Lovely Professional University

Specialization-Wise B.Tech Lateral Entry Syllabus

- **B.Tech in Mechanical Engineering (ME)**

Semester III	Semester IV
- Computer Programming - 1 - Engineering Materials - Fluid Mechanics and Machinery - Language Elective 2 - Mechanics and Materials - Numerical and Statistical Methods Laboratory - Primary Manufacturing - Primary Manufacturing Laboratory - Solid Mechanics	- Applied Thermal Engineering - Computer-Aided Design and Modeling Laboratory - Computer programming - 2 - Design of Machine Elements - 1 - Engineering Minor Elective 1 - Engineering Sustainable Development - Fluid Mechanics and Machinery Laboratory - Open Minor 1 - Theory of Machines - Theory of Machines Laboratory
Semester V	**Semester VI**
- Computer-Aided Design and Analysis Laboratory - Computing System and Technologies - Engineering Minor Elective 2 - Heat Transfer - Machine Tools and Machining - Machine Tools and Machining Laboratory - Open Minor 2 - Open Minor 3 - Pathway Elective 1 - Seminar on Summer Training - Thermal engineering Laboratory	- Design of Machine Elements - 2 - Engineering Minor Elective 3 - Industrial Engineering - Non-traditional and Computer-Aided Manufacturing - Non-Traditional and Computer-Aided Manufacturing Laboratory - Open Minor 4 - Pathway Elective 2
Semester VII	**Semester VIII**
- Capstone Project - 1 - Engineering Minor Elective 4 - Industry Co-Op Project - 1 - Pathway Elective 3 - Pathway Elective 4	- Capstone Project - 2 - Engineering Minor Elective 5 - Engineering Minor Elective 6 - Training Elective 1

- **B.Tech in Biotechnology (BT)**

Semester III	Semester IV
- Biochemistry - Biochemistry Laboratory - Biosafety Bioethics IPR and Patents - Data Analysis and Simulations - Genetics - Genetics Laboratory - Language Elective 1 - Microbiology - Microbiology Laboratory - Object Oriented Programming	- Bioprocess Engineering - Bioprocess Engineering Laboratory - Engineering Minor Elective 1 - Immunology and Immunotechnology - Immunology and Immunotechnology Laboratory - Introduction to Python - MATLAB - Open Minor 1 - Recombinant DNA Technology - Recombinant DNA Technology Laboratory - Structural Biology - Synthetic and Systems Biology
Semester V	**Semester VI**
- Bioinformatics and Computational Biology - Bioinformatics and Computational Biology Laboratory - Biopython - Cheminformatics and Medicinal Chemistry - Engineering Minor Elective 2 - Metabolic Engineering - Microbiology Laboratory IV - Open Minor 2 - Open Minor 3 - Pathway Elective 1 - Seminar on Summer Training	- Animal and Plant Biotechnology - Animal and Plant Biotechnology Laboratory - Bioseparation Engineering - Bioseparation Engineering Laboratory - Engineering Minor Elective 3 - Good Manufacturing and Laboratory Practice - Green Biotechnology and Pollution Abetment - Open Minor 4 - Pathway Elective 2
Semester VII	**Semester VIII**
- Capstone Project - 1 - Engineering Minor Elective 4 - Industrial Internship 1 - Pathway Elective 3 - Pathway Elective 4	- Capstone Project 2 - Engineering Minor Elective 5 - Engineering Minor Elective 6 - Training Elective 1

- **B.Tech in Electronics and Communication Engineering (ECE)**

Semester III	Semester IV
- Analog Electronics - Analog Electronics Laboratory	- Control System Laboratory - Control Systems

