

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELGAUM**  
**CHOICE BASED CREDIT SYSTEM (CBCS)**  
**SCHEME OF TEACHING AND EXAMINATION 2016-2017**

**M.Tech. in Waste Water Management, Health & Safety Engineering**

**I - SEMESTER**

| Sl. No.      | Subject Code | Title   | Teaching Hours /Week |                                 | Examination |            |                        | Credits    |             |
|--------------|--------------|---|----------------------|---------------------------------|-------------|------------|------------------------|------------|-------------|
|              |              |   | Theory               | Practical/Field Work/Assignment | Duration    | I.A. Marks | Theory/Practical Marks |            | Total Marks |
| 1            | 16 CWM 11    | Advanced Computational Methods and Numerical Analysis | 4                    | -                               | 3           | 20         | 80                     | 100        | 4           |
| 2            | 16 CWM 12    | Aquatic Chemistry and Microbiology                    | 4                    | -                               | 3           | 20         | 80                     | 100        | 4           |
| 3            | 16 CWM 13    | Advanced Waste Water Treatment Technology             | 4                    | -                               | 3           | 20         | 80                     | 100        | 4           |
| 4            | 16 CWM 14    | Water Treatment Technology                            | 4                    | -                               | 3           | 20         | 80                     | 100        | 4           |
| 5            | 16 CWM 15x   | Elective-I  | 3                    | -                               | 3           | 20         | 80                     | 100        | 3           |
| 6            | 16 CWML 16   | Environmental Laboratory - I                          |                      | 3                               | 3           | 20         | 80                     | 100        | 2           |
| 7            | 16 CWM 17    | Seminar   | -                    | 3                               | -           | 100        | -                      | 100        | 1           |
| <b>TOTAL</b> |              |   | <b>19</b>            | <b>6</b>                        | <b>18</b>   | <b>220</b> | <b>480</b>             | <b>700</b> | <b>22</b>   |

| <b>Elective - I</b> |   |
|---------------------|---|
| 16 CWM 151          | Environmental Pollutions and Control Management       |
| 16 CWM 152          | Renewable & Alternative Fuels                         |
| 16 CWM 153          | Community Health Science and Environmental Sanitation |
| 16 CWM 154          | Remote Sensing and GIS in Environmental Engineering   |

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**II - SEMESTER**

| Sl. No.      | Subject Code | Title   | Teaching Hours /Week |                                 | Examination |            |                        |             | Credit    |
|--------------|--------------|---|----------------------|---------------------------------|-------------|------------|------------------------|-------------|-----------|
|              |              |   | Theory               | Practical/Field Work/Assignment | Duration    | I.A. Marks | Theory/Practical Marks | Total Marks |           |
| 1            | 16 CWM 21    | Occupational Safety and Health Management     | 4                    | -                               | 3           | 20         | 80                     | 100         | 4         |
| 2            | 16 CWM 22    | Hazardous Waste Management                    | 4                    | -                               | 3           | 20         | 80                     | 100         | 4         |
| 3            | 16 CWM 23    | Transport Modelling of Aquatic Systems        | 4                    | -                               | 3           | 20         | 80                     | 100         | 4         |
| 4            | 16 CWM 24    | Industrial Effluent Treatment and Engineering | 4                    | -                               | 3           | 20         | 80                     | 100         | 4         |
| 5            | 16 CWM 25x   | Elective - II                                 | 3                    | -                               | 3           | 20         | 80                     | 100         | 3         |
| 6            | 16 CWML 26   | Environmental Laboratory - II                 |                      | 3                               | 3           | 20         | 80                     | 100         | 2         |
| 7            | 16 CWM 27    | Seminar                                       | -                    | 3                               | -           | 100        | -                      | 100         | 1         |
| <b>TOTAL</b> |              |   | <b>19</b>            | <b>6</b>                        | <b>18</b>   | <b>220</b> | <b>480</b>             | <b>700</b>  | <b>22</b> |

| <b>Elective - II</b> |  |
|----------------------|--|
| 16 CWM 251           | Integrated Solid Waste Management      |
| 16 CWM 252           | Industrial Waste Pollution and Control |
| 16 CWM 253           | Environmental Impact Assessment        |
| 16 CWM 254           | Environmental Planning and Management  |

