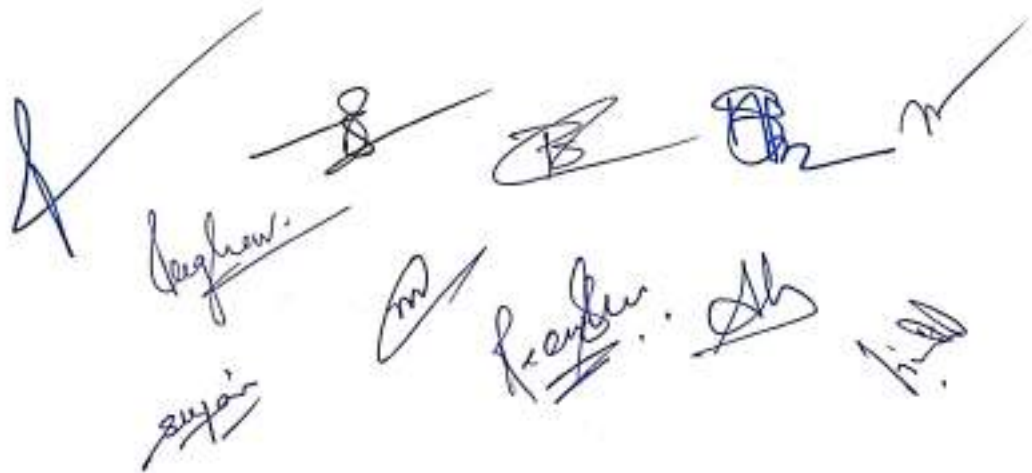


***DEPARTMENT OF CIVIL
ENGINEERING***

***MINUTES OF BOARD OF
STUDIES MEETING, MAY 2025
ALONG WITH ITS ANNEXURES***








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Summary of Board of Studies Meeting held on 28th May, 2025

COURSES WHERE SYLLABUS REVISION WAS CARRIED OUT
(Session: July - Dec 2025)

(Course / Subject name)	Course Code	Year/Date of introduction	Year/Date of revision	Percentage of content added or replaced	Item No.	Page No.
Software Application for Solving Civil Engineering Problem	2110711	---	2025	15%	1,7	--



Summary of Board of Studies Meeting held on 28th May, 2025
NEW COURSES ADDED
 (Session: July - Dec 2025)

(Course/subject name)	Course Code	Activities/contents which have a bearing on increasing skill and employability	Item No.	Page No.
Pavement Construction Technology	2110762	Material selection, Mix design, Alternative Pavement Materials.	2,4	2,3,8
Admixtures and Special Concretes	2110763	Advanced admixtures and special concretes to build expertise in innovative materials for high-performance construction.	2,4	2,3,8
Ground Improvement	2110764	Densification, drainage, stabilization, grouting, and geosynthetics for enhanced geotechnical engineering skills.	2,4	2,3,8
River Engineering	2110767	River hydraulics, sediment transport, equilibrium, dynamics, stabilization, engineering works, and modeling.	2,4	3,5
Design of Reinforced Concrete Structures	M110705	Working stress method, Design of beam (singly & doubly), slab, compression member, footing & staircase	7	3,5
Principles of Construction Management	M110706	Project cost estimation, planning, quality, safety, and legal aspects to develop managerial and technical skills	7	3,5
Project Planning & Control	M110707/ M110505	Construction Project Management, Time Management, WBS, Gantt Charts, Duration Estimation, Network Analysis, Scheduling, Time-Cost Trade-off, Resource Scheduling, PDM, Project Monitoring & Control	7, 13	3,5
Advanced Prestressed Concrete	H110713	Analysis, design, and application of prestressed concrete systems with case studies	7	3
Optimization methods for Civil Engineering	H110714/H110516	Metaheuristic optimization techniques with practical applications using MATLAB and Excel to enhance problem-solving	7, 13	3,5
Mechanics of Solids	H110514	Stress-Strain relationship, Torsion, Stability of Equilibrium: Buckling	13	5
Climate Change - Extreme Events	H110518	Predictive Modeling of Extreme Events, Socioeconomic Impacts, Vulnerability, and Policy Responses	13	5
Sustainable Engineering Concepts and Life Cycle Analysis	H110520	Life cycle Analysis (LCA), Life Cycle Impact Assessment (LCIA), Design for sustainability, Case study	13	5
Traffic Engineering and Design	910238	Traffic Engineering Principal, Intelligent Transportation System (ITS), Parking Management, Road Safety	5	3,8

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Civil Engineering Department, MITS Gwalior

Minutes of Board of Studies Meeting held on 28th May 2025

The meeting of Board of Studies of the Civil Engineering department was held on Wednesday, 28th May 2025. Following were present:

- | | |
|---------------------------|---|
| 1. Dr. S. Tiwari | (Chairman BoS & Head of the department) |
| 2. Dr. S. K. Jain | (Member, BOS) |
| 3. Dr. M. K. Trivedi | (Member, BOS) |
| 4. Prof. A. K. Dwivedi | (Member, BOS) |
| 5. Prof. A. K. Saxena | (Member, BOS) |
| 6. Prof. G. Bhadoriya | (Member, BOS) |
| 7. Prof. Aditya Agarwal | (Member, BOS) |
| 8. Dr. Hemant Shrivastava | (Member, BOS) |
| 9. Dr. Prachi Singh | (Member, BOS) |
| 10. Dr. Abhilash Shukla | (Member, BOS) |
| 11. Dr. Raghvendra Sahu | (Member, BOS) |
| 12. Dr. Mohit Kumar | (Member, BOS) |
| 13. Dr. Rohit Rali | (Member, BOS) |
| 14. Dr. Mali Shivshankar | (Member, BOS) |
| 15. Dr. Reema Sharma | (Member, BOS) |

Following agendas were discussed & deliberated upon

BoS Agenda Items	
Item No. / CE - 1	<p>To confirm the minutes of previous BoS meeting held in the month of December 2024</p> <p>Previous Board of Studies meeting minutes dated 06 December 2024 are confirmed.</p>
Item No. / CE - 2	<p>To review and finalize the scheme structure of B. Tech. VII Semester with the provision of Three (02) Departmental Electives (DEs) and one (01) Open Category (OC) Course. (Out of which Open category course is to be run through MITS MOOCs and Two (02) Departmental Electives are to be run through SWAYAM/NPTEL platform with credit transfer. (For the batch admitted in 2022-23).</p> <p>The finalized scheme of B.Tech VII Semester for 2022-23 admitted batch is attached in Annexure - I.</p>
Item No. / CE - 3	<p>To introduce a two-credit course titled "Professional Skills & Competencies" in the VII semester scheme for the batch admitted in 2022-23.</p> <p>To enhance career readiness and relating opportunities, a two-credit course titled "Professional Skills & Competencies" has been introduced in the VII semester scheme for the batch admitted in 2022-23.</p>
Item No. / CE - 4	<p>To propose the list of courses which the students can opt from SWAYAM/NPTEL/MOOC based Platforms, to be offered in online mode for Two (02) Departmental Electives (DE) Course, with credit transfer in the B.Tech. VII Semester under the flexible curriculum (for the batch admitted in 2022-23).</p> <p>Following SWAYAM/NPTEL courses are offered as Departmental Elective (DE) Courses in VII Semester for batch admitted in 2022-23 with credit transfer.</p> <p style="text-align: center;">1. Foundation Engineering (2110761) (DE-2)</p>

	<ol style="list-style-type: none"> 2. Pavement Construction Technology (2110762) (DE-2) 3. Admixtures and Special Concretes (2110763) (DE-2) 4. Ground Improvement (2110764) (DE-2) 5. Transportation Network Analysis (2110768) (DE-2) 6. Principles of Construction Management (2110765) (DE-3) 7. Remote Sensing & GIS (2110766) (DE-3) 8. River Engineering (2110767) (DE-3) 												
Item No. / CE - 5	<p>To propose the list of the courses (as per the format given below) which the students can opt from MITS MOOCs to be offered in blended mode for Open Category (OC) course for students of B.Tech. VII Semester under the flexible curriculum (for the batch admitted in 2022-23).</p> <table border="1"> <thead> <tr> <th>S.No</th> <th>Name of the Course</th> <th>Course Faculty</th> <th>Mentor</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Integrated Waste Management for Smart City</td> <td>Dr. Prachi Singh</td> <td>Dr. Prachi Singh</td> </tr> <tr> <td>2.</td> <td>Traffic engineering and Design</td> <td>Dr. Reema Sharma</td> <td>Dr. Reema Sharma</td> </tr> </tbody> </table>	S.No	Name of the Course	Course Faculty	Mentor	1.	Integrated Waste Management for Smart City	Dr. Prachi Singh	Dr. Prachi Singh	2.	Traffic engineering and Design	Dr. Reema Sharma	Dr. Reema Sharma
S.No	Name of the Course	Course Faculty	Mentor										
1.	Integrated Waste Management for Smart City	Dr. Prachi Singh	Dr. Prachi Singh										
2.	Traffic engineering and Design	Dr. Reema Sharma	Dr. Reema Sharma										
Item No. / CE - 6	<p>To propose the list of "Additional Courses" which can be opted for getting an (i) Honours (for students of the host department) and (ii) Minor Specialization (for students of other departments) These will be offered through SWAYAM/NPTEL/MOOC based Platforms for the B.Tech. VII semester students (for the batch admitted in 2022-23).</p> <p>Following SWAYAM/NPTEL courses are proposed as additional courses which can be opted for getting Minor Specialization during VII semester for 2022-23 admitted batch</p> <ol style="list-style-type: none"> 1. Soil Mechanics / Geotechnical Engineering I (M110703) 2. Geometric Design of Highways (M110704) 3. Design of Reinforced Concrete Structures (M110705) 4. Principles of Construction Management (M110706) 5. Project Planning & Control (M110707) <p>Following SWAYAM/NPTEL courses were offered as additional courses for getting Minors during V semester for 2022-23 admitted batch and are running on SWAYAM/NPTEL platform in upcoming semester. Hence these courses are also offered as additive courses for getting Minors during VII Semester provided students can opt only those courses which they have not taken for any credit transfer facility earlier</p> <ol style="list-style-type: none"> 1. Building Materials and Composites (M110501) 2. Strength of Materials (M110503) 3. Fluid Mechanics (M110504) <p>Following SWAYAM/NPTEL courses are proposed as additional courses which can be opted for getting Honours during VII semester for 2022-23 admitted batch</p> <p>TRACK 1: STRUCTURE ENGINEERING</p> <ol style="list-style-type: none"> 1. Bridge Engineering (H110704) 2. Advanced Prestressed Concrete (H110713) 3. Optimization methods for Civil Engineering (H110714) 												




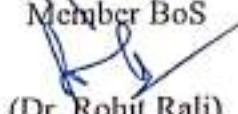

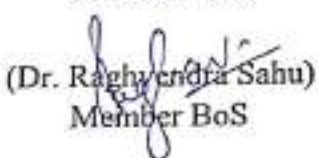
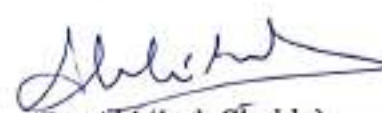
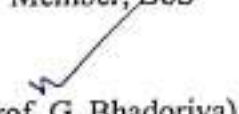
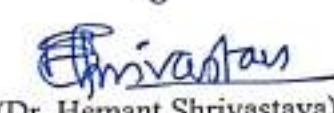
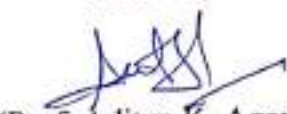
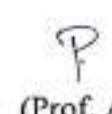
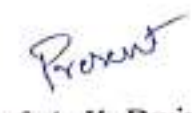

