

**Minutes of Board of Studies Meeting held on 28<sup>th</sup> November, 2020**

The meeting of Board of Studies of the Civil Engineering department was held on Saturday, 28<sup>th</sup> November, 2020 online through Google meet (Owing to the unprecedented situation of Covid-19 virus outbreak). Following were present:

1. Dr. A. K. Nema (Expert nominated by V.C.)  
Professor, Civil Engg., IIT Delhi
2. Dr. P. K. Jain (Subject Expert nominated by Academic Council)  
Professor, Civil Engg., MANIT Bhopal
3. Dr. Mahesh Jat (Subject Expert nominated by Academic Council)  
Professor, Civil Engg., MNIT Jaipur
4. Mr. Sanjay Sarwate (Representative from Industry)  
Deputy Director, CSM L&T
5. Mr. Brijesh Kumar Gupta (Alumnus)  
DRM, East Coast Railway, Bhubaneswar
6. Dr. M. K. Trivedi (Chairman BoS & Head of the department)
7. Prof. (Mrs.) Archana Tiwari (Member, BOS)
8. Dr. S. K. Jain (Member, BOS)
9. Dr. R. Kansal (Member, BOS)
10. Dr. S. Tiwari (Member, BOS)
11. Prof. D. Rastogi (Member, BOS)
12. Prof. A. K. Dwivedi (Member, BOS)
13. Prof. A. K. Saxena (Member, BOS)
14. Prof. G. Bhadoriya (Member, BOS)
15. Prof. Aditya K. Agarwal (Member, BOS)

Following agendas were discussed & deliberated upon

|                      |   |        |                        |        |  |        |   |
|----------------------|---|--------|------------------------|--------|--|--------|---|
| Item No. /<br>CE - 1 | <p>To propose the list of courses which the students can opt from SWAYAM/ NPTEL/ MOOC Platform, to be offered in <i>online mode under Departmental Elective (DE) category</i>, for credit transfer in the <i>VIII Semester (Batch admitted in 2017-18): applicable during January-June 2021 academic session</i></p> <p>Following courses are finalized as DE courses for VIII Semester through NPTEL/SWAYAM platform.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>110851</td> <td>Safety in Construction</td> </tr> <tr> <td>110852</td> <td>Introduction to Accounting &amp; Finance for Civil Engineers</td> </tr> <tr> <td>110853</td> <td>Strategies for Sustainable Design<br/><i>Water Supply Engg.<br/>natural habitats</i></td> </tr> </table> <p>The finalized scheme of B.Tech Civil Engg. 8<sup>th</sup> Sem. (2017 admitted Batch) is attached in Annexure – I. The name of faculty mentors for these courses are also finalized, the compiled list of mentors in attached in Annexure – VII.</p> | 110851 | Safety in Construction | 110852 | Introduction to Accounting & Finance for Civil Engineers | 110853 | Strategies for Sustainable Design<br><i>Water Supply Engg.<br/>natural habitats</i> |
| 110851               | Safety in Construction  |        |                        |        |  |        |   |
| 110852               | Introduction to Accounting & Finance for Civil Engineers  |        |                        |        |  |        |   |
| 110853               | Strategies for Sustainable Design<br><i>Water Supply Engg.<br/>natural habitats</i>   |        |                        |        |  |        |   |



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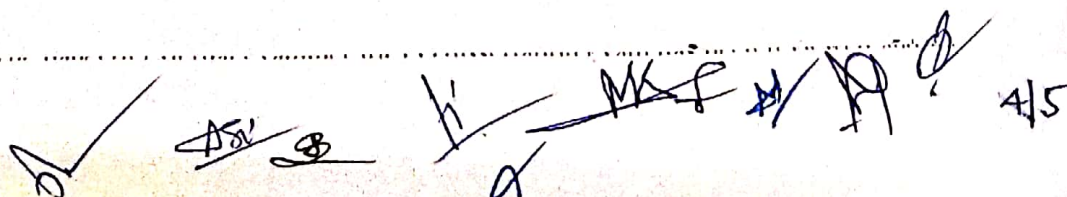
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| <p>Item No. /<br/>CE - 4</p> | <p>To review and finalize the list and syllabi for all <i>Departmental Elective (DE) Courses of VI Semester to be offered to (the batch admitted in 2018-19) under the flexible curriculum along with their COs; { applicable during January-June 2021 academic session}</i></p> <p>Following courses are finalized as Departmental Elective (DE) courses for VI semester which will be offered in conventional mode to students of batch admitted in 2018-19.</p> <ol style="list-style-type: none"><li>1. 110612, Solid Waste Management</li><li>2. 110613, Construction Planning &amp; Management</li><li>3. 110614, Railway, Airport &amp; Tunnel Engineering</li></ol> <p>The syllabus along with COs for these courses were discussed &amp; finalized. The syllabus is attached in Annexure - II and the same has been incorporated in the syllabus file for 2018 batch.</p> |
| <p>Item No. /<br/>CE - 5</p> | <p>To review and finalize the list of Courses from SWAYAM/NPTEL/MOOC Platform to be offered (for batch admitted in 2018-19) in online mode under <i>Departmental Elective (DE) Courses for credit transfer in the VI Semester {applicable during January-June 2021 academic session}</i></p> <p>Following courses are finalized as DE courses for VI Semester through NPTEL/SWAYAM platform.</p> <ol style="list-style-type: none"><li>1. 110651, Maintenance &amp; Repair of Concrete Structures</li><li>2. 110652, Geotechnical Engineering - II (Foundation Engineering)</li></ol> <p>The name of faculty mentors for these courses are also finalized, the compiled list of mentors in attached in Annexure - VII.</p>   |
| <p>Item No. /<br/>CE - 6</p> | <p>To review and finalize the Courses &amp; Syllabi to be offered (for batch admitted in 2018-19) under the <i>Open Category (OC) Courses for VI semester students of other departments along with their COs</i></p> <p>Following courses are finalized as Open Category (OC) courses for VI semester which will be offered in conventional mode to students of batch admitted in 2018-19.</p> <ol style="list-style-type: none"><li>1. Numerical Methods in Engineering</li><li>2. Maintenance Management</li></ol> <p>The syllabus along with COs for these courses were discussed &amp; finalized. The syllabus is attached in Annexure - II and the same has been incorporated in the syllabus file for 2018 batch.</p>  |
| <p>Item No. /<br/>CE - 7</p> | <p>To review and finalize the <i>Courses &amp; Syllabi to be offered (to the batch admitted in 2018-19) under Departmental Core (DC) Courses for the IV &amp; VI semester students along with their COs</i></p> <p>The courses &amp; syllabi which are being offered under DC category for batch admitted in 2018 &amp; 2019 for VI &amp; IV semester were reviewed and found to be ok, hence no changes are recommended in this.</p>  |
| <p>Item No. /<br/>CE - 8</p> | <p>To review and finalize the <i>Scheme &amp; Syllabi (I &amp; II semester) of the NEW B. Tech. programme(s) to be started by the departments w.e.f. the batch admitted in 2020-21</i></p> <p>The new Scheme &amp; Syllabi for I &amp; II Semester for B.Tech Civil Engineering for batch admitted in 2020-2021 was discussed and approved. The scheme as well as syllabus is being attached in Annexure - III</p>   |

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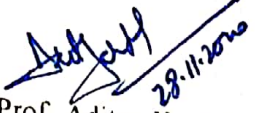
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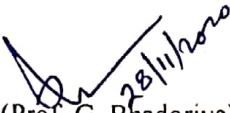
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| <b>Item No. /<br/>CE - 9</b>  | <p><b>To identify gaps in CO attainment levels for Jan-June 2020 semester and propose corrective measures for improvement</b></p> <p>CO attainment calculations were done based upon mathematical model developed by the institute which is followed uniformly by all the departments. The gap analysis in CO attainment level for all the courses was carried on the basis of the set targets and the report of the same is attached in Annexure – IV. On the basis of this analysis it is observed that in almost all the courses the CO attainment level was found to achieve the set target, however in some of the courses where numerical/analytical portion was more, the CO attainment level for some COs was found to be below the set target.</p> <p>Based upon the analysis following gaps have been identified:</p> <ol style="list-style-type: none"><li>1. Due to exam being held online through moodle for the first time, students were not able to attempt properly the numerical/analytical questions asked in the exam as they were not very conversant with the new technique of exam conduction.</li></ol> <p>Following corrective measures for improvement in CO attainment have been proposed:</p> <ol style="list-style-type: none"><li>1. Students need to be given more practice problems in such courses through online tests etc. so that they are more conversant on how to attempt numerical problems in online exams in future.</li><li>2. Remedial classes for such courses can also be planned to be conducted to improve the performance of the students.</li></ol> |
| <b>Item No. /<br/>CE - 10</b> | <p><b>To prepare and propose the equivalence list of courses for B. Tech programmes (for 2017-18, 2018-2019, 2019-2020 &amp; the 2020 admitted batch)</b></p> <p>The equivalence list of course for B.Tech programmes has been prepared and reviewed, the list is attached in Annexure – V.</p>   |
| <b>Item No. /<br/>CE - 11</b> | <p><b>Any other matter</b></p> <ol style="list-style-type: none"><li>1. <b>Review of Panel of external examiner for PG dissertation exam.</b><br/>The panel of external examiner for PG dissertation exam has been reviewed and the proposed list of examiners is attached in Annexure – VI.</li><li>2. <b>Bridge Course for 8<sup>th</sup> Sem Students (2017 admitted batch)</b><br/>The following courses will run as bridge course for 8<sup>th</sup> Sem students (2017 admitted batch).<ol style="list-style-type: none"><li>1. Hydraulic Structure</li><li>2. Railways &amp; Tunnel Engineering</li></ol><p>There will be 2 periods per week per course for these courses and interested students will only enroll in these courses. Few assignments / quiz will be given to the enrolled students as it is only for enhancement of knowledge of students.</p></li></ol>   |


The meeting ended with vote of thanks to the chair.




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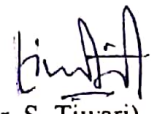
  
(Prof. Aditya K. Agarwal)  
Member, BoS


  
(Prof. G. Bhadoriya)  
Member, BoS

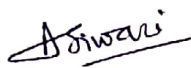
  
(Prof. A. K. Saxena)  
Member, BoS

  
(Prof. A. K. Dwivedi)  
Member, BoS


  
(Prof. D. Rastogi)  
Member, BoS

  
(Dr. S. Tiwari)  
Member, BoS

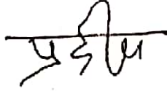
  
(Dr. R. Kansal)  
Member, BoS

  
(Prof. (Mrs.) A. Tiwari)  
Member, BoS

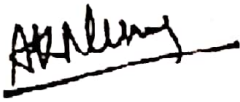
(Dr. S. K. Jain)  
Member, BoS

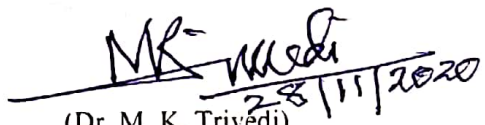
  
(Mr. Sanjay Sarwate)  
Representative from Industry


Digitally Approved  
(Dr. Mahesh Jat)  
Subject Experts nominated by Academic Council

  
(Dr. P.K. Jain)

Digitally Approved  
Mr. Brijesh Gupta  
Alumnus

  
(Dr. A. K. Nema)  
Expert Nominated by V.C.

