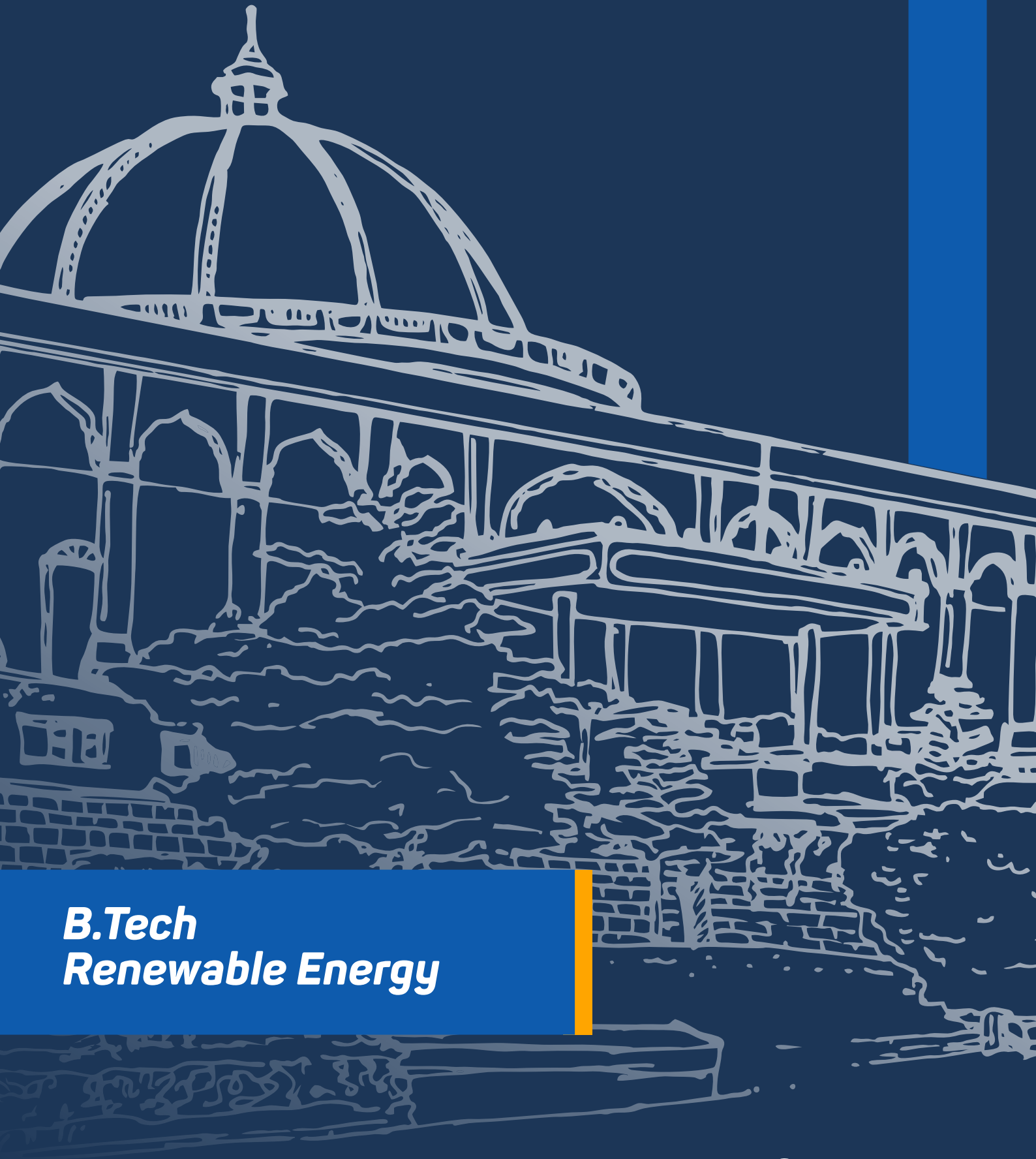
MIT-WPU
॥ विश्वशान्तिर्ध्रुवं ध्रुवा ॥

FACULTY OF ENGINEERING AND TECHNOLOGY



B.Tech Renewable Energy

Program Structure

mitwpu.edu.in

Division	Faculty of Engineering and Technology
School Name	School of Engineering and Technology
Department Name	Department of Electrical and Electronics Engineering
Programme Name	B.Tech. Renewable Energy

Semester	Odd (I)	Even (II)	Total Credits
First Year	22	22	44
Second Year	22	22	44
Third Year	22	22	44
Fourth Year	16	16	32

COURSE BASKET

Course Type	Description
Programme Core	Courses dealing with foundations, depth and breadth of the major in which a student is admitted at MIT-WPU.
Programme Electives	Open electives under the programme allow students to specialise in a particular area connected to their major.
University Core	Courses that reflect the core MIT-WPU values and the mission of Life Transformation of students.
University Electives	Multidisciplinary courses across the faculties at MIT-WPU and outside the programme core.