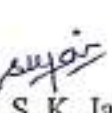
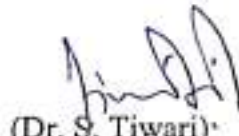
	<p><u>TRACK 2: ENVIRONMENTAL ENGINEERING</u></p> <ol style="list-style-type: none"> 1. Indoor Air Pollution: Sources, Effects, Monitoring, Control and Modeling (H110709) 2. Environmental Modeling and Simulation (H110710) 3. An Introduction to Climate Dynamics, Variability and Monitoring (H110711) 4. Integrated Waste Management for Smart City (H110712) <p>Following SWAYAM/NPTEL courses were offered as additional courses for getting Honours during V semester for 2022-23 admitted batch and are running on SWAYAM/NPTEL platform in upcoming semester, Hence these courses are also offered as additive courses for getting Honours during VII Semester provided students can opt only those courses which they have not taken for any credit transfer facility earlier</p> <p><u>TRACK 1: STRUCTURE ENGINEERING</u></p> <ol style="list-style-type: none"> 1. Dynamics of Structures (H110507) 2. Introduction to Engineering Seismology (H110509) <p><u>TRACK 2: ENVIRONMENTAL ENGINEERING</u></p> <ol style="list-style-type: none"> 1. Environmental Chemistry (H110511) 2. Availability and Management of Groundwater Resources (H110512)
<p>Item No. / CE - 7</p>	<p>To review and finalize the Experiment list/ Lab manual for Departmental Laboratory Courses (DLC) to be offered in B. Tech. VII semester {for the batch admitted in 2022-23}.</p> <p>The list of experiments for laboratory course to be offered in VII semester for 2022-23 admitted batch were finalized and are attached in Annexure – II and the same has been incorporated in the syllabus file for 2022 batch.</p>
<p>Item No. / CE - 8</p>	<p>To review and finalize the <i>scheme structure of B.Tech. V Semester</i> under the flexible curriculum {for the batch admitted in 2023-24}.</p> <p>The finalized scheme of B.Tech V Semester for 2023-24 admitted batch is attached in Annexure – III.</p>
<p>Item No. / CE - 9</p>	<p>To review and finalize the syllabi for all <i>Departmental Core (DC) Courses</i> of B. Tech. V Semester (for batch admitted in 2023-24) under the flexible curriculum along with their COs.</p> <p>The syllabus along with COs for Departmental Core (DC) courses which are being offered in V Semester were discussed & finalized. The syllabus is attached in Annexure – IV and the same has been incorporated in the syllabus file for 2023-24 batch.</p>
<p>Item No. / CE - 10</p>	<p>To review and recommend the Experiment list/ Lab manual for all the Laboratory Courses to be offered in B. Tech. V Semester {for the batch admitted in 2023-24}.</p> <p>The list of experiments for laboratory course to be offered in V semester for 2023-24 admitted batch were finalized along with the syllabi of courses offered in B.Tech V Semester as mentioned in agenda Item No. / CE – 9.</p>
<p>Item No. / CE - 11</p>	<p>To review and recommend the list of projects which can be assigned under the 'Skill based mini-project' category in various laboratory components based courses to be</p>

8/11/23
 Prof. Dr. S. K. Mishra
 Head, Deptt. of Civil Engineering
 MITS Gwalior

	<p>offered in B.Tech. V Semester (for the batch admitted in 2023-24).</p> <p>The list of Skill based mini project for the lab courses for batch 2023-24 is being included in syllabus of V semester as mentioned in agenda Item No. / CE - 9.</p>
Item No. /CE - 12	<p>To propose the list of courses from SWAYAM/NPTBL/MOOC Platforms to be offered in online mode under <i>Self-Learning/ Presentation</i>, in the B.Tech. V Semester (for the batch admitted in 2023-24).</p> <p>Following courses are offered Self-learning / Presentation courses for V semester (for batch admitted in 2023-24) through SWAYAM/NPTBL platform.</p> <ol style="list-style-type: none"> 1. Geotechnical Engineering Laboratory. 2. Global Navigation Satellite Systems and Applications. 3. Water Society & Sustainability 4. Strategic Communication for Sustainable Development 5. Principles and Applications of Building Science 6. Technical Communication for Engineers 7. Inclusive Planning and Universal Design
Item No. /CE - 13	<p>To propose the list of "Additional Courses" which can be opted for getting an (i) Honours (for students of the host department) and (ii) Minor Specialization (for students of other departments)</p> <p>These will be offered through SWAYAM/NPTBL/MOOC based Platforms for the B.Tech. V semester students (for the batch admitted in 2023-24).</p> <p>Following SWAYAM/NPTBL courses are proposed as additional courses which can be opted for getting Minor Specialization during V semester for 2023-24 admitted batch</p> <ol style="list-style-type: none"> 1. Building Materials and Composites (MH0501) 2. Strength of Materials (MH0503) 3. Fluid Mechanics (MH0504) 4. Project Planning & Control (MH0505) <p>Following SWAYAM/NPTBL courses are proposed as additional courses which can be opted for getting Honours during V semester for 2023-24 admitted batch</p> <p><u>TRACK 1: STRUCTURE ENGINEERING</u></p> <ol style="list-style-type: none"> 1. Dynamics of Structures (HH0507) 2. Introduction to Engineering Seismology (HH0509) 3. Advanced Concrete and Technology (HH0506) 4. Mechanics of Solids (HH0514) 5. Advanced Structural Analysis (HH0515) <p><u>TRACK 2: ENVIRONMENTAL ENGINEERING</u></p> <ol style="list-style-type: none"> 1. Environmental Chemistry (HH0511) 2. Optimization methods for Civil Engineering (HH0516) 3. Indoor Air Pollution; Sources, Effects, Monitoring, Control and Modeling (HH0517) 4. Climate Change - Extreme Events (HH0518) 5. Sustainable Engineering Concepts and Life Cycle Analysis (HH0520)
Item No. /CE - 14	<p>To review the CO attainments, to identify gaps and to suggest corrective measures for the improvement in the CO attainment levels for all the courses taught during July-Dec 2024 session.</p>

	CO attainment calculations & gap analysis has been done for July-Dec 24 On the basis of this analysis it is observed that the CO attainment level is found to be below the set target, for those COs corrective actions to be taken have been suggested. The compiled report is attached in Annexure – V. The summary of the same is presented below:			
	Total No of Courses	Total Number of COs	No. of COs Not attained	Percentage of COs not attained
	25	118	61	51.69%
Item 15	To review <i>curricula feedback</i> from various stakeholders, its analysis and impact. The curricula feedback has been taken from various stakeholders. The compiled report along with its analysis & ATR is attached in Annexure – VI (a) & (b).			
Item 16	Any other matter None.			

The meeting ended with vote of thanks to the chair.

 (Dr. Reema Sharma) Member BoS	 (Dr. Mohit Kumar) Member BoS	 (Dr. Mali Shivshankar) Member BoS
 (Dr. Rohit Rali) Member BoS	 (Dr. Prachi Singh) Member, BoS	 (Dr. Raghendra Sahu) Member BoS
 (Dr. Abhilash Shukla) Member, BoS	 (Prof. G. Bhadoriya) Member BoS	 (Dr. Hemant Shrivastava) Member, BoS
 (Prof. Aditya K. Agarwal) Member BoS	 (Prof. A. K. Saxena) Member BoS	
 (Prof. A. K. Dwivedi) Member, BoS	 (Dr. M. K. Trivedi) Member, BoS	 (Dr. S. K. Jain) Member, BoS
		 (Dr. S. Tiwari) Head of Department & Chairman, BoS



ANNEXURE – I

(Scheme 7th Sem B.Tech Civil Engineering (2022
Admitted Batch))

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(For batches admitted in academic session 2022-23)

S. No.	Subject Code	Category Code	Subject Name	Maximum Marks Allotted										Mode of Teaching	Mode of Exam						
				Theory Slot			Practical Slot			MOOCs		Conduct Hours per week				Total Marks	Total Credits				
				End Sem. Exam.	Proficiency in subject / course	Mid Sem. Exm. / Assignm.	Continuous Evaluation	End Sem. Exm.	Lab work & Sessional	Continuous Evaluation	Assignm.	Exam	L					T	P		
1.	21107XX	DE	* Departmental Elective (DE-2)	-	-	-	-	-	-	-	-	25	75	100	3	-	-	3	Blended	MCQ	
2.	21107XX	DE	* Departmental Elective (DE-3)	-	-	-	-	-	-	-	-	25	75	100	3	-	-	3	Blended	MCQ	
3.	910XXX	OC	⁰ Open Category (OC-2)	50	10	20	20	20	-	-	-	-	-	100	3	-	-	3	Blended	MCQ	
4.	2110711	DLC	Software Application for Solving Civil Engineering Problems (DLC-5)	-	-	-	-	-	-	-	-	-	-	100	3	-	-	3	Blended	MCQ	
5.	2110712	DLC	Creative Problems Solving (DLC-6)	-	-	-	-	-	20	20	20	-	-	100	-	-	4	2	Offline	SD	
6.	2110713	DLC	** Professional Skills & Competencies (DLC-7)	-	-	-	-	-	25	25	25	-	-	50	-	-	4	2	Offline	SD	
7.	2110714	DLC	Summer Internship Project-III (04 weeks) (Evaluation)	-	-	-	-	-	40	60	60	-	-	100	-	-	4	2	Offline	MCQ	
Total				50	10	20	20	20	185	105	20	50	150	610	10	16	18	18			
8.	100000	MAC	Universal Human Values & Professional Ethics (UHVPE)	50	10	20	20	20	-	-	-	-	-	60	-	-	4	2	Interactive	SD	
Additional Course for Honours or minor Specialization				Permitted to opt for maximum two additional courses for the award of Honours or Minor Specialization																	
*Proficiency in subject / course – includes the weightage towards ability/ skill/ competency/knowledge level/ expertise attained, etc. in that particular course/subject																					
** Professional Skills & Competencies will include and prepare the students on coding skills, technical proficiency (industry readiness and higher studies), aptitude, communication & soft skill set, etc.																					
*Course will run through SWAYAM/NPTEL, platforms with credit transfer																					
*Course will run through MITS MOOCs																					
MCQ: Multiple Choice Question																					
				AO: Assignment + Oral PP: Pen Paper SO: Submission + Oral																	

Mode of Teaching		Mode of Examination		Total Credits	
Offline	Blended	PP	AO	MCQ	SO
6	10	2	-	12	6
33.33%	55.56%	11.11%	-	66.67%	33.33%
				100 %	

DE - 2 (Through SWAYAM/NPTEL)		DE - 3 (Through SWAYAM/NPTEL)		OC - 2	
2110761. Foundation Engineering		2110765. Principles of Construction Management		910211 Integrated Waste Management for Smart City	
2110762. Pavement Construction Technology		2110766. Remote Sensing & GIS		910238 Traffic engineering and Design	
2110763. Admixtures and Special Concretes		2110767. River Engineering			
2110764. Ground Improvement					
2110768. Transportation Network Analysis					

-MKS- *[Signature]* *[Signature]* *[Signature]* *[Signature]* *[Signature]* *[Signature]*



ANNEXURE-II

SYLLABUS/ EXPERIMENT LIST FOR DEPARTMENTAL LABORATORY COURSES (DLC) TO BE OFFERED IN VII SEMESTER

Course Code: 2110711

Course Name: Software Application for Solving Civil Engineering
Problems

L	T	P	Credit
0	0	4	2

Course Objective:

To practice various software used in civil engineering design and analysis, including SciLAB, QGIS, and other relevant applications in civil engineering works.

List of Experiments:

1. Design and analysis of reinforced concrete beam using suitable civil engineering software tools.
2. Design and analysis of reinforced concrete slab using suitable civil engineering software tools.
3. Design SciLAB code to develop load-response curve for different load conditions for a beam designed of experiment 1.
4. Settlement analysis of a shallow foundation using MS Excel: Calculate immediate settlement for a cohesive soil layer by inputting load, foundation dimensions, and soil properties, and plot a load-settlement curve.
5. Application of QGIS in preparation of vector map of major city and preparation of land use and land cover maps.
6. Determination of critical network for a construction project using suitable civil engineering software tools.
7. To prepare an estimation of Multi-storey building and Road using MS-Excel.
8. Design water supply networks through Hardy Cross method. (Loops, EPANET and other software's).
9. Slope stability analysis using MS Excel: Perform a simplified Bishop's method analysis by inputting soil parameters, slope geometry, and water table conditions to calculate the factor of safety.
10. Development of Geo-contour map by total station.
11. Estimation of axle load (msa) through IRC 37: 2018 using MS Excel.





