

**Symbiosis Institute of Technology, Pune**  
**Bachelor of Technology (Civil Engineering)**  
**Programme Structure 2022-26**



|    |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                    |                          |                                              |
|----|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|--------------------------|----------------------------------------------|
| 1. | OBJECTIVE            | B.Tech is a full-time four year graduation programme, which aims at transforming a student into a technically sound professional. The syllabus contains courses on basic sciences, technical arts, humanities & liberal arts and professional courses. The mix of these courses has been evolved with an aim to produce professionals who have knowledge not only of Engineering but who are good managers to contribute in a cross-functional team and have human values.<br>Being a professional programme it ensures a healthy balance between theoretical foundation and practical exposure to the present day world.<br>The emphasis is to develop all round personality that would enable the students to take up the challenges of the corporate world and also become responsible citizens of the society. |                                    |                          |                                              |
| 2. | DURATION (IN MONTHS) | 48 (Full Time)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                    |                          |                                              |
| 3. | INTAKE               | 60                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                    |                          |                                              |
| 4. | RESERVATION          | I.Within the sanctioned intake                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | a) SC<br>(In Percentage)           | b) ST<br>(In Percentage) | c) Differently abled<br>(In Percentage)      |
|    |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 15                                 | 7.5                      | 3                                            |
|    |                      | II.Over and above the sanctioned intake                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | a) Kashmiri Migrants<br>(In Seats) |                          | b) International Students<br>(In Percentage) |
|    |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2                                  |                          | 15                                           |
| 5. | ELIGIBILITY          | Passed 10+2 examination with Physics and Mathematics as compulsory subjects along with one of Chemistry/ Biotechnology/ Biology/ Technical Vocational subjects. Obtained at least 45% marks or equivalent grade (40% marks or equivalent grade for Scheduled Caste /Scheduled Tribes) in the above subjects taken together.<br>B. Tech (Lateral entry to second year) :<br>a) Passed Diploma examination from an AICTE approved Institution; with at least 45% marks or equivalent grade (40% marks or equivalent grade for Scheduled Caste /Scheduled Tribes) in appropriate branch of Engineering / Technology.                                                                                                                                                                                                  |                                    |                          |                                              |

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|    |                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |                                    | <p>b) Passed B.Sc. Degree from a recognized University as defined by UGC, with at least 45% marks or equivalent grade (40% marks or equivalent grade for Scheduled Caste /Scheduled Tribes) and passed XII standard with mathematics as a subject.</p> <p>c) Provided that in case of students belonging to B. Sc. Stream, shall clear the subjects of Engineering Graphics / Engineering Drawing and Engineering Mechanics of the first year Engineering program along with the second year subjects.</p> <p>d) Provided further that, the students belonging to B. Sc. Stream shall be considered only after filling the supernumerary seats in this category with students belonging to the Diploma stream.</p> <p>e) Provided further that students, who have passed Diploma in Engineering and Technology from an AICTE approved Institution or B. Sc. Degree from a recognized University as defined by UGC, shall also be eligible for admission to the first year Engineering Degree courses subject to vacancies in the first year class in case the vacancies at lateral entry are exhausted. However the admissions shall be based strictly on the eligibility criteria as mentioned in a, b, c, and d above.</p> |
| 6. | <b>SELECTION PROCEDURE</b>         | Merit list by a valid score of Symbiosis Entrance Test (SIT EEE) or Joint Entrance Examination (JEE - Mains) or All States Engineering Entrance Test                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 7. | <b>MEDIUM OF INSTRUCTION</b>       | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 8. | <b>PROGRAMME PATTERN</b>           | Semester                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 9. | <b>COURSE &amp; SPECIALIZATION</b> | <p>Annexure A: Bachelor of Technology (Civil Engineering)</p> <p>Students may pursue optional (Honours) OR (Minor) specialization in one of the specialization areas by completing additional 20 credits in Semester: 5, 6 and 7 as specified in Annexure B for Honours and Annexure C for Minor in the respective specialization area.</p> <p>Annexure B: Optional (Honours) Specialization Area</p> <ol style="list-style-type: none"> <li>1. Environmental Hydraulics</li> <li>2. Geo-Environmental Engineering</li> <li>3. GIS and Surveying Technology</li> <li>4. Infrastructure Engineering and Management</li> <li>5. Smart Cities and Urban Analytics</li> <li>6. Structural Engineering</li> </ol> <p>Annexure C : Optional (Minor) Specialization Area</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                        |



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|                                                                                                                                                |                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                  |                   |        |
|------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------------|--------|
|                                                                                                                                                |                                             | 1. Artificial Intelligence and Machine Learning (CSE)<br>2. Automobile Engineering with Hybrid and Autonomous Technology (ME)<br>3. Data Science (CSE)<br>4. Embedded Systems (E&TC)<br>5. Internet of Things (CSE)                                                                                                                                                                                                                                                                                                                                                                        |                  |                   |        |
| 10.                                                                                                                                            | FEE                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Academic Fee p.a | Institute Deposit | Total  |
|                                                                                                                                                |                                             | Indian Students                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 260000           | 20000             | 280000 |
|                                                                                                                                                |                                             | International Students (USD equivalent to INR)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 390000           | 20000             | 410000 |
| <b>Note: For additional optional specialization 'Honours' or 'Minor', an additional fees of Rs. 25000/- will be charged in the third year.</b> |                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                  |                   |        |
| 11.                                                                                                                                            | ASSESSMENT                                  | All internal courses will have 100% component as internal evaluation at the institute level. All external courses will have 40% internal component and 60% component as external [University] examination. The internal and external will be separate heads of passing.                                                                                                                                                                                                                                                                                                                    |                  |                   |        |
| 12.                                                                                                                                            | STANDARD OF PASSING                         | The assessment of the student for each examination is done, based on relative performance. Maximum Grade Point (GP) is 10 corresponding to O (Outstanding). For all courses, a student is required to pass both internal and external examination separately with a minimum Grade Point of 4 corresponding to Grade P. Students securing less than 40% absolute marks in each head of passing will be declared FAIL. The University awards a degree to the student who has achieved a minimum CGPA of 4 out of maximum of 10 CGPA for the programme.                                       |                  |                   |        |
| 13.                                                                                                                                            | AWARD OF DEGREE/<br>DIPLOMA/<br>CERTIFICATE | Bachelor of Technology (Civil Engineering)<br>OR<br>Bachelor of Technology (Civil Engineering) with Honours in Environmental Hydraulics / Geo-Environmental Engineering / GIS and Surveying Technology / Infrastructure Engineering and Management/ Smart Cities and Urban Analytics/ Structural Engineering<br>OR<br>Bachelor of Technology (Civil Engineering) with Minor in Artificial Intelligence and Machine Learning / Data Science / Internet of Things / Embedded Systems / Automobile Engineering with Hybrid and Autonomous Technology as applicable will be awarded at the end |                  |                   |        |

of semester VIII examination by taking into consideration the performance of all semester examinations after obtaining minimum 4.00 CGPA out of 10 CGPA.

#### 14. CLASSIFICATION OF CREDITS

| Semester                                     | Generic Core | Generic Elective | Specialization Core | Specialization Elective | Open Elective | Audit    | Total      |
|----------------------------------------------|--------------|------------------|---------------------|-------------------------|---------------|----------|------------|
| 1                                            | 20           | 0                | 0                   | 0                       | 0             | 1*       | 20         |
| 2                                            | 23           | 0                | 0                   | 0                       | 0             | 1*       | 23         |
| 3                                            | 20           | 2                | 0                   | 0                       | 0             | 1*       | 22         |
| 4                                            | 23           | 1                | 0                   | 0                       | 0             | 0        | 24         |
| 5                                            | 18           | 2                | 0                   | 0                       | 3             | 0        | 23         |
| 6                                            | 14           | 7                | 0                   | 0                       | 3             | 0        | 24         |
| 7                                            | 8            | 12               | 0                   | 0                       | 0             | 0        | 20         |
| 8                                            | 14           | 0                | 0                   | 0                       | 0             | 0        | 14         |
| <b>Total</b>                                 | <b>140</b>   | <b>24</b>        | <b>0</b>            | <b>0</b>                | <b>6</b>      | <b>0</b> | <b>170</b> |
| <b>Optional Additional Courses (Honours)</b> |              |                  |                     |                         |               |          |            |
| <b>Total</b>                                 | <b>0</b>     | <b>0</b>         | <b>14/17</b>        | <b>6/3</b>              | <b>0</b>      | <b>0</b> | <b>20</b>  |
| <b>Optional Additional Courses (Minor)</b>   |              |                  |                     |                         |               |          |            |
| <b>Total</b>                                 | <b>0</b>     | <b>0</b>         | <b>20</b>           | <b>0</b>                | <b>0</b>      | <b>0</b> | <b>20</b>  |
| <b>Grand Total</b>                           |              |                  |                     |                         |               |          | <b>190</b> |

\* Satisfactory completion of the non letter grade courses 'Integrated Disaster Management', 'Fitness for Life', 'Environmental Science' is mandatory for the award of degree.

This Programme Structure is aligned with the norms laid down by the University and is approved by the Academic Council.  
Hereafter changes (if any) which conform to the policy on "Curriculum Development and Review" would be permissible, subject to revision of the Programme Structure, following the specified processes.

