**Dual Degree (B Tech-M Tech) Energy and Environmental Engineering**

**Eligibility:**

Higher Secondary (10+2) with Mathematics as a subject with at least 55% marks in aggregate or an equivalent grade for General/OBC candidates, and 45% marks in aggregate or an equivalent grade for SC/ST and Differently Abled (DA) category candidates from a recognized Board.

**Age Limit:**

As decided by the Devi Ahilya Vishwavidyalaya or State Govt. for U.G. program.

**Admission Procedure:**

The admission of Indian students will be done as per merit in the entrance test. No admission test will be conducted for NRI/ Foreign Students.

**Seats:** Seats for Indian Students: 30 (reservation as per state Govt. rules).

Seats for PIO/Foreign Students: 06

**Duration: Ten Semesters** (Five Years).

**Curriculum:**

**FIRST SEMESTER:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Code** | **Title** | **Credits (L-T-P)** | **Hours** | **Faculty** |
| **CORE COURSE** | | | | |
| EN6A-101 | Applied Math- I | 4 (3-1-0) | 64 |  |
| EN6A -102 | Applied Physics-I | 4 (3-1-0) | 64 |  |
| EN6A -103 | Engineering Chemistry | 4 (3-1-0) | 64 |  |
| EN6A -104 | Basics of Computer Application | 3 (0-0-3) | 48 |  |
| EN6A -105 | Workshop Practices-I (Welding, Shredding, Cutting, threading, multi meter, Bernier, micrometer est.) | 4 (0-0-3) | 64 |  |
| **ELECTIVE COURSE** | | | | |
| EN6A -106 | Technical English and communication | 4 (3-1-0) | 64 |  |
| **Comprehensive Viva-Voce** | | | | |
| EN6A-107 | Comprehensive Viva-Voce | 4 | 64 |  |
| **Value Added Course** | | | | |
| It is an additional Course, its credit shall not be counted in calculating SGPA/CGPA | | | | |
|  | **Total Credit** | **27** |  |  |

**SECOND SEMESTER:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Code | Title | Credits (L T P) | Hours | Faculty |
| **CORE COURSE** | |  |  |  |
| EN6A -108 | Applied Math- II | 4 (3-1-0) | 64 |  |
| EN6A -109 | Applied Physics-II | 4 (3-1-0) | 64 |  |
| EN6A -110 | Engineering drawing | 4 (1-0-3) | 64 |  |
| EN6A -111 | Computer Programming (C++, Python) | 4 (1-0-3) | 64 |  |
| **ABILITY ENHANCEMENT COURSE** | | | | |
| EN6A -112 | Seminar | 2 (0-0-2) | 32 |  |
| EN6A -113 | Workshop Practices-II (Labs on Physics & Chemistry) | 3 (0-0-3) | 48 |  |
| **ELECTIVE COURSE** | |  |  |  |
| EN6A -114 | Humanity (Social Science & Ethics) | 4 (4-0-0) | 64 |  |
| **Comprehensive Viva-Voce** | | | | |
| EN6A -115 | Comprehensive Viva-Voce | 4 | 64 |  |
| **Value Added Course** | | | | |
| It is an additional Course, its credit shall not be counted in calculating SGPA/CGPA | | | | |
|  | **Total Credit** | **29** |  |  |

**THIRD SEMESTER:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Code | Title | Credits (L T P) | Hours | Faculty |
| **CORE COURSE** | |  |  |  |
| EN6A -201 | Basics of Electrical & Electronic Engineering | 4 (3-1-0) | 64 |  |
| EN6A -202 | Basics of Mechanical Engineering | 4 (3-1-0) | 64 |  |
| EN6A -203 | Engineering Thermodynamics | 4 (3-1-0) | 64 |  |
| EN6A -204 | Basics of Environmental Studies | 4 (4-0-0) | 64 |  |
| **ABILITY ENHANCEMENT COURSE** | |  |  |  |
| EN6A -205 | Workshop Practices-III (AUTOCAD) | 3(0-0-3) | 48 |  |
| **ELECTIVE COURSE** | | | | |
| EN6A -206 | Industrial Instrumentation and Measurement | 4 (3-1-0) | 64 |  |
| **Comprehensive Viva-Voce** | | | | |
| EN6A -207 | Comprehensive Viva-Voce | 4 | 64 |  |
| **Value Added Course** | | | | |
| It is an additional Course, its credit shall not be counted in calculating SGPA/CGPA | | | | |
|  | **Total Credit** | **27** |  |  |