12. Bituminous Mix Design using MS Excel: Using Marshall test data for various bitumen contents, calculate air voids, voids filled with bitumen (VFB), and bulk density. Prepare plots of bitumen content vs stability, flow, air voids, VBA, bulk density. Based on plots and standard criteria, determine Optimum Bitumen Content (OBC)
13. Design and analysis of multi-storey building using suitable civil engineering software tools.
14. Simulation of Flood Hydrograph Using HEC-HMS: To analyze rainfall-runoff response and generate Direct Runoff Hydrograph (DRH) for given watershed and storm events.
15. 1D Channel Flow Simulation and Water Surface Profile Analysis Using HEC-RAS: To perform steady/unsteady flow analysis in natural channels and compute water surface profiles for varying boundary conditions.
16. Groundwater Flow Modeling and Drawdown Analysis Using MODFLOW: To simulate groundwater flow in confined/unconfined aquifers and assess drawdown under different pumping scenarios.
17. Urban Storm water Drainage Design Using SWMM: To model urban storm water runoff, design drainage systems, under varying rainfall conditions.

In addition to above, various available open source software's will be used.

Course Outcomes

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

- CO 1: Design structural elements and multi-storey buildings using civil engineering software tools.
- CO 2: Analyze water supply, stormwater drainage, and groundwater systems using tools like EPANET, SWMM, MODFLOW, and HEC-series.
- CO 3: Practice MS Excel and SciLAB for solving geotechnical, transportation, and estimation problems including settlement, slope stability, axle load, and bituminous mix design.
- CO 4: Produce land use land cover maps and geo contour maps using various software's.
- CO 5: Demonstrate construction project planning and scheduling skills using various software's.

Course Articulation Matrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	2	3	2	2	1	2	2	2	3	3	3
CO2	3	3	3	2	3	2	2	1	2	2	2	3	3	3
CO3	3	3	3	2	3			1	2	2	2	3	3	3
CO4	3	2	2		3	2	3	1	2	2		2	3	2
CO5	2	3	3		3		2	1	3	3	3	3	3	2

1 - Slightly; 2 - Moderately; 3 – Substantially



Course Code: 2110712

Course Name: Creative Problem Solving

L	T	P	Credit
0	0	4	2

Course Objective:

To create interest in students to provide solutions to various on-field problems in civil engineering.

List of Experiments

1. Traffic Survey of Major Road's in the city.
2. Design of Traffic Signal.
3. Performance evaluation of new building materials.
4. Determination of residual life of structure.
5. Field assessment of soil bearing capacity for shallow foundations: Conduct a basic plate load test simulation or use empirical correlations (e.g., SPT or CPT data) to estimate the safe bearing capacity of soil at a local site in Gwalior.
6. Identification of solid waste collection problems in a locality and subsequent proposal of the solutions to those problems.
7. Determination of surface roughness index of road.
8. Use of waste materials for construction of pavement layers.
9. Creation of data bank of water resources in the city.
10. Industrial visit and joint solution of problems in industry.

Course Outcomes

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

CO 1: Identify real-world civil engineering problems through field investigations and surveys.

CO 2: Apply appropriate engineering principles and techniques.

CO 3: Analyze identified engineering problems.

CO 4: Develop practical and innovative solutions to address field-based engineering challenges.

CO 5: Demonstrate critical thinking, collaboration, and communication skills in solving problems.

Course Articulation Matrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2	2	2	2	2		2	2	2	3	3	3
CO2	3	3	3	2	3	2	2		2	2	2	3	3	3
CO3	3	3	3	2	3	2	3	2	2	2	2	3	3	3
CO4	2	2	2	2	2	2	2	2	3	3	2	3	2	2

1 - Slightly; 2 - Moderately; 3 - Substantially

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Course Code: 2110713

Course Name: Professional Skills & Competencies
(Activity Based Learning)

L	T	P	Credit
0	0	4	2

Course Objectives

- To equip students with essential professional competencies.
- To develop analytical and technical skills.

Module 1: Communication Skills

Verbal Communication: Public speaking, Group discussions, and Interview handling. Non-verbal Communication: Body language, Gestures, Listening skills. Written Communication: Résumé writing, Email etiquette, Cover letters, Report Writing. Presentation Skills: Visual aids, Audience engagement, Delivery techniques.

English (Verbal Ability): Passage/Sentence Rearrangement, Error Detection and Correction, fill in the Blanks, Reading Comprehension Passages, Sentence Completion, Synonyms and Antonyms, Words Completion, Para jumbles etc.

Activities: Mock interviews and GDs, Email & résumé writing workshops, Peer review and instructor feedback.

Module 2: General Aptitude

Quantitative Aptitude: Number systems, Ratios, Percentages, Averages, Time & Work, Probability. Logical Reasoning: Series, Puzzles, Syllogisms, Direction sense, Blood relations. Data Interpretation: Tables, Pie charts, Graphs.

Activities: Weekly quizzes, Group problem-solving sessions, timed mock aptitude tests.

Module 3: Basic Coding Skills

Basic Programming Concepts, Syntax and semantics, Input/output handling, Variables, data types, Loops. Functions and recursion. Arrays, strings. Sorting and searching, Pointers (C/C++) / References (Java/Python). Exception handling (Java, Python).

Activities: Technical round based Weekly coding exercises, Mini hands-on projects, Error debugging practice, Mock technical tests.

Module 4: Competitive Coding Skills

Introduction to Data Structures: Linked Lists (Singly, Doubly), Problem solving using linked lists. Stacks, Queues, Trees (Binary, BST, basic traversals), Heaps (Min/Max heap concepts), Graphs (Adjacency list/matrix, BFS, DFS), Sets (HashSet, TreeSet). OOPS concepts: Encapsulation, Abstraction, Inheritance and Polymorphism. Introduction to Databases, ER-model, basics of SQL. Version Control: Git, GitHub.

Activities: Weekly coding contests, Problem solving on competitive coding platforms like Leetcode, Codeforces, Hackerrank etc., Peer-to-peer code review, Mock technical interviews.

Module 5: Discipline Specific Tools*

CSE/ CSD / IT: Git & GitHub, Docker, Postman, MySQL, VS Code, Linux Shell.

Electronics / Electrical: MATLAB, Simulink, Multisim, Proteus, LTspice, Arduino IDE.

Mechanical Engineering: AutoCAD, SolidWorks, ANSYS, MATLAB, Fusion 360.

Civil Engineering: AutoCAD Civil 3D, STAAD Pro, Revit, Primavera, GIS tools.

AI&DS/ AI&ML / IT(AIR): Jupyter Notebook, Pandas, Scikit-learn, TensorFlow, Tableau.



IoT: Arduino IDE, Raspberry Pi, ESP-32, LoRaWAN, ESP-IDF, PlatformIO, LTspice.

Activities: Tool-based lab exercises, Branch-specific mini projects, Short presentations on use-cases of tools in industry.

*Respective departments may include discipline specific tools which are essential for students.

COURSE OUTCOMES

After completion of the course students will be able to:

- CO1 Demonstrate effective communication strategies in professional scenarios including interviews and group discussions.
- CO2 Solve real-world quantitative and logical reasoning problems with time-bound accuracy.
- CO3 Implement basic algorithms using standard programming languages.
- CO4 Design efficient algorithmic solutions to solve coding problems.
- CO5 Apply discipline-specific tools to simulate, model, or develop solutions relevant to core engineering problems.

CO-PO Mapping Matrix												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1								1	3	3		2
CO2	2	3				2		1				2
CO3	3	2			2							2
CO4	3	3	3	2	2							2
CO5	2	2	2	2	3	3	1				1	2

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Course Code: 2110714

Course Name: Summer Internship Project - III

L	T	P	Credit
0	0	4	2

Course Objectives:

Develop an appreciation for the importance of civil engineering in infrastructure development, understand engineering principles for construction activities, emphasize the use of modern tools and equipment in the construction industry, build practical background and exposure to field problems, and develop technical skills for preparing project documents.

Syllabus:

Each candidate shall go for 1 month (4 week) on field training at different organizations/ sites of his / her choice after completion of their 6th Semester exams (in summer vacations) and shall submit a detailed report after completion of training.

Course Outcomes:

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

- CO1: Observe various activities of civil construction works.
- CO2: Examine the utility of general and specific equipment for construction.
- CO3: Differentiate the construction projects individually and in team.
- CO4: Develop the writing and communication skills for various engineering problems.
- CO5: Adapt lifelong learning for benefit of society.

Course Articulation Matrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	3	2	2	2	2	2	2	2	2	3	2	2
CO2	3	3	3	2	3	2	2		2	2	2	3	3	2
CO3	2	2	2		2	1		1	3	2	2	2	2	2
CO4	2	2	2		2	2		2	2	3	2	2	2	2
CO5	1	1	1		1	2	3	2	1	2	2	3	2	2

1 - Slightly; 2 - Moderately; 3 - Substantially

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DEPARTMENT OF CIVIL ENGINEERING
Scheme of Evaluation
B. Tech. V Semester (Civil Engineering)

For batches admitted in academic session 2023 – 24 onwards

S. No.	Subject Code	Category Code	Subject Name	Maximum Marks Allotted						Total Marks			Contact Hours per week			Total Credits	Mode of Teaching (Offline/Online)	Mode of Exam
				Theory Slot		Practical Slot		End Sem Exam	Continuous Evaluation	Lab Work & Mini Project	Continuous Evaluation	L	T	P				
				End Term Exam	Proficiency In subject /course	Mid Sem	Quiz/Assign ment								Lab			
				Exam		Sem												
1.	3110520	MC	Data Science	50	10	20	20	40	30	30	3	0	2	4	Blended	MCQ		
2.	3110511	DC	Wastewater Engineering (DC - 10)	50	10	20	20	-	-	-	2	1	-	3	Blended	PP		
3.	3110512	DC	Estimating Costing & Contracting (DC - 11)	50	10	20	20	-	-	-	2	1	-	3	Blended	PP		
4.	3110513	DC	Structural Design & Drawing (RCC) (DC - 12)	50	10	20	20	-	-	-	2	1	-	3	Blended	PP		
5.	3110514	DC	Railway, Airport and Tunnel Engineering (DC - 13)	50	10	20	20	-	-	-	2	1	-	3	Blended	PP		
6.	3110515	DLC	Minor Project – I (DLC - 3)*	-	-	-	-	40	60	100	-	-	4	2	Offline	SO		
7.	3110516	DLC	Self-learning /Presentation (SWAYAM /NPTEL/ MOOC)*	-	-	-	-	-	40	40	-	-	2	1	Online + Mentoring	SO		
8.	200XXX	CLC	Novel Engaging Course (Informal Learning)	-	-	-	-	50	-	50	-	-	2	1	Interactive	SO		
9.	3110517	DLC	Summer Internship Project-II (Institute Level) (Evaluation)	-	-	-	-	60	-	60	-	-	4	2	Offline	SO		
10.	1000006	MAC	Disaster Management	250	50	100	100	190	130	30	850	11	4	14	22	Blended	MCQ	
Total				50	10	20	20	-	-	-	100	2	-	-	Grade	-	-	

Permitted to opt for maximum 02 additional courses for the award of Honours or Minor Specialization

Additional Courses for obtaining Honours or Minor Specialization compulsory registration for one online course using SWAYAM/NPTEL/ MOOC, evaluation through attendance, assignments and presentation

*Proficiency in course/subject – includes the weights towards ability/ skill/ competence /knowledge level /expertise attained /attendance etc. in that particular course/subject

MCQ – Multiple Choice Questions, PP – Pen paper Mode, A+O – Assignment + Oral, SO – Submission + Oral

Note: Students of 2023/24 admitted to batch to appear and complete an additional MAC course of 30 Hrs. duration on Project Management & Financing / other modules related to Intelligent technologies (Drivers/ Robotics etc.)

* The Minor Project-I may be evaluated by an internal committee for awarding assistant marks.