  
(Dr. M. K. Trivedi)  
Head of Department & Chairman, BoS

  
DEAN (ACADEMICS)  
M.I.T.S  
GWALIOR

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## **ANNEXURE – I**

**(Scheme 8<sup>th</sup> Sem B.Tech Civil Engineering (2017  
Admitted Batch))**

**MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR**  
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**Scheme of Examination**

**B. Tech. VIII Semester (Civil Engineering)**

[For batch admitted in Academic Session 2017-18]

| S. No. | Subject Code     | Category Code | Subject Name   | Maximum Marks Allotted |                     |                |                   |                                 | Total Marks | Contact Periods per Week |   |   | Total Credits |            |
|--------|------------------|---------------|--|------------------------|---------------------|----------------|-------------------|---------------------------------|-------------|--------------------------|---|---|---------------|------------|
|        |                  |               |  | Theory Slot            |                     | Practical Slot | MOOCs             |                                 |             | L                        | T | P |               |            |
|        |                  |               |  | End Sem.               | Mid Sem. Assignment |                | Quiz / Assignment | End Sem. / Lab Work / Sessional |             |                          |   |   |               | Assignment |
| 1.     |                  | DE            | (DE-5)*  | -                      | -                   | -              | -                 | 25                              | 75          | 100                      | 2 | - | -             | 2          |
| 2.     |                  | OC            | (OC-4)*  | -                      | -                   | -              | -                 | 25                              | 75          | 100                      | 2 | - | -             | 2          |
| 3.     |                  | OC            | (OC-5)*  | -                      | -                   | -              | -                 | 25                              | 75          | 100                      | 2 | - | -             | 2          |
| 4.     | 110801<br>110804 | DLC           | Internship / Project (D.L.C-9)                                       | -                      | -                   | 250            | 150               | -                               | -           | 400                      | - | - | -             | 3+2<br>=5  |
| 5.     | 110802<br>110805 | PD            | Professional Development*  | -                      | -                   | -              | 50                | -                               | -           | 50                       | - | - | -             | 2+1<br>=3  |
| 6.     |                  |               | Additional Courses for obtaining Honours or Minor desirable students | -                      | -                   | 250            | 200               | 75                              | 225         | 750                      | 6 | - | -             | 8+2<br>=10 |

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

\* At least one of these courses must be run through SWAYAM/NPTEL/MOOC.

† Evaluation will be based on participation/awards brought by the students in national/state level technical and other events during the complete tenure of the UG program (participation in professional chapter activities, club activities, cultural events, sports, personality development activities, collaborative events, MOOCs and technical events)

| SEMESTER - VIII   |  |
|---|--|
| DE - 5 (Through SWAYAM/NPTEL)   | 900615 OC - 4 (Through SWAYAM/NPTEL)<br>Plastic Waste Management |
| 110851. Safety in Construction  | 900614 Natural Hazards   |
| 110852. Introduction to Accounting & Finance for Civil Engineers                  |  |
| 110853. Strategies for Sustainable Design   |  |
| 110854. Natural Hazards   |  |
| 900617 PC - 5 (Through SWAYAM/NPTEL)<br>Remote Sensing: Principles & Applications | DEAN (ACADEMICS)<br>M.I.T.S                                      |
|   | GWALIOR  |

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## **ANNEXURE – II**

**(Scheme & Syllabus DE & OC 6<sup>th</sup> Sem B.Tech Civil  
Engineering (2018 Admitted Batch))**



**MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR**  
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**Scheme of Examination**  
**B. Tech. VI Semester (Civil Engineering)**

*[For batch admitted in Academic Session 2018-19 onwards]*

| S. No. | Subject Code | Category Code | Subject Name   | Maximum Marks Allotted  |            |                 |            |                    |            |           | Total Marks | Contact Periods per Week |           |          | Total Credits |           |
|--------|--------------|---------------|--|---|------------|-----------------|------------|--------------------|------------|-----------|-------------|--------------------------|-----------|----------|---------------|-----------|
|        |              |               |  | Theory Slot   |            | Practical Slot  |            | MICRAN             |            |           |             | L                        | T         | P        |               |           |
|        |              |               |  | End Sem.  | Mid Sem.   | Quiz/Assignment | End Sem.   | Lab Work/Sessional | Assignment | Exam      |             |                          |           |          |               |           |
| 1.     | 100005*      | HSMC          | Ethics, Economics, & Entrepreneurship Management (HSMC-4)                                    | 70  | 20         | 10              | -          | -                  | -          | -         | -           | 3                        | -         | -        | 3             |           |
| 2.     | 110602       | DC            | Structural Design & Drawing (Steel) (DC-14)  | 70  | 20         | 10              | -          | -                  | -          | -         | -           | 100                      | 3         | 1        | -             | 4         |
| 3.     |              | DE            | (DE-1)*  | 70  | 20         | 10              | -          | -                  | -          | -         | -           | 100                      | 3         | 1        | -             | 4         |
| 4.     |              | DE            | (DE-2)*  | -   | -          | -               | -          | -                  | -          | -         | 25          | 75                       | 3         | 1        | -             | 4         |
| 5.     |              | OC            | (OC-1)*  | 70  | 20         | 10              | -          | -                  | -          | -         | -           | 100                      | 2         | 1        | -             | 3         |
| 6.     | 100007       | MC            | Disaster Management (MC)   | 70  | 20         | 10              | -          | -                  | -          | -         | -           | 100                      | 3         | -        | -             | 3         |
| 7.     | 110607       | DLC           | Minor Project - II (DLC-5)   | -   | -          | -               | 100        | 50                 | -          | -         | -           | 150                      | -         | -        | 4             | 2         |
|        |              |               | <b>Total</b>   | <b>350</b>  | <b>100</b> | <b>50</b>       | <b>100</b> | <b>50</b>          | <b>50</b>  | <b>25</b> | <b>75</b>   | <b>750</b>               | <b>17</b> | <b>4</b> | <b>4</b>      | <b>23</b> |
| 8.     | 100006       | MC            | Indian Constitution & Traditional Knowledge Course (MC)                                      | 70  | 20         | 10              | -          | -                  | -          | -         | -           | 100                      | 3         | -        | -             | -         |
| 9.     |              |               | <b>Additional Courses for obtaining Honours or Minor Specialization by desirous students</b> | <p align="center"><b>Summer Internship Project - III (On Job Training) for Four Weeks Duration : Evaluation in VII Semester</b></p> <p align="center">Permitted to opt for maximum 02 additional courses for the award of Honours or Minor Specialization</p> |            |                 |            |                    |            |           |             |                          |           |          |               |           |

\* This course will run for Group B, A in V & VI semester respectively

† This course will run for Group B, A in V & VI semester respectively. (Passing is optional, however a separate marksheet will be issued to those who qualify)

‡ At least one of these courses must be run through SWAYAM/NPTEL - MOCs.

GROUP A: (Electrical, Electronics, Computer Science, Information Technology, Electronics & Telecommunication)

GROUP B: (Civil, Mechanical, Chemical, Biotech, Automobile)

**SEMESTER - VI**

| DE - 1   | DE - 2 (Through SWAYAM/NPTEL)                                | OC - 1                              |
|--|--|-------------------------------------|
| 110612. Solid Waste Management                 | 110651. Maintenance & Repair of Concrete Structures.         | 1. Numerical Methods in Engineering |
| 110613. Construction Planning & Management     | 110652. Geotechnical Engineering II (Foundation Engineering) | 2. Maintenance Management           |
| 110614. Railways, Airport & Tunnel Engineering |  |                                     |





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Course Code: 110612

Course Name: Solid Waste Management

| L | T | P | Credit |
|---|---|---|--------|
| 3 | 1 | 0 | 4      |

**Course Objectives:**

- 1) To provide broad knowledge on various aspects of planning & implementation of a solid waste management system in a city/town.
- 2) To understand the principles applied in solid wastemanagement.
- 3) To understand various ways to collect, treat & disposal ofwaste.
- 4) To understand various ways of energy recovery from waste.
- 5) To provide an insight into the principles of hazardous waste management.

**Syllabus:**

**Unit I:**

Functional Elements of Solid Waste Management, Objective of Solid Waste Management, Principle of Municipal Solid Waste Management. Classification of solid waste, composition, Physical, chemical & biological properties of municipal solid waste, Quantity of solid waste, Sampling & analysis of solid waste.

**Unit II:**

Collection, conveyance, separation & recycling of solid waste: Types of collection system, Collection routes, equipment's, transfer station, transport methods, material separation & recycling of MSW.

**Unit III:**

Disposal of solid waste by Land fill method: Classification, type, method, site consideration composition and control of gases, Leachate control inland fills, surface water management, landfill operation & care. Remediation of old landfill sites.

**Unit IV:**

Disposal of solid waste by other methods: Thermal conversion technologies, Incineration, Pyrolysis gasification, environmental control system. Biological & Chemical conversion technologies. aerobic composting, anaerobic digestion, other biological and chemical transformation.

**Unit V:**

Solid waste Management — legislative trend and planning issues: Major legislations, government agencies, future trend in planning. Hazardous solid waste management, handling & Disposal. Disposal of Biomedical Waste, Demolition waste, E-Waste & Plastic Waste etc.

**Course Outcomes:**

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

- CO 1: Explain the principles & concepts of waste management.
- CO 2: Apply various techniques in collecting the waste.
- CO 3: Apply various techniques of reducing the waste.
- CO 4: Apply various techniques in disposal of waste.
- CO 5: Plan an effective & efficient waste management system

*Asst. Prof. Dr. Anand K. Singh*  
*Dr. Anand K. Singh*  
*Dr. Anand K. Singh*  
*Dr. Anand K. Singh*  
*Dr. Anand K. Singh*

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**Text Books:**

1. Text Book of Solid Wastes Management, Iqbal H. Khan and Naved Ahsan, CBS Publishers, 1st edition 2012
2. Integrated Solid Waste Management, Hilary Theisen and Samuel A, Vigil, George Tchobanoglous, McGraw Hill Yew York, 1993

**Reference Books:**

1. Environmental Engineering, Rowe, Peavy & Tchobanoglous, Tata McGraw Hill Publications, 2017
2. CPHEEO, Manual on Municipal Solid Waste management, Central Public Health and Environmental Engineering organization, Government of India, New Delhi, 2016
3. Solid waste Engineering, Vesilind P.A., Worrel H. W. and Reinhard. Thomson Learning Inc, 2003

*AS* *W* *A* *MS* *A* *AY* *Q*

**Course Code: 110613**  
**Course Name: Construction Planning & Management**

| L | T | P | Credit |
|---|---|---|--------|
| 3 | 1 | 0 | 4      |

**Course Objectives:**

- 1) To make student conversant with the concepts and importance of the subject of construction planning & management.
- 2) To provide a broad knowledge on how to make bar chart, work break structure of a project, schedules.
- 3) To provide a broad knowledge on how to analyze a problem using various techniques of project management like CPM, PERT & optimization of time & cost of a project.
- 4) To provide an insight into various types of machinery used in construction works & various concepts of man & material management.

**Syllabus:**

**Unit I**

**Modern management techniques:** An overview of planning process, planning through Bar Charts and Milestone charts, Network techniques, Basic concept of network preparations, CPM and PERT techniques with network analysis.

**Unit II**

**Construction management:** Principles of construction management, Planning for Job Layout, Advantages of Job Layout, Scheduling Techniques of Construction Project.

**Unit III**

**Construction equipment's:** Factors affecting selection, investment and operating cost, Efficiency and capacity rating of various equipment's, study of equipment's required for various jobs such as earthwork, dredging, conveyance, concreting, hoisting, pile driving, compaction and grouting. Equipment Management.

**Unit IV**

**Time & Cost Optimization using Network Techniques:** Time computations using CPM & PERT, Probability of achieving completion time. Project cost, Direct & Indirect cost. Cost vs. Time curves, Total project cost & optimum duration, Contracting the network for cost optimization, Time cost optimization

**Unit V**

**Site Organization & Manpower management:** Introduction of site organization, types of organization, organization chart & manuals, Manpower Management, Labour laws (Compensation Act etc.) & Human relations, Welfare facilities, Safety Management.

**Course Outcomes:**

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

**CO 1:** Explain the concepts of construction planning & management process.

**CO 2:** Describe various techniques used in construction planning & management.

*Ass. in Dr. K. Medi d. V. P. - 8*

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CO 3: Apply techniques of project planning & management.

CO 4: Analyze various problems of time & cost optimization using network techniques like CPM & PERT.

CO 5: Plan effectively for manpower & material management in a project along with suitable safety measures.

**Text Books:**

- 1) K. K. Chitkara, Construction Project Management, McGraw Hill International Publishers.
- 2) B. C. Punmia & K. K. Khandelwal, Project Planning & Control with PERT & CPM, Laxmi Publishers.
- 3) U.K. Shrivastava, Construction Planning & Management.
- 4) Neeraj Kumar Jha, Construction Project Management, Pearson Publishers.