**FOURTH SEMESTER:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Code | | Title | | Credits (L T P) | Hours | Faculty |
| **CORE COURSE** | | | |  |  |  |
| EN6A -208 | | Energy Engineering Fundamental | | 4 (3-1-0) | 64 |  |
| EN6A -209 | | Material Sciences and Technologies | | 4 (3-1-0) | 64 |  |
| EN6A -210 | | Basics of RCC Structure | | 4 (3-1-0) | 64 |  |
| EN6A -211 | | Natural Resource Management | | 4 (4-0-0) | 64 |  |
| **ABILITY ENHANCEMENT COURSE** | | | | | | |
| EN6A -212 | | Workshop Practices-IV (MATLAB) | | 3 (0-0-3) | 64 |  |
| EN6A -213 | | Industrial Training during Summer vacation | | 3(0-0-3) | 48 |  |
| **ELECTIVE COURSE** | | | |  |  |  |
| EN6A -214 | | Engineering Economics | | 4(3-1-0) | 64 |  |
| **Comprehensive Viva-Voce** | | | | | | |
| EN6A -215 | Comprehensive Viva-Voce | | 4 | |  |  |
| **Value Added Course** | | | | | | |
| It is an additional Course, its credit shall not be counted in calculating SGPA/CGPA | | | | | | |
|  | | Total Credit | | **30** |  |  |

**FIFTH SEMESTER:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Code | Title | Credits (L-T-P) | Hours | Faculty |
| **CORE COURSE** | |  |  |  |
| EN6A -301 | Environmental Ecology and Microbiology | 4 (3-1-0) | 64 |  |
| EN6A -302 | Environmental Chemistry | 4 (3-1-0) | 64 |  |
| EN6A -303 | Fundamentals of Solar Engineering | 4 (3-1-0) | 64 |  |
| EN6A -304 | World and Indian Energy Scenario | 4 (3-1-0) | 64 |  |
| **ABILITY ENHANCEMENT COURSE** | | | | |
| EN6A -305 | Workshop Practices-V(Heat Transfer & Energy Conservation Lab) | 3(0-0-3) | 48 |  |
| **ELECTIVE COURSE** | |  |  |  |
| EN6A -306 | Surveying & Leveling | 4 (3-1-0) | 64 |  |
| **Comprehensive Viva-Voce** | | | | |
| EN6A -307 | Comprehensive Viva-voce | 4 |  |  |
| **Value Added Course** | | | | |
| It is an additional Course, its credit shall not be counted in calculating SGPA/CGPA | | | | |
|  | Total Credit | **27** |  |  |

**SIX SEMESTERS:**

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| --- | --- | --- | --- | --- |
| Code | Title | Credits (L T P) | Hours | Faculty |
| **CORE COURSE** | |  |  |  |
| EN6A -308 | Renewable Energy, Sources and Technologies- I | 4 (3-1-0) | 64 |  |
| EN6A -309 | Environmental Laws and Policies | 4 (3-1-0) | 64 |  |
| EN6A -310 | Water: Pollution & Control Technologies | 4 (3-1-0) | 64 |  |
| EN6A -311 | Energy Management (Thermal System) | 4 (3-1-0) | 64 |  |
| EN6A -312 | Field Visit | 2(0-0-2) | 32 |  |
| **ABILITY ENHANCEMENT COURSE** | | | | |
| EN6A -313 | Workshop Practices-VI (Solar Thermal and Photo - Voltaic Laboratory) | 3 (0-0-3) | 64 |  |
| **ELECTIVE COURSE** | |  |  |  |
| EN6A -314 | Energy Modeling and Project Management | 4 (3-1-0) | 64 |  |
| **Comprehensive Viva-Voce** | | | | |
| EN6A -315 | Comprehensive Viva-Voce | 4 | 64 |  |
| **Value Added Course** | | | | |
| It is an additional Course, its credit shall not be counted in calculating SGPA/CGPA | | | | |
|  | Total Credit | **29** |  |  |