Head - Academics

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**Annexure A**

| Catalog Course Code  | Course Code | Course Title                       | Nature | Specialization/ Area/ Department | Teaching Scheme (Hours Per Week) |   |      | Examination Scheme (Marks) |     |        |     | Total Credits    | Total |
|----------------------|-------------|------------------------------------|--------|----------------------------------|----------------------------------|---|------|----------------------------|-----|--------|-----|------------------|-------|
|                      |             |                                    |        |                                  |                                  |   |      | Practical                  |     | Theory |     |                  |       |
|                      |             |                                    |        |                                  | L                                | T | La b | CA                         | ESE | CA     | ESE |                  |       |
| Semester : 1         |             |                                    |        |                                  |                                  |   |      |                            |     |        |     |                  |       |
| Generic Core Courses |             |                                    |        |                                  |                                  |   |      |                            |     |        |     |                  |       |
| TE7168               | 0701210101  | Engineering Mathematics -I         | BS     |                                  | 3                                | 1 | 0    | 0                          | 0   | 40     | 60  | 4                | 100   |
| TE7732               | 0701210102  | Programming and Logic Building Lab | ES     |                                  | 0                                | 0 | 4    | 20                         | 30  | 0      | 0   | 2                | 50    |
| TE7683               | 0701210103  | Physics for Civil Engineers        | BS     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3                | 75    |
| TE7687               | 0701210104  | Physics Lab                        | BS     |                                  | 0                                | 0 | 2    | 10                         | 15  | 0      | 0   | 1                | 25    |
| TE7702               | 0701210105  | Applied Mechanics                  | ES     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3                | 75    |
| TE7703               | 0701210106  | Applied Mechanics Lab              | ES     |                                  | 0                                | 0 | 2    | 10                         | 15  | 0      | 0   | 1                | 25    |
| T7925                | 0701210107  | Engineering Graphics Lab           | ES     |                                  | 0                                | 0 | 4    | 20                         | 30  | 0      | 0   | 2                | 50    |
| T7383                | 0701210108  | Communication Skills               | ES     |                                  | 2                                | 0 | 0    | 0                          | 0   | 20     | 30  | 2                | 50    |
| T7384                | 0701210109  | Communication skills lab           | ES     |                                  | 0                                | 0 | 2    | 10                         | 15  | 0      | 0   | 1                | 25    |
| T6873                | 0701210110  | Creative Thinking                  | HS     |                                  | 1                                | 0 | 0    | 0                          | 0   | 25     | 0   | 1                | 25    |
| TE7188               | 0701210111  | Environmental Science *            |        |                                  | 0                                | 0 | 0    | 0                          | 0   | 0      | 0   | Non Letter Grade | 0     |
| Total                |             |                                    |        |                                  | 12                               | 1 | 14   | 70                         | 105 | 145    | 180 | 20               | 500   |
| Semester : 2         |             |                                    |        |                                  |                                  |   |      |                            |     |        |     |                  |       |
| Generic Core Courses |             |                                    |        |                                  |                                  |   |      |                            |     |        |     |                  |       |
| TE7169               | 0701210201  | Engineering Mathematics -II        | BS     |                                  | 3                                | 1 | 0    | 0                          | 0   | 40     | 60  | 4                | 100   |



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|----------------------|-------------|--------------------------------------------|--------|----------------------------------|----------------------------------|---|------|----------------------------|-----|--------|-----|------------------|-------|
|                      |             |                                            |        |                                  |                                  |   |      | Practical                  |     | Theory |     |                  |       |
|                      |             |                                            |        |                                  | L                                | T | La b | CA                         | ESE | CA     | ESE |                  |       |
| TE7694               | 0701210202  | Chemistry                                  | BS     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3                | 75    |
| TE7695               | 0701210203  | Chemistry Lab                              | BS     |                                  | 0                                | 0 | 2    | 10                         | 15  | 0      | 0   | 1                | 25    |
| TE7720               | 0701210204  | Digital Land Surveying and Mapping         | ES     |                                  | 2                                | 0 | 0    | 0                          | 0   | 20     | 30  | 2                | 50    |
| TE7721               | 0701210205  | Digital Land Surveying and Mapping Lab     | ES     |                                  | 0                                | 0 | 2    | 10                         | 15  | 0      | 0   | 1                | 25    |
| TE7729               | 0701210206  | Introduction to Python Programming Lab     | ES     |                                  | 0                                | 0 | 4    | 20                         | 30  | 0      | 0   | 2                | 50    |
| T7957                | 0701210207  | Building Construction Technology           | ES     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3                | 75    |
| TE7706               | 0701210208  | Basics of Sensors and Microcontrollers     | HS     |                                  | 2                                | 0 | 0    | 0                          | 0   | 20     | 30  | 2                | 50    |
| TE7707               | 0701210209  | Basics of Sensors and Microcontrollers Lab | HS     |                                  | 0                                | 0 | 2    | 10                         | 15  | 0      | 0   | 1                | 25    |
| TE7739               | 0701210210  | Software Tools for Civil Engineers         | ES     |                                  | 0                                | 0 | 2    | 10                         | 15  | 0      | 0   | 1                | 25    |
| T6732                | 0701210211  | Critical Thinking                          | HS     |                                  | 1                                | 0 | 0    | 0                          | 0   | 25     | 0   | 1                | 25    |
| TE7300               | 0701210212  | Tinker Lab                                 | ES     |                                  | 0                                | 0 | 4    | 50                         | 0   | 0      | 0   | 2                | 50    |
| TH4095               | 0701210213  | Fitness for Life *                         |        |                                  | 0                                | 0 | 0    | 0                          | 0   | 0      | 0   | Non Letter Grade | 0     |
| Total                |             |                                            |        |                                  | 14                               | 1 | 16   | 110                        | 90  | 165    | 210 | 23               | 575   |
| Semester : 3         |             |                                            |        |                                  |                                  |   |      |                            |     |        |     |                  |       |
| Generic Core Courses |             |                                            |        |                                  |                                  |   |      |                            |     |        |     |                  |       |
| TE7390               | 0701210301  | Strength of Materials                      | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3                | 75    |
| TE7730               | 0701210302  | Materials Testing Lab                      | PC     |                                  | 0                                | 0 | 2    | 10                         | 15  | 0      | 0   | 1                | 25    |





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|--------------------------------|-------------|----------------------------------------------|--------|----------------------------------|----------------------------------|---|------|----------------------------|-----|--------|-----|------------------|-------|
|                                |             |                                              |        |                                  |                                  |   |      | Practical                  |     | Theory |     |                  |       |
|                                |             |                                              |        |                                  | L                                | T | La b | CA                         | ESE | CA     | ESE |                  |       |
| T7388                          | 0701210303  | Engineering Mathematics-III                  | BS     |                                  | 3                                | 1 | 0    | 0                          | 0   | 40     | 60  | 4                | 100   |
| T7674                          | 0701210304  | Cyber Security                               | ES     |                                  | 2                                | 0 | 0    | 0                          | 0   | 20     | 30  | 2                | 50    |
| T7966                          | 0701210305  | Advanced Surveying Lab                       | PC     |                                  | 0                                | 0 | 4    | 50                         | 0   | 0      | 0   | 2                | 50    |
| TE7290                         | 0701210306  | Project Based Learning -I                    | PIS    |                                  | 0                                | 0 | 4    | 50                         | 0   | 0      | 0   | 2                | 50    |
| TE7710                         | 0701210307  | Computer Aided Building Design & Drawing Lab | ES     |                                  | 0                                | 0 | 4    | 50                         | 0   | 0      | 0   | 2                | 50    |
| TE7400                         | 0701210308  | Introduction to Fluid Mechanics              | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3                | 75    |
| TE7728                         | 0701210309  | Introduction to Fluid Mechanics Lab          | PC     |                                  | 0                                | 0 | 2    | 10                         | 15  | 0      | 0   | 1                | 25    |
| T4005                          | 0701210310  | Integrated Disaster Management *             |        |                                  | 0                                | 0 | 0    | 0                          | 0   | 0      | 0   | Non Letter Grade | 0     |
| Total                          |             |                                              |        |                                  | 11                               | 1 | 16   | 170                        | 30  | 120    | 180 | 20               | 500   |
| Generic Elective Courses Group |             |                                              |        |                                  |                                  |   |      |                            |     |        |     |                  |       |
| T6184                          | 0701210311  | Basic German I                               | GE     |                                  | 2                                | 0 | 0    | 0                          | 0   | 50     | 0   | 2                | 50    |
| T6186                          | 0701210312  | Basic French I                               | GE     |                                  | 2                                | 0 | 0    | 0                          | 0   | 50     | 0   | 2                | 50    |
| T6188                          | 0701210313  | Basic Spanish I                              | GE     |                                  | 2                                | 0 | 0    | 0                          | 0   | 50     | 0   | 2                | 50    |
| Total Required Credits         |             |                                              |        |                                  |                                  |   |      | 0                          | 0   | 50     | 0   | 2                | 50    |
| Semester : 4                   |             |                                              |        |                                  |                                  |   |      |                            |     |        |     |                  |       |
| Generic Core Courses           |             |                                              |        |                                  |                                  |   |      |                            |     |        |     |                  |       |