**Reference Books:**

- 1) Gahlot & Dhir, Construction Management, New Age International Publishers.
- 2) L.S. Srinath, PERT & CPM – Principles & Applications, East West Press.
- 3) Sengupta & Guha, Construction Management & Planning, McGraw Hill Publishers.
- 4) Peurify, Construction Equipment.

*Handwritten signatures and initials:*  
A collection of approximately seven handwritten signatures and initials in blue ink, including the name "M. S. Mehta" and other illegible names.

Course Code: 110614

Course Name: Railway, Airport & Tunnel Engineering

| L | T | P | Credit |
|---|---|---|--------|
| 3 | 1 | 0 | 4      |

**Course Objectives:**

- 1) To understand the requirements of airport, runway & taxi - way.
- 2) To understand the requirement of lighting & signal & traffic control at airports.
- 3) To understand the geometrical elements of railway track.
- 4) To understand the properties of good ballast.
- 5) To understand the track alignment, super elevation, turnout. yards.
- 6) To understand the principles of signalling & interlocking.
- 7) To understand the construction of tunnels.

**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.

*Asst. Prof. Dr. A. K. Mehta* *W. S. P. D. Q.*

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## Unit-V Tunnels

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

### Text Books:

1. Airport Planning & Design, S. K. Khanna & M. G. Arora, Nem chand Publishers, 6<sup>th</sup> 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, 5<sup>th</sup> edition, 2010
3. Railway Engineering, S.C. Rangwala, Charotar Publication House, Anand, 2012
4. Railway Tack, K.F. Antia, New Book Company, 5<sup>th</sup> edition, 1960

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Course Code: 900117

Course Name: Numerical Methods in  
Engineering

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**Course Objectives:**

1. To learn about Basics of MATLAB programming
2. To perform Array operations in MATLAB
3. Working with files: Scripts and Functions. Plotting and program output
4. To understand water management and planning system in a building.
5. To learn maintenance of building services and management of related tasks.

**Syllabus:**

**Unit I**

**SOLUTION OF EQUATIONS AND EIGENVALUE PROBLEMS**

Solution of algebraic and transcendental equations – Fixed point iteration method – Newton Raphson method – Solution of linear system of equations – Gauss elimination method – Pivoting -Gauss Jordan method – Iterative methods of Gauss Jacobi and Gauss Seidel – Eigenvalues of a matrix by Power method and Jacobi's method for symmetric matrices

**Unit II**

**INTERPOLATION AND APPROXIMATION**

Interpolation with unequal intervals – Lagrange's interpolation – Newton's divided difference interpolation – Cubic Splines – Difference operators and relations – Interpolation with equal intervals – Newton's forward and backward difference formulae.

**Unit III**

**NUMERICAL DIFFERENTIATION AND INTEGRATION**

Approximation of derivatives using interpolation polynomials – Numerical integration using Trapezoidal, Simpson's 1/3 rule – Romberg's Method – Two point and three point Gaussian quadrature formulae – Evaluation of double integrals by Trapezoidal and Simpson's 1/3 rules.

**Unit IV**

**INITIAL VALUE PROBLEMS FOR ORDINARY DIFFERENTIAL EQUATIONS**

Single step methods – Taylor's series method – Euler's method – Modified Euler's method – Fourth order Runge – Kutta method for solving first order equations – Multi step methods – Milne's and Adams – Bash forth predictor corrector methods for solving first order equations.

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**Unit V**

**BOUNDARY VALUE PROBLEMS IN ORDINARY AND PARTIAL DIFFERENTIAL EQUATIONS**

Finite difference methods for solving second order two – point linear boundary value problems -Finite difference techniques for the solution of two dimensional Laplace's and Poisson's equations on rectangular domain – One dimensional heat flow equation by explicit and implicit (Crank Nicholson) methods – One dimensional wave equation by explicit method

**Course Outcome:**

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

**CO1: Demonstrate** understanding of common numerical methods and how they are used to obtain approximate solutions to otherwise intractable mathematical problems

**CO2: Apply** numerical methods to obtain approximate solutions to mathematical problems

**CO3: Derive** numerical methods for various mathematical operations and tasks, such as interpolation, differentiation, integration, the solution of linear and nonlinear equations, and the solution of differential equations

**CO4: Evaluate** the accuracy of common numerical methods & implement numerical methods in MATLAB

**Text Book:**

1. Numerical Methods: For Scientific And Engineering Computation by M K Jain, Sixth Ed. 2012, New Age International Publishers.

**Reference Books:**

1. Fausett L.V.(2007) Applied Numerical Analysis Using MATLAB, 2nd Ed. Pearson Education
2. Chapra S.C. and Canale R.P.(2006) Numerical Methods for Engineers, 5th Ed., McGraw Hill

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Course Code: 900118

Course Name: Maintenance Management

| L | T | P | C |
|---|---|---|---|
| 2 | 1 | - | 3 |

**Course Objectives:**

6. To learn about building services required in a building.
7. To learn about fire fighting systems in buildings.
8. To understand planning and maintenance requirements of lifts in high rise buildings.
9. To understand water management and planning system in a building.
10. To learn maintenance of building services and management of related tasks.

**Syllabus:**

**Unit I**

**Introduction:** Introduction to primary services in a building, Type of services required to keep facility usable, planning of services, Organization structures of services management, Role and administrative functions of supervisors, Outline of the concept of carbon trading and self sustainable zero carbon building, Importance

**Unit II**

**Fire Fighting:** Standard fire, fire resistance, classification of buildings, Basic requirement of the works for fighting system, various components of the fire fighting system, Maintenance required of the system, fire fighting in high-rise buildings, commercial/industrial complexes, Public buildings, checklist for fire safety, Provision of NBC.

**Unit III**

**Lifts/Elevators, Escalators:** Legal formalities for elevators, various types of lifts, working mechanisms of lift and escalators, Indian standard codes for planning & installations of elevator, inspection & maintenance of lifts.

**Unit IV**

**Plumbing Services Water Supply System:** Basics of Plumbing systems, Requirement of Plumbing works, Agency, Activity flow chart for plumbing work, Quality checking of materials, Water supply and distribution system in high-rise building & other complexes, pumps and pumping mechanisms, Operation & maintenance of fittings & fixtures of water supply & sanitary, Do's & Don'ts for water pipe networks.

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## Unit V

**Maintenance and management of services:** Telecommunication network, computer network LAN, Electrical network & appliances. Basics of single phase & three phase electrification, precautions and safety measures during electrification. Indian standard codes for electrical appliances & wiring operations & maintenance of network & appliances. Landscaping & Horticulture. Building maintenance management, applications of computer in service management. Flowcharts of air conditioning & heating. Centralised systems, monitoring and working of the equipments, Checklist of inspection, Performance testing. Water proofing. Damp proofing & Termite proofing. Working procedure & stages of work of water proofing for W.C., Bathrooms. Terrace, sloping roof, Basements, tanks. Use of chemicals for water proofing treatment.

## Course Outcome:

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

**CO1:** Identify various services required in a building.

**CO2:** Carry out planning of fire fighting system for a building.

**CO3:** Develop a management strategy for maintenance of building services in a building.

**CO4:** Design a sustainable building services plan for a building.

## Reference Books:

1. Building services Design and Management by Jakie Partman, Willey Blackwell 2014.
2. Building Services Engineering by David V. Chadderton, Routledge 2013.

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## **ANNEXURE – III**

**(Scheme & Syllabus 1<sup>st</sup> & 2<sup>nd</sup> Sem B.Tech Civil  
Engineering (2020-2021 onwards Admitted Batch))**

**Scheme of Examination**  
**GROUP X: I Semester**  
**B. Tech. I Semester (Civil Engineering)**

**For batches admitted in academic session 2020 - 21 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 |                       |                          |             | L                      | T        | P        |               |                                   |              |
|              |              |               |   | End Term Evaluation    |                                | Continuous Evaluation |                 | End Sem Exam   | Continuous Evaluation |                          |             |                        |          |          |               |                                   |              |
|              |              |               |   | End Sem Exam           | Proficiency in subject /course | Mid Sem Exam          | Quiz/Assignment |                | Lab Work & Sessional  | Skill Based Mini Project |             |                        |          |          |               |                                   |              |
| 1.           | 100011       | BSC           | Engineering Mathematics - I (BSC - 1)             | 50                     | 10                             | 20                    | 20              | -              | -                     | -                        | 100         | 3                      | 1        | -        | 4             | Offline (4/0)                     | PP           |
| 2.           | 100012       | BSC           | Engineering Chemistry (BSC - 2)                   | 50                     | 10                             | 20                    | 20              | 60             | 20                    | 20                       | 200         | 2                      | 1        | 2        | 4             | Blended (2/1)                     | MCQ          |
| 3.           | 100014       | ESC           | Engineering Graphics (ESC - 1)                    | 50                     | 10                             | 20                    | 20              | -              | -                     | -                        | 100         | 1                      | 2        | -        | 3             | Blended (2/1)                     | A+O          |
| 4.           | 100015       | HSMC          | Energy, Environment, Ecology & Society (HSMC - 1) | 50                     | 10                             | 20                    | 20              | -              | -                     | -                        | 100         | 3                      | -        | -        | 3             | Online (0/3)                      | MCQ          |
| 5.           | 100016       | HSMC          | Technical Language (HSMC - 2)                     | 50                     | 10                             | 20                    | 20              | -              | -                     | -                        | 100         | 3                      | -        | -        | 3             | Blended (2/1)                     | PP           |
| 6.           | 100017       | HSMC          | Language Lab (HSMC - 3)                           | -                      | -                              | -                     | -               | 60             | 20                    | 20                       | 100         | -                      | -        | 2        | 1             | Offline (1/0)                     | SO           |
| 7.           | 100018       | ESC           | Engineering Graphics Lab (ESC - 2)                | -                      | -                              | -                     | -               | 60             | 20                    | 20                       | 100         | -                      | -        | 2        | 1             | Offline (1/0)                     | SO           |
| <b>Total</b> |              |               |   | <b>250</b>             | <b>50</b>                      | <b>100</b>            | <b>100</b>      | <b>180</b>     | <b>60</b>             | <b>60</b>                | <b>800</b>  | <b>12</b>              | <b>4</b> | <b>6</b> | <b>19</b>     | -                                 | -            |

Induction programme of three weeks (MC): Physical activity, Creative Arts, Universal Human Values, Literary, Proficiency Modules, Lectures by Eminent People, Visits to local Areas, Familiarization to Dept./Branch & Innovations.

