INDIAN INSTITUTE OF TECHNOLOGY INDORE

MEHTA FAMILY SCHOOL OF SUSTAINABILITY

BTech in Environmental Economics and Sustainable Engineering

A Vision-Driven Hub for Sustainability Research, Education, and Leadership

Presented by
Prof. Pritee Sharma
and Team, IIT Indore

June 2026

What will you learn?

What is Sustainability: Growth for self, nation, region and the planet through Technological and Business Solutions following Environmental Endurability, Economic Viability and Social Equitability

Program Duration: 4 Years (8 Semesters) | Full-Time Undergraduate Degree

Three Areas of the Program

- Environmental Economics
- Energy Systems
- Water and climate Studies

Knowledge Domains

- Environmental, Ecological, & Resource Economics
- Energy & Battery technology
- Energy management
- Green energy creation and storage
- Earth systems
- Hydrology
- Pollution & waste management
- Natural resource management
- Green infrastructure & sustainable development
- Environment and Social Impact Assessment
- Policy & governance

Skills

- Compliance, Regulation, Legal and Financial Reporting
- Optimization & Project Management
- Industrial Processes and Plant Design for Sustainability
- Ecological Processes for Planetary health
- statistical analysis
- Logistics & Marketing Analysis
- Climate modeling

BTech in Environmental Economics and Sustainable Engineering

Game Theory
Logistics and Marketing
Carbon Trading

Environmental Economics
Statistics and Computations for Sustainability
Resource Economics and Circular Economy

The curriculum is built around three core verticals:

(i) **Environmental Economics and Policy**
(ii) **Energy Systems and Sustainable Engineering**
(iii) **Water and Climate Modelling**

Field and Industrial Visits
Case Studies and Flip Classrooms
Internships, Mini and Major Projects

The program will begin in July 2026 with 30 seats, with admission through JEE Advanced, preparing graduates for careers in Sustainable Manufacturing, Clean Energy, Green Infrastructure, Policy and Planning, and Green Finance, Business and Entrepreneurship.

Thermodynamics
Process and Plant Design
Energy Storage Technologies

Batteries and Supercapacitors
Green hydrogen and Fuel Cells
Solar Energy Systems

Remote Sensing and Climate Data Analytics
Engineering Hydrology
Ecological Systems

Weather Engineering
Water and Waste Treatment Plant Design
Industrial Pollution Management

Program Outline

Sem I	Semester I Common		
II	**Combined Elective (Flexi):** Sustainable Development and Climate Change (1) • Policy and Standard for Water Food Energy (1)		
Sem	**Env. Economics**	**Energy Systems**	**Water and climate Studies**
III	**Core Courses** • Environmental Economics (3) • Statistics & Computations for Sustainability (3)	**Core Courses** • Thermodynamics and Energy Conversion (3) • Introduction to Electronics: Applications for Energy Systems Lab (2)	**Core Courses** • Fluid Mechanics and Heat Transfer (3) • Earth System and Natural Resource Management (Half Semester) (1.5)
	Elective • Frontiers in Experimental Economics (1)	**Elective** • Technologies for Batteries and Supercapacitors (1)	**Elective** • Weather Engineering (1) • Water Security: Indian and International Perspectives (1)
IV	**Core Courses** • Resource Economics & Circular Economy (3)	**Core Courses** • Energy Systems: Analysis and Modelling(3) • Optimization and Project Management (3)	**Core Courses** • Remote Sensing and Climate Data Analytics (3)
	Micro Project – I (1)		
	Elective • Economics of Climate Change (1.5)	**Elective** • Sustainable Energy Materials & Minerals (1.5)	**Elective** • Resource Quality Monitoring: Sensor Based (1.5)
	Institute Elective: Emerging Contaminants (3)		
V	**Core Courses** • Ecological & Institutional Economics (3) • ESIA and LCA (Half Semester) (1.5)	**Core Courses** • Distributed Control systems (1.5) • IoT for Environment (1.5) • Process and Plant Design (3)	**Core Courses** • Engineering Hydrology (3) • Ecological Systems (Half Semester) (1.5)
	Micro Project – II (1)		
	Electives • Behavioural Economics (3)	**Electives** • Energy Management (3)	**Electives** Numerical Weather Predications and Geoinformatics (3)
	Institute Elective: Disaster Management, Resilience and Adaptation (3)		
VI	**Core Courses** • Environmental Econometrics (3)	• **Core Courses** • Energy Storage Technologies (3)	• **Core Courses** • Environmental Pollution and Waste Control (3) • Green Infrastructure for Urban Ecosystem (3)
	Electives • Game Theory (3) • Agricultural and Industrial Economics (3)	**Electives** • Green hydrogen and Fuel Cells (3) • Solar Energy Systems (3)	**Electives** • Water Treatment Plant Design (3) • Water Resource System and Planning (3)
VIII	**Electives** • Logistics & Marketing (3) • Carbon Trading (3)	**Electives** • Green Transportation (3) • Modern Battery Technologies (3) • Computational Material Science: Applications to Energy Storage and Conversion (3)	**Electives** • Environmental Hydraulics: Open Channel and River Mechanics (3) • Industrial Pollution Management (3)