Mode of Teaching				Mode of Examination				Total Credits						
Theory	Lab / SIP	Seminar	NEC	Theory	Lab	SIP/SLP/NEC	Total Credits							
Offline	Online	Blended	Offline	Interactive	PP	A+O		MCQ	Lab	SO	SO			
-	-	15	68%	5	23%	1	4.5%	1	12	3	4	18%	3	22
-	-	15	68%	5	23%	1	4.5%	1	12	3	4	18%	3	22
								14%			14%			

(Signatures and stamps of faculty members and department head)



ANNEXURE – IV

(Syllabus 5th Sem B.Tech Civil Engineering (2023-2024 Admitted Batch))

(Handwritten signatures and initials)

Handwritten signatures and initials are scattered across the page, including:

- Top left: A circled 'm' with a horizontal line.
- Top center: 'FB' with a horizontal line.
- Top right: A stylized signature with a horizontal line.
- Middle left: A signature that appears to be 'Ravi' with a horizontal line.
- Middle center: A signature that appears to be 'Ravi' with a horizontal line.
- Middle right: A signature that appears to be 'Ravi' with a horizontal line.
- Bottom left: A signature that appears to be 'Ravi' with a horizontal line.
- Bottom center: A signature that appears to be 'Ravi' with a horizontal line.
- Bottom right: A signature that appears to be 'Ravi' with a horizontal line.



ANNEXURE – IV

SYLLABUS FOR COURSES TO BE OFFERED IN V SEMESTER (2023-2024 ADMITTED BATCH)

Course Code: 3110511

Course Name: Waste Water Engineering

L	T	P	Credit
2	1	0	3

Course Objective:

To provide comprehensive knowledge on sewerage systems, sewage composition, disposal standards, and various sewage treatment techniques, including advanced processes.

Syllabus:

Unit – I

Sewerage schemes & sewerage system and their importance, collection & conveyance of sewage, Estimation of sewage & storm water quantity, fluctuation in sewage flow, Flow through sewer, Design of sewer, Construction & maintenance of sewer, testing of sewer, Sewer appurtenances.

Unit – II

Characteristics and analysis of wastewater (Physical, chemical & biological parameters). Oxygen demand i.e. BOD & COD, TOC, TOD, ThOD, relative Stability, Population equivalent, Natural methods of waste water disposal i.e. by land treatment & by dilution, Self-purification capacity of stream, Oxygen sag analysis (numerical problems).

Unit-III

Unit operations for waste water treatment, Preliminary treatment such as screens, grit chamber, floatation tank, sedimentation etc. and chemical clarification, Role of micro-organism in biological treatment, Sewage filtration – theory & design. Trickling filter its design & constructions, modifications in trickling filter.

Unit-IV

Methods of Biological Treatment (Theory & Design) – Activated Sludge Process, Oxidation ditch, Stabilization Ponds, Aerated Lagoon, Anaerobic Lagoons, Septic Tank & Imhoff tank, Rotating Biological contactor Sources & treatment of sludge, sludge thickening and digestion, sludge drying beds, sludge disposal.

Unit-V

Advanced Waste Water treatment – Need of advanced treatment, Diatomaceous earth filters, Ultra filtration, Adsorption by activated carbon, Phosphorus removal, Nitrogen removal, Sewage treatment plants using MBBR and SBR technology.

Course Outcomes:

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

CO 1: Explain the concepts of waste water engineering.

CO 2: Determine the requirements for safe disposal of sewage.

CO 3: Apply suitable techniques for sewage treatment & disposal based upon the available data.



CO 4: Analyse a given sewerage system.

CO 5: Design sewage system for safe disposal of sewage

Text Books:

1. Waste Water Engg., B. C. Punmia, Laxmi Publication (P) Ltd, New Delhi, 2004
2. Sewage Disposal and Air Pollution Engineering, S. K. Garg, Khanna Publishers, 2007

Reference Books:

1. Water Supply & Sanitary Engg., G.S. Birdie, Dharam Rai Publishing Company, 2004
2. Environmental Engg., Rowe, Peavy & Tchobanoglous Tata McGraw Hill Publication, 2007
3. Water & Waste Water Technology, Mark J Hammer, Prentice Hall of India, 6th edition 2008
4. Waste Water Engineering, Muzaff & Edgy, Mc Gerw Hill Book Company New Delhi, 4th edition 2005
5. CPHEEO Manual on Sewage & Sewage Treatment System, GOI, 2013

Course Articulation Matrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
CO1	2					2	2						2	2	1
CO2	2	2		2		3	3	2					3	3	3
CO3	2	2		3		3	3						3	3	3
CO4	3	3	2	3	1	3	3		1	2			3	3	3
CO5	3	3	3	2	2	3	3	2	1	2	1		3	3	3

1 - Slightly; 2 - Moderately; 3 - Substantially

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Course Code: 3110512

Course Name: Estimating Costing & Contracting

L	T	P	Credit
2	1	0	3

Course Objective:

To develop skills to calculate quantities for various civil works such as buildings and culverts, compute earthwork, understand detailed specifications and perform rate analysis, learn different estimation methods, comprehend valuation processes and rent fixation, and grasp contracting procedures.

Syllabus:

Unit I Introduction of Estimating:

Purpose and importance of estimates, principles of estimating, methods of taking out quantities of items of work. Mode of measurement, measurement sheet and abstract sheet, bill of quantities. Types of estimate, plinth area rate, cubical content rate, preliminary, original, revised and supplementary estimates for different projects.

Unit II: Details of Items:

Specifications of materials and works: Types of Specifications, General specifications for Class A, B & C type of building, Detailed specifications of important items of work.

Rate Analysis: Task for average artisan, various factors involved in the rate of item, material and labour requirement for various trades, preparation for rates of important items of work, current schedule of rates (C.S.R)

Unit III: Estimates

Preparing detailed estimates of various types of buildings, R.C.C Works, Culverts, earth work calculations for roads and Canals, contingencies and work charge establishment, use of computational tools for preparing estimates.

Unit IV: Valuation

Purposes, depreciation, sinking fund, scrap value, year's purchase, gross and net income, dual rate of interest, methods of valuation, rent fixation of buildings

Unit V: Contracting

Contract, Types of engineering contract, essentials documents of engineering Contract, Conditions of contract, Earnest Money Deposit, Security Deposit, Responsibility of Engineer, Contractor & Client.

Course Outcomes:

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

- CO 1: Explain the fundamentals of quantity estimation, costing & contracting.
- CO 2: Apply methods to estimate area, volume & cost.
- CO 3: Evaluate mathematical & numerical models for rate & quantity estimation.
- CO 4: Determine rates & value.
- CO 5: Classify different rates of items, contracts & measurement techniques.

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Text Books:

1. Estimating & costing in civil engineering, B.N. Dutta, UBS Publishers, 28th revised edition 2016
2. Estimating & Costing, S.C. Rangwala, Charotar Publishing House, 17th edition 2017

Reference Books:

1. Estimating & Costing for Civil Engg., G.S. Birdie, Dhanpat Rai Publications, 6th edition 2014
2. Estimating & Costing specification & valuation in civil engineering, M. Chakraborti, 2006

Course Articulation Matrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2			1		2	1	2			2	1		2
CO2	2			1	1	2	1	2			2	2		2
CO3	2	2	1	2	2	2	2	2	2	2	3	3		3
CO4	2	3		2	1	2	2		2	2	3	3		3
CO5	2	3		2		2	2	2	2	2	1	3		3

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Course Code: 3110513

Course Name: Structural Design & Drawing (RCC)

L	T	P	Credit
2	1	0	3

Course Objective:

To understand various design philosophies; learn design of RC elements such as beams, slabs, columns, footings and staircase using Indian Standard provisions.

Syllabus:

Unit-I

Design principles: Materials; Introduction to IS 456; Design philosophies: Working stress, Ultimate load and Limit state design

Singly reinforced beam sections: Analysis and design of singly reinforced rectangular beams: Lintel, Cantilever, Simply supported beams; Design for deflection.

Unit-II Design of Beams:

Design for Shear; Design for bond; Doubly-reinforced and Flanged sections; Design of Continuous beams

Unit-III Design of Slabs:

Slabs spanning in one direction: Cantilever, Simply supported and Continuous slabs; Slabs spanning in two directions; Circular slabs.

Unit-IV Columns & Footing:

Design of short columns subjected to axial loads, axial load and bending moments (section with no tension); Design of long columns; Introduction to IS 13920; Design of isolated and combined footings.

Unit-V Staircases:

Design of Staircases with waist slab: straight flight, dog legged, and open well staircase with different support conditions; Design of Tread-riser (without waist slab) staircase.

Course Outcomes:

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

CO1: Apply the concepts of different design philosophies for analysis and design of singly reinforced concrete beams using relevant IS Codes.

CO2: Analyze and design singly, doubly and flanged sections for flexure, shear and bond using relevant IS Codes

CO3: Design one way, two way and circular slabs using relevant IS Codes.

CO4: Analyze and design compression members and design footings using relevant IS codes.

CO5: Design different type of staircase using relevant IS codes

Text Books:

1. Reinforced Concrete Limit State Design, A.K. Jain, Nem Chand Pub., 7th edition, 2012
2. Reinforced Concrete, Pillai & Menon, Tata McGraw Hill, New Delhi, 3rd edition, 2017
3. Limit State Design, P.C. Varghese, Prentice Hall of India, New Delhi, 2nd edition, 2008
4. RCC Design, Neelam Sharma, Katson Publishers, 2014



Reference Books:

1. Reinforced Cement Concrete, P. Dayaratnam, Medtech Publishers, 5th edition, 2017.
2. Reinforced Concrete Design, S.N. Sinha, Tata McGraw Hill, 3rd edition, 2017
3. Plain and Reinforced Concrete, O.P. Jain and Jai Krishna, Nem Chand Pub., 8th edition, 2008
4. Reinforced Cement Concrete, Winter & Nelson, McGraw Hill, 11th edition, 1991

Course Articulation Matrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2	2	1	2		2				2	3	1
CO2	3	3	2	2	1	2		2				2	3	1
CO3	3	3	2	2	2	2		2	1	2		3	3	2
CO4	3	3	3	2	2	2		3	1	2		3	3	2
CO5	3	3	3	2	2	2	2	3	1	2		3	3	2

1 - Slightly; 2 - Moderately; 3 - Substantially



Course Code: 3110514

Course Name: Railway, Airport & Tunnel Engineering

L	T	P	Credit
3	0	0	3

Course Objective:

To expose the students to Railway survey, planning & requirements of geometrical elements for ideal railway track, design, construction and maintenance, and planning, design principles & construction methodology of Airports and Tunnel.

Syllabus:

Unit-I Introduction to Railway Engineering

Tractive resistance & Permanent way, Principles of Transportation, Transportation by Road, Railways, Airways, Waterways, their importance and limitations. Route surveys and alignment, railway track, development and gauges. Hauling capacity and tractive effort.

- (i) Rails- types, welding of rails, wear & tear of rails, rail creep ultrasonic Testing of Rails.
- (ii) Rail fastenings- types – Fishplates, spikes bearing plates, chairs, keys, check and guard rails, Elastic Rail Clips (ERC), Vossloh fastening.
- (iii) Sleepers, types & comparison, requirement of a good sleeper, sleeper density, Turnouts.
- (iv) Ballast –Requirement of good ballast, various materials used as ballast, quantity of ballast, Ballast Cleaning.

Different methods of plate laying, material trains, calculation of materials required, relaying of track.

Unit-II

Track alignment, Geometrical Design, Gradient & grade compensation, Super Elevation, Equilibrium, Cant and Cant deficiency, relationship of super elevation, gauge, speed & radius of curves, speed on curves, Limits of super elevation, Cant deficiency, Negative super elevation, curves, transition curves, necessity of points and crossing. Turnouts, Points of switches, Types of switches, crossing, calculation of turnouts, sleepers at points & crossing, Types of Track junctions. Types, locations, general equipments, layouts, marshalling yards. Definition, layout details, designs of simple turnouts.

Stations and Yards: Site selection for a Railway stations, Requirements of railway stations, junction station & terminals, location, layout & details, Types of signals in stations and yards, principles of signaling and inter-locking, Modern development in railways, Modernization of track for high speed, Maintenance of track, Track drainage.