GROUP X: (Civil, Mechanical, Electrical and Automobile)

GROUP Y: (Electronics, Computer Science & Engineering, Information Technology, Electronics & Telecommunication, Chemical) 01 Theory

Period = 1 Credit; 02 Practical Periods = 1 Credit

MCQ - Multiple Choice Questions, PP - Pen paper Mode, A+O - Assignment + Oral, SO - Submission + Oral, CLC: College Level Course

| Mode of Teaching |        |         |        | Mode of Examination |     |     |     | Credits |
|------------------|--------|---------|--------|---------------------|-----|-----|-----|---------|
| Theory           |        | Lab     |        | Theory              |     |     | Lab |         |
| Offline          | Online | Blended |        | Offline             | PP  | A+O | MCQ |         |
|                  |        | Offline | Online |                     |     |     |     |         |
| 4                | 3      | 6       | 3      | 3                   | 7   | 3   | 6   | 3       |
| 21%              | 16%    | 31%     | 16%    | 16%                 | 33% | 16% | 31% | 16%     |

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## B. Tech. II Semester (Civil Engineering)

For batches admitted in academic session 2020 - 21 onwards

| S. No. | Subject Code | Category Code | Subject Name   | Maximum Marks Allotted |                                |                       |                   |                |                       |                          | Contact Hours per week |    |   | Total Credits | Mode of Teaching (Offline/Online) | Mode of Exam  |     |
|--------|--------------|---------------|--|------------------------|--------------------------------|-----------------------|-------------------|----------------|-----------------------|--------------------------|------------------------|----|---|---------------|-----------------------------------|---------------|-----|
|        |              |               |  | Theory Slot            |                                |                       |                   | Practical Slot |                       |                          | Total Marks            | L  | T |               |                                   |               | P   |
|        |              |               |  | End Term Evaluation    |                                | Continuous Evaluation |                   | End Sem Exam   | Continuous Evaluation |                          |                        |    |   |               |                                   |               |     |
|        |              |               |  | End Sem Exam           | Proficiency in subject /course | Mid Sem Exam          | Quiz/ Assig nment |                | Lab Work & Sessional  | Skill Based Mini Project |                        |    |   |               |                                   |               |     |
| 1.     | 110211       | DC            | Building Planning & Design (DC - 1)                  | 50                     | 10                             | 20                    | 20                | -              | -                     | -                        | 100                    | 1  | - | -             | 3                                 | Blended (2/1) | PP  |
| 2.     | 100020       | ESC           | Basic Civil Engineering & Mechanics (ESC - 3)        | 50                     | 10                             | 20                    | 20                | -              | -                     | -                        | 100                    | 2  | 1 | -             | 3                                 | Blended (2/1) | PP  |
| 3.     | 100021       | ESC           | Basic Mechanical Engineering (ESC - 4)               | 50                     | 10                             | 20                    | 20                | -              | -                     | -                        | 100                    | 2  | 1 | -             | 3                                 | Blended (2/1) | MCQ |
| 4.     | 100022       | ESC           | Basic Electrical & Electronics Engineering (ESC - 5) | 50                     | 10                             | 20                    | 20                | 60             | 20                    | 20                       | 200                    | 2  | 1 | 2             | 4                                 | Blended (2/1) | MCQ |
| 5.     | 100023       | ESC           | Basic Computer Engineering (ESC - 6)                 | 50                     | 10                             | 20                    | 20                | 60             | 20                    | 20                       | 200                    | 2  | 1 | 2             | 4                                 | Blended (2/1) | A+O |
| 6.     | 100024       | ESC           | Manufacturing Practices (ESC - 7)                    | -                      | -                              | -                     | -                 | 60             | 20                    | 20                       | 100                    | -  | - | 2             | 1                                 | Offline (1/0) | SO  |
| 7.     | 100026       | ESC           | Basic Civil Engineering Lab (ESC - 8)                | -                      | -                              | -                     | -                 | 60             | 20                    | 20                       | 100                    | -  | - | 2             | 1                                 | Offline (1/0) | SO  |
| Total  |              |               |  | 250                    | 50                             | 100                   | 100               | 240            | 80                    | 80                       | 900                    | 11 | 4 | 8             | 19                                | -             | -   |
| 8.     |              | MAC           | Engineering Physics (Mandatory VAC)                  | 50                     | 10                             | 20                    | 20                | -              | -                     | -                        | 100                    | 2  | - | -             | Grade                             | Online        | MCQ |

Summer Internship Project - I (Institute Level) (Qualifier): Minimum two-week duration; Evaluation in III Semester.

- The certification/marksheet will be issued separately by examination cell.

| Mode of Teaching |        |         |        | Lab     |     | Mode of Examination |     |        |    |
|------------------|--------|---------|--------|---------|-----|---------------------|-----|--------|----|
| Theory           |        | Blended |        | Offline | PP  | Theory              |     | Lab SO | 19 |
| Offline          | Online | Offline | Online |         |     | A+O                 | MCQ |        |    |
| -                | -      | 10      | 5      | 4       | 6   | 3                   | 6   | 4      |    |
|                  |        | 53%     | 26%    | 33%     | 33% | 12%                 | 33% |        |    |

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**DEPARTMENT OF CIVIL  
ENGINEERING**

**SYLLABUS B.Tech Civil  
Engineering**

**2020 ONWARDS ADMITTED  
BATCHES**

**SEMESTER-**  
**II**



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Course Code: 110211

Course Name: Building Planning & Design

|   |   |   |        |
|---|---|---|--------|
| L | T | P | Credit |
| 3 | 0 | 0 | 3      |

**Course Objectives:**

1. To make aware the student with sustainability aspects of building.
2. To impart knowledge to students about significance of building bye-laws & rules & regulation regarding building planning.
3. To impart knowledge to students regarding specific consideration required to be considered under Indian condition for planning & designing of building.
4. To appraise students about the rules & consideration to get adequate ventilation, lighting & Sound insulation for improved energy efficiency of building.
5. To make students understand about various essential requirements of different type of building.
6. To make aware students about green building rating for enhanced sustainability.

**Syllabus:**

**Unit I**

Natural Environment & Built environment, Ecology, Ecosphere - sustainable development, Dimensions of sustainability, Built Environment & liveability, integrated approach in design, challenges in sustainable development, Green environment, expectations from green building, IGBC, USGBC, LEED- GRIHA, SVA, GRIHA.

**Unit II**

Building Bye - laws, Functions of local authority, Terminology i.e. (Building line, control line, FAR, light plane etc.) Principles underlying building bye- laws, classification of building, requirements of parts of Buildings, site section of building, orientation, factors affecting orientation, orientation criteria's for Indian conditions. Provisions of NBC.

**Unit III**

Principles of planning of buildings (Aspects, prospect, Furniture requirement, rooming, grouping, privacy circulation etc.), Principles of architectural composition (Unity, contrast, scale, proportion, balance, Rhythm, character, etc.), Massing, Sun and the Building, Sun path, Sun shading & devices, Design of sun shades.

**Unit IV**

Thermal insulation, Heat transfer in building, Thermal insulation materials, methods of thermal insulation ventilation: natural & artificial, necessity & functional requirement of ventilation, system of ventilation, types of mechanical ventilation, air conditioning, functional requirement of air conditioning, Essentials of air conditioning, acoustic and sound insulation, Behavior of sound acoustical defects. Sabine formula, acoustical design of various spaces, sound insulation methods & materials, illumination (natural & artificial).

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## Unit V

Design and planning consideration for various types of building i.e. Residential Building, Education buildings, Hospitals & Dispensaries, Hotels, Commercial building, recreational buildings, government offices & other, standards specified by Bye-laws, various aspects of sustainability & energy efficiency applied to various types of Building, green building concept applied to various types of building.

### Course Outcomes:

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

- CO1: Explain basics of building planning & design.
- CO2: Describe sustainability principle, by laws & characteristics of thermal and sound insulation.
- CO3: Apply sustainability concepts & principles in planning & design of buildings.
- CO4: Evaluate environmental, sustainable & safety aspects of a building.
- CO5: Plan different types of buildings as per by laws & codal provisions.

### Text Books:

1. Building Drawing (Built Environment), Sah. Kale and Pathi, Tata McGraw hill, 4<sup>th</sup> edition, reprint 2007
2. Building Planning, Designing and Scheduling, Gurucharan Singh, Standard Publisher, distribution, 2009
3. Building Design and Drawing, Mallik and Meo, Computech Publication Ltd New Asian: 5<sup>th</sup> edition 2009

### Reference Books:

1. Building Design and drawing, Y.S.Sane, Standard Publisher, 2006
2. National Building Codes (Latest Edition), 2016 by Bureau of Indian Standards (Third Revision)
3. Building Construction, B.C.Punmia, Laxmi Publication, 11<sup>th</sup> edition, 2016

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*AK Mishra*  
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**Course Code: 100020**

**Course Name: Basic Civil Engineering & Mechanics**

| L | T | P | Credit |
|---|---|---|--------|
| 3 | 0 | 0 | 3      |

**Course Objectives:**

1. To understand the utility of various types of building materials.
2. To understand the location, construction detail and suitability of various building elements.
3. To determine the location of object on ground surface.
4. To stabilize the position of various object.
5. To understand the effects of system of forces on rigid body in static conditions.
6. Analysis of determinate structure (beam & truss)

**Syllabus:**

**Unit- I**

Building Materials: Stones, bricks, cement, timber - types, properties, test & uses, Introduction of concrete properties & Laboratory tests on concrete, curing of concrete and mortar Materials.

**Unit- II**

Surveying & Positioning: Introduction to surveying, Survey stations, Measurement of distances- conventional and EDM methods, Measurement of directions by different methods, Measurement of elevations by different methods, reciprocal leveling.

**Unit- III**

Mapping & Sensing: Mapping details and contouring, Plane tables and related devices. Introduction of theodolite. Measurement of areas and volumes, application of measurements in quantity computations, Introduction of remote sensing and its applications.

**Unit- IV**

Forces and Equilibrium: Graphical and Analytical Treatment of Concurrent and non-concurrent coplanar forces, free body Diagram, Force Diagram and Bow's notations, Application of Equilibrium Concepts: Analysis of plane Trusses, method of joints, method of Sections. Frictional force in equilibrium problems.

**Unit -V**

Centre of Gravity and moment of Inertia: Centroid and Centre of Gravity, Moment of Inertia of Composite section, Radius of Gyration, Introduction to product of Inertia and Principle Axes. Support Reactions, Shear force and bending moment diagram for cantilever & simply supported beam with concentrated, distributed load and Couple.

**Course Outcomes:**

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

- CO1: Explain concepts and terminologies of building materials, surveying and mechanics.
- CO 2: Apply various methods for surveying and mechanics.
- CO 3: Determine the location, area and volume of objects on ground surface.

*Asst. Prof. Dr. Anurag K. Singh*

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CO4: Solve the problems of surveying and mechanics by using various methods.

CO5: Analyse the effects of system of forces on rigid bodies in static conditions.

**Text Books:**

1. Surveying, Vol. - 1, Punmia B.C., Laxmi Publications, 17<sup>th</sup> edition, 2016
2. Building Material, B. C. Punmia, Laxmi Publications, 2016
3. A textbook of Engineering Mechanics, D. S. Kumar, Katsons Publications, 2013

**Reference Books:**

1. Basic Civil Engineering, S. Ramamurtam & R. Narayan, Dhanpat Rai Pub., 3<sup>rd</sup> edition, 2013
2. Applied Mechanics, Prasad I.B., Khanna Publication 17<sup>th</sup> edition, 1996
3. Surveying, Duggal, Tata McGraw Hill New Delhi, 4<sup>th</sup> edition, 2013
4. Engineering Mechanics - Statics & Dynamics, R.C. Hibbler, Pearson Publications, 14<sup>th</sup> edition, 2015
5. Engineering Mechanics - statics dynamics, A. Boresi & Schmidt, Cengage learning, 1<sup>st</sup> edition, 2008.
6. Applied Mechanics, R.K. Rajput, Laxmi Publications, 3<sup>rd</sup> edition, 2016

**List of Experiments:**

1. Study of various types of chain and tapes.
2. Measurement of distance involving direct and indirect ranging.
3. Chain and tape survey of given area
4. Study of prismatic and surveyors compass
5. Measurement of direction by prismatic compass
6. Calculation of distance between two inaccessible points by prismatic compass
7. Study of dumpy level, levelling staff and level field book
8. Exercise of differential levelling and flying levelling
9. Study of various types of a transit theodolite
10. Measurements of horizontal angle by repetition method.
11. Determining the resultant force of coplanar concurrent and non-concurrent system of forces by graphical method
12. Determine forces in members of a perfect frame by graphical method.

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

CO1: Follow the guidelines for field surveying.

CO2: Follow the working principles of survey instruments for measurements.

CO3: Measure the horizontal distances, difference in elevation and angles of various points

CO4: Detect measurement errors and accordingly suggest corrections

CO5: Interpret survey data and compute areas

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Course Code: 100026  
Course Name: Basic Civil Engineering Lab

| L | T | P | Credit |
|---|---|---|--------|
| 0 | 0 | 2 | 1      |

**Course Objectives:**

1. To perform the chain & tape surveying
2. To perform the survey work using various types of compass.
3. To determine the location of object on ground surface.
4. To determine the properties of cement
5. To determine the properties of concrete
6. To determine the properties of bricks.