(B.Tech.) Environmental Economics and Sustainable Engineering (EESE) Semester wise detail

Semester I

Course Code	Course	Weekly Contact Hours (L-T-P)	Credit
EE 101	Basic Electrical Engineering	1-1-0	2
ME 101	Engineering Mechanics	2-0-0	2
MA 101N	Calculus-I (half Semester)	3-1-0	2
MA 103N	Calculus-II (half Semester)	3-1-0	2
CH 105	Chemistry	3-0-0	3
CH 155	Chemistry Lab	0-0-2	1
HS 109	Language and Composition	2-0-0	2
HS XXX	Flexible Elective (HSS)	1-0-0	1
CS 103	Computer Programming	2-0-0	2
IC 151	Computer Programming Lab	0-0-3	1.5
NO 101	National Sports organization (NSO)	0-0-0	P/NP
	Total Credit		18.5

Semester II

Course Code	Course	Weekly Contact Hours (L-T-P)	Credit
BSE 102	Biosciences	2-1-0	3
MA 102N	Linear Algebra (Half Semester)	2-1-0	1.5
MA 104N	Differential Equations-I (Half Semester)	2-1-0	1.5
HS 102	Environmental Studies: Social Aspects (Half Semester course)	2-1-0	1.5
ES 102	Environmental Studies: Scientific & Engineering Aspects (Half Semester course)	2-1-0	1.5
HS 104	Fundamentals of Economics	2-0-0	2
IC 152	Makerspace	1-0-6	4
PH 107	Basics of Physics	2-1-0	3
PH 157	Physics Lab	0-0-2	1
ZZ XXX	**Flexible Elective-I**	**1-0-0**	**1**
ZZ XXX	**Flexible Elective-II**	**1-0-0**	**1**
HS XXX	Flexible Elective-(HSS)	1-0-0	1
NO 102	National Sports organization (NSO)	0-0-0	P/NP
		Total Credit	22

Semester	Course Code	Subject Name	Weekly Contact Hours (L-T-P)	Credits
II (Flexible Elective)	ZZ xxx	Policy and Standards for Water-Energy-Food Systems (WEF)	1-0-0	1
	ZZ xxx	Sustainable Development and Climate Change	1-0-0	1

(B.Tech.) Environmental Economics and Sustainable Engineering (EESE) Semester wise detail

Semester III

Course Code	Course Title	Weekly Contact Hours (L-T-P)	Credits
ZZ xxx	**Course-I for Minor Program**	**X-X-X**	**3**
MA 205	Complex Analysis	3-1-0 (Half semester)	2
MA 207	Differential Equations-II	3-1-0 (Half semester)	2
SE XXX	Environmental Economics	2-1-0	3
SE XXX	Statistics and Computations for Sustainability	2-0-2	3
SE XXX	Thermodynamics and Energy Conversion	2-1-0	3
SE XXX	Introduction to Electronics: Applications for Energy Systems lab	1-0-2	2
SE XXX	Fluid Mechanics and Heat Transfer	2-0-2	3
SE XXX	Earth System and Natural Resource Management	2-1-0 (Half semester)	1.5
SE 1xx	**Department Elective-I**	**x-x-x**	**3**
		Total	**22.5/25.5**