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**III- SEMESTER: Internship**

| Sl. No.      | Subject Code | Title  | Teaching Hours /Week |                                 | Examination |            |                        | Credit     |             |
|--------------|--------------|--|----------------------|---------------------------------|-------------|------------|------------------------|------------|-------------|
|              |              |  | Theory               | Practical/Field Work/Assignment | Duration    | I.A. Marks | Theory/Practical Marks |            | Total Marks |
| 1            | 16 CWM 31    | Seminar / Presentation on Internship (After 8 weeks from the date of commencement) | -                    | -                               | -           | 25         | -                      | 25         | 20          |
| 2            | 16 CWM 32    | Report on Internship   | -                    | -                               | -           | 50         | -                      | 50         |             |
| 3            | 16 CWM 33    | Evaluation and Viva-Voce of Internship   | -                    | -                               | -           | -          | 75                     | 75         |             |
| 4            | 16 CWM 34    | Evaluation of Project phase -1   | -                    | -                               | -           | 25         | -                      | 25         | 1           |
| <b>TOTAL</b> |              |  | -                    | -                               | -           | <b>100</b> | <b>75</b>              | <b>175</b> | <b>21</b>   |

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**IV - SEMESTER**

| Sl. No.      | Subject Code | Title                                 | Teaching Hours /Week |                                 | Examination |            |                        |             | Credit    |
|--------------|--------------|---------------------------------------|----------------------|---------------------------------|-------------|------------|------------------------|-------------|-----------|
|              |              |                                       | Theory               | Practical/Field Work/Assignment | Duration    | I.A. Marks | Theory/Practical Marks | Total Marks |           |
| 1            | 16 CWM 41    | Atmospheric Air Pollution and Control | 4                    | -                               | 3           | 20         | 80                     | 100         | 4         |
| 2            | 16 CWM 42    | Elective-III                          | 3                    | -                               | 3           | 20         | 80                     | 100         | 3         |
| 3            | 16 CWM 43    | Evaluation of Project phase -2        | -                    | -                               | -           | 50         | -                      | 50          | 3         |
| 4            | 16 CWM 44    | Evaluation of Project and Viva-Voce   | -                    | -                               | 3           | -          | 100+100                | 200         | 10        |
| <b>TOTAL</b> |              |                                       | -                    | -                               | <b>6</b>    | <b>60</b>  | <b>75</b>              | <b>450</b>  | <b>20</b> |

| <b>Elective -III</b> |  |
|----------------------|--|
| 16 CWM 421           | Instrumentation Technique in Environmental Engineering |
| 16 CWM 422           | Energy Systems and Environmental Resources             |
| 16 CWM 423           | Hydraulics of Water and Waste Water Systems            |
| 16 CWM 424           | Human impact on Marine and Coastal Environment         |

**Note:**

1. **Project Phase-1:** 6-week duration shall be carried out between 2<sup>nd</sup> and 3<sup>rd</sup> Semester vacation. Candidates in consultation with the guide shall carry out literature survey/ visit industries to finalize the topic of Project.
2. **Project Phase-2:** 16-week duration during 4<sup>th</sup> semester. Evaluation shall be done by the committee constituted comprising of HoD as Chairman, Guide and Senior faculty of the department.
3. **Project Evaluation:** Evaluation shall be taken up at the end of 4<sup>th</sup> semester. Project work evaluation and Viva-Voce examination shall be conducted
4. **Project evaluation:**
  - a. Internal Examiner shall carry out the evaluation for 100 marks.
  - b. External Examiner shall carry out the evaluation for 100 marks.
  - c. The average of marks allotted by the internal and external examiner shall be the final marks of the project evaluation.
  - d. Viva-Voce examination of Project work shall be conducted jointly by Internal and External examiner for 100 marks.