Unit – III Airport Planning, Runway & Taxiway

Airport site selection. air craft characteristic and their effects on runway alignments, wind rose diagrams, basic runway length and corrections, classification of airports. Geometrical elements: taxi ways and runways, pattern of runway capacity.

Unit – IV Airport, Obstructions, Lightning & Traffic control

Zoning regulations, approach area, approach surface-imaginary, conical, horizontal. Rotating beacon, boundary lights, approach lights, runway and taxiway lighting etc. instrumental landing system, precision approach radar.

Unit-V Tunnels

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Selection of route, Engineering surveys, alignment, shape and size of tunnel, bridge action, pressure relief phenomenon, Tunnel approaches, Shafts, pilot shafts , Construction of tunnels in soft soil, hard soil and rock, Different types of lining, methods of lining, Mucking operation, Drainage and ventilation, Examples of existing important tunnels in India and abroad.

Course Outcomes:

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

- CO 1: Explain various elements of railway tracks, signaling , yards, bridges & tunnels.
- CO 2: Illustrate various gauges, signals, fasteners, turnouts, crossing & their defects etc.
- CO 3: Explain the elements of airport planning, & tunnels.
- CO 4: Design runway & taxiway system as per regulations.
- CO 5: Apply construction methods of railway tunnels.

Text Books:

1. Airport Planning & Design, S. K. Khanna & M. G. Arora, Nem chand Publishers, 6th edition, 1999
2. Railway Engineering, Arora & Saxena, Dhanpat Rai & Sons, 2010

Reference Books:

1. Airport Planning, Froesch, Charles, Andesite Press, 2017
2. The Planning & Design of Airports, Horonjeff Robert, MHE, 5th edition, 2010
3. Railway Engineering, S.C. Rangwala, Charotar Publication House, Anand, 2012
4. Railway Tack, K.F. Antia, New Book Company, 5th edition, 1960

Course Articulation Matrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	1		1	2	1	1				1	1	1	1
CO2	2			1		1	1				1	2	2	1
CO3	2	2		2		2	2	2	1		1	2	1	2
CO4	2	2	3	2	2	2	2		1	2	2	2	2	2
CO5	2	1		2	2	2	2	2	2	2	2	2	3	2

1 - Slightly; 2 - Moderately; 3 - Substantially

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**Course Code: 3110515**
Course Name: Minor Project – I

L	T	P	Credit
0	0	4	2

Course Objective:

To familiarize students with a thorough understanding and practical experience in addressing civil engineering problems, utilizing both conventional methods and software, innovating and implementing technological solutions, functioning professionally with social responsibility, collaborating effectively with peers, and preparing professional reports with proficient data presentation and computer graphics skills.

Syllabus:

Each candidate shall work on an approved project of a public building or any other civil engineering work and shall submit design and a set of drawings.

OR

Shall submit a detailed report of experimental work / software package on any specific problem of importance.

Course Outcomes:

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

- CO 1: Recognize various engineering problems and techniques to solve them.
- CO 2: Reproduce the solution of the problems upon the need of society.
- CO 3: Cooperate to work within group.
- CO 4: Develop the writing and communication skills for various engineering problems.
- CO 5: Display lifelong learning.

Course Articulation Matrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	2	3	2	2	2	2	3	3	1	3		2
CO2	3	3	3	3	3	3	3		3	3	3	3	3	2
CO3				2	2				3	2		2		
CO4									3	3		2		
CO5	2	2	2	2	2	2	2	2	2	2	1	3	2	2

1 - Slightly; 2 - Moderately; 3 - Substantially



Course Code: 3110516

Course Name: Self Learning / Presentation

L	T	P	Credit
0	0	2	1

Course Objective:

To encourage students to read and understand various civil engineering topics from articles and literature, present these topics to supplement classroom knowledge, develop strong oral and written communication skills, promote lifelong learning, and cultivate soft skills for effective presentations.

Syllabus:

1. Any relevant topic related to civil engineering from within or beyond the syllabus through Swayam / NPTEL/MOOC.

Course Outcomes:

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

- CO 1: Analyze contemporary issues in civil engineering & its allied areas through literature survey.
- CO 2: Distinguish state of art & relevance of the topic in national & international arena.
- CO 3: Demonstrate good oral & written communication skills.
- CO 4: Develop poster and power point presentations for effective communication.
- CO 5: Display lifelong learning.

Course Articulation Matrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1	1		2	1	2	2	1	2	2	1	2	1	2
CO2	1			2	1	2	2	1	2	2	1	2		1
CO3								2	3	3		2		
CO4								2	3	3		2		
CO5	2	2	2	2	2	2	2	2	2	2	1	3	2	2

1 - Slightly; 2 - Moderately; 3 - Substantially

(Handwritten signatures and initials)



Course Code: 3110517

Course Name: Summer Internship Project – II

L	T	P	Credit
0	0	4	2

Course Objective:

To develop students' oral and written communication skills, promote lifelong learning, and cultivate soft skills for effective topic presentations to listeners.

Syllabus:

Each candidate shall have to undergo 15 days in house summer internship related to soft skills at the institute after the completion of their 4th Semester exams (in summer vacations) and after successful completion of internship they have to submit detailed report.

Course Outcomes:

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

CO 1: Develop the writing and communication skills for various engineering problems.

CO 2: Adapt lifelong learning for benefit of society.

Course Articulation Matrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1									3	3		2		
CO2	2	2	2	2	2	2	2	2	2	2	1	3	2	2

1 - Slightly; 2 - Moderately; 3 – Substantially

Handwritten signatures and initials of faculty members, including names like 'Ranjana', 'AB', 'Surya', 'Rajesh', 'AKS', and 'S'.



Course Code: 3110520
Course Name: Data Science

L	T	P	Credit
3	0	2	4

COURSE OBJECTIVE:

The objective of a data science course is to equip students with the skills to analyze and interpret complex data sets using statistical and computational techniques. This includes learning to extract actionable insights, build predictive models, and communicate findings effectively.

Syllabus

Unit 1

Need for data science, benefits and uses, facets of data, data science process, Introduction of basics python tool, Setting working Directory, Creating and saving a script file, File execution, removing variables from environment, clearing environment, Commenting script files, Variable creation, Data types and associated operations, Arithmetic and logical operators.

Unit 2

Control structures, loop, Functions, data structures: Lists, Arrays, Tuples, Dictionary, Sets, NumPy library, Data Collection: Getting to know your data, Types of Data, Data collection strategies, Data Pre-processing, Feature engineering, Exploratory Data Analytics.

Unit 3

Descriptive Statistics, Mean, Standard Deviation, Skewness and Kurtosis, inferential statistics: hypothesis testing, probability: probability theory, conditional probability, Pandas library, dataframe and dataframe related operations, Reading files.

Unit 4

Data Cleaning and Preparation, Handling Missing Data, Data Transformations using pandas and sklearn library, Removing Duplicates, Replacing Values, Detecting Outliers. Data visualization on different dataset using matplotlib and seaborn libraries, Scatter plot, Line plot, Bar plot, Histogram, Box plot, Pair plot.

Unit 5

Supervised learning: Regression, classification, Linear regression, logistic regression, decision tree, tree creation with entropy and information gain, ID3 algorithm, random forest, naïve bayes theorem, K-nearest neighbor and ensemble methods for solving real world problems, Unsupervised learning: Clustering, Reinforcement learning.

BOOKS AND REFERENCES

1. Mastering python for data science, Samir Madhavan
2. Introduction to linear algebra - by Gilbert Strang
3. Applied statistics and probability for engineers – by Douglas Montgomery
4. Pattern Recognition and Machine Learning, Christopher M. Bishop

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COURSE OUTCOMES:

After completing the course, the student will be able to:

- CO1: Define different Data Science techniques.
- CO2: Illustrate various tools used for Data Science technique.
- CO3: Apply data visualization techniques to solve real world problems.
- CO4: Build exploratory data analysis for Data Science methods.
- CO5: Apply Data Science techniques for solving real world problems.
- CO6: Evaluate the performance of algorithms in data science.

Course Articulation Matrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2		1	1	1						2		
CO2	2	2		1	1	1		1				2		
CO3	2	2	1	2	2	1	1	1	2	3		2		2
CO4	2	2	1	2	2	1	1	1	2	1	2	2		3
CO5	2	2	2	2	2	1	1	2	2	2	2	2		3
CO6	2	2		2	2	1	1		2	1		2		3

1 - Slightly; 2 - Moderately; 3 - Substantially

List of Experiments

1. Perform creation, indexing, slicing, concatenation and repetition operations on Python built – in data types: Strings, List, tuples, dictionary, set
2. Solve problems using decision and looping statements.
3. Apply python built-in data types: Strings, List, tuples, dictionary, set and their methods to solve any given problem.
4. Handle numerical operations using math and random number functions
5. Manipulation of NumPy arrays – Indexing, Slicing, Reshaping, Joining and Splitting.
6. Computation on NumPy arrays using universal functions and mathematical methods.
7. Import a CSV file and perform various statistical and comparison operations on rows/columns.
8. Create Pandas series and data-frame from various inputs.
9. Import any CSV file to Pandas data-frame and perform the following –
 - Visualize the first and last 10 records
 - Get the shape, index and column details
 - Select / Delete the rows / columns based on conditions
 - Perform ranking and sorting operations
 - Do required statistical operations on given columns
 - Find the count and uniqueness of the given categorical values
 - Rename single / multiple files
10. Import any CSV file to Pandas data-frame and perform the following –
 - Handle missing data by detecting and dropping / filling missing values.
 - Transform data using different methods
 - Detect and filter outliers
 - Perform vectorized string operations on Pandas series
 - Visualize data using line plots, bar pots, histograms, density plots and scatter plots
11. Use the scikit-learn package in python to implement the regression model and its related methods

Sanjay Kumar
AKS
AB
sejan
baghel



List of Skill Based Mini Project:

1. Write a python Program to predictive maintenance of Infrastructure.
2. Write a python Program for Traffic Flow Optimization.
3. Implement python programming for Water Distribution System Optimization.
4. Implementation of Decision Tree method for Environmental Impact Assessment
5. Write a Program for Material Quality Prediction using MLR.
6. Write a python Program for Structural Health Monitoring.
7. Implement python programming for Sewer Distribution System Optimization.

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Below it, several handwritten signatures and initials are present, including:
- A signature that appears to be "R."
- "IS" in a circle.
- A signature that appears to be "R."
- A checkmark.
- A signature that appears to be "S."
- A signature that appears to be "P."
- A signature that appears to be "M."
- "Neelgagan" written vertically.
- "Sujain" written vertically below "Neelgagan".
- A signature that appears to be "S."
- "Python" written vertically.
- "S-5" written vertically.



Course Code: 1000006

Course Name: Disaster Management

L	T	P
2	-	-

Course Objective:

To understand the basic concepts, definitions, and terminologies in disaster management, the types and categories of disasters, the challenges posed by disasters, and the key skills needed to manage their impact.

Syllabus:

Unit 1: Introduction to disaster management, concepts and definitions: disaster, vulnerability, risk severity, frequency and details, capacity impact, prevention, mitigation.

Unit 2: Disasters – Disasters classification, demographic aspects (gender, age, special needs); hazard locations; global and national disaster trends, hazard and vulnerability profile of India.

Unit 3: Disaster Impacts – Disaster impact (environmental, physical, social, ecological, economic, political, etc.); health, psycho-social issues, impact of natural disasters (floods, draught, cyclones, volcanoes, earthquakes, tsunami, landslides etc.), impact of manmade disasters (industrial pollution, artificial flooding in urban areas, urban disasters, transportation accidents etc.).

Unit 4: Disaster Risk Reduction (DRR)- Disaster management cycle- its phases; prevention, mitigation, preparedness, relief and recovery; structural and non- structural measures; risk analysis, vulnerability and capacity assessment; early warning systems, Post disaster environmental response. Roles and responsibilities of government, community, local institutions, NGOs and other stakeholders: Policies and legislation for disaster management. DRR programmes in India and the activities of National Disaster Management Authority.