Semester	Course Code	Subject Name	Weekly Contact Hours (L-T-P)	Credits
III (Dept Electives)	SE XXX	Frontiers in Experimental Economics	1-0-0	1
	SE XXX	Technologies for Batteries and Supercapacitors	1-0-0	1
	SE XXX	Weather Engineering	1-0-0	1
	SE XXX	Water Security: Indian and International Perspectives	1-0-0	1

Semester IV

Course Code	Course Title	Weekly Contact Hours (L-T-P)	Credits
ZZ XXX	**Course-II for Minor Program**	**X-X-X**	**3**
MA 204N	Numerical Methods	2-1-0	3
SE XXX	Resource Economics & Circular Economy	2-1-0	3
SE XXX	Energy Systems: Analysis and Modelling	2-0-2	3
SE XXX	Optimization and Project Management	2-0-2	3
SE XXX	Remote Sensing and Climate Data Analytics	2-0-2	3
SE XXX	Mini Project - I	0-0-2	1
SE 2xx	**Department Elective-II**	**x-x-x**	**3**
ZZ xxx	**Institute Elective-I**	**x-x-x**	**3**
		Total	**22/25**

Semester	Course Code	Subject Name	Weekly Contact Hours (L-T-P)	Credits
IV (Dept Electives)	SE XXX	Economics of Climate Change	3-0-0 (Half Semester)	1.5
	SE XXX	Sustainable Materials & Mining	2-0-2 (Half Semester)	1.5
	SE XXX	Resource Quality Monitoring: Sensor Based	2-0-2 (Half Semester)	1.5
IV (Institute Elective)	ZZ XXX	Emerging Contaminants	2-0-2	3

(B.Tech.) Environmental Economics and Sustainable Engineering (EESE) Semester wise detail

Semester V

Course Code	Subject Name	Weekly Contact Hours (L-T-P)	Credits
ZZ XXX	**Course-III for Minor Program**	**X-X-X**	**3**
SE XXX	Ecological & Institutional Economics	2-1-0	3
SE XXX	ESIA and LCA	2-0-2 (Half semester)	1.5
SE XXX	Distributed Control Systems	2-0-2 (Half Semester)	1.5
SE XXX	Internet of Things (IoT) for Environment	2-0-2 (Half Semester)	1.5
SE XXX	Process and Plant Design	2-0-2	3
SE XXX	Engineering Hydrology	2-1-0	3
SE XXX	Ecological Systems	2-1-0 (Half semester)	1.5
SE XXX	Mini Project - II	0-0-2	1
SE 3xx	**Department Elective -III**	**x-x-x**	**3**
		Total	**22/25**

Semester VI

Course Code	Subject Name	Weekly Contact Hours (L-T-P)	Credits
ZZ xxx	**Course-IV for Minor Program**	**X-X-X**	**3**
SE XXX	Environmental Econometrics	2-0-2	3
SE XXX	Energy Storage Technologies	2-1-0	3
SE XXX	Environmental Pollution and Waste Control	2-0-2	3
SE XXX	Green Infrastructure for Urban Ecosystem	1-0-2	2
SE 4xx	**Department Elective -IV**	**x-x-x**	**3**
SE 5xx	**Department Elective -V**	**x-x-x**	**3**
ZZ xxx	**Institute Elective-III**	**x-x-x**	**3**
		Total	**20/23**

Semester	Course Code	Subject Name	Weekly Contact Hours (L-T-P)	Credits
V (School Electives)	SE XXX	Behavioral Economics	2-0-2	3
	SE XXX	Energy Management	2-0-2	3
	SE XXX	Numerical Weather Predications and Geoinformatics	2-0-2	3
V (Institute Elective)	ZZ XXX	Disaster Management, Resilience and Adaptation	2-0-2	3

