

B. Tech. in General Engineering in School of Mechanical and Materials Engineering (SMME)

I. Preamble:

A general engineering programme is a interdisciplinary programme that gives students a foundation of theoretical and practical knowledge for a career in engineering. through active learning, an interdisciplinary approach, and collaboration with industry/academia for specialization.

II. Programme Structure:

Course Type	Credits
IC course	39
Basket of IC course	6
HSS courses	12
IKS	3
Discipline Core	36
Discipline electives	0
Free Electives	22
ISTP	4
MTP in specialization	8
Specialization courses +	30
Total	160

Institute Core Courses (to be offered in 1st and 2nd year)

Course Name
Calculus
Complex Variables and Vector Calculus
Linear Algebra
ODE & Integral Transforms
Internship
Engineering Graphics
Introduction to Python and Data Science
Probability and Statistics
Machine Learning
Design Practicum
Applied Electronics
Applied Electronics Lab
Physics Practicum
Environmental Science
Data Structures and Algorithms




General Engineering Discipline core courses (to be offered in 2nd and 3rd year)

Course Name	Credits
Reverse Engineering (Mech)	0-0-2-1
Reverse Engineering	0-0-2-1
Electrical Systems Around Us	3-0-2-4
Materials Science for Engineers	3-0-0-3
Measurement and Instrumentation	2-0-2-3
Mathematical Foundations of Data Science	3-1-0-4
Artificial Intelligence	3-0-0-3
Engineering economics	3-0-0-3
Mechanics of Rigid Bodies	3-0-0-3
Thermodynamics	3-0-2-4
Essentials of Entrepreneurship	3-0-0-3
Communication Systems	3-0-2-4

B Tech in General Engineering (with Specialization in ABC) - Specialization options (Phase I):

<p>Fashion:</p> <ul style="list-style-type: none">• Fashion Management• Fashion Technology• Sustainable fashion/textile Design• Fashion accessory Design• Functional Fashion Design• ERP for the Fashion industry <p>Design:</p> <ul style="list-style-type: none">• Photography• Graphic Design (UI/UX)	<p>Nascent Engineering:</p> <ul style="list-style-type: none">• Robotics and AI• Advanced Manufacturing• E-Mobility• Energy Engineering <p>Innovation and Entrepreneurship</p> <ul style="list-style-type: none">• Entrepreneurship• Product Design• Business management
For a specialization, student(s) must complete 36 credits in the specified field	

Collaborations for specializations:

  DALARNA UNIVERSITY	National Institute of Fashion Technology	
	<ul style="list-style-type: none"> • Fashion Management • Fashion Technology • Sustainable fashion/textile Design • Photography • Graphic Design (UI/UX) • Fashion accessory Design • Functional Fashion Design • ERP for the Fashion industry 	
	Dalarna University, Sweden	
	<ul style="list-style-type: none"> • Energy Engineering • Economics • Information Systems 	

Specialization Courses for Energy Engineering

Course Name
Renewable Power Generation
Active Power Grids
Industrial Heating Technology
Energy Efficiency
Energy Systems
Scientific Methods
The Environmental Impact of Energy Systems
MTP

Specialization Courses for Advanced Manufacturing Engineering

Course Name
ME308 - Manufacturing Engineering
ME351 - Management of Manufacturing and Logistics
ME515 - Carbon Materials and Technology
ME510 - Advanced Manufacturing Processes
ME2XX - PMT
ME524 - Additive Manufacturing
ME635 - Manufacturing for Energy Systems
ME509 - Nanomanufacturing
CAD for Additive Manufacturing
Process modelling in Additive Manufacturing
Design for Manufacturing and Assembly

Specialization courses for e- Mobility

Course Name
Power Electronics
Power Electronics Lab
Fundamentals of Electric Drives
Practicum on Electric Drives
Advanced Electric Drives
Practicum on Advanced Electrical Drives
Systems Design for Electric Vehicle
Embedded Systems and IoT for E-Transportation
Power Electronic Applications in Electric Transportation
Electrical Machine and Drives in Electric Transportation
Laboratory course on Power Electronics and Electrical Drives
Vehicle Design and Dynamics
Laboratory course on Vehicle Design and Control
Electrochemical Systems for Energy Engineering
Energy Storage Technologies
Laboratory course on Energy Storage Technologies
Modeling, Simulation and Control of HEV

Specialization courses for Product Design

Course Name
IC141 - PMT
ME308 - Manufacturing Engineering
ME523 – Product design
ME524 - Additive Manufacturing
Design thinking
User Experience & Interaction Design
Graphics Design, Animation & VFX
Introduction to Human Factors (Ergonomics &
Marketing Research & Marketing
Intellectual property rights
Visualisation & Drawing Techniques
Introduction to Indian Craft Techniques

Specialization courses for Robotics and AI

Course Name
Robotics and control
Robot Kinematics, Dynamics and Control
Mobile Virtual Reality and Artificial Intelligence
Deep Learning and Applications
Advanced Topics in Deep Learning
Advanced Design Practicum
Data Mining for Decision Making
Introduction to Computer Vision
Digital Image Processing
Mechatronics
Robot Programming, Modeling and Simulation
Principles of Robot Autonomy
Deep Learning for Robotics

USP of the Programme

- Flexibility: Choice of a variety of specialization
- interdisciplinary
- Variety of career options
- Easier to keep up with evolving job market and new trends through specializations
- Compulsory year-long exchange program/internship
- It might fulfil the growing demand for interdisciplinary experts and/or specialists in nascent engineering fields