Unit 5: Disasters, Environment and Development – Factors affecting vulnerability such as impact of development projects and environmental modifications (including of dams, land use changes, urbanization etc.), sustainable and environmental friendly recovery; reconstruction and development methods.

Course Outcomes:

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

- CO1: Identify disaster prevention and mitigation approaches.
- CO2: Classify global and national disasters, their trends and profiles.
- CO3: Determine the impacts of various disasters.
- CO4: Apply Disaster Risk Reduction in management.
- CO5: Infer the linkage between disasters, environment and development.

Text Books:

1. Pradeep Sahni, 2004, Disaster Risk Reduction in South Asia, Prentice Hall.
2. Ghosh G.K., 2006, Disaster Management, APH Publishing Corporation



3. Srivastava H.H. & Gupta G.D., Management of Natural Disasters in developing countries, DayaPublishers Delhi, 2006.

Reference Books:

1. <http://ndma.gov.in> (Home page of National Disaster Management Authority)
2. <http://www.ndmindia.nic.in> / (National Disaster Management in India)
3. Singh B.K., 2008, Handbook of Disaster Management: Techniques & Guidelines, Rajat Publication.
4. National Disaster Management Policy, 2009, GOI.
5. Inter Agency Standing Committee (IASC) (Feb. 2007), IASC Guidelines on Mental Health and Psychosocial Support in Emergency Setting. Geneva: IASC

Course Articulation Matrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1	1				1	1					2		1
CO2	2	1		2		1						2		2
CO3	2	2		3	2	2	2	2	2	3		2		2
CO4	2	1	2	2	2	2	2	2	2	2	2	2	1	2
CO5	2			2		3	2	2			1	2		2

1 - Slightly; 2 - Moderately; 3 - Substantially



ANNEXURE – V

(CO Attainment & Gap Analysis July – December
2024)

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ANNEXURE – V

CO Attainment & Gap Analysis July – December 2024

Table.1: CO Attainment & Gap Analysis of II Year, III SEM

Course Code & Name	Course Outcomes	Direct CO Attainment	Indirect CO Attainment	Overall CO Attainment	Target Attainment	Gap in Attainment	Status of CO Attainment	Action Taken
3110321: Fluid Mechanics-I	CO 1	0.51	3.00	1.01	2.5	1.49	Not Attained	More explain fluid properties
	CO 2	0.52	3.00	1.01	2.5	1.49	Not Attained	More assignments to fluid flow and dimensional analysis
	CO 3	0.49	3.00	1.00	2.5	1.50	Not Attained	More assignments on fluid flow problems
	CO 4	0.52	3.00	1.02	2.5	1.48	Not Attained	More explain fluid characteristics
	CO 5	0.51	3.00	1.01	2.5	1.49	Not Attained	More explain various types of fluid flow & measurement technique
	C 6	2.28	3.00	2.42	2.5	0.08	Not Attained	More explain concept of laminar flow
3110321: Fluid Mechanics (Lab)	CO 1	3	3	3.00	2.5	-0.50	Attained	Rubrics for the level can be modified
	CO 2	3	3	3.00	2.5	-0.50	Attained	Rubrics for the level can be modified
	CO 3	3	3	3.00	2.5	-0.50	Attained	Rubrics for the level can be modified
	CO 4	3	3	3.00	2.5	-0.50	Attained	Rubrics for the level can be modified
3110322: Theory of Structures-I	CO 1	0.50	3.00	1.00	2.5	1.50	Not Attained	More assignments and numerical problems to










	0.49	3.00	0.99	2.5	1.51	Not Attained	be given	
3110323: Geotechnical Engineering	CO 2	3.00	0.99	2.5	1.51	Not Attained		
	CO 3	3.00	1.00	2.5	1.50	Not Attained		
	CO 4	3.00	0.98	2.5	1.52	Not Attained		
	CO 5	3.00	0.99	2.5	1.51	Not Attained		
	CO 1	3.00	1.10	2.5	1.40	Not Attained	More explain different properties of rock & soil	
3110323: Geotechnical Engineering (Lab)	CO 2	3.00	0.98	2.5	1.52	Not Attained	More explain flow & shear parameter of soil	
	CO 3	3.00	0.95	2.5	1.55	Not Attained	More assignments on stress distribution & shear failure	
	CO 4	3.00	0.97	2.5	1.53	Not Attained	More assignments on shear strength parameters	
	CO 5	3.00	0.92	2.5	1.58	Not Attained	More assignments on stability of slopes	
	CO 1	3.00	3.00	3.00	2.5	-0.50	Attained	Rubrics for the level can be modified
3110324: Transportation Engineering	CO 2	3.00	3.00	3.00	2.5	-0.50	Attained	Rubrics for the level can be modified
	CO 3	3.00	3.00	3.00	2.5	-0.50	Attained	Rubrics for the level can be modified
	CO 4	3.00	3.00	3.00	2.5	-0.50	Attained	Rubrics for the level can be modified
	CO 1	3.00	3.00	1.16	2.5	1.34	Not Attained	More explain principle of planning & geometric design
	CO 2	3.00	3.00	1.05	2.5	1.45	Not Attained	More explain physical properties of highway materials
CO 3	3.00	3.00	1.05	2.5	1.45	Not Attained	More explain concept of traffic engineering	

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	CO 4	0.56	3.00	1.05	2.5	1.45	Not Attained	More assignments on design of pavement
	CO5	0.57	3.00	1.06	2.5	1.44	Not Attained	More explain provision of drainage & maintenance
3110324: Transportation Engineering (Lab)	CO 1	3.00	3.00	3.00	2.5	-0.50	Attained	Rubrics for the level can be modified
	CO 2	3.00	3.00	3.00	2.5	-0.50	Attained	Rubrics for the level can be modified
	CO 3	3.00	3.00	3.00	2.5	-0.50	Attained	Rubrics for the level can be modified
	CO 4	3.00	3.00	3.00	2.5	-0.50	Attained	Rubrics for the level can be modified
	CO 1	3.00	3.00	3.00	2.5	-0.50	Attained	Rubrics for the level can be modified
3110324: Self Learning	CO 2	3.00	3.00	3.00	2.5	-0.50	Attained	Rubrics for the level can be modified
	CO 3	3.00	3.00	3.00	2.5	-0.50	Attained	Rubrics for the level can be modified
	CO 4	3.00	3.00	3.00	2.5	-0.50	Attained	Rubrics for the level can be modified
	CO 5	0.57	3.00	1.05	2.5	1.45	Not Attained	More explain attributes of project
	CO 1	2.38	3.00	2.50	2.5	0.00	Attained	-
1000005: Project Management & Financing	CO 2	2.09	3.00	2.27	2.5	0.23	Not Attained	More assignments to analyse project network
	CO 3	1.68	3.00	1.94	2.5	0.56	Not Attained	More assignments on cost of projects
	CO 4	2.37	3.00	2.50	2.5	0.00	Not Attained	More explain different option to arrange finances
	CO 5							



Table.2: CO Attainment & Gap Analysis of III Year, V SEM

Course Code & Name	Course Outcomes	Direct CO Attainment	Indirect CO Attainment	Overall CO Attainment	Target Attainment	Gap in Attainment	Status of CO Attainment	Action Taken
2110520: Data Science	CO 1	2.32	3.00	2.45	2.5	0.05	Not Attained	More explain different techniques
	CO 2	2.37	3.00	2.50	2.5	0.00	Attained	
	CO 3	0.44	3.00	0.95	2.5	1.55	Not Attained	More assignments on data visualization techniques
	CO 4	0.55	3.00	1.04	2.5	1.46	Not Attained	More assignments on data analysis
	CO 5	2.10	3.00	2.28	2.5	0.22	Not Attained	More assignments on data science technique
	CO 6	1.88	3	2.10	2.5	0.396	Not Attained	More assignments on performance of algorithm
2110521: Waste Water Engineering	CO 1	0.79	3.00	1.24	2.5	1.26	Not Attained	More explain concept of waste water engineering
	CO 2	2.57	3.00	2.66	2.5	-0.16	Attained	
	CO 3	0.76	3.00	1.21	2.5	1.29	Not Attained	More explain techniques for sewage treatment
	CO 4	0.82	3.00	1.25	2.5	1.25	Not Attained	More assignment to analyse sewerage system
	CO 5	0.82	3.00	1.26	2.5	1.24	Not Attained	More assignments to sewerage system

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2110512: Estimating, Costing & Contracting	CO 1	1.55	3.00	1.84	2.5	0.66	Not Attained	More explain estimation, costing & contracting
	CO 2	0.78	3.00	1.22	2.5	1.28	Not Attained	More assignments to estimate area, volume & cost
	CO 3	0.80	3.00	1.24	2.5	1.26	Not Attained	More explain rate analysis
	CO 4	2.27	3.00	2.42	2.5	0.08	Not Attained	More assignments to determine rates & value
	CO 5	2.54	3.00	2.63	2.5	-0.13	Attained	
2110513: S.D.D. (RCC)	CO 1	2.09	3.00	2.27	2.5	0.23	Not Attained	More explain and assignments to design beam, column, slabs & foundation
	CO 2	2.14	3.00	2.31	2.5	0.19	Not Attained	
	CO 3	0.39	3.00	0.92	2.5	1.58	Not Attained	
	CO 4	1.96	3.00	2.17	2.5	0.33	Not Attained	
	CO 5	0.41	3.00	0.93	2.5	1.57	Not Attained	
2110514: Railway, Airport and Tunnel Engineering	CO 1	0.44	3.00	0.95	2.5	1.55	Not Attained	More explain the various elements of railway
	CO 2	0.44	3.00	0.95	2.5	1.55	Not Attained	More illustrate various gauges, signals etc.
	CO 3	0.44	3.00	0.95	2.5	1.55	Not Attained	More explain airport planning & tunnel
	CO 4	0.43	3.00	0.94	2.5	1.56	Not Attained	More assignments on design runway &







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1000006: Disaster Management	CO 1	2.36	3.00	2.48	2.5	0.02	Not Attained	More explain disaster prevention & mitigation approaches
	CO 2	2.36	3.00	2.49	2.5	0.01	Not Attained	More explain global & national disasters
	CO 3	1.35	3.00	1.68	2.5	0.82	Not Attained	More explain impacts of various disasters
	CO 4	0.55	3.00	1.04	2.5	1.46	Not Attained	More explain disaster risk reduction
	CO 5	2.36	3.00	2.49	2.5	0.01	Not Attained	More explain linkage between disasters, environment and development






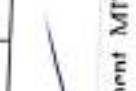










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 Department of Civil Engineering



110716: Software Application to Civil Engineering Problems	CO 4	2.93	3.00	2.94	2.5	-0.44	Attained	-
	CO 5	2.68	3.00	2.74	2.5	-0.24	Attained	-
	CO 1	3.00	3.00	3.00	2.5	-0.50	Attained	Rubrics for the level can be modified
	CO 2	3.00	3.00	3.00	2.5	-0.50	Attained	Rubrics for the level can be modified
	CO 3	3.00	3.00	3.00	2.5	-0.50	Attained	Rubrics for the level can be modified
110717: Creative Problem Solving	CO 4	3.00	3.00	3.00	2.5	-0.50	Attained	Rubrics for the level can be modified
	CO 5	3.00	3.00	3.00	2.5	-0.50	Attained	Rubrics for the level can be modified
	CO 1	3.00	3.00	3.00	2.5	-0.50	Attained	Rubrics for the level can be modified
	CO 2	3.00	3.00	3.00	2.5	-0.50	Attained	Rubrics for the level can be modified
	CO 3	3.00	3.00	3.00	2.5	-0.50	Attained	Rubrics for the level can be modified