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| Catalog Course Code            | Course Code | Course Title                                      | Nature | Specialization/ Area/ Department | Teaching Scheme (Hours Per Week) |   |      | Examination Scheme (Marks) |     |        |     | Total Credits | Total |
|--------------------------------|-------------|---------------------------------------------------|--------|----------------------------------|----------------------------------|---|------|----------------------------|-----|--------|-----|---------------|-------|
|                                |             |                                                   |        |                                  |                                  |   |      | Practical                  |     | Theory |     |               |       |
|                                |             |                                                   |        |                                  | L                                | T | La b | CA                         | ESE | CA     | ESE |               |       |
| T8000                          | 0701210401  | Service Learning                                  | HS     |                                  | 0                                | 0 | 8    | 100                        | 0   | 0      | 0   | 4             | 100   |
| TE7691                         | 0701210402  | Statistics, Probability and Numerical Methods     | BS     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7692                         | 0701210403  | Statistics, Probability and Numerical Methods Lab | BS     |                                  | 0                                | 0 | 2    | 10                         | 15  | 0      | 0   | 1             | 25    |
| TE7711                         | 0701210404  | Computer Aided Structural Analysis-I              | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7199                         | 0701210405  | Hydrology and Water Resource Engineering          | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7404                         | 0701210406  | Open Channel Flow                                 | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7731                         | 0701210407  | Open Channel Flow Simulation Lab                  | PC     |                                  | 0                                | 0 | 2    | 10                         | 15  | 0      | 0   | 1             | 25    |
| TE7723                         | 0701210408  | Geotechnical Engineering                          | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7724                         | 0701210409  | Geotechnical Engineering Lab                      | PC     |                                  | 0                                | 0 | 2    | 10                         | 15  | 0      | 0   | 1             | 25    |
| T2646                          | 0701210410  | Entrepreneurship Venture                          | HS     |                                  | 1                                | 0 | 0    | 0                          | 0   | 25     | 0   | 1             | 25    |
| Total                          |             |                                                   |        |                                  | 16                               | 0 | 14   | 130                        | 45  | 175    | 225 | 23            | 575   |
| Generic Elective Courses Group |             |                                                   |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| T6872                          | 0701210411  | Foundation of Ethics                              | GE     |                                  | 1                                | 0 | 0    | 0                          | 0   | 25     | 0   | 1             | 25    |
| T6760                          | 0701210412  | Introduction to Indian Philosophy                 | GE     |                                  | 1                                | 0 | 0    | 0                          | 0   | 25     | 0   | 1             | 25    |
| Total Required Credits         |             |                                                   |        |                                  |                                  |   |      | 0                          | 0   | 25     | 0   | 1             | 25    |
| Semester : 5                   |             |                                                   |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| Generic Core Courses           |             |                                                   |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| TE7743                         | 0701210501  | Water Treatment and Supply System                 | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |



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|--------------------------------|-------------|----------------------------------------------|--------|----------------------------------|----------------------------------|---|------|----------------------------|-----|--------|-----|---------------|-------|
|                                |             |                                              |        |                                  |                                  |   |      | Practical                  |     | Theory |     |               |       |
|                                |             |                                              |        |                                  | L                                | T | La b | CA                         | ESE | CA     | ESE |               |       |
| F0001                          | 0701210502  | Flexi-Credit Course                          | PC     |                                  | 0                                | 0 | 2    | 25                         | 0   | 0      | 0   | 1             | 25    |
| TE7712                         | 0701210503  | Computer Aided Structural Analysis-II        | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7714                         | 0701210504  | Design of RCC Structures                     | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7715                         | 0701210505  | Design of RCC Structures Lab                 | PC     |                                  | 0                                | 0 | 2    | 10                         | 15  | 0      | 0   | 1             | 25    |
| TE7713                         | 0701210506  | Construction Project Management Lab          | PC     |                                  | 0                                | 0 | 2    | 10                         | 15  | 0      | 0   | 1             | 25    |
| T6749                          | 0701210507  | Design Thinking                              | HS     |                                  | 2                                | 0 | 0    | 0                          | 0   | 50     | 0   | 2             | 50    |
| TE7291                         | 0701210508  | Project Based Learning-II                    | PIS    |                                  | 0                                | 0 | 4    | 50                         | 0   | 0      | 0   | 2             | 50    |
| T6774                          | 0701210509  | Principles of Economics                      | HS     |                                  | 2                                | 0 | 0    | 0                          | 0   | 50     | 0   | 2             | 50    |
| Total                          |             |                                              |        |                                  | 13                               | 0 | 10   | 95                         | 30  | 190    | 135 | 18            | 450   |
| Generic Elective Courses Group |             |                                              |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| TE7704                         | 0701210510  | Artificial Intelligence and Machine Learning | PE     |                                  | 2                                | 0 | 0    | 0                          | 0   | 50     | 0   | 2             | 50    |
| TE7727                         | 0701210511  | Internet of Things                           | PE     |                                  | 2                                | 0 | 0    | 0                          | 0   | 50     | 0   | 2             | 50    |
| TE7709                         | 0701210512  | Cloud Computing and Blockchain Technology    | PE     |                                  | 2                                | 0 | 0    | 0                          | 0   | 50     | 0   | 2             | 50    |
| TE7708                         | 0701210513  | Big Data Analytics                           | PE     |                                  | 2                                | 0 | 0    | 0                          | 0   | 50     | 0   | 2             | 50    |
| Total Required Credits         |             |                                              |        |                                  |                                  |   |      | 0                          | 0   | 50     | 0   | 2             | 50    |
| Open Electives Courses Group   |             |                                              |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| TE7698                         | 0701210514  | Nanotechnology                               | OE     | Applied Science                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7676                         | 0701210515  | Executive Corporate Communication For Impact | OE     | Applied Science                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |



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| Catalog Course Code    | Course Code | Course Title                          | Nature | Specialization/ Area/ Department                            | Teaching Scheme (Hours Per Week) |   |      | Examination Scheme (Marks) |     |        |     | Total Credits | Total |
|------------------------|-------------|---------------------------------------|--------|-------------------------------------------------------------|----------------------------------|---|------|----------------------------|-----|--------|-----|---------------|-------|
|                        |             |                                       |        |                                                             |                                  |   |      | Practical                  |     | Theory |     |               |       |
|                        |             |                                       |        |                                                             | L                                | T | La b | CA                         | ESE | CA     | ESE |               |       |
| TE7195                 | 0701210516  | GIS Applications                      | OE     | Civil Engineering                                           | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7203                 | 0701210517  | Intelligent Transportation Management | OE     | Civil Engineering                                           | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7297                 | 0701210518  | Software Testing Tools                | OE     | Computer Science and Engineering and Information Technology | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7756                 | 0701210519  | Open Source Technologies              | OE     | Computer Science and Engineering and Information Technology | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| T7584                  | 0701210520  | Printed Circuit Board (PCB) Design    | OE     | Electronics & Tele-communication Engineering                | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7334                 | 0701210521  | Introduction to Mechatronics          | OE     | Electronics & Tele-communication Engineering                | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7804                 | 0701210522  | Design Optimization Techniques        | OE     | Mechanical Engineering                                      | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7351                 | 0701210523  | 3D Printing and Prototyping           | OE     | Mechanical Engineering                                      | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| Total Required Credits |             |                                       |        |                                                             |                                  |   |      | 0                          | 0   | 30     | 45  | 3             | 75    |
| Semester : 6           |             |                                       |        |                                                             |                                  |   |      |                            |     |        |     |               |       |
| Generic Core Courses   |             |                                       |        |                                                             |                                  |   |      |                            |     |        |     |               |       |
| TE7741                 | 0701210601  | Waste Water Treatment and Recycling   | PC     |                                                             | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7742                 | 0701210602  | Water and Waste Water Analysis Lab    | PC     |                                                             | 0                                | 0 | 2    | 10                         | 15  | 0      | 0   | 1             | 25    |





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| Catalog Course Code                 | Course Code | Course Title                           | Nature | Specialization/ Area/ Department | Teaching Scheme (Hours Per Week) |   |      | Examination Scheme (Marks) |     |        |     | Total Credits | Total |
|-------------------------------------|-------------|----------------------------------------|--------|----------------------------------|----------------------------------|---|------|----------------------------|-----|--------|-----|---------------|-------|
|                                     |             |                                        |        |                                  |                                  |   |      | Practical                  |     | Theory |     |               |       |
|                                     |             |                                        |        |                                  | L                                | T | La b | CA                         | ESE | CA     | ESE |               |       |
| TE7716                              | 0701210603  | Design of Steel Structures             | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7717                              | 0701210604  | Design of Steel Structures Lab         | PC     |                                  | 0                                | 0 | 2    | 10                         | 15  | 0      | 0   | 1             | 25    |
| F0003                               | 0701210605  | Flexi-Credit Course                    | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 75     | 0   | 3             | 75    |
| T7802                               | 0701210606  | Capstone Course                        | PC     |                                  | 2                                | 0 | 0    | 0                          | 0   | 50     | 0   | 2             | 50    |
| TE7726                              | 0701210607  | Highway Engineering Lab                | PC     |                                  | 0                                | 0 | 2    | 10                         | 15  | 0      | 0   | 1             | 25    |
| Total                               |             |                                        |        |                                  | 11                               | 0 | 6    | 30                         | 45  | 185    | 90  | 14            | 350   |
| Generic Elective Courses Group - I  |             |                                        |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| T7987                               | 0701210608  | Foundation Engineering                 | PE     |                                  | 4                                | 0 | 0    | 0                          | 0   | 40     | 60  | 4             | 100   |
| TE7409                              | 0701210609  | Bridge Engineering                     | PE     |                                  | 4                                | 0 | 0    | 0                          | 0   | 40     | 60  | 4             | 100   |
| T7975                               | 0701210610  | Green Building Technology              | PE     |                                  | 4                                | 0 | 0    | 0                          | 0   | 40     | 60  | 4             | 100   |
| TE7734                              | 0701210611  | Railway and Tunnel Engineering         | PE     |                                  | 4                                | 0 | 0    | 0                          | 0   | 40     | 60  | 4             | 100   |
| TE7412                              | 0701210612  | Introduction to Remote Sensing and GIS | PE     |                                  | 4                                | 0 | 0    | 0                          | 0   | 40     | 60  | 4             | 100   |
| TE7221                              | 0701210613  | Smart Cities and Future Urbanism       | PE     |                                  | 4                                | 0 | 0    | 0                          | 0   | 40     | 60  | 4             | 100   |
| Total Required Credits              |             |                                        |        |                                  |                                  |   |      | 0                          | 0   | 40     | 60  | 4             | 100   |
| Generic Elective Courses Group - II |             |                                        |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| T7980                               | 0701210614  | Glass Facade Engineering               | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7414                              | 0701210615  | Pavement Design                        | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7415                              | 0701210616  | Integrated Water Resource Management   | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |



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| Catalog Course Code          | Course Code | Course Title                                     | Nature | Specialization/ Area/ Department                            | Teaching Scheme (Hours Per Week) |   |      | Examination Scheme (Marks) |     |        |     | Total Credits | Total |
|------------------------------|-------------|--------------------------------------------------|--------|-------------------------------------------------------------|----------------------------------|---|------|----------------------------|-----|--------|-----|---------------|-------|
|                              |             |                                                  |        |                                                             |                                  |   |      | Practical                  |     | Theory |     |               |       |
|                              |             |                                                  |        |                                                             | L                                | T | La b | CA                         | ESE | CA     | ESE |               |       |
| T7984                        | 0701210617  | Computer Applications in Construction Management | PE     |                                                             | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7235                       | 0701210618  | Urban Transport Engineering                      | PE     |                                                             | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7416                       | 0701210619  | Smart Cities Planning and Development            | PE     |                                                             | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7175                       | 0701210620  | Advanced Structural Analysis                     | PE     |                                                             | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7182                       | 0701210621  | Design of Hydraulic Structures                   | PE     |                                                             | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7705                       | 0701210622  | Automation in Construction                       | PE     |                                                             | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| Total Required Credits       |             |                                                  |        |                                                             |                                  |   |      | 0                          | 0   | 30     | 45  | 3             | 75    |
| Open Electives Courses Group |             |                                                  |        |                                                             |                                  |   |      |                            |     |        |     |               |       |
| TE7677                       | 0701210623  | Financial Mathematics                            | OE     | Applied Science                                             | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7700                       | 0701210624  | Smart Materials                                  | OE     | Applied Science                                             | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7223                       | 0701210625  | Smart Urban Planning                             | OE     | Civil Engineering                                           | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7240                       | 0701210626  | Water Resource Planning and Management           | OE     | Civil Engineering                                           | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| T7499                        | 0701210627  | Java                                             | OE     | Computer Science and Engineering and Information Technology | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7750                       | 0701210628  | Web Application Development                      | OE     | Computer Science and Engineering and Information Technology | 3                                | 3 | 3    | 0                          | 0   | 30     | 45  | 3             | 75    |



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|------------------------------------|-------------|--------------------------------------------------------|--------|----------------------------------------------|----------------------------------|---|------|----------------------------|-----|--------|-----|---------------|-------|
|                                    |             |                                                        |        |                                              |                                  |   |      | Practical                  |     | Theory |     |               |       |
|                                    |             |                                                        |        |                                              | L                                | T | La b | CA                         | ESE | CA     | ESE |               |       |
| T7574                              | 0701210629  | MATLAB                                                 | OE     | Electronics & Tele-communication Engineering | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7428                             | 0701210630  | Introduction to Image Processing                       | OE     | Electronics & Tele-communication Engineering | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7810                             | 0701210631  | Industrial Revolution and Introduction of Industry 5.0 | OE     | Mechanical Engineering                       | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| T7650                              | 0701210632  | Six sigma                                              | OE     | Mechanical Engineering                       | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| Total Required Credits             |             |                                                        |        |                                              |                                  |   |      | 0                          | 0   | 30     | 45  | 3             | 75    |
| Semester : 7                       |             |                                                        |        |                                              |                                  |   |      |                            |     |        |     |               |       |
| Generic Core Courses               |             |                                                        |        |                                              |                                  |   |      |                            |     |        |     |               |       |
| T7804                              | 0701210701  | B.Tech Project                                         | PIS    |                                              | 0                                | 0 | 8    | 40                         | 60  | 0      | 0   | 4             | 100   |
| TE7701                             | 0701210702  | Advanced BIM Lab                                       | PC     |                                              | 0                                | 0 | 4    | 50                         | 0   | 0      | 0   | 2             | 50    |
| TE7733                             | 0701210703  | Project Estimation, Costing and Valuation Lab          | PC     |                                              | 0                                | 0 | 4    | 20                         | 30  | 0      | 0   | 2             | 50    |
| Total                              |             |                                                        |        |                                              | 0                                | 0 | 16   | 110                        | 90  | 0      | 0   | 8             | 200   |
| Generic Elective Courses Group - I |             |                                                        |        |                                              |                                  |   |      |                            |     |        |     |               |       |
| T2585                              | 0701210704  | Organizational Behaviour                               | GE     |                                              | 2                                | 0 | 0    | 0                          | 0   | 50     | 0   | 2             | 50    |
| TE7438                             | 0701210705  | History of Science and Technology                      | GE     |                                              | 2                                | 0 | 0    | 0                          | 0   | 50     | 0   | 2             | 50    |
| Total Required Credits             |             |                                                        |        |                                              |                                  |   |      | 0                          | 0   | 50     | 0   | 2             | 50    |



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| Catalog Course Code                  | Course Code | Course Title                                                 | Nature | Specialization/ Area/ Department | Teaching Scheme (Hours Per Week) |   |      | Examination Scheme (Marks) |     |        |     | Total Credits | Total |
|--------------------------------------|-------------|--------------------------------------------------------------|--------|----------------------------------|----------------------------------|---|------|----------------------------|-----|--------|-----|---------------|-------|
|                                      |             |                                                              |        |                                  |                                  |   |      | Practical                  |     | Theory |     |               |       |
|                                      |             |                                                              |        |                                  | L                                | T | La b | CA                         | ESE | CA     | ESE |               |       |
| Generic Elective Courses Group - II  |             |                                                              |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| TE7725                               | 0701210706  | Harbour and Airport Engineering                              | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7238                               | 0701210707  | Water and Air Quality Modelling                              | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7417                               | 0701210708  | Advanced Concrete Technology                                 | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7418                               | 0701210709  | Geoinformatics Application for Emergency Response Management | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| T7955                                | 0701210710  | Professional Practices in Construction                       | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7216                               | 0701210711  | Project Management in Smart Cities                           | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7219                               | 0701210712  | Rock Mechanics                                               | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| Total Required Credits               |             |                                                              |        |                                  |                                  |   |      | 0                          | 0   | 30     | 45  | 3             | 75    |
| Generic Elective Courses Group - III |             |                                                              |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| TE7722                               | 0701210713  | Emerging Technologies in Construction                        | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 75     | 0   | 3             | 75    |
| TE7231                               | 0701210714  | Sustainable Construction Methods                             | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 75     | 0   | 3             | 75    |
| TE7419                               | 0701210715  | Introduction to Finite Element Methods                       | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 75     | 0   | 3             | 75    |
| TE7420                               | 0701210716  | Environmental Geotechniques                                  | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 75     | 0   | 3             | 75    |
| TE7421                               | 0701210717  | Environmental Impact Assessment                              | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 75     | 0   | 3             | 75    |
| TE7422                               | 0701210718  | Traffic Engineering                                          | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 75     | 0   | 3             | 75    |
| TE7423                               | 0701210719  | Optimization in Civil Engineering                            | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 75     | 0   | 3             | 75    |
| Total Required Credits               |             |                                                              |        |                                  |                                  |   |      | 0                          | 0   | 75     | 0   | 3             | 75    |



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| Catalog Course Code                 | Course Code | Course Title                             | Nature | Specialization/ Area/ Department | Teaching Scheme (Hours Per Week) |   |      | Examination Scheme (Marks) |     |        |     | Total Credits | Total |
|-------------------------------------|-------------|------------------------------------------|--------|----------------------------------|----------------------------------|---|------|----------------------------|-----|--------|-----|---------------|-------|
|                                     |             |                                          |        |                                  |                                  |   |      | Practical                  |     | Theory |     |               |       |
|                                     |             |                                          |        |                                  | L                                | T | La b | CA                         | ESE | CA     | ESE |               |       |
| Generic Elective Courses Group - IV |             |                                          |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| TE7718                              | 0701210720  | Digital Image Processing                 | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7214                              | 0701210721  | Pre-stressed Concrete Structure          | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7737                              | 0701210722  | Smart Transport Management               | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7735                              | 0701210723  | Smart Solid Waste Management Systems     | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| Total Required Credits              |             |                                          |        |                                  |                                  |   |      | 0                          | 0   | 30     | 45  | 3             | 75    |
| Generic Elective Courses Group - V  |             |                                          |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| TE7719                              | 0701210724  | Digital Image Processing Lab             | PE     |                                  | 0                                | 0 | 2    | 25                         | 0   | 0      | 0   | 1             | 25    |
| TE7215                              | 0701210725  | Prestressed Concrete Structure Lab       | PE     |                                  | 0                                | 0 | 2    | 25                         | 0   | 0      | 0   | 1             | 25    |
| TE7738                              | 0701210726  | Smart Transport Management Lab           | PC     |                                  | 0                                | 0 | 2    | 25                         | 0   | 0      | 0   | 1             | 25    |
| TE7736                              | 0701210727  | Smart Solid Waste Management Systems Lab | PC     |                                  | 0                                | 0 | 2    | 25                         | 0   | 0      | 0   | 1             | 25    |
| Total Required Credits              |             |                                          |        |                                  |                                  |   |      | 25                         | 0   | 0      | 0   | 1             | 25    |
| Semester : 8                        |             |                                          |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| Generic Core Courses                |             |                                          |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| T7912                               | 0701210801  | Internship                               | PIS    |                                  | 0                                | 0 | 24   | 120                        | 180 | 0      | 0   | 12            | 300   |
| T7802                               | 0701210802  | Seminar                                  | PIS    |                                  | 0                                | 0 | 4    | 20                         | 30  | 0      | 0   | 2             | 50    |
| Total                               |             |                                          |        |                                  | 0                                | 0 | 28   | 140                        | 210 | 0      | 0   | 14            | 350   |

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**Abbreviations (Nature)**

|     |                                 |
|-----|---------------------------------|
| BS  | Basic Sciences                  |
| ES  | Engineering Sciences            |
| HS  | Humanities and Social Sciences  |
| OE  | Open Electives                  |
| PC  | Professional Core               |
| PE  | Professional Elective           |
| PIS | Project, Internship, Seminar    |
| PD  | Professional Development Course |
| MC  | Mandatory Course                |
| L   | Lecture                         |
| T   | Tutorial                        |
| CA  | Continuous Assessment           |
| ESE | End Semester Examination        |