**SEVENTH SEMESTER:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Code | Title | Credits (L T P) | Hours | Faculty |
| **CORE COURSE** | |  |  |  |
| EN6A -401 | Air & Noise Pollution: Effects and Control Technologies | 4 (3-1-0) | 64 |  |
| EN6A -402 | Waste Water Engineering | 4 (3-1-0) | 64 |  |
| EN6A -403 | Bio-fuel Technology | 4 (3-1-0) | 64 |  |
| EN6A -404 | Energy Management (Electrical System) | 4 (3-1-0) | 64 |  |
| EN6A -405 | Seminar | 2(0-0-2) | 32 |  |
| **ABILITY ENHANCEMENT COURSE** | |  |  |  |
| EN6A -406 | Workshop Practices-VII (Environment Lab) | 3(0-0-3) | 48 |  |
| **ELECTIVE COURSE** | |  |  |  |
| EN6A -407 | Electrical Power Generation, Transmission & Distribution | 4 (3-1-0) | 64 |  |
| **Comprehensive Viva-Voce** | | | | |
| EN6A -408 | Comprehensive Viva-Voce | 4 | 64 |  |
| **Value Added Course** | | | | |
| It is an additional Course, its credit shall not be counted in calculating SGPA/CGPA | | | | |
|  | Total Credit | **29** | 464 |  |

**EIGHT SEMESTERS:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Code | | Title | Credits (L T P) | Hours | Faculty |
| **CORE COURSE** | | |  |  |  |
| EN6A -409 | | Renewable Energy, Sources and Technologies II | 4 (3-1-0) | 64 |  |
| EN6A -410 | | Sustainable development, Environmental Auditing and Environmental Impact Assessment | 4 (3-1-0) | 64 |  |
| EN6A -411 | | Industrial Pollution Control Technologies | 4 (3-1-0) | 64 |  |
| EN6A -412 | | Green Building Technologies | 4 (3-1-0) | 64 |  |
| **ABILITY ENHANCEMENT COURSE** | | |  |  |  |
| EN6A -413 | | Minor Project-I | 4 (0-0-4) | 64 |  |
| EN6A -414 | | Industrial Training/ Educational Tour (minimum 4 weeks) | 4 (0-0-4) | 64 |  |
| EN6A -415 | | Workshop Practices-VIII **(**Biomass Laboratory) | 3 (0-0-3) | 48 |  |
| **ELECTIVE COURSE** | | |  |  |  |
| EN6A -416 | | Electric and Hybrid Electric Vehicle Technology | 4 (3-1-0) | 64 |  |
| **Comprehensive Viva-Voce** | | | | | |
| EN6A -417 | Comprehensive Viva-Voce | | 4 | 64 |  |
| **Value Added Course** | | | | | |
| It is an additional Course, its credit shall not be counted in calculating SGPA/CGPA | | | | | |
|  | | Total Credit | **35** | 560 |  |

**NINTH SEMESTER:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Code** | **Title** | **Credits (L T P)** | Hours | Faculty |
| **CORE COURSE** | |  |  |  |
| EN6A -501 | Solid Waste Management | 4 (3-1-0) | 64 |  |
| EN6A -502 | Sustainable Development and Climate Change | 4 (3-1-0) | 64 |  |
| EN6A -503 | Efficient Lighting: Sources, Systems and Design Aspects | 4 (3-1-0) | 64 |  |
| EN6A -504 | Refrigeration & Air Conditioning | 4 (3-1-0) | 64 |  |
| **ABILITY ENHANCEMENT COURSE** | | | | |
| EN6A -505 | Minor project-II | 4 (0-0-4) | 64 |  |
| EN6A -506 | Workshop Practices-IX (Energy & Environment Software Application) | 3(0-0-3) | 48 |  |
| **ELECTIVE COURSE** | |  |  |  |
| EN6A -507 | Operations Research | 4 (0-0-4) | 64 |  |
| **Comprehensive Viva-Voce** | | | | |
| EN6A -508 | Comprehensive Viva-Voce | 4 | 64 |  |
| **Value Added Course** | | | | |
| It is an additional Course, its credit shall not be counted in calculating SGPA/CGPA | | | | |
|  | Total Credit | **31** | 496 |  |

**Tenth Semester:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Code** | **Title** | **Credits (L T P)** | Hours | Faculty |
| **CORE COURSES** | | |  |  |
| EN6A-509 | Major Project | 12 (0-0-12) | 192 |  |
| **Comprehensive Viva- Voce** | | | | |
| EN6A-510 | Comprehensive Viva-vice | 4 |  |  |
|  | Total Credit | 16 |  |  |
|  | **Grand Total Credits** | **280** | **4480** |  |

Note: The above course contents can be modified as per requirement from time to time in accordance with University Ordinance No. 14.