

B.Sc. in Product Design Subject & Syllabus

First year	Semester 1	Product Design and development
		Quality Concepts in design
		Material in Product Design and Development
		Solid Modelling Lab
		Rapid Prototyping and Tooling Lab - I
	Semester 2	Computer Aided Product Development
		Reliability in product designing
		Rapid Prototyping and Tooling -II
		Creativity in design
		Product and process Tools
Second year	Semester 3	Product Life Cycle Management
		Design for X
		Applied Ergonomics
		Product Packing
		Die design and development
		Product Lifecycle Management
	Semester 4	Vehicle Design
		Polymeric Material and Processing
		Robotics
		Micro Electro product Systems@
		Product marketing
Third year	Semester 5	Seminar
		Smart Materials and applications
		Composite Material
	Semester 6	Dissertation I
		Dissertation II
		Marketing for designer
		Entrepreneurship

Syllabus

Semester I

Product Design and development

- Introduction: Classification/ Specifications of Products
- Conceptual Designing
- Design for Mfg. & Assembly
- Concepts of size and texture, colour .Comfort criteria
- Tools for product design
- Man-Machine interaction

Quality Concepts in design

- Design for Quality
- Failure mode effect analysis
- Design for experiments
- Statistical Consideration
- Reliability
- Design for six sigma

Material in Product Design and Development

- Material Behaviour and Selection
- Process modelling and product design
- Non Metals and manufacturing
- Product design and assembly requirements
- Development in material processing
- Introduction to Smart / Intelligent Materials

Solid Modelling Lab

- Create 3-D solid models
- Create reference geometry features (planes, axes)
- Create solid features using sweeping and lofting operations
- Measure properties of 3-D CAD models
- Create assemblies of CAD parts with appropriate mating relationships

Rapid Prototyping and Tooling Lab - I

- Study of reverse Product designing Concepts
- Demonstration of 3D scanning
- Study of rapid prototyping machines
- Demonstration of Fusion Deposition Modelling
- Demonstration of Selective Laser Sintering
- Demonstration of Vacuum casting
- Demonstration of Virtual Reality

SEMESTER II

Computer Aided Product Development

- Introduction to computer Graphics
- Graphics Programming
- Curves learning
- Virtual Reality
- CAD & Geometric Modelling

Reliability in product designing

- Probability theory
- Reliability Concepts
- System Reliability
- Reliability Improvement
- Maintainability and Availability
- Failure Mode, Effects and Criticality Analysis

Rapid Prototyping and Tooling -II

- Rapid Prototyping
- Subsystems of RP Machine
- Liquid Based Rapid Prototyping Systems
- Solid Based Rapid Prototyping Systems
- Powder Based Rapid Prototyping Systems
- Advances in Systems and Case Studies

Creativity in design

- Introduction
- Creativity in thinking
- Visualization
- Creativity
- Designing
- Innovation

Product and process Tools

- Tools for concept development
- Tools for process improvement
- Statistical process control
- Quality management system
- Benchmarking and establishment
- Project Management

SEMESTER III

Product Life Cycle Management

- Introduction to Product Lifecycle Management
- Product and Product Data
- Product Data Management
- Life Cycle Approach in Product Design
- Life Cycle Assessment and Life Cycle Cost Analysis
- Integration of Environmental Aspects in Product Design

Design for X

- Design for manufacture
- Design for assembly
- Value analysis
- Product development economics
- Concept of reliability
- Maintainability

Applied Ergonomics

- Human factors basics
- Human Machine system
- Human performance in the workplace
- Physical Designing
- Introduction to the concept of system design
- Introduction to basic elements of design

Product Packing

- Functions of Packaging
- Packaging Media
- Quality Assessment & Performance Evaluation
- Package Printing
- Package Storage and Handling
- Packaging & Environment

Die design and development

- Introduction to Manufacturing Process
- Tool and Die Materials
- Design of Blanking and Punching Dies
- Design of Bending Dies
- Deep Drawing Dies
- Various Forming Dies

Product Lifecycle Management

- Introduction to Product Lifecycle Management
- Product and Product Data
- Life Cycle Approach in Product Design
- Life Cycle Assessment and Life Cycle Cost Analysis
- Integration of Environmental Aspects in Product Design

SEMESTER IV

Vehicle Design

- Automotive Product designing development
- Modern materials and their incorporation into vehicle design
- Body design - The styling process
- Body design: Aerodynamics
- Occupant accommodation
- Future trends in automobile design

Polymeric Material and Processing

- The early history of polymers
- Plastic properties
- Fabrication process
- Industrial Polymers
- Polymers in special uses
- Plastics and the environment

Robotics

- Introduction of Robotic System & Anatomy Classification
- Robot & its Peripherals
- Robot Kinematics
- Trajectory Planning & Robot Dynamics
- Machine Vision
- Programming For Robots

Micro Electro product Systems

- Introduction to Micro-Electro-Mechanical Systems
- Sensors and Actuators in Micro-domain
- Fabrication Methods
- Modelling and Simulation Techniques
- Characterization Techniques
- Introduction to Advances of Nanotechnology

Product marketing

- Advanced Marketing Planning
- Consumer Behaviour
- Marketing Research
- Pricing Strategies
- Brand Strategy
- Designing the Supply Chain network

SEMESTER V

Seminar

Seminar should be assessed based on following points

- Quality of Literature survey and Novelty in the topic
- Relevance to the specialization
- Understanding of the topic
- Quality of Written and Oral Presentation

Smart Materials and applications

- Introduction to Smart / Intelligent Materials
- Introduction to High bandwidth
- Introduction to Low bandwidth
- Advances in Smart Materials

Composite Material

- Introduction to Composite Materials
- Micromechanical Behaviour
- Failure, Analysis and Design
- Introduction to Fabrication Techniques for Composites

SEMESTER VI

Dissertation I

- Quality of Literature survey and Novelty in the problem
- Clarity of Problem definition and Feasibility of problem solution
- Relevance to the specialization
- Clarity of objective and scope

Dissertation II

- Quality of Literature survey and Novelty in the problem
- Clarity of Problem definition and Feasibility of problem solution
- Relevance to the specialization or current Research / Industrial trends Clarity of objective and scope
- Quality of work attempted
- Validation of results
- Quality of Written and Oral Presentation

Marketing for designer

Assessment of target audience, creating graphic advertisements, and how to reach an audience.

Entrepreneurship

- Design thinking
- Additive manufacturing
- Virtual and rapid prototyping techniques
- Integrated electronic and physical systems
- Low and high resolution prototyping and
- Business aspects of product creation

Internship

There are different internships that a student can pursue after their graduation or while doing their graduation. These internships present a better insight into the domain of product designing and provide a great experience in this career. Involving in the varied jobs or internships students.

The Product Design Intern creates designs for new products and improvements to existing products. The Intern works hands-on in all design phases, including designing, modelling, testing, and producing prototypes.

Placement Opportunity

In completion of the course study in product design, whether undergraduate or postgraduate degree provides various job profiles from many top recruiting companies in colleges or outside the campus. There is a wide range of job profiles to choose from according to an individual's skills and knowledge in the field concerned. Let us look at some of the best job profiles for people completing the course in product design.

BSc in Product Design students can lead to a wide range of career opportunities in the below Sectors.

- Marketing
- Public Relations
- IT Companies
- Architectural Industries
- Social Media Platforms
- Hardware Companies
- Software Companies