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| Semester     | Internal Credits | External Credits | Total Credits | Total Marks |
|--------------|------------------|------------------|---------------|-------------|
| Semester 1   | 1                | 19               | 20            | 500         |
| Semester 2   | 3                | 20               | 23            | 575         |
| Semester 3   | 8                | 14               | 22            | 550         |
| Semester 4   | 6                | 18               | 24            | 600         |
| Semester 5   | 9                | 14               | 23            | 575         |
| Semester 6   | 5                | 19               | 24            | 600         |
| Semester 7   | 8                | 12               | 20            | 500         |
| Semester 8   | 0                | 14               | 14            | 350         |
| <b>Total</b> | <b>40</b>        | <b>130</b>       | <b>170</b>    | <b>4250</b> |



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| Catalog Course Code                                          | Course Code | Course Title                        | Nature | Specialization/ Area/ Department | Teaching Scheme (Hours Per Week) |   |      | Examination Scheme (Marks) |     |        |     | Total Credits | Total |
|--------------------------------------------------------------|-------------|-------------------------------------|--------|----------------------------------|----------------------------------|---|------|----------------------------|-----|--------|-----|---------------|-------|
|                                                              |             |                                     |        |                                  |                                  |   |      | Practical                  |     | Theory |     |               |       |
|                                                              |             |                                     |        |                                  | L                                | T | La b | CA                         | ESE | CA     | ESE |               |       |
| Semester : 5                                                 |             |                                     |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| Environmental Hydraulics<br>Specialization Core Courses      |             |                                     |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| TE7185                                                       | 0701210524  | Environmental Fluid Mechanics       | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7241                                                       | 0701210525  | Water Resources Field Methods       | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7242                                                       | 0701210526  | Water Resources Field Methods Lab   | PC     |                                  | 0                                | 0 | 2    | 10                         | 15  | 0      | 0   | 1             | 25    |
| Total                                                        |             |                                     |        |                                  | 6                                | 0 | 2    | 10                         | 15  | 60     | 90  | 7             | 175   |
| Semester : 5                                                 |             |                                     |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| Geo-Environmental Engineering<br>Specialization Core Courses |             |                                     |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| TE7190                                                       | 0701210527  | Environmental Systems               | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7229                                                       | 0701210528  | Structural Geology                  | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7230                                                       | 0701210529  | Structural Geology Lab              | PC     |                                  | 0                                | 0 | 2    | 10                         | 15  | 0      | 0   | 1             | 25    |
| Total                                                        |             |                                     |        |                                  | 6                                | 0 | 2    | 10                         | 15  | 60     | 90  | 7             | 175   |
| Semester : 5                                                 |             |                                     |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| GIS and Surveying Technology<br>Specialization Core Courses  |             |                                     |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| TE7184                                                       | 0701210530  | Digital Image Processing in GIS     | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7196                                                       | 0701210531  | Global Navigation Satellite Systems | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |





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**Optional 'Honours' Specialization**

| Catalog Course Code                                                      | Course Code | Course Title                                 | Nature | Specialization/ Area/ Department | Teaching Scheme (Hours Per Week) |   |      | Examination Scheme (Marks) |     |        |     | Total Credits | Total |
|--------------------------------------------------------------------------|-------------|----------------------------------------------|--------|----------------------------------|----------------------------------|---|------|----------------------------|-----|--------|-----|---------------|-------|
|                                                                          |             |                                              |        |                                  |                                  |   |      | Practical                  |     | Theory |     |               |       |
|                                                                          |             |                                              |        |                                  | L                                | T | La b | CA                         | ESE | CA     | ESE |               |       |
| TE7197                                                                   | 0701210532  | Global Navigation Satellite Systems Lab      | PC     |                                  | 0                                | 0 | 2    | 10                         | 15  | 0      | 0   | 1             | 25    |
| Total                                                                    |             |                                              |        |                                  | 6                                | 0 | 2    | 10                         | 15  | 60     | 90  | 7             | 175   |
| Semester : 5                                                             |             |                                              |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| Infrastructure Engineering and Management<br>Specialization Core Courses |             |                                              |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| TE7236                                                                   | 0701210533  | Urban Transportation Planning                | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7201                                                                   | 0701210534  | Infrastructure Planning and Design           | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7202                                                                   | 0701210535  | Infrastructure Planning and Design Lab       | PC     |                                  | 0                                | 0 | 2    | 10                         | 15  | 0      | 0   | 1             | 25    |
| Total                                                                    |             |                                              |        |                                  | 6                                | 0 | 2    | 10                         | 15  | 60     | 90  | 7             | 175   |
| Semester : 5                                                             |             |                                              |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| Smart Cities and Urban Analytics<br>Specialization Core Courses          |             |                                              |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| TE7220                                                                   | 0701210536  | Smart Cities : Context Policy and Governance | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7206                                                                   | 0701210537  | IOT for Smart Cities                         | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7207                                                                   | 0701210538  | IOT for Smart Cities Lab                     | PC     |                                  | 0                                | 0 | 2    | 10                         | 15  | 0      | 0   | 1             | 25    |
| Total                                                                    |             |                                              |        |                                  | 6                                | 0 | 2    | 10                         | 15  | 60     | 90  | 7             | 175   |
| Semester : 5                                                             |             |                                              |        |                                  |                                  |   |      |                            |     |        |     |               |       |



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**Optional 'Honours' Specialization**

| Catalog Course Code                                  | Course Code | Course Title                              | Nature | Specialization/ Area/ Department | Teaching Scheme (Hours Per Week) |   |      | Examination Scheme (Marks) |     |        |     | Total Credits | Total |
|------------------------------------------------------|-------------|-------------------------------------------|--------|----------------------------------|----------------------------------|---|------|----------------------------|-----|--------|-----|---------------|-------|
|                                                      |             |                                           |        |                                  |                                  |   |      | Practical                  |     | Theory |     |               |       |
|                                                      |             |                                           |        |                                  | L                                | T | La b | CA                         | ESE | CA     | ESE |               |       |
| Structural Engineering Specialization Core Courses   |             |                                           |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| TE7213                                               | 0701210539  | Prestressed Concrete                      | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7208                                               | 0701210540  | Modelling and Analysis of Uncertainty     | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7209                                               | 0701210541  | Modelling and Analysis of Uncertainty Lab | PC     |                                  | 0                                | 0 | 2    | 10                         | 15  | 0      | 0   | 1             | 25    |
| Total                                                |             |                                           |        |                                  | 6                                | 0 | 2    | 10                         | 15  | 60     | 90  | 7             | 175   |
| Semester : 6                                         |             |                                           |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| Environmental Hydraulics Specialization Core Courses |             |                                           |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| T7802                                                | 0701210633  | Specialization Project                    | PIS    |                                  | 0                                | 0 | 4    | 50                         | 0   | 0      | 0   | 2             | 50    |
| T7802                                                | 0701210634  | Specialization Seminar                    | PIS    |                                  | 0                                | 0 | 4    | 50                         | 0   | 0      | 0   | 2             | 50    |
| Total                                                |             |                                           |        |                                  | 0                                | 0 | 8    | 100                        | 0   | 0      | 0   | 4             | 100   |
| Specialization Elective :Environmental Hydraulics    |             |                                           |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| TE7211                                               | 0701210635  | Pipeline Engineering                      | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7218                                               | 0701210636  | River Engineering                         | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| Total Required Credits                               |             |                                           |        |                                  |                                  |   |      | 0                          | 0   | 30     | 45  | 3             | 75    |
| Semester : 6                                         |             |                                           |        |                                  |                                  |   |      |                            |     |        |     |               |       |



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| Catalog Course Code                                       | Course Code | Course Title                   | Nature | Specialization/ Area/ Department | Teaching Scheme (Hours Per Week) |   |      | Examination Scheme (Marks) |     |        |     | Total Credits | Total |
|-----------------------------------------------------------|-------------|--------------------------------|--------|----------------------------------|----------------------------------|---|------|----------------------------|-----|--------|-----|---------------|-------|
|                                                           |             |                                |        |                                  |                                  |   |      | Practical                  |     | Theory |     |               |       |
|                                                           |             |                                |        |                                  | L                                | T | La b | CA                         | ESE | CA     | ESE |               |       |
| Geo-Environmental Engineering Specialization Core Courses |             |                                |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| T7802                                                     | 0701210633  | Specialization Project         | PIS    |                                  | 0                                | 0 | 4    | 50                         | 0   | 0      | 0   | 2             | 50    |
| T7802                                                     | 0701210634  | Specialization Seminar         | PIS    |                                  | 0                                | 0 | 4    | 50                         | 0   | 0      | 0   | 2             | 50    |
| Total                                                     |             |                                |        |                                  | 0                                | 0 | 8    | 100                        | 0   | 0      | 0   | 4             | 100   |
| Specialization Elective :Geo-Environmental Engineering    |             |                                |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| TE7187                                                    | 0701210637  | Environmental Laws and Policy  | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7194                                                    | 0701210638  | Geotechnical Design            | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| Total Required Credits                                    |             |                                |        |                                  |                                  |   |      | 0                          | 0   | 30     | 45  | 3             | 75    |
| Semester : 6                                              |             |                                |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| GIS and Surveying Technology Specialization Core Courses  |             |                                |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| T7802                                                     | 0701210633  | Specialization Project         | PIS    |                                  | 0                                | 0 | 4    | 50                         | 0   | 0      | 0   | 2             | 50    |
| T7802                                                     | 0701210634  | Specialization Project         | PIS    |                                  | 0                                | 0 | 4    | 50                         | 0   | 0      | 0   | 2             | 50    |
| TE7227                                                    | 0701210639  | Spatial Modelling and Analysis | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| Total                                                     |             |                                |        |                                  | 3                                | 0 | 8    | 100                        | 0   | 30     | 45  | 7             | 175   |
| Semester : 6                                              |             |                                |        |                                  |                                  |   |      |                            |     |        |     |               |       |