Semester	Course Code	Subject Name	Weekly Contact Hours (L-T-P)	Credits
VI (School Electives)	SE XXX	Agricultural and Industrial Economics	2-0-2	3
	SE XXX	Game Theory Applications in Natural Resource Management (NRM)	2-0-2	3
	SE XXX	Green hydrogen and Fuel Cells	2-0-2	3
	SE XXX	Solar Energy Systems	2-0-2	3
	SE XXX	Water and Waste Treatment Plant Design	2-0-2	3
	SE XXX	Water Resource System and Planning	2-0-2	3

(B.Tech.) Environmental Economics and Sustainable Engineering (EESE) Semester wise detail

Semester VII

Course Code	Subject Name	Weekly Contact Hours (L-T-P)	Credits
ZZ xxx	**Course-V for Minor Program**	**x-x-x**	**2**
ZZ 493N	B. Tech. Project (BTP)	0-0-32	16
ZZ 495 ZZ XXX	Internship Or Professional/Societal-Connect Basket Course	x-x-x	1.5
		Total	**17.5/19.5**

Semester VIII

Course Code	Subject Name	Weekly Contact Hours (L-T-P)	Credits
SE 6xx	**Department Elective-VI**	**x-x-x**	**3**
SE 7xx	**Department Elective-VII**	**x-x-x**	**3**
ZZ xxx	**Institute Elective-IV**	**x-x-x**	**3**
ZZ xxx	**Institute Elective-V**	**x-x-x**	**3**
ZZ xxx	**Institute Elective-VI**	**x-x-x**	**3**
		Total	**15**

Semester	Course Code	Subject Name	Weekly Contact Hours (L-T-P)	Credits
VIII (School Electives)	SE XXX	Logistics & Marketing	2-0-2	3
	SE XXX	Carbon Trading	2-0-2	3
	SE XXX	Green Transportation	2-0-2	3
	SE XXX	Computational Material Science and Applications	2-0-2	3
	SE XXX	Modern Battery Technologies	2-0-2	3
	SE XXX	Environmental Hydraulics: Open Channel and River Mechanics	2-0-2	3
	SE XXX	Industrial Pollution Management	2-0-2	3

(B.Tech.) Environmental Economics and Sustainable Engineering (EESE) Semester wise detail

Semester	Course Code	Subject Name	Weekly Contact Hours (L-T-P)	Credits
II (Flexible Elective)	ZZ xxx	Policy and Standards for Water Energy Food (WEF)	1-0-0	1
	ZZ XXX	Sustainable Development and Climate Change	1-0-0	1
III (Department Electives)	SE XXX	Frontiers in Experimental Economics	1-0-0	1
	SE XXX	Technologies for Batteries and Supercapacitors	1-0-0	1
	SE XXX	Weather Engineering	1-0-0	1
	SE XXX	Water Security: Indian and International Perspectives	1-0-0	1
IV (Department Electives)	SE XXX	Economics of Climate Change (Half Semester)	3-0-0	1.5
	SE XXX	Sustainable Materials & Mining (Half Semester)	2-0-2	1.5
	SE XXX	Resource Quality Monitoring: Sensor Based (Half Semester)	2-0-2	1.5
IV (Institute Elective)	ZZ XXX	Emerging Contaminants	2-0-2	3
V n(Department Electives)	SE XXX	Behavioral Economics	2-0-2	3
	SE XXX	Energy Management	2-0-2	3
	SE XXX	Numerical Weather Predications and Geoinformatics	2-0-2	3
V (Institute Elective)	ZZ XXX	Disaster Management, Resilience and Adaptation	2-0-2	3
VI (Department Electives)	SE XXX	Agricultural and Industrial Economics	2-0-2	3
	SE XXX	Game Theory Applications in Natural Resource Management (NRM)	2-0-2	3
	SE XXX	Green hydrogen and Fuel Cells	2-0-2	3
	SE XXX	Solar Energy Systems	2-0-2	3
	SE XXX	Water and Waste Treatment Plant Design	2-0-2	3
	SE XXX	Water Resource System and Planning	2-0-2	3
VIII (Department Electives)	SE XXX	Logistics & Marketing	2-0-2	3
	SE XXX	Carbon Trading	2-0-2	3
	SE XXX	Green Transportation	2-0-2	3
	SE XXX	Computational Material Science and Applications	2-0-2	3
	SE XXX	Modern Battery Technologies	2-0-2	3
	SE XXX	Environmental Hydraulics: Open Channel and River Mechanics	2-0-2	3
	SE XXX	Industrial Pollution Management	2-0-2	3