**List of Experiments:**

1. Measurement of distance by chain or tape.
2. Chain and tape survey of given area
3. Measurement of direction by prismatic compass & surveyor's compass.
4. Calculation of distance between two inaccessible points by prismatic compass
5. Chain & compass traverse
6. Exercise of differential leveling by dumpy level.
7. Exercise of flying levelling by dumpy level.
8. Demonstration of theodolite.
9. Measurement of horizontal angle by theodolite.
10. Determination of standard consistency of cement by vicat apparatus.
11. Determination of initial setting time & final setting time of cement.
12. Determination of workability of cement concrete by slump cone test.
13. Determination of compressive strength of cement concrete.
14. Determination of compressive strength of bricks.
15. Determination of water absorption of bricks.

**Text Books:**

1. Surveying, Vol. - 1, Punmia B.C., Laxmi Publications, 17<sup>th</sup> edition, 2016
2. Building Material, B. C. Punmia, Laxmi Publications, 2016

**Reference Books:**

1. Basic Civil Engineering, S. Ramamurtam & R. Narayan, Dhanpat Rai Pub., 3<sup>rd</sup> edition, 2013
2. Surveying, Duggal, Tata McGraw Hill New Delhi, 4<sup>th</sup> edition, 2013

**Course Outcomes:**

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

- CO1: Follow the guidelines for field surveying.  
CO2: Follow the working principles of survey instruments for measurements.  
CO3: Measure the horizontal distances, difference in elevation and angles of various points  
CO4: Interpret survey data and compute areas  
CO5: Determine various properties of cement, concrete & bricks.

*Asst. Prof. Dr. M. M. Mishra*  
*Dr. P. P. - a*

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## **ANNEXURE – IV**

**(CO Gap Analysis Jan June 2020 semester)**

## ANNEXURE – IV

### CO Attainment Gap Analysis Jan June 2020

| Course Code & Name                               | CO   | Mid Sem 1 CO Attainment % (Online) | Mid Sem 2 CO Attainment % (Online) | Overall CO Attainment % | Target Attainment % | Gap in Attainment % |
|--|------|------------------------------------|------------------------------------|-------------------------|---------------------|---------------------|
| 100205: Basic Civil Engineering & Mechanics (CE) | CO 1 | 87.0%                              | 89.0%                              | 88.0%                   | 65.0%               | ---                 |
|  | CO 2 | 98.0%                              | 98.0%                              | 98.0%                   | 65.0%               | ---                 |
|  | CO 3 | 97.0%                              | 98.0%                              | 97.5%                   | 65.0%               | ---                 |
|  | CO 4 | 80.0%                              | 95.0%                              | 87.5%                   | 65.0%               | ---                 |
|  | CO 5 | 74.0%                              | 93.0%                              | 83.5%                   | 65.0%               | ---                 |
| 100205: Basic Civil Engineering & Mechanics (ME) | CO 1 | 89.5%                              | 82.0%                              | 85.8%                   | 65.0%               | ---                 |
|  | CO 2 | 89.0%                              | 83.0%                              | 86.0%                   | 65.0%               | ---                 |
|  | CO 3 | 90.0%                              | 87.0%                              | 88.5%                   | 65.0%               | ---                 |
|  | CO 4 | 88.5%                              | 85.0%                              | 86.8%                   | 65.0%               | ---                 |
|  | CO 5 | 87.5%                              | 86.0%                              | 86.8%                   | 65.0%               | ---                 |
| 100205: Basic Civil Engineering & Mechanics (CM) | CO 1 | 98.0%                              | 84.1%                              | 91.0%                   | 65.0%               | ---                 |
|  | CO 2 | 95.0%                              | 84.0%                              | 89.5%                   | 65.0%               | ---                 |
|  | CO 3 | 97.0%                              | 89.0%                              | 93.0%                   | 65.0%               | ---                 |
|  | CO 4 | 90.0%                              | 84.0%                              | 87.0%                   | 65.0%               | ---                 |
|  | CO 5 | 93.0%                              | 86.0%                              | 89.5%                   | 65.0%               | ---                 |
| 100205: Basic Civil Engineering & Mechanics (AU) | CO 1 | 97.0%                              | 85.0%                              | 91.0%                   | 65.0%               | ---                 |
|  | CO 2 | 94.0%                              | 79.0%                              | 86.5%                   | 65.0%               | ---                 |
|  | CO 3 | 96.5%                              | 82.0%                              | 89.3%                   | 65.0%               | ---                 |
|  | CO 4 | 89.3%                              | 83.0%                              | 86.1%                   | 65.0%               | ---                 |
|  | CO 5 | 91.8%                              | 81.0%                              | 86.4%                   | 65.0%               | ---                 |
| 110402: Geotechnical Engg.                       | CO 1 | 78.0%                              | 66.0%                              | 72.0%                   | 65.0%               | ---                 |
|  | CO 2 | 81.0%                              | 67.0%                              | 74.0%                   | 65.0%               | ---                 |
|  | CO 3 | 80.0%                              | 66.0%                              | 73.0%                   | 65.0%               | ---                 |
|  | CO 4 | 70.0%                              | 59.0%                              | 64.5%                   | 65.0%               | ---                 |
|  | CO 5 | 76.0%                              | 50.0%                              | 63.0%                   | 65.0%               | 2.0%                |
| 110403: Fluid Mechanics - I                      | CO 1 | 72.0%                              | 86.0%                              | 79.0%                   | 65.0%               | ---                 |
|  | CO 2 | 81.0%                              | 87.0%                              | 84.0%                   | 65.0%               | ---                 |
|  | CO 3 | 81.0%                              | 89.0%                              | 85.0%                   | 65.0%               | ---                 |
|  | CO 4 | 78.0%                              | 88.0%                              | 83.0%                   | 65.0%               | ---                 |
|  | CO 5 | 78.0%                              | 87.0%                              | 82.5%                   | 65.0%               | ---                 |
| 110404: Structural Analysis                      | CO 1 | 82.9%                              | 75.5%                              | 79.2%                   | 65.0%               | ---                 |
|  | CO 2 | 85.1%                              | 74.8%                              | 79.9%                   | 65.0%               | ---                 |
|  | CO 3 | 85.3%                              | 71.5%                              | 78.4%                   | 65.0%               | ---                 |
|  | CO 4 | 83.4%                              | 74.9%                              | 79.1%                   | 65.0%               | ---                 |
|  | CO 5 | 74.8%                              | 73.4%                              | 74.1%                   | 65.0%               | ---                 |
| 110406: Water Resources Engg.                    | CO 1 | 68.0%                              | 62.0%                              | 65.0%                   | 65.0%               | ---                 |
|  | CO 2 | 69.0%                              | 65.0%                              | 67.0%                   | 65.0%               | ---                 |
|  | CO 3 | 57.0%                              | 62.0%                              | 59.5%                   | 65.0%               | 5.5%                |
|  | CO 4 | 61.0%                              | 57.0%                              | 59.0%                   | 65.0%               | 6.0%                |

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|  |      |       |       |       |       |       |
|--|------|-------|-------|-------|-------|-------|
| 110602: SDD<br>(Steel)                                       | CO 5 | 64.0% | 62.0% | 63.0% | 65.0% | 2.0%  |
|  | CO 6 | 59.0% | 57.0% | 58.0% | 65.0% | 7.0%  |
|  | CO 1 | 91.3% | 82.0% | 86.6% | 65.0% | ---   |
|  | CO 2 | 96.8% | 75.0% | 85.9% | 65.0% | ---   |
|  | CO 3 | 89.0% | 52.3% | 70.6% | 65.0% | ---   |
|  | CO 4 | 68.0% | 78.8% | 73.4% | 65.0% | ---   |
| 110611 (DE - 1):<br>Waste Water<br>Engg                      | CO 5 | 51.0% | 74.5% | 62.8% | 65.0% | 2.3%  |
|  | CO 1 | 78.0% | 85.0% | 81.5% | 65.0% | ---   |
|  | CO 2 | 79.0% | 85.0% | 82.0% | 65.0% | ---   |
|  | CO 3 | 81.0% | 86.0% | 83.5% | 65.0% | ---   |
|  | CO 4 | 88.0% | 83.0% | 85.5% | 65.0% | ---   |
| 110612 (DE - 1):<br>Solid Waste<br>Management                | CO 5 | 77.0% | 81.0% | 79.0% | 65.0% | ---   |
|  | CO 1 | 94.0% | 78.0% | 86.0% | 65.0% | ---   |
|  | CO 2 | 65.0% | 77.0% | 71.0% | 65.0% | ---   |
|  | CO 3 | 61.0% | 81.0% | 71.0% | 65.0% | ---   |
|  | CO 4 | 97.0% | 87.0% | 92.0% | 65.0% | ---   |
| 110613 (DE - 1):<br>Construction<br>Planning &<br>Management | CO 5 | 53.0% | 84.0% | 68.5% | 65.0% | ---   |
|  | CO 1 | 92.0% | 71.0% | 81.5% | 65.0% | ---   |
|  | CO 2 | 95.0% | 71.0% | 83.0% | 65.0% | ---   |
|  | CO 3 | 95.0% | 70.0% | 82.5% | 65.0% | ---   |
|  | CO 4 | 96.0% | 67.0% | 81.5% | 65.0% | ---   |
| 100007: Disaster<br>Management                               | CO 5 | 95.0% | 67.0% | 81.0% | 65.0% | ---   |
|  | CO 1 | 91.0% | 94.0% | 92.5% | 65.0% | ---   |
|  | CO 2 | 95.0% | 96.0% | 95.5% | 65.0% | ---   |
|  | CO 3 | 92.0% | 98.0% | 95.0% | 65.0% | ---   |
|  | CO 4 | 95.0% | 99.0% | 97.0% | 65.0% | ---   |
| BCEL-801: ASD<br>- II (steel)                                | CO 5 | 96.0% | 93.0% | 94.5% | 65.0% | ---   |
|  | CO 1 | 57.0% | 62.0% | 59.5% | 65.0% | 5.5%  |
|  | CO 2 | 79.0% | 54.0% | 66.5% | 65.0% | ---   |
|  | CO 3 | 69.0% | 57.0% | 63.0% | 65.0% | 2.0%  |
|  | CO 4 | 59.0% | 59.0% | 59.0% | 65.0% | 6.0%  |
| BCEL-802:<br>Hydraulic<br>Structure                          | CO 5 | 75.0% | 55.0% | 65.0% | 65.0% | ---   |
|  | CO 1 | 88.0% | 77.0% | 82.5% | 65.0% | ---   |
|  | CO 2 | 0.0%  | 61.0% | 61.0% | 65.0% | 4.0%  |
|  | CO 3 | 76.0% | 72.0% | 74.0% | 65.0% | ---   |
|  | CO 4 | 76.0% | 55.0% | 65.5% | 65.0% | ---   |
| BCEL-803:<br>Industrial Waste<br>Treatment                   | CO 5 | 88.0% | 69.0% | 78.5% | 65.0% | ---   |
|  | CO 1 | 65.0% | 70.0% | 67.5% | 65.0% | ---   |
|  | CO 2 | 75.0% | 88.0% | 81.5% | 65.0% | ---   |
|  | CO 3 | 80.0% | 86.0% | 83.0% | 65.0% | ---   |
|  | CO 4 | 75.0% | 87.0% | 81.0% | 65.0% | ---   |
| BCEL-804:<br>Building Env &<br>Services                      | CO 5 | 70.0% | 78.0% | 74.0% | 65.0% | ---   |
|  | CO 1 | 59.0% | 69.0% | 64.0% | 65.0% | 1.0%  |
|  | CO 2 | 91.0% | 68.0% | 79.5% | 65.0% | ---   |
|  | CO 3 | 52.0% | 71.0% | 61.5% | 65.0% | 3.5%  |
|  | CO 4 | 21.0% | 71.0% | 46.0% | 65.0% | 19.0% |
|  | CO 5 | 58.0% | 72.0% | 65.0% | 65.0% | ---   |