● Computer Programming ● Digital Logic Design lab ● Language Elective 1 ● Network Analysis and Synthesis ● Probability Theory and Stochastic Processes ● Professional Ethics and Legal Compliance ● Signal and Systems	● Digital Signal Processing ● Electromagnetic Field Theory ● Engineering Minor Elective 1 ● Fundamentals of Microprocessors and Microcontrollers ● Microcontroller and Applications Laboratory ● Object Oriented Programming ● Open Minor 1
Semester V	**Semester VI**
● AL, ML, and Emerging Technologies ● Analog and Digital Communications ● Database Management Systems ● Digital System Design Using Verilog ● Engineering Minor Elective 2 ● Networks and Measurements Laboratory ● Open Minor 2 ● Open Minor 3 ● Pathway Elective 1 ● Seminar on Industrial Training	● Communication Networks ● Communication Networks Project Laboratory ● Communication System Laboratory ● Engineering Minor Elective 3 ● Industrial Automation ● Open Minor 4 ● Pathway Elective 2 ● Programming in Java
Semester VII	**Semester VIII**
● Capstone Project 1 ● Engineering Minor Elective 4 ● Industry Co-Op Project 1 ● Pathway Elective 3 ● Pathway Elective 4	● Capstone Project 2 ● Engineering Minor Elective 5 ● Engineering Minor Elective 6 ● Training Elective 1

- **B.Tech in ME - Mechatronics**

Semester III	**Semester IV**
● Computer-Aided Design and Modeling Laboratory ● Computer Programming 1 ● Electronic Devices and Circuits ● Language Elective 1 ● Manufacturing Technology ● Materials and Manufacturing Laboratory ● Smart Engineering Materials ● Smart Mechatronics System Laboratory ● Thermo Fluids	● Analog and Digital Electronics ● Analog and Digital Laboratory ● Complex Analysis and Transforms ● Computer Programming 2 ● Engineering Minor Elective 1 ● Fundamentals of Microprocessors and Microcontrollers ● Human Values and Professional Ethics ● Microcontroller and Applications Laboratory ● Open Minor 1 ● Theory of Machines

Semester V	Semester VI
- Computing System and Technologies - Control System Laboratory - Control Systems - Design of Machine Elements - Engineering Minor Elective 2 - Open Minor 2 - Open Minor 3 - Pathway Elective 1 - Seminar on Summer Training	- Electrical Machines - Electrical Machines Laboratory - Engineering Minor Elective 3 - Heat Transfer - Mechatronics System Modeling - Open Minor 4 - Pathway Elective 2
Semester VII	**Semester VIII**
- Capstone Project 1 - Engineering Minor Elective 4 - Industry Co-Op Project 1 - Pathway Elective 3 - Pathway Elective 4	- Capstone Project 2 - Engineering Minor Elective 5 - Engineering Minor Elective 6 - Training Elective 1

- **B.Tech in Food Technology**

Semester III	Semester IV
- Community Development Project - Food Biochemistry and Nutrition - Food Biochemistry and Processing Laboratory - Food Microbiology - Food Microbiology Laboratory - Fundamentals of Food Processing - Heat and Mass Transfer in Food Processing - Language Elective 2 - Object Oriented Programming - Unit Operations in Food Processing 1	- Engineering Minor Elective 1 - Open Minor 1 - Plants Foods Laboratory - Processing Technology of Cereals, Pulses and Legumes - Processing Technology of Fruits and Vegetables - Processing Technology of Milk and Milk Products - Processing Technology of Milk and Milk Products Laboratory - Statistical methods and numerical Analysis - Unit operations in Food Processing 2
Semester V	**Semester VI**
- Bakery, Confectionary and Packaging Laboratory - Bakery, Confectionery and Snack Products - Engineering Minor Elective 2 - Food Packaging Technology and Equipment - Introduction to Python	- Engineering Minor Elective 3 - Food Analysis Laboratory - Food Quality, Safety Standards, and Certification - Instrumentation Techniques in Food Analysis - Introduction to AI, ML, and Emerging Technologies

- Open Minor 2 - Open Minor 3 - Processing technology of Meat, Fish, and Poultry Products - Seminar on Summer Internship	- Open Minor 4 - Pathway Elective 2
Semester VII	**Semester VIII**
- Capstone Project 1 - Engineering Minor Elective 4 - Pathway Elective 3 - Pathway Elective 4	- Capstone Project 2 - Engineering Minor Elective 5 - Engineering Minor Elective 6