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| Catalog Course Code                                                      | Course Code | Course Title                                     | Nature | Specialization/ Area/ Department | Teaching Scheme (Hours Per Week) |   |      | Examination Scheme (Marks) |     |        |     | Total Credits | Total |
|--------------------------------------------------------------------------|-------------|--------------------------------------------------|--------|----------------------------------|----------------------------------|---|------|----------------------------|-----|--------|-----|---------------|-------|
|                                                                          |             |                                                  |        |                                  |                                  |   |      | Practical                  |     | Theory |     |               |       |
|                                                                          |             |                                                  |        |                                  | L                                | T | La b | CA                         | ESE | CA     | ESE |               |       |
| Infrastructure Engineering and Management<br>Specialization Core Courses |             |                                                  |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| T7802                                                                    | 0701210633  | Specialization Project                           | PIS    |                                  | 0                                | 0 | 4    | 50                         | 0   | 0      | 0   | 2             | 50    |
| T7802                                                                    | 0701210634  | Specialization Seminar                           | PIS    |                                  | 0                                | 0 | 4    | 50                         | 0   | 0      | 0   | 2             | 50    |
| Total                                                                    |             |                                                  |        |                                  | 0                                | 0 | 8    | 100                        | 0   | 0      | 0   | 4             | 100   |
| Specialization Elective :Infrastructure Engineering and Management       |             |                                                  |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| TE7217                                                                   | 0701210640  | Public Transportation Systems                    | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7210                                                                   | 0701210641  | Pavement Materials                               | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| Total Required Credits                                                   |             |                                                  |        |                                  |                                  |   |      | 0                          | 0   | 30     | 45  | 3             | 75    |
| Semester : 6                                                             |             |                                                  |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| Smart Cities and Urban Analytics<br>Specialization Core Courses          |             |                                                  |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| T7802                                                                    | 0701210633  | Specialization Project                           | PIS    |                                  | 0                                | 0 | 4    | 50                         | 0   | 0      | 0   | 2             | 50    |
| T7802                                                                    | 0701210634  | Specialization Seminar                           | PIS    |                                  | 0                                | 0 | 4    | 50                         | 0   | 0      | 0   | 2             | 50    |
| TE7177                                                                   | 0701210642  | Application of Sensor Technology to Smart Cities | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| Total                                                                    |             |                                                  |        |                                  | 3                                | 0 | 8    | 100                        | 0   | 30     | 45  | 7             | 175   |
| Semester : 6                                                             |             |                                                  |        |                                  |                                  |   |      |                            |     |        |     |               |       |



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| Catalog Course Code                                       | Course Code | Course Title                          | Nature | Specialization/ Area/ Department | Teaching Scheme (Hours Per Week) |   |      | Examination Scheme (Marks) |     |        |     | Total Credits | Total |
|-----------------------------------------------------------|-------------|---------------------------------------|--------|----------------------------------|----------------------------------|---|------|----------------------------|-----|--------|-----|---------------|-------|
|                                                           |             |                                       |        |                                  |                                  |   |      | Practical                  |     | Theory |     |               |       |
|                                                           |             |                                       |        |                                  | L                                | T | La b | CA                         | ESE | CA     | ESE |               |       |
| Structural Engineering Specialization Core Courses        |             |                                       |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| T7802                                                     | 0701210633  | Specialization Project                | PIS    |                                  | 0                                | 0 | 4    | 50                         | 0   | 0      | 0   | 2             | 50    |
| T7802                                                     | 0701210634  | Specialization Seminar                | PIS    |                                  | 0                                | 0 | 4    | 50                         | 0   | 0      | 0   | 2             | 50    |
| TE7228                                                    | 0701210643  | Structural Analysis by Matrix Methods | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| Total                                                     |             |                                       |        |                                  | 3                                | 0 | 8    | 100                        | 0   | 30     | 45  | 7             | 175   |
| Semester : 7                                              |             |                                       |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| Environmental Hydraulics Specialization Core Courses      |             |                                       |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| T7803                                                     | 0701210728  | Specialization Project                | PIS    |                                  | 0                                | 0 | 6    | 30                         | 45  | 0      | 0   | 3             | 75    |
| Total                                                     |             |                                       |        |                                  | 0                                | 0 | 6    | 30                         | 45  | 0      | 0   | 3             | 75    |
| Specialization Elective :Environmental Hydraulics         |             |                                       |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| TE7198                                                    | 0701210729  | Hydraulic Modelling                   | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7180                                                    | 0701210730  | Basics of Computational Methods       | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| Total Required Credits                                    |             |                                       |        |                                  |                                  |   |      | 0                          | 0   | 30     | 45  | 3             | 75    |
| Semester : 7                                              |             |                                       |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| Geo-Environmental Engineering Specialization Core Courses |             |                                       |        |                                  |                                  |   |      |                            |     |        |     |               |       |



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| Catalog Course Code                                         | Course Code | Course Title                                               | Nature | Specialization/ Area/ Department | Teaching Scheme (Hours Per Week) |   |      | Examination Scheme (Marks) |     |        |     | Total Credits | Total |
|-------------------------------------------------------------|-------------|------------------------------------------------------------|--------|----------------------------------|----------------------------------|---|------|----------------------------|-----|--------|-----|---------------|-------|
|                                                             |             |                                                            |        |                                  | L                                | T | La b | Practical                  |     | Theory |     |               |       |
|                                                             |             |                                                            |        |                                  |                                  |   |      | CA                         | ESE | CA     | ESE |               |       |
| T7803                                                       | 0701210728  | Specialization Project                                     | PIS    |                                  | 0                                | 0 | 6    | 30                         | 45  | 0      | 0   | 3             | 75    |
| Total                                                       |             |                                                            |        |                                  | 0                                | 0 | 6    | 30                         | 45  | 0      | 0   | 3             | 75    |
| Specialization Elective :Geo-Environmental Engineering      |             |                                                            |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| TE7226                                                      | 0701210731  | Solid and Hazardous Waste Management                       | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7186                                                      | 0701210732  | Environmental Geotechnology                                | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| Total Required Credits                                      |             |                                                            |        |                                  |                                  |   |      | 0                          | 0   | 30     | 45  | 3             | 75    |
| Semester : 7                                                |             |                                                            |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| GIS and Surveying Technology<br>Specialization Core Courses |             |                                                            |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| T7803                                                       | 0701210728  | Specialization Project                                     | PIS    |                                  | 0                                | 0 | 6    | 30                         | 45  | 0      | 0   | 3             | 75    |
| Total                                                       |             |                                                            |        |                                  | 0                                | 0 | 6    | 30                         | 45  | 0      | 0   | 3             | 75    |
| Specialization Elective :GIS and Surveying Technology       |             |                                                            |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| TE7193                                                      | 0701210733  | Geoinformatics Applications in Natural Resource Management | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7205                                                      | 0701210734  | Intelligent Transportation Systems                         | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| Total Required Credits                                      |             |                                                            |        |                                  |                                  |   |      | 0                          | 0   | 30     | 45  | 3             | 75    |
| Semester : 7                                                |             |                                                            |        |                                  |                                  |   |      |                            |     |        |     |               |       |



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**Optional 'Honours' Specialization**

| Catalog Course Code                                                      | Course Code | Course Title                       | Nature | Specialization/ Area/ Department | Teaching Scheme (Hours Per Week) |   |      | Examination Scheme (Marks) |     |        |     | Total Credits | Total |
|--------------------------------------------------------------------------|-------------|------------------------------------|--------|----------------------------------|----------------------------------|---|------|----------------------------|-----|--------|-----|---------------|-------|
|                                                                          |             |                                    |        |                                  |                                  |   |      | Practical                  |     | Theory |     |               |       |
|                                                                          |             |                                    |        |                                  | L                                | T | La b | CA                         | ESE | CA     | ESE |               |       |
| Infrastructure Engineering and Management<br>Specialization Core Courses |             |                                    |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| T7803                                                                    | 0701210728  | Specialization Project             | PIS    |                                  | 0                                | 0 | 6    | 30                         | 45  | 0      | 0   | 3             | 75    |
| Total                                                                    |             |                                    |        |                                  | 0                                | 0 | 6    | 30                         | 45  | 0      | 0   | 3             | 75    |
| Specialization Elective :Infrastructure Engineering and Management       |             |                                    |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| TE7205                                                                   | 0701210734  | Intelligent Transportation Systems | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7233                                                                   | 0701210735  | Transportation Economics           | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| Total Required Credits                                                   |             |                                    |        |                                  |                                  |   |      | 0                          | 0   | 30     | 45  | 3             | 75    |
| Semester : 7                                                             |             |                                    |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| Smart Cities and Urban Analytics<br>Specialization Core Courses          |             |                                    |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| T7803                                                                    | 0701210728  | Specialization Project             | PIS    |                                  | 0                                | 0 | 6    | 30                         | 45  | 0      | 0   | 3             | 75    |
| Total                                                                    |             |                                    |        |                                  | 0                                | 0 | 6    | 30                         | 45  | 0      | 0   | 3             | 75    |
| Specialization Elective :Smart Cities and Urban Analytics                |             |                                    |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| TE7205                                                                   | 0701210734  | Intelligent Transportation Systems | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7234                                                                   | 0701210736  | Urban Hydrology and Hydraulics     | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| Total Required Credits                                                   |             |                                    |        |                                  |                                  |   |      | 0                          | 0   | 30     | 45  | 3             | 75    |
| Semester : 7                                                             |             |                                    |        |                                  |                                  |   |      |                            |     |        |     |               |       |