## **ANNEXURE – V**

**(Equivalence of courses)**

**Equivalence of Courses B.Tech Civil Engineering**

| S. No | Course Code & Title                           | Course Code & Title                 | Course Code & Title                | Course Code & Title                        | Whether Equivalence or Not                         |
|-------|---|-------------------------------------|------------------------------------|--|--|
|       | 2017-2018 admission batch                     | 2018-2019 admission batch           | 2019-2020 admission batch          | 2020-2021 admission batch                  |  |
| 1     | 100205<br>Basic Civil Engineering & Mechanics | NO CHANGE                           | NO CHANGE                          | 100020 Basic Civil Engineering & Mechanics | Equivalence  |
| 2     | 100302<br>Building Planning & Design          | NO CHANGE                           | NO CHANGE                          | 110211 Building Planning & Design          | Equivalence  |
| 3     | 110303<br>Building Materials & Construction   | NO CHANGE                           | NO CHANGE                          | -  | Equivalence  |
| 4     | 110304<br>Surveying                           | NO CHANGE                           | NO CHANGE                          | -  | Equivalence  |
| 5     | 110305<br>Strength of Materials               | NO CHANGE                           | NO CHANGE                          | -  | Equivalence  |
| 6     | 110402<br>Geotechnical Engineering            | NO CHANGE                           | NO CHANGE                          | -  | Equivalence  |
| 7     | 110403 Fluid Mechanics - I                    | NO CHANGE                           | NO CHANGE                          | -  | Equivalence  |
| 8     | 110404 Structural Analysis                    | NO CHANGE                           | NO CHANGE                          | -  | Equivalence  |
| 9     | 110405 Engineering Hydrology                  | 110406 Water Resources Engineering  | 110406 Water Resources Engineering | -  | Not Equivalence for 2017 with 2018 onwards batches |
| 10    | 110501<br>Estimating, Costing & Contracting   | NO CHANGE                           | -                                  | -  | Equivalence  |
| 11    | 110502<br>Structural Design & Drawing (RCC)   | NO CHANGE                           | -                                  | -  | Equivalence  |
| 12    | 110503 Fluid Mechanics - II                   | NO CHANGE                           | -                                  | -  | Equivalence  |
| 13    | 110504<br>Environmental Engineering - I       | 110509<br>Environmental Engineering | -                                  | -  | Not Equivalence for 2017 with 2018 onwards batches |
| 14    | 110505<br>Transportation Engineering          | NO CHANGE                           | -                                  | -  | Equivalence  |

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|    |   |           |   |   |             |
|----|---|-----------|---|---|-------------|
| 15 | 110602 Structural Design & Drawing (Steel)        | NO CHANGE | - | - | Equivalence |
| 16 | 110611 Wastewater Engineering                     | -         | - | - | NA          |
| 17 | 110612 Solid Waste Management                     | NO CHANGE | - | - | Equivalence |
| 18 | 110613 Construction Planning & Management         | NO CHANGE | - | - | Equivalence |
| 19 | 100007 Disaster Management                        | NO CHANGE | - | - | Equivalence |
| 20 | 110711 Irrigation Engineering                     | -         | - | - | NA          |
| 21 | 110712 Industrial Waste Treatment                 | -         | - | - | NA          |
| 22 | 110713 Advanced Structural Design (RCC)           | -         | - | - | NA          |
| 23 | 900201 Integrated Waste Management for Smart City | -         | - | - | NA          |
| 24 | 900202 Project Planning & Control                 | -         | - | - | NA          |
| 25 | 900213. Urban Planning & Transportation Systems.  | -         | - | - | NA          |

## **ANNEXURE – VI**

**(Panel of Examiners – PG Dissertation)**

**ANNEXURE – VI**

**Panel of External Examiners for PG Dissertation**

| S. No. | Name of External Examiner | Designation         | Postal Address                                |
|--------|---------------------------|---------------------|---|
| 1      | Dr. N. K. Samadhiya       | Professor           | Civil Engg. Deptt., IIT Roorkee               |
| 2      | Dr. A. K. Dwivedi         | Professor           | Civil Engg. Deptt., RTU, Kota                 |
| 3      | Dr. Abhay Verma           | Professor           | BIET, Jhansi                                  |
| 4      | Dr. J. K. Sharma          | Professor           | Civil Engg. Deptt., RTU, Kota                 |
| 5      | Dr. S. S. Kushwaha        | Professor           | Civil Engg. Deptt, UIT RGPV                   |
| 6      | Dr. Pradeep Kumar         | Professor           | Civil Engg. Deptt., HBTI Kanpur               |
| 7      | Dr. S. K. Saran           | Principal Scientist | CBRI, Roorkee                                 |
| 8      | Dr. Manish K. Goyal       | Associate Professor | Civil Engg. Deptt., IIT Indore                |
| 9      | Dr. Mahesh Jat            | Professor           | Civil Engg. Deptt., MNIT Jaipur               |
| 10     | Dr. Vimal Gupta           | Professor           | Civil Engg. Deptt., AMITY University, Gwalior |
| 11     | Dr. Mukesh Pandey         | Professor           | Civil Engg. Deptt., ITM, Gwalior              |
| 12     | Prof. K. K. Punjabi       | Associate Professor | Civil Engg. Deptt., SATI Vidisha              |
| 13     | Dr. C. S. Gokhale         | Dean                | SOCTM, NICMAR, Pune                           |
| 14     | Dr. K. K. Pathak          | Professor           | Civil Engineering Department, IIT BHU         |
| 15     | Dr. Mukul Kulshreshtha    | Professor           | Civil Engineering Department, MANIT Bhopal    |
| 16     | Dr. A. B. Gupta           | Professor           | Civil Engineering Department, MNIT Jaipur     |
| 17     | Dr. Nirendra Dev          | Professor           | Civil Engg. Deptt., DTU, Delhi                |
| 18     | Dr. J. P. Tegar           | Professor           | Civil Engg. Deptt., NITTR Bhopal              |
| 19     | Dr. S. S. Bhadoriya       | Director            | Civil Engg. Deptt, UIT RGPV                   |
| 20     | Dr. Saleem Akhtar         | Professor           | Civil Engg. Deptt, UIT RGPV                   |

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|    |                         |                     |  |
|----|-------------------------|---------------------|--|
| 21 | Dr. M. M. Pande         | Retired Professor   | H. No. 182, Sector -3, Urban Estate, Kurukshetra |
| 22 | Dr. V.R. Rode           | Professor           | Civil Engg. Deptt., SGSITS Indore                |
| 23 | Dr. Shakeel Ahmad       | Professor           | Civil Engg. Deptt., ZHCET, AMU, Aligarh          |
| 24 | Dr. M. C. Paliwal       | Professor           | Civil Engg. Deptt., NITTR Bhopal                 |
| 25 | Dr. Rakesh Khare        | Professor           | Civil Engg. Deptt., SGSITS Indore                |
| 26 | Dr. D. K. Jain          | Professor           | Civil Engg. Deptt., REC, Rewa                    |
| 27 | Dr. Sanjay Bhandari     | Professor           | Civil Engg. Deptt., SATI Vidisha                 |
| 28 | Dr. A. K. Nema          | Professor           | Civil Engg. Deptt., IIT Delhi                    |
| 29 | Dr. Anil Sharma         | Professor           | Civil Engg. Deptt., MANIT Bhopal                 |
| 30 | Dr. Devendra Mohan      | Professor           | Civil Engg. Deptt., IIT BHU, Varanasi            |
| 31 | Dr. Atul Sthapak        | Professor           | Civil Engg. Deptt., UEC Ujjain                   |
| 32 | Dr. Iqbal Kahleel Khan  | Professor           | Civil Engg. Deptt., ZHCET, AMU, Aligarh          |
| 33 | Dr. Shamsuddin Jafri    | Professor           | Civil Engg. Deptt., ZHCET, AMU, Aligarh          |
| 34 | Dr. Amitabh Shrivastava | Professor           | Civil Engg. Deptt., BIET Jhansi                  |
| 35 | Dr. Sandeep Narulkar    | Professor           | Civil Engg. Deptt., SGSITS Indore                |
| 36 | Dr. Nek Ram Rawal       | Associate Professor | Civil Engg. Deptt., MNNIT Allahabad              |
| 37 | Dr. R. K. Kaushal       | Associate Professor | Civil Engg. Deptt., BIET Jhansi                  |
| 38 | Dr. A. K. Nigam         | Professor           | Civil Engg. Deptt., BIET Jhansi                  |
| 39 | Dr. Amit Vishwakarma    | Associate Professor | Civil Engg. Deptt., UIT RGPV, Bhopal             |
| 40 | Dr. Raghvendra Singh    | Professor           | Civil Engg. Deptt., UEC Ujjain                   |
| 41 | Dr. Sudhir Kumar        | Professor           | Civil Engg. Deptt., MNIT Jaipur                  |
| 42 | Dr. P. K. S. Dikshit    | Professor           | Civil Engg. Deptt., IIT BHU                      |
| 43 | Dr. Sohail Ayub         | Associate Professor | Civil Engg. Deptt., ZHCET, AMU, Aligarh          |
| 44 | Dr. Umesh Maheshwari    | Professor           | Civil Engg. Deptt., KNIT Sultanpur               |

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M. K. Maheshwari  
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Q

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|    |                       |                     |  |
|----|-----------------------|---------------------|--|
| 45 | Dr. Suraj Prakash     | Scientist F         | CRRI, New Delhi  |
| 46 | Dr. H. K. Sharma      | Professor           | Civil Engg. Deptt., NIT Kurukshetra                            |
| 47 | Dr. Achal Mittal      | Principal Scientist | CBRI, Roorkee  |
| 48 | Dr. Navjeev Saxena    | Principal Scientist | CBRI, Roorkee  |
| 49 | Dr. S. K. Thakkar     | Retired Professor   | IIT Roorkee  |
| 50 | Dr. C. S. P. Ojha     | Professor           | Civil Engg. Deptt., IIT Roorkee                                |
| 51 | Dr. A. A. Kazmi       | Professor           | Civil Engg. Deptt., IIT Roorkee                                |
| 52 | Dr. Mahendra Singh    | Professor           | Civil Engg. Deptt., IIT Roorkee                                |
| 53 | Dr. A. K. Minocha     | Director & Head     | CBRI, Roorkee  |
| 54 | Dr. Khalid Moin       | Professor           | Civil Engg. Deptt., Jamia Millia Islamia University, New Delhi |
| 55 | Dr. Mohammad Arif     | Professor           | Civil Engg. Deptt., ZHCET, AMU, Aligarh                        |
| 56 | Dr. R. D. Gupta       | Professor           | Civil Engg. Deptt., MNNIT Allahabad                            |
| 57 | Dr. Anil Kumar Sachan | Professor           | MNNIT, Allahbad  |
| 58 | Dr. Pankaj Agarwal    | Professor           | Civil Engg. Deptt., IIT Roorkee                                |
| 59 | Dr. Swapnil Rai       | Associate Professor | Environment Science Deptt., AMITY University, Gwalior          |
| 60 | Dr. K.S. Hariprasad   | Professor           | Civil Engg. Deptt., IIT Roorkee                                |
| 61 | Dr. Amit Srivastava   | Professor           | Civil Engg. Deptt., DTU Delhi                                  |
| 62 | Dr. Alok Verma        | Professor           | Civil Engg. Deptt., DTU Delhi                                  |
| 63 | Dr. P. K. Jain        | Professor           | Civil Engg. Deptt., MANIT Bhopal                               |
| 64 | Dr. K. N. Jha         | Professor           | Civil Engg. Deptt., IIT Delhi                                  |
| 65 | Dr. Rajeev Jain       | Professor           | Civil Engg. Deptt., SATI Vidisha                               |
| 66 | Dr. Pramod Sharma     | Professor           | Civil Engg. Deptt., SATI Vidisha                               |
| 67 | Dr. D. J. Killedar    | Professor           | Civil Engg. Deptt., SGSITS Indore                              |
| 68 | Dr. Sunil Ajmera      | Professor           | Civil Engg. Deptt., SGSITS Indore                              |
| 69 | Dr. Rajeev Chandak    | Professor           | Civil Engg. Deptt., JEC Jabalpur                               |

*ASV* *lit* *AK* *AK* *AK* *AK*

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|    |                       |           |                                |
|----|-----------------------|-----------|--------------------------------|
| 70 | Dr. Sandeep Chaudhary | Professor | Civil Engg. Deptt, IIT Indore  |
| 71 | Dr. Arinjay Jain      | Professor | Indraprastha University, Delhi |

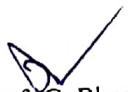
72

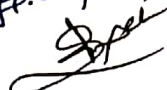
Dr. A.K. Sachan


Professor


Civil Engg. Deptt., MNNIT, Allahabad

  
 (Prof. Aditya K. Agarwal)  
 Member, B.O.S.