 Civil Engineering Department MITS Gwalior





	CO 4	3.00	3.00	3.00	3.00	2.5	-0.50	Attained	Rubrics for the level can be modified
	CO 5	3.00	3.00	3.00	3.00	2.5	-0.50	Attained	Rubrics for the level can be modified
	CO 1	3.00	3.00	3.00	3.00	2.5	-0.50	Attained	Rubrics for the level can be modified
	CO 2	3.00	3.00	3.00	3.00	2.5	-0.50	Attained	Rubrics for the level can be modified
	CO 3	3.00	3.00	3.00	3.00	2.5	-0.50	Attained	Rubrics for the level can be modified
	CO 4	3.00	3.00	3.00	3.00	2.5	-0.50	Attained	Rubrics for the level can be modified
	CO 5	3.00	3.00	3.00	3.00	2.5	-0.50	Attained	Rubrics for the level can be modified
110718: SIP-III	CO 1	2.36	3.00	2.49	3.00	2.5	0.01	Not Attained	More explain principles & concept of waste management
	CO 2	2.92	3.00	2.94	3.00	2.5	-0.44	Attained	
9110211: Industrial Waste Management for Smart City									



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 - Middle right: *...*
 - Bottom left: *...*
 - Bottom middle: *...*
 - Bottom right: *...*





CO 3	2.93	3.00	2.94	2.5	-0.44	Attained	-
CO 4	2.34	3.00	2.47	2.5	0.03	Not Attained	More explain effective & efficient waste management system
CO 1	2.36	3.00	2.49	2.5	0.01	Not Attained	More explain quality management system
CO 2	2.92	3.00	2.94	2.5	-0.44	Attained	-
CO 3	2.93	3.00	2.94	2.5	-0.44	Attained	-
CO 4	2.34	3.00	2.47	2.5	0.03	Not Attained	More explain the quality control
CO 5	2.63	3.00	2.70	2.5	-0.20	Attained	-

9110212: Safety
Quality &
Management





ANNEXURE – VI

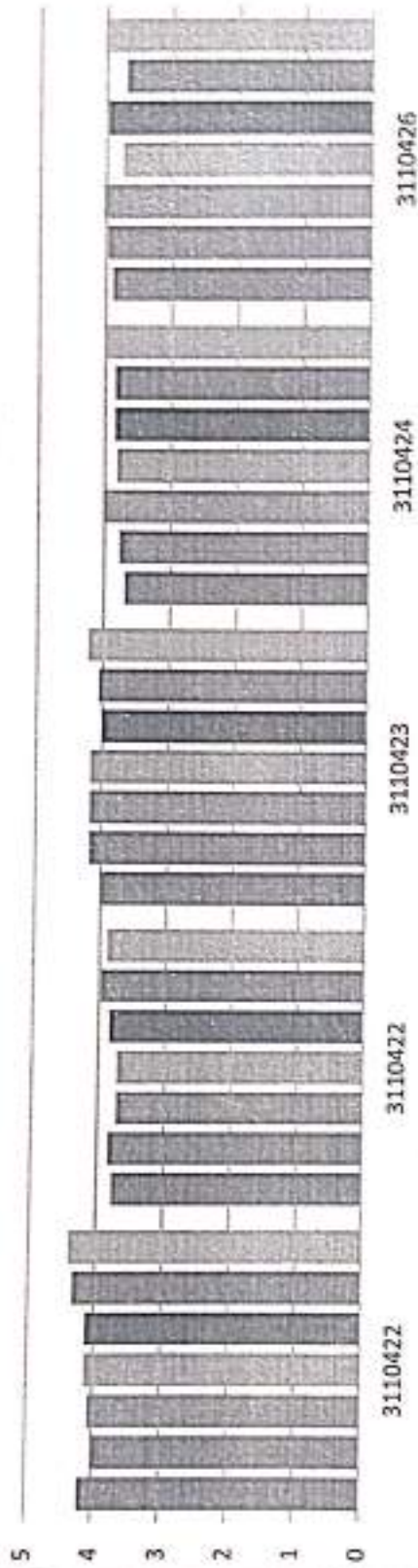
(CURRICULUM FEEDBACK ANALYSIS)

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A1. CURRICULUM FEEDBACK ANALYSIS FROM STUDENTS – (UG II Year) – July-Dec 2024

Course Curriculum Feedback UG II Year



- 1. The course is well designed
- 2. The syllabus units are balanced
- 3. The learning material was available to you
- 4. The content was clear and easy to understand
- 5. The course was relevant and updated for present needs
- 6. The course meets your career expectations
- 7. The course will be useful to meet your higher studies/future aspirations.











	3110422: Fluid Mechanics-II	3110422: Theory of Structures-II	3110423: Water Supply Engineering	3110424: Water Resource Engineering	3110426: Cyber Security
1. The course is well designed	4.2	3.77	4	3.69	3.89
2. The syllabus units are balanced	4	3.83	4.17	3.77	3.97
3. The learning material was available to you	4.07	3.71	4.17	4.02	4.03
4. The content was clear and easy to understand	4.13	3.71	4.17	3.81	3.75
5. The course was relevant and updated for present needs	4.13	3.83	4.0	3.84	3.97
6. The course meets your career expectations	4.33	3.97	4.06	3.84	3.69
7. The course will be useful to meet your higher studies/future aspirations.	4.4	3.88	4.22	3.98	4.03

Mention the course / contents which in your opinion is outdated & needs to be removed.	Name course / contents which needs to be updated.	Is any new course required to meet current needs?
-	-	-





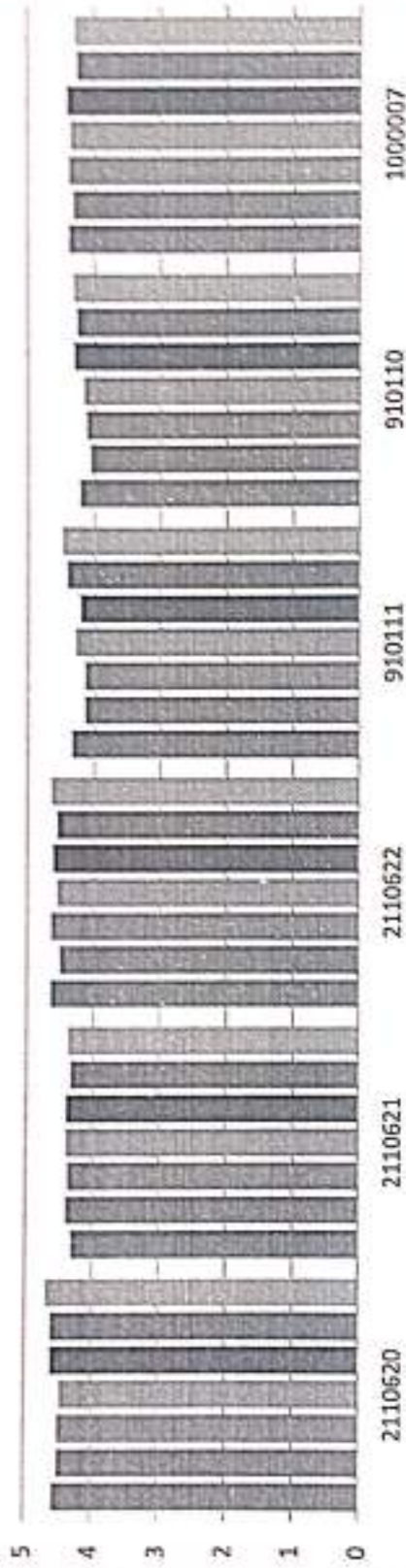






A2. CURRICULUM FEEDBACK ANALYSIS FROM STUDENTS – (UG III Year) – July-Dec 2024

Course Curriculum Feedback UG III Year



- 1. The course is well designed
- 2. The syllabus units are balanced
- 3. The learning material was available to you
- 4. The content was clear and easy to understand
- 5. The course was relevant and updated for present needs
- 6. The course meets your career expectations
- 7. The course will be useful to meet your higher studies/future aspirations.


















	2110620: AI & ML	2110621: Solid Hazardous Waste Management	2110622: SDD (Steel)	910111: Building Maintenance & Services	910110: Sustainable Materials & Green Buildings	1000007: Intellectual Property rights
1. The course is well designed	4.57	4.31	4.64	4.33	4.21	4.38
2. The syllabus units are balanced	4.5	4.39	4.5	4.13	4.05	4.31
3. The learning material was available to you	4.5	4.37	4.64	4.13	4.11	4.38
4. The content was clear and easy to understand	4.46	4.39	4.54	4.27	4.15	4.36
5. The course was relevant and updated for present needs	4.61	4.39	4.61	4.2	4.30	4.4
6. The course meets your career expectations	4.61	4.33	4.54	4.4	4.25	4.25
7. The course will be useful to meet your higher studies/future aspirations.	4.68	4.37	4.64	4.47	4.31	4.29

Mention the course / contents which in your opinion is outdated & needs to be removed.	Name course / contents which needs to be updated.	Is any new course required to meet current needs? Optimization methods, Pavement Technology
-	-	



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(Deemed to be University)

MMAC Accredited with A++ Grade

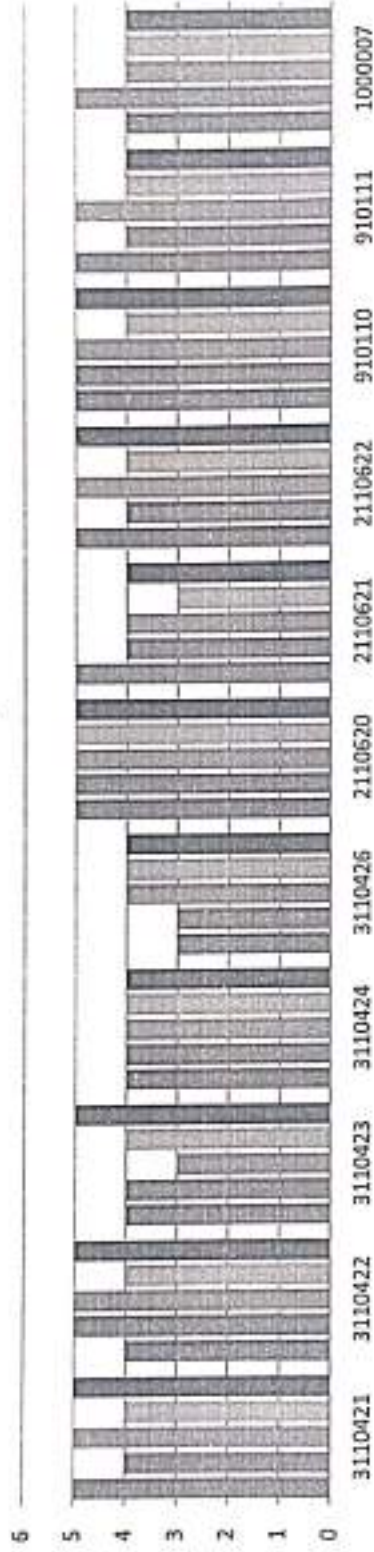
Department of Civil Engineering



ESTABLISHED IN 1983

B. FACULTY FEEDBACK ANALYSIS ON COURSE CONTENT – July-Dec 2024

Curriculum Faculty Feedback



- 1. The availability of books & E-learning material in the institute is good.
- 2. The Courses and content are up to date.
- 3. The course curriculum/syllabi are helpful in meeting the higher studies/placement requirements according to present global trends.
- 4. The course / contents in your domain/area are well designed and frequently updated, hence need no changes at present.
- 5. The curriculum is capable of inculcating life-long learning abilities in students.