Semester I

Semester	Course Type	Course Name / Course Title	Total Credits
I	PC	Linear Algebra and Differential Calculus	3
I	PC	Electrical Fundamentals for Energy Systems	4
I	PC	Physics for Energy Systems	3
I	PC	Engineering Mechanics for Energy Systems	4
I	PC	Programming and Problem Solving	3
I	PC	Python Programming	1
I	UC	Environment and Sustainability	1
I	UC	Financial Literacy	1
I	UC	Indian Constitution	1
I	UC	Yoga – I	1
		Total Credits:	**22**

Semester II

Semester	Course Type	Course Name / Course Title	Total Credits
II	PC	Analog and Digital Electronics	4
II	PC	Integral Calculus	3
II	PC	Materials for Energy Systems	3
II	PC	Principles of Thermodynamics	3
II	UC	Co-creation	1
II	UC	Indian Knowledge System (General)	2
II	UC	Sports	1
II	UC	AI for Everyone	2
II	UC	Yoga - II	1
II	UC	Foundation of Peace	2
		Total Credits:	**22**

Semester - III

Semester	Course Type	Course Name / Course Title	Total Credits
III	PC	Renewable Energy Systems	4
III	PC	Power Systems I - Fundamentals	3
III	PC	Electrical Machines	3
III	PC	Energy Systems Modelling	1
III	PC	Probability and Statistics for Energy Systems	3
III	PC	Power Systems Lab	1
III	PC	Electrical Machines Lab	1
III	UC	Spiritual and Cultural heritage: Indian Experience	2
III	UC	Research Innovation Design Entrepreneurship RIDE	1
III	UE	University Elective - I	3
		Total Credits:	**22**

SEMESTER - IV

Semester	Course Type	Course Name / Course Title	Total Credits
IV	PC	Power Electronics and Converters	3
IV	PC	Power Systems II-Planning, Reliability & RE Integration	3
IV	PC	Microcontrollers and Embedded Systems	3
IV	PC	Control Systems and Automation	3
IV	PC	Power Electronics and Converters Lab	1
IV	PC	Microcontrollers and Embedded Systems Lab	1
		Competitive Coding	1
IV	PC	Indian Knowledge System (Sci.&Tech.)	2
IV	UC	Rural Immersion	1
IV	UC	Life Realisation Program	1
IV	UE	University Elective - II	3
		Total Credits:	**22**

Semester - V

Semes-ter	Course Type	Course Name / Course Title	Total Credits
V	PC	Instrumentation & Measurement for Energy	2
V	PC	Electric Vehicle Technology	2
V	PC	Safety, Governance & Regulations in Energy	2
V	PC	Communication for Smart Energy	3
V	PC	Data Analytics for Energy Systems	1
V	PC	Electric Vehicle Technology Lab	1
V	PC	Instrumentation and Measurement for Energy Lab	1
		Cognitive Skills	1
V	PE	Program Elective - I	4
V	UE	University Elective - III	3
V	UC	Managing Conflicts Peacefully: Tools and Techniques	2
		Total Credits:	**22**

Semester - VI

Semester	Course Type	Course Name / Course Title	Total Credits
VI	PC	Electrical Drives for Energy Systems	3
VI	PC	Power Quality Monitoring and Mitigation	3
VI	PC	Distributed Energy Systems and Smart Grids	3
VI	PC	Energy Storage & Battery Technology	4
VI	PC	Distributed Energy Systems and Smart Grids Lab	1
VI	PC	Electrical Drives for Energy Systems	1
VI	PC	Minor Project	1
VI	PE	Program Elective - II	4
VI	UC	National Academic Immersion Program	2
		Total Credits:	**22**

Semester - VII

Semester	Course Type	Course Name / Course Title	Total Credits
VII	PE	Program Elective - III	4
VII	PC	Capstone Project	12
		Total Credits:	**16**

Semester - VIII

Semester	Course Type	Course Name / Course Title	Total Credits
VIII	PC	Internship	12
VIII	PE	Program Elective - IV	4
		Total Credits:	**16**

Program Electives

Semester	Course Type	Course Name / Course Title	Total Credits
V	PE-I	Advanced Renewable Energy Sources	4
V	PE-I	Advanced Energy Modelling & Simulation	4
V	PE-I	Computational Methods for Energy Systems	4
V	PE-I	Renewable Energy Regulations and Standards	4
VI	PE-II	Bioenergy	4
VI	PE-II	Digital Twins and AI for Energy Systems	4
VI	PE-II	Energy Forecasting & Market Prediction	4
VI	PE-II	Carbon Markets and Climate Policy	4
VII	PE-III	Green Hydrogen Technology and Safety	4
VII	PE-III	BMS and Charging infrastructure	4
VII	PE-III	Cyber Security for Power & Smart Grids	4
VII	PE-III	Operation, Maintenance & Life-Cycle Assessment	4
VIII	PE-IV	Waste Recycling and Waste-to-Energy Technologies	4
VIII	PE-IV	Intelligent Systems in EV	4
VIII	PE-IV	Energy Efficiency in Electrical & Thermal Utilities	4
VIII	PE-IV	Energy Economics, Trading & Risk Management	4

University Electives

Semester	Course Type	Course Name / Course Title	Total Credits
III	UE-I	Sustainable Development Goals	3
III	UE-I	Digital Tools for Energy	3
IV	UE-II	Social Impact of Renewables	3
IV	UE-II	Cyber Awareness in Energy	3
V	UE-III	Green Technologies	3
V	UE-III	Energy Policies of India	3

*Modifications to the programmes and courses are contingent upon adherence to university guidelines and procedures. Any proposed changes must undergo a thorough review process, including consultation with relevant academic departments, approval from the appropriate administrative bodies, and compliance with accreditation standards. Additionally, consideration will be given to feedback from students, faculty, and other stakeholders to ensure that modifications align with the overall educational objectives and mission of the university. The implementation of any approved changes will be communicated transparently to the university community, and appropriate measures will be taken to facilitate a smooth transition for all affected parties.