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| Catalog Course Code                                | Course Code | Course Title                     | Nature | Specialization/ Area/ Department | Teaching Scheme (Hours Per Week) |   |      | Examination Scheme (Marks) |     |        |     | Total Credits | Total |
|----------------------------------------------------|-------------|----------------------------------|--------|----------------------------------|----------------------------------|---|------|----------------------------|-----|--------|-----|---------------|-------|
|                                                    |             |                                  |        |                                  |                                  |   |      | Practical                  |     | Theory |     |               |       |
|                                                    |             |                                  |        |                                  | L                                | T | La b | CA                         | ESE | CA     | ESE |               |       |
| Structural Engineering Specialization Core Courses |             |                                  |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| T7803                                              | 0701210728  | Specialization Project           | PIS    |                                  | 0                                | 0 | 6    | 30                         | 45  | 0      | 0   | 3             | 75    |
| Total                                              |             |                                  |        |                                  | 0                                | 0 | 6    | 30                         | 45  | 0      | 0   | 3             | 75    |
| Specialization Elective :Structural Engineering    |             |                                  |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| TE7200                                             | 0701210737  | Industrial Structures            | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7232                                             | 0701210738  | System Engineering and Economics | PE     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| Total Required Credits                             |             |                                  |        |                                  |                                  |   |      | 0                          | 0   | 30     | 45  | 3             | 75    |

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| Semester                                         | Internal Credits | External Credits | Total Credits | Total Marks |
|--------------------------------------------------|------------------|------------------|---------------|-------------|
| <b>Environmental Hydraulics</b>                  |                  |                  |               |             |
| Semester 5                                       | 0                | 7                | 7             | 175         |
| Semester 6                                       | 4                | 3                | 7             | 175         |
| Semester 7                                       | 0                | 6                | 6             | 150         |
| <b>Total</b>                                     | <b>4</b>         | <b>16</b>        | <b>20</b>     | <b>500</b>  |
| <b>Geo-Environmental Engineering</b>             |                  |                  |               |             |
| Semester 5                                       | 0                | 7                | 7             | 175         |
| Semester 6                                       | 4                | 3                | 7             | 175         |
| Semester 7                                       | 0                | 6                | 6             | 150         |
| <b>Total</b>                                     | <b>4</b>         | <b>16</b>        | <b>20</b>     | <b>500</b>  |
| <b>GIS and Surveying Technology</b>              |                  |                  |               |             |
| Semester 5                                       | 0                | 7                | 7             | 175         |
| Semester 6                                       | 4                | 3                | 7             | 175         |
| Semester 7                                       | 0                | 6                | 6             | 150         |
| <b>Total</b>                                     | <b>4</b>         | <b>16</b>        | <b>20</b>     | <b>500</b>  |
| <b>Infrastructure Engineering and Management</b> |                  |                  |               |             |
| Semester 5                                       | 0                | 7                | 7             | 175         |
| Semester 6                                       | 4                | 3                | 7             | 175         |
| Semester 7                                       | 0                | 6                | 6             | 150         |
| <b>Total</b>                                     | <b>4</b>         | <b>16</b>        | <b>20</b>     | <b>500</b>  |
| <b>Smart Cities and Urban Analytics</b>          |                  |                  |               |             |
| Semester 5                                       | 0                | 7                | 7             | 175         |
| Semester 6                                       | 4                | 3                | 7             | 175         |

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**Annexure B**

**Optional 'Honours' Specialization**

|                               |          |           |           |            |
|-------------------------------|----------|-----------|-----------|------------|
| Semester 7                    | 0        | 6         | 6         | 150        |
| <b>Total</b>                  | <b>4</b> | <b>16</b> | <b>20</b> | <b>500</b> |
| <b>Structural Engineering</b> |          |           |           |            |
| Semester 5                    | 0        | 7         | 7         | 175        |
| Semester 6                    | 4        | 3         | 7         | 175        |
| Semester 7                    | 0        | 6         | 6         | 150        |
| <b>Total</b>                  | <b>4</b> | <b>16</b> | <b>20</b> | <b>500</b> |



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**Annexure C**  
**Optional 'Minor' Specialization**

| Catalog Course Code                                                      | Course Code | Course Title                       | Nature | Specialization/ Area/ Department | Teaching Scheme (Hours Per Week) |   |      | Examination Scheme (Marks) |     |        |     | Total Credits | Total |
|--------------------------------------------------------------------------|-------------|------------------------------------|--------|----------------------------------|----------------------------------|---|------|----------------------------|-----|--------|-----|---------------|-------|
|                                                                          |             |                                    |        |                                  |                                  |   |      | Practical                  |     | Theory |     |               |       |
|                                                                          |             |                                    |        |                                  | L                                | T | La b | CA                         | ESE | CA     | ESE |               |       |
| Semester : 5                                                             |             |                                    |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| Artificial Intelligence and Machine Learning Specialization Core Courses |             |                                    |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| TE7273                                                                   | 0701210542  | Machine Learning: Classification   | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7274                                                                   | 0701210543  | Machine Learning: Regression       | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| Total                                                                    |             |                                    |        |                                  | 6                                | 0 | 0    | 0                          | 0   | 60     | 90  | 6             | 150   |
| Semester : 5                                                             |             |                                    |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| Data Science Specialization Core Courses                                 |             |                                    |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| TE7281                                                                   | 0701210544  | Open Source Tools for Data Science | PC     |                                  | 4                                | 0 | 0    | 0                          | 0   | 40     | 60  | 4             | 100   |
| TE7292                                                                   | 0701210545  | R Programming                      | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| Total                                                                    |             |                                    |        |                                  | 7                                | 0 | 0    | 0                          | 0   | 70     | 105 | 7             | 175   |
| Semester : 5                                                             |             |                                    |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| Internet of Things Specialization Core Courses                           |             |                                    |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| TE7268                                                                   | 0701210546  | Introduction to IOT                | PC     |                                  | 4                                | 0 | 0    | 0                          | 0   | 40     | 60  | 4             | 100   |
| TE7293                                                                   | 0701210547  | Raspberry Pi and Python            | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| Total                                                                    |             |                                    |        |                                  | 7                                | 0 | 0    | 0                          | 0   | 70     | 105 | 7             | 175   |



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**Annexure C**  
**Optional 'Minor' Specialization**

| Catalog Course Code                                                                         | Course Code | Course Title                               | Nature | Specialization/ Area/ Department | Teaching Scheme (Hours Per Week) |   |      | Examination Scheme (Marks) |     |        |     | Total Credits | Total |
|---------------------------------------------------------------------------------------------|-------------|--------------------------------------------|--------|----------------------------------|----------------------------------|---|------|----------------------------|-----|--------|-----|---------------|-------|
|                                                                                             |             |                                            |        |                                  |                                  |   |      | Practical                  |     | Theory |     |               |       |
|                                                                                             |             |                                            |        |                                  | L                                | T | La b | CA                         | ESE | CA     | ESE |               |       |
| Semester : 5                                                                                |             |                                            |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| Embedded Systems<br>Specialization Core Courses                                             |             |                                            |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| T7801                                                                                       | 0701210548  | Specialization Project                     | PIS    |                                  | 0                                | 0 | 2    | 10                         | 15  | 0      | 0   | 1             | 25    |
| T7802                                                                                       | 0701210549  | Specialization Seminar                     | PIS    |                                  | 0                                | 0 | 4    | 20                         | 30  | 0      | 0   | 2             | 50    |
| TE7298                                                                                      | 0701210550  | System Programming                         | PC     |                                  | 4                                | 0 | 0    | 0                          | 0   | 40     | 60  | 4             | 100   |
| Total                                                                                       |             |                                            |        |                                  | 4                                | 0 | 6    | 30                         | 45  | 40     | 60  | 7             | 175   |
| Semester : 5                                                                                |             |                                            |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| Automobile Engineering with Hybrid and Autonomous Technology<br>Specialization Core Courses |             |                                            |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| TE7355                                                                                      | 0701210551  | Basics of Automotive Engineering           | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7666                                                                                      | 0701210552  | Automotive Vehicle Dynamics and NVH Lab    | PC     |                                  | 0                                | 0 | 2    | 10                         | 15  | 0      | 0   | 1             | 25    |
| TE7665                                                                                      | 0701210553  | Automotive Electronics and Instrumentation | PC     |                                  | 2                                | 0 | 0    | 0                          | 0   | 50     | 0   | 2             | 50    |
| Total                                                                                       |             |                                            |        |                                  | 5                                | 0 | 2    | 10                         | 15  | 80     | 45  | 6             | 150   |
| Semester : 6                                                                                |             |                                            |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| Artificial Intelligence and Machine Learning<br>Specialization Core Courses                 |             |                                            |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| TE7266                                                                                      | 0701210644  | Introduction to Deep Learning              | PC     |                                  | 4                                | 0 | 0    | 0                          | 0   | 40     | 60  | 4             | 100   |
| TE7271                                                                                      | 0701210645  | Machine Learning Clustering and Retrieval  | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |



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**Annexure C**  
**Optional 'Minor' Specialization**

| Catalog Course Code                               | Course Code | Course Title                | Nature | Specialization/ Area/ Department | Teaching Scheme (Hours Per Week) |   |      | Examination Scheme (Marks) |     |        |     | Total Credits | Total |
|---------------------------------------------------|-------------|-----------------------------|--------|----------------------------------|----------------------------------|---|------|----------------------------|-----|--------|-----|---------------|-------|
|                                                   |             |                             |        |                                  |                                  |   |      | Practical                  |     | Theory |     |               |       |
|                                                   |             |                             |        |                                  | L                                | T | La b | CA                         | ESE | CA     | ESE |               |       |
| Total                                             |             |                             |        |                                  | 7                                | 0 | 0    | 0                          | 0   | 70     | 105 | 7             | 175   |
| Semester : 6                                      |             |                             |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| Data Science<br>Specialization Core Courses       |             |                             |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| TE7247                                            | 0701210646  | Business Analytics          | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7284                                            | 0701210647  | Power BI                    | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| Total                                             |             |                             |        |                                  | 6                                | 0 | 0    | 0                          | 0   | 60     | 90  | 6             | 150   |
| Semester : 6                                      |             |                             |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| Internet of Things<br>Specialization Core Courses |             |                             |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| TE7269                                            | 0701210648  | IOT Security and Privacy    | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| TE7295                                            | 0701210649  | Software Defined Networking | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| Total                                             |             |                             |        |                                  | 6                                | 0 | 0    | 0                          | 0   | 60     | 90  | 6             | 150   |
| Semester : 6                                      |             |                             |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| Embedded Systems<br>Specialization Core Courses   |             |                             |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| T7802                                             | 0701210650  | Specialization Project      | PIS    |                                  | 0                                | 0 | 4    | 20                         | 30  | 0      | 0   | 2             | 50    |
| TE7325                                            | 0701210651  | Embedded Linux              | PC     |                                  | 4                                | 0 | 0    | 0                          | 0   | 40     | 60  | 4             | 100   |



