests on spring and wood	(K3)
	CO5 Students will be able to use the suitable brick for the construction purposes based on their properties.	(K3)

List of Experiments:

1. Tension Test on Mild steel
2. Direct Shear Test on Steel Rod Specimens
3. Bend and Re-bend Test on Steel Rod Specimens
4. Brinell Hardness Test on Metal Specimens
5. Rockwell Hardness Test on Metal Specimens
6. Impact Test on Metal Specimens using Izod arrangement
7. Impact Test on Metal Specimens using Charpy arrangement
8. Ductility Test on Sheet metals using Erichsen Cupping
9. Torsion Test on Metal Specimens
10. Test on open coil helical spring
11. Test on closed coil helical spring
12. Compression Test on wood Specimens- Parallel and Perpendicular to the Grains.
13. Test on Brick
    (i) Compression Test
    (ii) Efflorescence
    (iii) Water absorption test

Lecture Periods: - 00	Tutorial Periods: -00	Practical Periods: 30	Total Periods: 30

Reference Books

1.Bansal R.K, "Strength of Materials" , Lakshmi Publications Ltd, New Delhi, 2022

2. Gere J.M. and Goodno, B.J., "Mechanics of Materials", CENGAGE Learning Custom Publishing; 9th edition, 2017.

3.Punmia B.C and Jain A.K., "mechanics of Materials", Laxmi Publications Ltd, New Delhi, 2018.

4.IS 1608 (2005): Mechanical testing of metals - Tensile Testing

5.IS 10175-(Part 1) 1993 : Mechanical testing of metals -Modified Erichsen cupping test

6.IS1786-2008 (Fourth Revision, Reaffirmed 2013), 'High strength deformed bars and wires for concrete reinforcement – Specification', 2008.

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1. https://www.coursera.org/learn/mechanics-1
2. https://nptel.ac.in/courses/105/104/105104160/

COs/POs/PSOs Mapping

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

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

Evaluation Method

Assessment	Continuous Assessment Marks (CAM)					End Semester Examination (ESE) Marks	Total Marks
	Performance in practical classes			Model Practical Examination	Attendance		
	Conduction of practical	Record work	viva				
Marks	15	5	5	15	10	50	100

		L	T	P	C	Hrs
U23CEC2XX	CERTIFICATION COURSE - I	0	0	4	-	50

Students shall choose an International certification course offered by the reputed organizations like Google, Microsoft, IBM, Texas Instruments, Bentley, Autodesk, Eplan and CISCO, etc. The duration of the course is 40 - 50 hours specified in the curriculum, which will be offered through Centre of Excellence.

Pass /Fail will be determined on the basis of participation, attendance, performance and completion of the course. If a candidate fails, he/she has to repeat the course in the subsequent years. Pass in this course is mandatory for the award of degree.

Department	Civil Engineering	Programme: B.Tech.						
Semester	II	Course Category : MC			End Semester Exam Type: -			
Course Code	U23CEM202	Periods / Week			Credit	Maximum Marks		
		L	T	P	C	CAM	ESE	TM
Course Name	Sports Yoga and NSS	0	0	2	Non-Credit	100	-	100
Prerequisite	-							

Course Outcomes	On completion of the course, the students will be able to	BT Mapping (Highest Level)
	CO1 Practice Physical activities and Hatha Yoga focusing on yoga for strength, flexibility and relaxation.	K2
	CO2 Understand basic skills associated with yoga and physical activities including strength and flexibility, balance and coordination.	K2
	CO3 Develop understanding of psychological problems associated with age and lifestyle.	K2
	CO4 Recognize the importance of national service in community development.	K2
	CO5 Convert existing skills into socially relevant life skills.	K2

UNIT-I	Introduction to Physical Education	Periods: 06
Definition, Aims and Objectives of Physical Education - Changing trends in Physical Education **Physical Fitness, Wellness and Lifestyle:** Importance of Physical Fitness and Wellness - Components of Physical fitness - Components of Health related fitness - Components of wellness - Preventing Health Threats through Lifestyle Change - Concept of Positive Lifestyle.		CO1

UNIT-II	Yoga and Lifestyle	Periods: 06
Importance of Yoga - Elements of Yoga - Introduction - Asanas, Pranayama, Meditation and Yogic Kriyas - Yoga for concentration and related Asanas (Sukhasana, Tadasana, Padmasana and Shashankasana) - Relaxation Techniques for improving concentration - Yog-nidra. Asanas as preventive measures – Hypertension – Obesity - Back Pain-Diabetes - Asthema.		CO2

UNIT-III	Training and Planning in Sports	Periods: 06
Training - Warming up and limbering down-Skill, Technique and Style - Objectives of Planning – Tournament - Knock-Out, League/Round Robin and Combination. **Psychology and Sports** - Important of Psychology in Physical Education and Sports - Differentiate Between Growth and Development - Adolescent problems and their Management - Emotion: Concept, Type and Controlling of emotions - Concepts and Types of Aggressions in Sports - Psychological benefits of exercise - Anxiety and Fear and its effects on Sports Performance - Motivation, its type and techniques - Understanding Stress and Coping strategies		CO3

UNIT-IV	Introduction to National Service Scheme	Periods: 06
Orientation of NSS volunteers: History, motto, symbol, awards, structure and activities of NSS - Days of National and International Importance - Sensitizing about the thrust areas and awareness activities - Importance of tree plantation and voluntary blood donation - The role of SHGs and NGOs in community development – CSR - Life skills and youth development-extension activities in HEIs - various clubs and schemes like RRC, ELC, YRC, UBA, SBA, etc.,		CO4

UNIT-V	Community issues and the use of technology	Periods: 06
Common Problems of rural India - Technology development and its suitability – Sustainability - Value addition to agricultural products - Service learning and youth volunteering – Shramdaan - Campus cleaning - Field visit to nearby communities - village survey - Initiatives to clean and green environment - preservation of water bodies in adopted villages.		CO5

Lecture Periods: -	Tutorial Periods: -	Practical Periods: 30	Total Periods: 30

Reference Books

1. Brar Ajmer Singh, Gill Jagtar Singh, Bains Jagdish, "Modern Textbook of Physical Education Health and Sports- I", Kalyani Publishers , 6th Edition, 2014
2. B.K.S. Iyengar, "Light on Yoga: The Definitive Guide to Yoga Practice",Thorsons Publishers, Thorsons Classics edition, 2015
3. Joseph, Siby K, Mahodaya, "Bharat Essays on Conflict Resolution", Institute of Gandhian Studies Publishers, 2007
4. Barman Prateeti , Goswami, "Document on Peace Education", Triveni Akansha Publishing House, New Delhi, 2009
5. Prof R.B.S. Verma, "Field Work Practicum in Social Work-Emerging Concerns", Rapid Publisher, Lucknow, 2020

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6. Sibereisen, K , Richard M, "Lerner Approaches to Positive Youth Development", Sage Publications, New Delhi, 2007
7. Hoshiar Singh, "Administration of Rural Development in India",Sterling Publisher, the University of Michigan, 2009

Web References

1. http://www.thebetterindia.com/140/national-service-scheme-nss
2. http://en.wikipedia.org/wiki/national-service-scheme 19=http://nss.nic.in/adminstruct
3. http://nss.nic. in
4. http://socialworknss.org/about.html
5. Young Journal on Youth published by SAGE: http://you.sagepub.com

Evaluation methods

Assessment	Continuous Assessment Marks (CAM)			Total Marks
	Attendance	**MCQ Test**	**Presentation / Activity / Assignment**	
Marks	10	30	60	100