  
 (Prof. G. Bhadoriya)  
 Member, B.O.S.

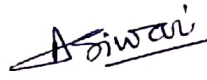
  
 (Prof. A. K. Saxena)  
 Member, B.O.S.

  
 (Prof. A. K. Dwivedi)  
 Member, B.O.S.

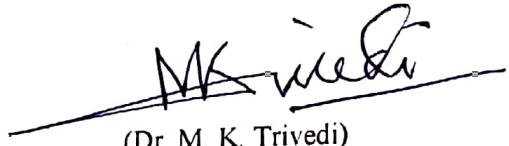
  
 (Prof. D. Rastogi)  
 Member, B.O.S.

(Dr S. Tiwari)  
 Member, B.O.S.

  
 (Dr R. Kansal)  
 Member, B.O.S.

  
 (Prof. (Mrs.) A. Tiwari)  
 Member, B.O.S.

(Dr. S. K. Jain)  
 Member, B.O.S.

  
 (Dr. M. K. Trivedi)  
 Head of Department & Chairman, B.O.S.



## **ANNEXURE – VII**

**(List of Mentors for DE & OC Courses to be run  
through SWAYAM/NPTEL)**

**List of faculty Mentors for DE & OC Courses to be run through  
SWAYAM/NPTEL in Jan June 2021 session**

| S. No.  | Course Code & Title  | Semester            | Name of Faculty Mentor |
|---|--|---------------------|------------------------|
| <b><u>DEPARTMENTAL ELECTIVES (Through SWAYAM/NPTEL)</u></b> |  |                     |                        |
| 1   | 110851, Safety in Construction                                   | 8 <sup>th</sup> Sem | Dr. S. K. Jain         |
| 2   | 110852. Introduction to Accounting & Finance for Civil Engineers | 8 <sup>th</sup> Sem | Dr. R. Kansal          |
| 3   | 110853. Strategies for Sustainable Design                        | 8 <sup>th</sup> Sem | Prof. A. K. Saxena     |
| 4   | 110651. Maintenance & Repair of Concrete Structures              | 6 <sup>th</sup> Sem | Dr. Pankaj Kumar       |
| 5   | 110652. Geotechnical Engineering II (Foundation Engineering)     | 6 <sup>th</sup> Sem | Prof. Shivam Gupta     |
| <b><u>OPEN CATEGORY (Through SWAYAM/NPTEL)</u></b>          |  |                     |                        |
| 1   | Remote Sensing: Principles & Applications                        | 8 <sup>th</sup> Sem | Dr. M. K. Trivedi      |
| 2   | Plastic Waste Management   | 8 <sup>th</sup> Sem | Prof. Deepak Rastogi   |
| 3   | Natural Hazards  | 8 <sup>th</sup> Sem | Prof. Mohit Aggarwal   |

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# MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to R.G.P.V., Bhopal, M.P.)

Date: 05/12/2020

## Minutes of the Academic Council Meeting

The meeting of Academic Council (AC) was held on 5<sup>th</sup> December, 2020 at 11.30 A.M. onwards in the Convention Hall of the institute. The external members have attended the meeting through Video Conferencing.

The meeting was chaired by **Dr. R. K. Pandit**, Director of the Institute. **Er. Ramesh Agarwal**, Secretary, Scindia Engineering College Society (SECS) Gwalior, **Shri Prashant Mehta**, Member, Board of Governors (Nominee of Hon'ble Chairman, BoG) attended the meeting. **Dr. Saroj Kaushik**, Former Professor, IIT Delhi, **Prof. R. K. Singh**, Professor, University of Delhi and Special Invitee **Dr. Rommel Mehta**, Former Professor, School of Planning & Architecture, New Delhi attended the meeting. While the nominees of BoG, Prof. Gajendra Dixit, Professor at MANIT Bhopal, could not attend the meeting.

Other nominees of the Hon'ble Vice Chancellor of RGPV Bhopal, Prof. Mohan Sen, Joint Director DTE Bhopal and Prof. R.S. Rajput, Former Director, UIT RGPV Bhopal and Registrar RGPV Bhopal could not attend the meeting.

The following internal members attended the meeting:

| S. No. | Name                  | Designation  | Status in AC     |
|--------|-----------------------|--|------------------|
| 1.     | Dr. R. K. Pandit      | Director   | Chairperson      |
| 2.     | Dr. Manjaree Pandit   | Professor (Electrical Engineering) & Dean (Academics)                        | Member           |
| 3.     | Dr. Laxmi Srivastava  | Professor & Head, Electrical Engineering                                     | Member           |
| 4.     | Dr. M. K. Trivedi     | Professor & Head, Civil Engineering  | Member           |
| 5.     | Dr. S. S. Jadon       | Professor & Head, Architecture   | Member           |
| 6.     | Dr. Pratesh Jayaswal  | Professor & Head, Mechanical Engineering and Academic Coordinator, TEQIP-III | Member           |
| 7.     | Dr. Akhilesh Tiwari   | Professor & Head, Department of Information Technology                       | Member Secretary |
| 8.     | Dr. Manish Dixit      | Professor & Head, Department of Computer Science & Engineering               | Member           |
| 9.     | Dr. Laxmi Shrivastava | Associate Professor & Head, Electronics Engineering                          | Member           |
| 10.    | Dr. V. Shinde         | Professor & Head, Engineering Mathematics and Computing                      | Member           |
| 11.    | Dr. Sanjeev Khanna    | I/C HoD, Humanities  | Member           |
| 12.    | Prof. Archana Tiwari  | Professor, Civil Engineering   | Member           |
| 13.    | Dr. R. S. Jadon       | Professor, MCA   | Member           |

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| 14. | Prof. Anil Kumar Dwivedi   | Associate Professor, Civil Engineering                  | Member |
| 15. | Prof. Rajendra Prasad Kori | Assistant Professor, Mechanical Engineering             | Member |
| 16. | Prof. Swati Gupta          | Assistant Professor & Coordinator, Chemical Engineering | Member |

Dr. R. Kansal, Professor (Civil Engineering) & Dean (Students Welfare), Dr. P. K. Singhal, Professor, Electronics Engg. & Controller Examination and Dr. Sulochana Wadhvani, Professor, Electrical Engg & OBE Manager.

**The following deliberations took place in the meeting. The Item wise details are as follows:**

|                   |  |
|-------------------|--|
| Item:<br>AC-<br>1 | <p>To confirm the minutes of the last Academic Council Meeting held on 15<sup>th</sup> June, 2020.</p> <p>The compliance status of the key aspects discussed and approved in the previous academic council meeting was presented before the house, as follows:</p> <p><u>Conduction of the end term semester examination (theory and practical) for the semester Jan.-June 2020.</u></p> <p>As approved by the house, the examination was conducted in the online mode through Multiple Choice Question (MCQ) /MCQ + Short Answers and Open Book. The institute has conducted online viva-voce exam for the evaluation of end-term practical marks for final year students.</p> <p>For the remaining UG/PG end term examinations of intermediate years / semesters for the January-June 2020 session, The UGC guidelines, April 2020, was adopted for computing the results as a composite of 50% marks on the basis of the internal evaluation conducted by the institute (mid semester tests, assignments and quiz, etc.) and the remaining 50% marks, on the basis of the performance in previous semester only.</p> <p><u>Implementation of guidelines for accommodating the award of Marks / Grades towards SWAYAM/NPTEL/MOOC based courses for transfer of credits in the Scheme of Examination for UG / PG Programmes</u></p> <p>In the scheme of examination, one additional block with the label 'MOOCs' has been inducted. This is for the accommodation of marks pertaining to the courses being offered from the SWAYAM/NPTEL/MOOC based learning platforms. This is in addition to the already available 'theory' and 'practical' blocks.</p> <p>Furthermore, the modified scheme of examination has been used for declaring the result of Jan. - June 2020 semester.</p> <p><u>Inclusion of NPTEL awarded score for the courses offered through SWAYAM/NPTEL/MOOC learning platform due to COVID-19 pandemic situation.</u></p> <p>The pass certificate from NPTEL [containing marks obtained out of 100 (concluded on the basis of score of assignments)] was honoured by the institute for credit transfer purpose for</p> |
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|                            | <p>January-June 2020 session.</p> <p><u>Internal presentation and External Viva Voce exam of M.E./ M.Tech / MUP Dissertation</u></p> <p>As per the approval, the internal presentation and external viva voce exam of M.E. / M.Tech / MUP Dissertation are being conducted in online mode by all the departments.</p> <p><u>Progress of Open Category (OC) courses offered to UG VII semester under flexible scheme / curriculum</u></p> <p>The open category courses were offered by every department to students of UG Engineering programmes (VII semester) (under flexible scheme /curriculum). These courses were offered during the July –Dec. 2020 Semester to update the students on the interdisciplinary and application oriented aspects.</p> <p><u>Regarding the conduction of Advance Semester (July-Dec. 2020 Session) in online mode</u></p> <p>The advance semester on account of July-Dec., 2020 session (in online mode) was successfully conducted with the complete record keeping at institution level. The live classes and virtual labs were conducted and recorded lectures have also been shared with the students along with the study material. In addition, weekly quizzes and assignments were also conducted on regular basis.</p> <p><u>The minutes of the previous Academic Council meeting held on 15<sup>th</sup> June, 2020 were confirmed and efforts made towards implementation of the same were appreciated</u></p> |
| <p>Item:<br/>AC-<br/>2</p> | <p>To apprise the house regarding online academic activities conducted during the July-December 2020 Semester.</p> <p><b>The House was informed that a “Digital Teaching - Learning Action Plan” was prepared by the institute for smooth conduction of the online teaching-learning-evaluation activities. The plan was prepared on the basis of guidelines received from the MHRD, New Delhi and disseminated among the faculty members for strict adherence.</b></p> <p><b>It was apprised that the institute has conducted all the academic &amp; other relevant activities for July – Dec. 2020 semester from 15<sup>th</sup> July 2020 onwards in online mode (through institute MOODLE and other available digital teaching learning platforms).</b></p> <p><b>To ensure the effective digital teaching learning activity, the academic calendar was strictly followed.</b></p> <p><b><u>The house appreciated the efforts made by the institute</u></b></p>  |
| <p>Item:<br/>AC-<br/>3</p> | <p>To consider the proposal for ‘multiple mode logical pattern’ examination system</p> <p><b>It was discussed that due to the prevailing situation of COVID-19 pandemic, stakeholders of institute have expressed their concern about the examination. Taking note of the genuine concern of the students, faculty members and parents, it was proposed to conduct the end semester online examination (theory and practical) in</b></p>   |

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mixed mode as per the nature of courses/subjects (based on blooms taxonomy/learning levels) for July-Dec. 2020 semester and in future also (as and when applicable or desired), as detailed below:

| Nature of Subject/Course              | Theory/<br>Practical | Learning Levels                                    | Preferable<br>Mode of<br>Examination |
|---------------------------------------|----------------------|--|--------------------------------------|
| Theoretical                           | Theory               | Remembering,<br>Understanding,<br>Applying         | MCQ Based                            |
| Computational/<br>Mathematical        | Theory               | Applying,<br>Analysing                             | Open Book                            |
| Design / Drawing                      | Theory               | Applying,<br>Analysing,<br>Evaluating,<br>Creating | Assignment +<br>Oral                 |
| Practical<br>(Knowledge/ Application) | Practical            | Understanding,<br>Applying                         | Oral                                 |
| Practical<br>(Design/Analysis)        | Practical            | Analysing,<br>Evaluating                           | Assignment +<br>Oral                 |
| Projects                              | Practical            | Creating,<br>Evaluating,<br>Analyzing              | Project Report<br>+ Oral             |

The MCQ / Open Book exam will be conducted for two hours duration in the online mode.