(B.Tech.) Environmental Economics and Sustainable Engineering (EESE)

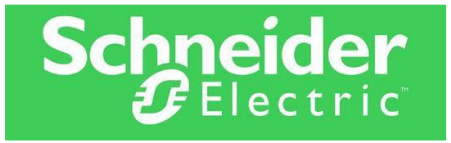
List of Other Department Elective Courses Related to B.Tech. EESE Program

Course Code	Course Name	Weekly Contact Hours (L-T-P)	Credit
ChE 309	Energy System and Sustainability	2-1-0	3
PH 312	Solar Photovoltaics: Fundamentals, Technologies and Applications	2-1-0	3
EE 321	Design of Photovoltaic Systems	2-1-0	3
ME 608 / ME 408	Hybrid Electric Vehicles	2-1-0	3
ME 219	Energy Storage Systems (Half Semester)	2-1-0	1.5
MM 457 / MM 657	Advances in Energy Storage Materials	2-1-0	3
MM 487 / MM 687	Advanced Battery Technologies	2-1-0	3
MM 405 / MM 605	Green Hydrogen: Materials and Technologies	2-1-0	3
MM 479 / MM 679	Fundamentals and Engineering of Solar Energy Devices	2-1-0	3
EE 410 / EE 610	Power Electronics Applications to Power Transmission	2-1-0	3
MA 212	Regression Analysis	2-1-0	3
MA 402 / MA 602	Industrial Statistics	2-0-2	3
MA 414 / MA 614	Time Series Analysis	2-1-0	3
ME 671 / ME 471 / MA 671	Operations Research	2-0-2	3
AA 412 / AA 612	Microwave Remote Sensing	2-1-0	3
AA 407 / AA 607	Remote Sensing for Atmospheric and Space Sciences	2-0-2	3
PH 312	Solar PV (Climate–Energy Interface)	2-1-0	3
MA 454 / MA 654	Mathematical Modeling and Simulations	2-0-2	3
MA 310	Algorithmic Techniques & Applications of Data Science	2-1-0	3
EE 216	Machine Learning for Signal Processing	2-1-0	3
ME 217	Industrial Data Analytics	2-1-0	3

Potential Job Sectors of B.Tech. EESE Graduates

Environmental Economics & Environmental Law | Job Placements

Energy Systems and Battery Technology | Job Placements



Water and Climate Studies | Job Placements

Where can the Sustainability Graduates go?

IT, FinTech, Manufacturing, Energy, Consulting, Construction, and so on

Top Sustainability Leading and Consulting Firms

- Unilever
- Patagonia
- IKEA
- Tesla
- Microsoft
- Nike
- Starbucks
- Google

- DuPont Sustainable Solutions (DSS)
- AECOM
- ERM (Environmental Resources Management)
- Jacobs
- EY (Ernst & Young)
- Lloyd's Register
- Arcadis
- Clean Harbors
- DEKRA Insight
- Ramboll
- GHD

- Stantec
- Golder *(now part of WSP)*
- WSP (including Parsons Brinckerhoff)
- Wood Group (Amec Foster Wheeler)
- Tetra Tech
- Antea Group
- Trinity Consultants
- Huco Consulting
- Langan

We are reachable at hosmfss@iiti.ac.in (Prof. Pritee Sharma)
Website: https://mfsos.iiti.ac.in/

Thank You