Select your course	Select your Subject	1. The availability of books & E-learning material in the institute is good.	2. The Courses and content are up to date.	3. The course curriculum/syllabi are helpful in meeting the higher studies/placement requirements according to present global trends.	4. The course / contents in your domain/area are well designed and frequently updated, hence need no changes at present.	5. The curriculum is capable of inculcating life-long learning abilities in students.
B. Tech	3110421: Fluid Mechanics-II	5	4	5	4	5
B. Tech	3110422: Theory of Structures-II	4	5	5	4	5
B. Tech	3110423: Water Supply Engineering	4	4	3	4	5
B. Tech	3110424: Water Resource Engineering	4	4	4	4	4
B. Tech	3110426: Cyber Security	3	3	4	4	4
B. Tech	2110620: AI & ML	5	5	5	5	5
B. Tech	2110621: Solid & Hazardous Waste Management	5	4	4	3	4
B. Tech	2110622: SDD (Steel)	5	4	5	4	5
B. Tech	910110: Sustainable Materials & Green Buildings	5	5	5	4	5
B. Tech	910111: Building Service & Maintenance	5	4	5	4	4
B. Tech	1000007: Intellectual Property Rights	4	5	4	4	4















Inputs received from Faculty:

Course level	Course	1. The availability of books & E-learning material in the institute is good. (Please give your opinion)	2. The Courses and content are up to date. Please suggest if you feel any new course(s) need to be introduced to meet current needs & technological changes?	3. The course curriculum/syllabi are helpful in meeting the higher studies/placement requirements according to present global trends.	4. The course / contents in your domain/area are well designed and frequently updated, hence need no changes at present. [If you feel some changes (new content to be added or outdated content to be removed) are needed]	5. The curriculum is capable of inculcating life-long learning abilities in students.	6. The environment of department/institute is conducive for innovative teaching and research.	7. The institute supports you in your initiatives for updating your knowledge/skills and in achieving career growth.
B. Tech	3110421: Fluid Mechanics-II	Yes	Yes	Yes	Yes	Yes	Yes	Yes
B. Tech	3110422: Theory of Structures-II	Yes	Yes	Yes	Yes	Yes	Yes	Yes
B. Tech	3110423: Water Supply Engineering	Yes	Yes	Yes	Yes	Yes	Yes	Yes











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B. Tech	3110424: Water Resource Engineering	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
B. Tech	3110426: Cyber Security	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
B. Tech	2110620: AI & ML	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
B. Tech	2110621: Solid & Hazardous Waste Management	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
B. Tech	2110622: SDD (Steel)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
B. Tech	910110: Sustainable Materials & Green Buildings	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

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Civil Engineering Department, MITS Gwalior

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B. Tech	910111: Building Service & Maintenance	Yes	Yes	Yes	Yes	Yes	Yes	Yes
B. Tech	1000007: Intellectual Property Rights	Yes	Yes	Yes	Yes	Yes	Yes	Yes

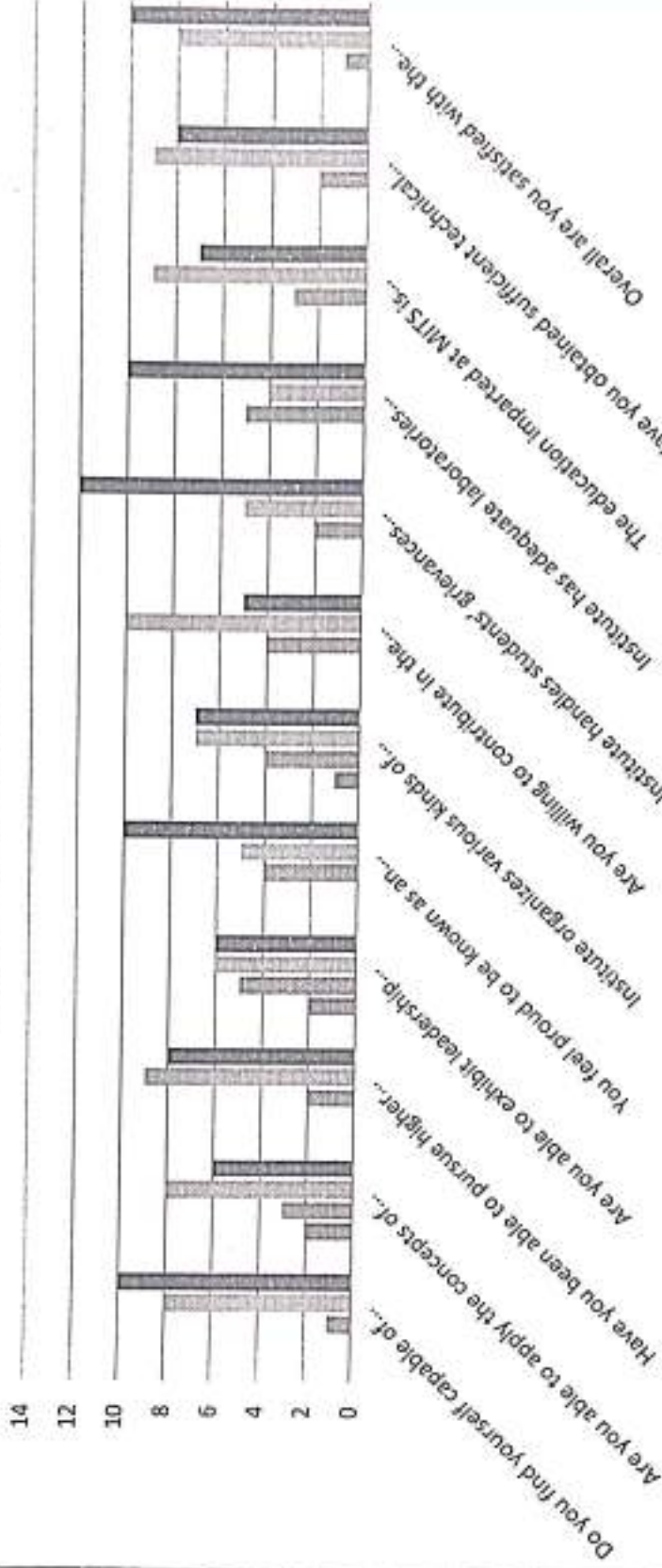
(i) Honours:		(ii) Minor specialization:		(iii) Departmental electives:		(iv) Open electives:	
Bridge Engineering		Building Materials and Composites		Remote Sensing & GIS			
Optimization methods for Civil Engineering		Strength of Materials		Principles of Construction Management			
Sustainable Engineering Concepts and Life Cycle Analysis		Project Planning & Control		Admixtures and Special Concretes			
Advanced Structural Analysis				Pavement Construction Technology			
				Foundation Engineering			



ALUMNI SATISFACTION SURVEY

Alumni Satisfaction Survey



Strongly Disagree
 Disagree
 Neutral
 Agree
 Strongly Agree

[Handwritten signatures and initials in blue ink, including names like 'Anshu', 'Siddhi', 'Anshu', 'Siddhi', 'Anshu', 'Siddhi', 'Anshu', 'Siddhi', 'Anshu', 'Siddhi']



Sample Size: 19

S. No.	Parameter	Poor	Fair	Good	Very Good	Excellent	Alumni Satisfaction Index
1	Do you find yourself capable of making a good career?	0	0	1	8	10	4.47
2	Are you able to apply the concepts of civil engineering in your profession?	0	2	3	8	6	3.95
3	Have you been able to pursue higher studies?	0	0	2	9	8	4.32
4	Are you able to exhibit leadership skills, team spirit & ethical practices while performing your duty?	0	2	5	6	6	3.84
5	You feel proud to be known as an MITS Alumnus	0	0	4	5	10	4.32
6	Institute organizes various kinds of activities for the overall development of students	0	1	4	7	7	4.05
7	Are you willing to contribute in the development of the Institute	0	0	4	10	5	4.05
8	Institute handles students' grievances properly	0	0	2	5	12	4.53
9	Institute has adequate laboratories and equipment for practical exposure to students	0	0	5	4	10	4.26
10	The education imparted at MITS is useful and relevant in your career and present job	0	0	3	9	7	4.21
11	Have you obtained sufficient technical knowledge (both in theory and practical) at MITS	0	0	2	9	8	4.32
12	Overall are you satisfied with the Faculty, Staff and Administration during Program	0	0	1	8	10	4.47












CIVIL ENGINEERING DEPARTMENT

ANNEXURE – VI (b)

Action Taken Report based on Curriculum Feedback Received from Stakeholders

A. Action taken based on Curriculum Feedback received from Students

S. No.	Comments /Suggestions Received during Feedback	Action Taken
1	Opinion regarding courses to be included as DE (Through SWAYAM) - Remote Sensing & GIS	The opinions of students were taken into consideration while finalizing the list of DE courses (SWAYAM)
2	Opinion regarding courses to be included as Honors (Through SWAYAM) - Integrated Waste Management for Smart City	The opinions of students were taken into consideration while finalizing the list of Honor courses (SWAYAM)

B. Action taken based on Curriculum Feedback received from Faculty

S. No.	Comments /Suggestions Received during Feedback	Action Taken
1	Opinion regarding courses to be included as DE (Through SWAYAM) - Foundation Engineering - Pavement Construction Technology - Admixtures and Special Concretes - Principles of Construction Management - Remote Sensing & GIS	The opinions of faculty members were taken into consideration while finalizing the list of DE courses (SWAYAM)
2	Opinion regarding courses to be included as Honors (Through SWAYAM) - Bridge Engineering - Optimization methods for Civil Engineering - Advanced Structural Analysis - Sustainable Engineering Concepts and Life Cycle Analysis	The opinions of faculty members were taken into consideration while finalizing the list of Honor courses (SWAYAM)
3	Opinion regarding courses to be included as Minor (Through SWAYAM) - Project Planning & Control - Building Materials and Composites - Strength of Materials	The opinions of faculty members were taken into consideration while finalizing the list of Minor courses (SWAYAM)

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CIVIL ENGINEERING DEPARTMENT

ANNEXURE – VI (b)

Action Taken Report based on Curriculum Feedback Received from Stakeholders

A. Action taken based on Curriculum Feedback received from Students

S. No.	Comments /Suggestions Received during Feedback	Action Taken
1	Opinion regarding courses to be included as DE (Through SWAYAM) - Pavement Construction Technology - Principles of Construction Management - Remote Sensing & GIS	The opinions of students were taken into consideration while finalizing the list of DE courses (SWAYAM)
2	Opinion regarding courses to be included as Honors (Through SWAYAM) - Advanced Prestressed Concrete - Optimization methods for Civil Engineering - Mechanics of Solids - Integrated Waste Management for Smart City - Indoor Air Pollution: Sources, Effects, Monitoring, Control and Modeling	The opinions of students were taken into consideration while finalizing the list of Honor courses (SWAYAM)

B. Action taken based on Curriculum Feedback received from Faculty

S. No.	Comments /Suggestions Received during Feedback	Action Taken
1	Opinion regarding courses to be included as DE (Through SWAYAM) - Foundation Engineering - Pavement Construction Technology - Admixtures and Special Concretes - Ground Improvement - Principles of Construction Management - Remote Sensing & GIS - River Engineering	The opinions of faculty members were taken into consideration while finalizing the list of DE courses (SWAYAM)
2	Opinion regarding courses to be included as Honors (Through SWAYAM) - Bridge Engineering - Advanced Prestressed Concrete - Optimization methods for Civil Engineering - Indoor Air Pollution: Sources, Effects, Monitoring, Control and Modeling - Environmental Modeling and Simulation	The opinions of faculty members were taken into consideration while finalizing the list of Honor courses (SWAYAM)

Ranjan S.

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CIVIL ENGINEERING DEPARTMENT

	<ul style="list-style-type: none"> - An Introduction to Climate Dynamics, Variability and Monitoring - Integrated Waste Management for Smart City - Dynamics of Structures - Introduction to Engineering Seismology - Advanced Concrete and Technology - Mechanics of Solids - Advanced Structural Analysis - Climate Change – Extreme Events - Sustainable Engineering Concepts and Life Cycle Analysis 	
3	<p>Opinion regarding courses to be included as Minor (Through SWAYAM)</p> <ul style="list-style-type: none"> - Soil Mechanics / Geotechnical Engineering - Geometric Design of Highways - Design of Reinforced Concrete Structures - Principle of Construction Management - Project Planning & Control - Building Materials and Composites - Strength of Materials - Fluid Mechanics - Project Planning & Control 	The opinions of faculty members were taken into consideration while finalizing the list of Minor courses (SWAYAM)

C. Action taken based on Feedback received from Alumni

S. No.	Comments /Suggestions Received during Feedback	Action Taken
1	Institute should have tie up with the industry for suitable employment of the students in time to come	MoU are already done with some of the Research Organizations like CBRI, CRRI, NHAI and efforts are being done to get students placed in them after their internship and more MoU are planned in future specially with leading Industry like L&T etc.
2	More industry Academia interaction	A team is already constituted in the department to plan programs for student industry interaction etc.