- **B.Tech in Information Technology (IT)**

Semester III	Semester IV
- Computer Networks - Computer Organization and Design - Data Structures and Algorithms - Internetworking Essentials - Language Elective 1 - Object Oriented Programming - Operating Systems - Operating Systems Laboratory	- Aptitude Elective 1 - Engineering Minor Elective 1 - Engineering Minor Elective 2 - Generative Artificial Intelligence - Human-Computer Interaction - Probability and Statistics - Programming in Java - User Interface Design Laboratory
Semester V	**Semester VI**
- Engineering Minor Elective 3 - Engineering Minor Elective 4 - Multimedia Systems - Multimedia Systems Laboratory - Open Minor 1 - Pathway Elective 1 - Pathway Elective 2 - Training Elective 1	- Engineering Minor Elective 5 - Industry Ethics and Legal Issues - Online Academic Course - Open Minor 2 - Pathway Elective 3 - Pathway Elective 4
Semester VII	**Semester VIII**
- Capstone Project 1 - Department Elective 1 - Department Elective 1 Lab - Engineering Minor Elective 6 - Industry Co-Op Project 1 - Open Minor 3 - Pathway Elective 4	- Capstone Project 2 - Comprehensive Seminar - Department Elective 2 - Department Elective 2 Lab - Open Minor 4 - Training Elective 2

- **B.Tech in Automobile Engineering (AE)**

Semester III	Semester IV
- Automotive Chassis and Suspension System - Automotive Engine and Chassis Component Laboratory - Computer Programming 1 - Language Elective 2 - Numerical and Statistical Methods Laboratory - Solid Mechanics - Theory of Machines - Thermo Fluids	- Automotive Structures and design - Automotive Transmissions - Computer Programming 2 - Engineering Minor Elective 1 - Heat Transfer - Manufacturing Technology - Manufacturing Technology Laboratory - Mechanics and Material Laboratory - Open Minor 1 - Thermo-Fluids laboratory
Semester V	**Semester VI**
- Automotive Electrical and Electronics - Automotive Electrical and Electronics Laboratory - Automotive Engine Component Design - Computer-Aided Vehicle Design Laboratory - Computing System and Technologies - Engineering Minor Elective 2 - Open minor 2 - Open Minor 3 - Pathway Elective 1 - Seminar on Summer Training	- Alternative Fuel and Energy System - Engine and Fuel Testing Laboratory - Engineering Minor Elective 3 - Open Minor 4 - Pathway Elective 2 - Professional Ethics and Legal Aspects - Vehicle Dynamics and Structure
Semester VII	**Semester VIII**
- Capstone Project 1 - Engineering Minor Elective 4 - Industry Co-Op Project 1 - Pathway Elective 3 - Pathway Elective 4	- Capstone Project 2 - Engineering Minor Elective 5 - Engineering Minor Elective 6 - Training Elective 1

- **B.Tech in Robotics and Automation**

Semester III	Semester IV
- Computer Programming - Digital Logic Design - Elements of Robotics - Elements of Robotics Laboratory - Language Elective 1 - Mathematics for Robotics - Professional Ethics and Legal	- Control System Laboratory - Control Systems - Engineering Minor Elective 1 - Fundamentals of Microprocessors and Microcontrollers - Object Oriented Programming - Open Minor 1

Compliance ● Sensors for Robotics	● Soft Computing Techniques for Robotics ● Solid Mechanics
Semester V	**Semester VI**
● Computer-Aided Design and Modeling Laboratory ● Database management Systems ● Embedded Systems ● Engineering Minor Elective 2 ● Materials and Manufacturing Laboratory ● Open Minor 2 ● Open Minor 3 ● Pathway Elective 1 ● Robot Kinematics and Dynamics ● Seminar on Industrial Training	● Engineering Minor Elective 3 ● Internet of Things ● Open Minor 4 ● Pathway Elective 2 ● PLC and SCADA ● Power Electronics and Drives ● Programming in Java ● Robotic Actuators
Semester VII	**Semester VIII**
● Capstone Project 1 ● Edge Computing ● Engineering Minor Elective 4 ● Industry Co-Op Project 1 ● Pathway Elective 3 ● Pathway Elective 4	● Capstone Project 2 ● Engineering Minor Elective 5 ● Engineering Minor Elective 6 ● Training Elective 1

- **B.Tech in Biomedical Engineering (BE)**

Semester III	**Semester IV**
● Analog Electronic Devices and Circuits ● Analog Electronics Laboratory ● Biomechanics ● Biophysics ● Computer Programming ● Digital Electronics ● Digital Electronics Laboratory ● Intellectual Property Rights and Patent ● Language Elective 1	● Biomedical Circuits and Networks ● Biomedical Circuits and Networks Laboratory ● Biomedical Signal Processing ● Biomedical Signal Processing Laboratory ● Engineering Minor Elective 1 ● Introduction to Python ● Medical Imaging Systems ● Medical Insstrumentation 1 ● Object Oriented Programming ● Open Minor 1
Semester V	**Semester VI**
● Biomedical Sensors and Measurement Devices	● Biomaterials and Artificial Organs ● Biomedical Control System