The house approved the proposal of multiple mode logical pattern examination system

Item: AC-4 To discuss and approve the proposal for conducting end term practical examinations through internal panel of subject matter experts / faculty members.

Considering the provisions and scope under the Academic Autonomy from UGC, it was proposed to conduct the end term practical examination (except PG dissertations), through the internal panel of subject matter experts / faculty members. In continuation, it was also discussed that the same arrangement for conducting end term practical exam evaluation / assessment is already under the practice at various Technical Institutions (including IITs, IIITs and NITs) / other universities and deemed universities. This arrangement will be helpful to further strengthen the effectiveness of evaluation and assessment process.

The house approved the proposal

Item: AC-5 To discuss and approve the credit requirements (in accordance with the AICTE guidelines) and weightage of theory and practical components for the award of B.Tech. degree for newly admitted (session 2020-21) students.

It was apprised that the the existing scheme of UG programmes in Engineering & Technology (under flexible curriculum) which was offered to 2017-18, 2018-19 and 2019-20 admitted batch was based on 170 Credits. Further, the students are required

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|                   | <p>to earn 20 additional credits for Honours degree in the parent discipline / Minor Specialization in other discipline.</p> <p>In order to unburden the students and to give them the scope for all round development, which is the need of the current market scenario; it was proposed to adjust the credit requirement to 160 credits for the award of the B.Tech degree with effect from the 2020-21 admitted batch.</p> <p>However, it is required to earn 20 additional credits (through SWAYAM/NPTEL/MOOC based learning platforms) i.e. 160 +20, for the award of Honours degree in the parent discipline / Minor Specialization in other discipline.</p> <p>In continuation, it was also proposed to keep the weightage /ratio of end-term assessment and continuous internal evaluation /assessment as 60:40 in the scheme structure of UG (B.Tech programmes) w.e.f the academic session 2020-21.</p> <p><u>The house approved the proposal</u></p> |
| Item:<br>AC-<br>6 | <p>To consider the proposal for running Foundation Courses for the UG Engineering &amp; Technology students</p> <p>It was proposed to run the foundation courses for the students shifting from one branch to other branch through branch sliding in 2<sup>nd</sup> Year of UG Engineering &amp; Technology/ taking transfer from other institution. Such students will be required to undergo foundation courses of subjects which they have not studied in the previous branch. Moreover the exam for the same will be conducted by the concerning department.</p> <p><u>The house approved the proposal</u></p>  |
| Item:<br>AC-<br>7 | <p>To ratify the consideration of audit courses as Value Added Courses w.e.f. academic session 2020-21.</p> <p>Considering the interest and inclination of students, it was proposed before the house that the following existing audit courses may be conducted as “Value Added Courses” w.e.f. 2020-21 academic session. This is in view of the fact that the registration / appearing in examination for these courses were optional and therefore, it is observed that the registration rate is very low in these courses.</p> <ul style="list-style-type: none"> <li>• Biology for Engineers</li> <li>• Indian Constitution &amp; Traditional Knowledge</li> </ul> <p><u>The house approved the proposal</u></p>   |
| Item:<br>AC-<br>8 | <p>To discuss and approve the inclusion of one course through SWAYAM/NPTEL/MOOC based platform with credit transfer for the purpose of Ph.D. course work.</p> <p>To expose the Ph.D. scholars to the emerging courses pertaining to the recent advancements in their research domain, it was proposed that at least one course to be</p>  |

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|                | <p>made as compulsory through SWAYAM/NPTEL/MOOC based platform with credit transfer for the purpose of Ph.D. course work.</p> <p><u>The house approved the proposal</u></p>   |
| Item:<br>AC-9  | <p>To consider the National Education Policy 2020 implementation at MITS Gwalior</p> <p><b>In connection with the <i>National Education Policy 2020 (NEP 2020)</i>, it was discussed that the institute is keen to implement the NEP-2020 in gradual manner; therefore it was proposed that the house may authorize the Academic Development Cell (ADC) of the institute to work out strategic plan towards the implementation of the same and present the same before the house in the next meeting.</b></p> <p><u>The house approved the proposal</u></p>   |
| Item:<br>AC-10 | <p>To consider the examination pattern for the courses pertaining to Mandatory Category in the existing scheme / curriculum.</p> <p><b>It was apprised that the institute is running following common courses in the existing scheme / curriculum of UG Engineering &amp; Technology (under the Mandatory Category courses). Further, it was proposed that the examination for these courses may be conducted in online (MCQ pattern) mode for two hours duration, in place of the traditional examination, with effect from 2020-21 academic session</b></p> <ul style="list-style-type: none"> <li>➤ Energy, Environment, Ecology &amp; Society</li> <li>➤ Ethics, Economics, Entrepreneurship &amp; Management</li> <li>➤ Disaster Management</li> <li>➤ Intellectual Property Rights (IPR)</li> </ul> <p><u>The house approved the proposal</u></p> |
| Item:<br>AC-11 | <p>To apprise about the Induction Program and commencement of academic session for newly admitted students (session 2020-21).</p> <p><b>It was apprised that the induction program (in virtual mode) for newly admitted students was planned and conducted from 1<sup>st</sup> to 5<sup>th</sup> December 2020. Moreover, the classes will start from 7<sup>th</sup> December 2020 in the virtual mode through institute MOODLE and other available teaching learning platforms.</b></p> <p><u>The house has noted and appreciated the efforts made by the institute</u></p>  |
| AC-12          | <p>To increase the weightage of credits for Professional Development component for UG programmes.</p> <p><b>It was proposed to increase the credits of the “Professional Development” course in the existing scheme / curriculum of UG Engineering &amp; Technology at VIII semester from 1 to 2 credits, with effect from 2020-21 academic session. This will help to</b></p>  |

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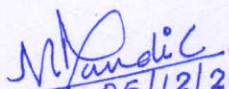
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|                    | <p><b>further motivate the students towards improved contribution in the activities covered under the professional development component.</b></p> <p><b><u>The house approved the proposal</u></b></p>  |         |   |         |  |
| Item:<br>AC-<br>13 | <p>To consider the approval of scheme structure and curriculum of MBA programme under autonomous structure.</p> <p><b>The scheme structure and curriculum of MBA programme to be started from academic session 2020-21, was presented before the house for kind approval.</b></p> <p><b><u>The house approved the scheme structure and curriculum of MBA programme</u></b></p>  |         |   |         |  |
| Item:<br>AC-<br>14 | <p>To consider the proposal for the early registration in the mandatory MOOCs courses (to be offered through SWAYAM/NPTEL based learning platforms) to the newly admitted students (academic session 2020-21) of M.E./M.Tech programmes</p> <p><b>It was proposed that the M.E./M.Tech. Students be permitted to register for the mandatory SWAYAM/NPTEL and MOOC platform based courses of their second semester, in Jan.-Feb. 2021 so that the credit requirements of their second semester are fulfilled in a timely manner (by May - June 2021).</b></p> <p><b>This is in lieu of the delayed admission process &amp; academic session due to COVID-19 pandemic.</b></p> <p><b><u>The house approved the proposal</u></b></p>   |         |   |         |  |
| Item:<br>AC-<br>15 | <p>To review and approve the minutes of the meeting of Board of Studies (BoS) held in the month of November 2020 through video conferencing.</p> <p><b>The deliberation of Board of Studies (BoS) were presented by the Chairpersons of the following departments:</b></p> <p>[Civil Engineering, Mechanical Engineering, Electrical Engineering, Electronics Engineering, Computer Science &amp; Engineering, Information Technology, Chemical Engineering, Engineering Mathematics and Computing, Architecture, Applied Sciences and Humanities].</p> <p><b><i>The presentation covered the following Agenda points of the respective BoS:</i></b></p> <table border="1"> <tr> <td>Item 1:</td> <td>To propose the list of courses which the students can opt from SWAYAM/NPTEL/MOOC Platform, to be offered in online mode under Departmental Elective (DE) category, for credit transfer in the VIII Semester (Batch admitted in 2017-18): applicable during January-June 2021 academic session</td> </tr> <tr> <td>Item 2:</td> <td>To propose the list of courses which the students can opt from SWAYAM/NPTEL/MOOC Platform to be offered (for students of other departments) in online mode under Open Category (OC) for credit transfer in the VIII Semester (Batch admitted in 2017-18): applicable during January-June 2021 academic session</td> </tr> </table> | Item 1: | To propose the list of courses which the students can opt from SWAYAM/NPTEL/MOOC Platform, to be offered in online mode under Departmental Elective (DE) category, for credit transfer in the VIII Semester (Batch admitted in 2017-18): applicable during January-June 2021 academic session | Item 2: | To propose the list of courses which the students can opt from SWAYAM/NPTEL/MOOC Platform to be offered (for students of other departments) in online mode under Open Category (OC) for credit transfer in the VIII Semester (Batch admitted in 2017-18): applicable during January-June 2021 academic session |
| Item 1:            | To propose the list of courses which the students can opt from SWAYAM/NPTEL/MOOC Platform, to be offered in online mode under Departmental Elective (DE) category, for credit transfer in the VIII Semester (Batch admitted in 2017-18): applicable during January-June 2021 academic session   |         |   |         |  |
| Item 2:            | To propose the list of courses which the students can opt from SWAYAM/NPTEL/MOOC Platform to be offered (for students of other departments) in online mode under Open Category (OC) for credit transfer in the VIII Semester (Batch admitted in 2017-18): applicable during January-June 2021 academic session  |         |   |         |  |

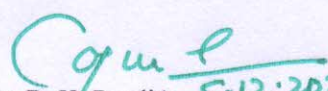
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| Item 3:  | To propose the list of "Additional Courses" which can be opted for getting an<br>(i) Honours (for students of the host department)<br>(ii) Minor Specialization (for students of other departments)<br>[These will be offered through SWAYAM/NPTEL/MOOC based Platforms for the VI semester (for the batch admitted in 2018-19) and for VIII semester students (for the batch admitted in 2017-18)] applicable during January-June 2021 academic session |
| Item 4:  | To review and finalize the list and syllabi for all Departmental Elective (DE) Courses of VI Semester to be offered to (the batch admitted in 2018-19) under the flexible curriculum along with their COs ; {applicable during January-June 2021 academic session}   |
| Item 5:  | To review and finalize the list of Courses from SWAYAM/NPTEL/MOOC Platform to be offered (for batch admitted in 2018-19) in online mode under Departmental Elective (DE) Courses for credit transfer in the VI Semester {applicable during January-June 2021 academic session}   |
| Item 6:  | To review and finalize the Courses & Syllabi to be offered (for batch admitted in 2018-19) under the Open Category (OC) Courses for VI semester students of other departments along with their COs   |
| Item 7:  | To review and finalize the Courses & Syllabi (along with their COs) of UG VI Semester (to be offered to batch admitted in 2018-19) and UG IV Semester (to be offered to batch admitted in 2019-20) under Departmental Core (DC) Courses  |
| Item 8:  | To review and finalize the Scheme & Syllabi (I & II semester) of the NEW B.Tech. programme(s) to be started by the departments w.e.f. the batch admitted in 2020-21  |
| Item 9:  | To identify gaps in CO attainment levels for Jan-June 2020 semester and propose corrective measures for improvement  |
| Item 10:   | To prepare and propose the equivalence list of courses for B. Tech programmes (for 2017-18, 2018-2019, 2019-2020 & the 2020 admitted batch)  |
| Item 11:   | Any other matter   |
| <b><u>The house approved the minutes and recommendations made by different Board of Studies (BoS).</u></b> |  |

The meeting ended with the vote of thanks to the Chair.

  
(Dr. Akhilesh Tiwari)  
Member Secretary, Academic Council

  
(Dr. Manjaree Pandit)  
Dean, Academics

  
(Dr. R. K. Pandit)  
Director &  
Chairperson, Academic  
Council

D.No 709

24.02.2021

***DEPARTMENT OF CIVIL  
ENGINEERING***

***MINUTES OF BOARD OF  
STUDIES MEETING,  
NOVEMBER 2020 ALONG  
WITH ITS ANNEXURES***