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**Annexure C**  
**Optional 'Minor' Specialization**

| Catalog Course Code                                          | Course Code | Course Title                              | Nature | Specialization/ Area/ Department | Teaching Scheme (Hours Per Week) |   |      | Examination Scheme (Marks) |     |        |     | Total Credits | Total |
|--------------------------------------------------------------|-------------|-------------------------------------------|--------|----------------------------------|----------------------------------|---|------|----------------------------|-----|--------|-----|---------------|-------|
|                                                              |             |                                           |        |                                  | L                                | T | La b | Practical                  |     | Theory |     |               |       |
|                                                              |             |                                           |        |                                  |                                  |   |      | CA                         | ESE | CA     | ESE |               |       |
| Total                                                        |             |                                           |        |                                  | 4                                | 0 | 4    | 20                         | 30  | 40     | 60  | 6             | 150   |
| Semester : 6                                                 |             |                                           |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| Automobile Engineering with Hybrid and Autonomous Technology |             |                                           |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| Specialization Core Courses                                  |             |                                           |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| TE7669                                                       | 0701210652  | Hybrid Technology                         | PC     |                                  | 2                                | 0 | 0    | 0                          | 0   | 20     | 30  | 2             | 50    |
| F0002                                                        | 0701210653  | Flexi-Credit Course                       | PC     |                                  | 2                                | 0 | 0    | 0                          | 0   | 50     | 0   | 2             | 50    |
| TE7435                                                       | 0701210654  | Automotive Engine and Transmission System | PC     |                                  | 3                                | 0 | 0    | 0                          | 0   | 30     | 45  | 3             | 75    |
| Total                                                        |             |                                           |        |                                  | 7                                | 0 | 0    | 0                          | 0   | 100    | 75  | 7             | 175   |
| Semester : 7                                                 |             |                                           |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| Artificial Intelligence and Machine Learning                 |             |                                           |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| Specialization Core Courses                                  |             |                                           |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| T7805                                                        | 0701210739  | Specialization Project                    | PIS    |                                  | 0                                | 0 | 10   | 50                         | 75  | 0      | 0   | 5             | 125   |
| T7802                                                        | 0701210740  | Specialization Seminar                    | PIS    |                                  | 0                                | 0 | 4    | 20                         | 30  | 0      | 0   | 2             | 50    |
| Total                                                        |             |                                           |        |                                  | 0                                | 0 | 14   | 70                         | 105 | 0      | 0   | 7             | 175   |
| Semester : 7                                                 |             |                                           |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| Data Science                                                 |             |                                           |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| Specialization Core Courses                                  |             |                                           |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| T7805                                                        | 0701210739  | Specialization Project                    | PIS    |                                  | 0                                | 0 | 10   | 50                         | 75  | 0      | 0   | 5             | 125   |





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**Annexure C**  
**Optional 'Minor' Specialization**

| Catalog Course Code                                                                         | Course Code | Course Title                           | Nature | Specialization/ Area/ Department | Teaching Scheme (Hours Per Week) |   |      | Examination Scheme (Marks) |     |        |     | Total Credits | Total |
|---------------------------------------------------------------------------------------------|-------------|----------------------------------------|--------|----------------------------------|----------------------------------|---|------|----------------------------|-----|--------|-----|---------------|-------|
|                                                                                             |             |                                        |        |                                  |                                  |   |      | Practical                  |     | Theory |     |               |       |
|                                                                                             |             |                                        |        |                                  | L                                | T | La b | CA                         | ESE | CA     | ESE |               |       |
| T7802                                                                                       | 0701210740  | Specialization Seminar                 | PIS    |                                  | 0                                | 0 | 4    | 20                         | 30  | 0      | 0   | 2             | 50    |
| Total                                                                                       |             |                                        |        |                                  | 0                                | 0 | 14   | 70                         | 105 | 0      | 0   | 7             | 175   |
| Semester : 7                                                                                |             |                                        |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| Internet of Things<br>Specialization Core Courses                                           |             |                                        |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| T7805                                                                                       | 0701210739  | Specialization Project                 | PIS    |                                  | 0                                | 0 | 10   | 50                         | 75  | 0      | 0   | 5             | 125   |
| T7802                                                                                       | 0701210740  | Specialization Seminar                 | PIS    |                                  | 0                                | 0 | 4    | 20                         | 30  | 0      | 0   | 2             | 50    |
| Total                                                                                       |             |                                        |        |                                  | 0                                | 0 | 14   | 70                         | 105 | 0      | 0   | 7             | 175   |
| Semester : 7                                                                                |             |                                        |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| Embedded Systems<br>Specialization Core Courses                                             |             |                                        |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| T7802                                                                                       | 0701210741  | Specialization Project                 | PIS    |                                  | 0                                | 0 | 4    | 20                         | 30  | 0      | 0   | 2             | 50    |
| TE7304                                                                                      | 0701210742  | Advanced Microcontrollers and RTOS     | PC     |                                  | 4                                | 0 | 0    | 0                          | 0   | 40     | 60  | 4             | 100   |
| TE7305                                                                                      | 0701210743  | Advanced Microcontrollers and RTOS Lab | PC     |                                  | 0                                | 0 | 2    | 10                         | 15  | 0      | 0   | 1             | 25    |
| Total                                                                                       |             |                                        |        |                                  | 4                                | 0 | 6    | 30                         | 45  | 40     | 60  | 7             | 175   |
| Semester : 7                                                                                |             |                                        |        |                                  |                                  |   |      |                            |     |        |     |               |       |
| Automobile Engineering with Hybrid and Autonomous Technology<br>Specialization Core Courses |             |                                        |        |                                  |                                  |   |      |                            |     |        |     |               |       |



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**Annexure C**  
**Optional 'Minor' Specialization**

| Catalog Course Code | Course Code | Course Title           | Nature | Specialization/ Area/ Department | Teaching Scheme (Hours Per Week) |   |      | Examination Scheme (Marks) |     |        |     | Total Credits | Total |
|---------------------|-------------|------------------------|--------|----------------------------------|----------------------------------|---|------|----------------------------|-----|--------|-----|---------------|-------|
|                     |             |                        |        |                                  |                                  |   |      | Practical                  |     | Theory |     |               |       |
|                     |             |                        |        |                                  | L                                | T | La b | CA                         | ESE | CA     | ESE |               |       |
| T7805               | 0701210739  | Specialization Project | PIS    |                                  | 0                                | 0 | 10   | 50                         | 75  | 0      | 0   | 5             | 125   |
| T7802               | 0701210740  | Specialization Seminar | PIS    |                                  | 0                                | 0 | 4    | 20                         | 30  | 0      | 0   | 2             | 50    |
| Total               |             |                        |        |                                  | 0                                | 0 | 14   | 70                         | 105 | 0      | 0   | 7             | 175   |



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**Optional 'Minor' Specialization**

| Semester                                                            | Internal Credits | External Credits | Total Credits | Total Marks |
|---------------------------------------------------------------------|------------------|------------------|---------------|-------------|
| <b>Artificial Intelligence and Machine Learning</b>                 |                  |                  |               |             |
| Semester 5                                                          | 0                | 6                | 6             | 150         |
| Semester 6                                                          | 0                | 7                | 7             | 175         |
| Semester 7                                                          | 0                | 7                | 7             | 175         |
| <b>Total</b>                                                        | <b>0</b>         | <b>20</b>        | <b>20</b>     | <b>500</b>  |
| <b>Data Science</b>                                                 |                  |                  |               |             |
| Semester 5                                                          | 0                | 7                | 7             | 175         |
| Semester 6                                                          | 0                | 6                | 6             | 150         |
| Semester 7                                                          | 0                | 7                | 7             | 175         |
| <b>Total</b>                                                        | <b>0</b>         | <b>20</b>        | <b>20</b>     | <b>500</b>  |
| <b>Internet of Things</b>                                           |                  |                  |               |             |
| Semester 5                                                          | 0                | 7                | 7             | 175         |
| Semester 6                                                          | 0                | 6                | 6             | 150         |
| Semester 7                                                          | 0                | 7                | 7             | 175         |
| <b>Total</b>                                                        | <b>0</b>         | <b>20</b>        | <b>20</b>     | <b>500</b>  |
| <b>Embedded Systems</b>                                             |                  |                  |               |             |
| Semester 5                                                          | 0                | 7                | 7             | 175         |
| Semester 6                                                          | 0                | 6                | 6             | 150         |
| Semester 7                                                          | 0                | 7                | 7             | 175         |
| <b>Total</b>                                                        | <b>0</b>         | <b>20</b>        | <b>20</b>     | <b>500</b>  |
| <b>Automobile Engineering with Hybrid and Autonomous Technology</b> |                  |                  |               |             |
| Semester 5                                                          | 2                | 4                | 6             | 150         |
| Semester 6                                                          | 2                | 5                | 7             | 175         |



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**Optional 'Minor' Specialization**

|              |          |           |           |            |
|--------------|----------|-----------|-----------|------------|
| Semester 7   | 0        | 7         | 7         | 175        |
| <b>Total</b> | <b>4</b> | <b>16</b> | <b>20</b> | <b>500</b> |