● Engineering Minor Elective 2 ● Medical Image Processing and Analysis ● Medical Image Processing and Analysis Lab ● Medical Instrumentation Laboratory ● Medical Instrumentation 2 ● Open Minor 2 ● Open Minor 3 ● Pathway Elective 1 ● Seminar on Summer Training	Laboratory ● Biomedical Control Systems ● Engineering Minor Elective 3 ● Microprocessor and Microcontroller Based Biomedical Instrumentation ● Microprocessor and Microcontroller-Based Biomedical Instrumentation Laboratory ● Open Minor 4 ● Pathway Elective 2
Semester VII	**Semester VIII**
● Capstone Project 1 ● Engineering Minor Elective 4 ● Industrial Internship 1 ● Pathway Elective 3 ● Pathway Elective 4	● Capstone Project 2 ● Engineering Minor Elective 5 ● Engineering Minor elective 6 ● Training Elective 1

● **B.Tech in Electrical Engineering (EE)**

Semester III	**Semester IV**
● Computer Programming ● Electrical Machines 1 ● Electrical Machines Laboratory 1 ● Language Elective 1 ● Network Analysis and Synthesis ● Networks and Measurements Laboratory ● Probability Theory and Stochastic Processes ● Professional Ethics and Legal Compliance ● Signal and Systems	● Control System Laboratory ● Control Systems ● Electrical Machines Laboratory 2 ● Electrical Machines 2 ● Electromagnetic field Theory ● Engineering Minor Elective 1 ● Fundamentals of Microprocessors and Microcontrollers ● Object Oriented Programming ● Open Minor 1
Semester V	**Semester VI**
● Database Management Systems ● Digital Logic Design lab ● Engineering Minor Elective 2 ● Open Minor 2 ● Open Minor 3 ● Pathway Elective 1 ● Power Electronics ● Power Electronics Laboratory ● Power Systems 1 ● Seminar on Industrial Training	● Electric Drives ● Engineering Minor Elective 3 ● Industrial Automation ● Open Minor 4 ● Pathway Elective 2 ● Power System 2 ● Power Systems Laboratory ● Programming in Java

Semester VII	Semester VIII
● Capstone Project 1 ● Engineering Minor Elective 4 ● Industry Co-Op Project 1 ● Pathway Elective 3 ● Pathway Elective 4	● Capstone Project 2 ● Engineering Minor Elective 5 ● Engineering Minor Elective 6 ● Training Elective 1

- **B.Tech in Aerospace Engineering**

Semester III	Semester IV
● Aerospace Materials and Processes ● Complex Analysis and Transforms ● Computer Programming 1 ● Fluid Mechanics and Machinery ● Language Elective 2 ● Manufacturing Technology ● Manufacturing Technology Laboratory ● Numerical and Statistical Methods Laboratory ● Solid Mechanics	● Aerodynamics 1 ● Aerospace Structures 1 ● Aircraft Legislation ● Computer-Aided Design Laboratory ● Computer Programming 2 ● Engineering Minor Elective 1 ● Open Minor 1 ● Thermal Engineering ● Thermo-Fluids Laboratory
Semester V	Semester VI
● Aerodynamics Laboratory ● Aerodynamics 2 ● Computing System and Technologies ● Engineering Minor Elective 2 ● Flight Mechanics ● Open Minor 2 ● Open Minor 3 ● Pathway Elective 1 ● Propulsion 1 ● Seminar on Summer Training	● Aerospace Structure Laboratory ● Aerospace Structures 2 ● Aircraft Design ● Engineering Minor Elective 3 ● Open Minor 4 ● Pathway Elective 2 ● Propulsion Laboratory ● Propulsion 2
Semester VII	Semester VIII
● Capstone Project 1 ● Engineering Minor Elective 4 ● Industry Co-Op Project 1 ● Pathway Elective 3 ● Pathway Elective 4	● Capstone Project 2 ● Engineering Minor Elective 5 ● Engineering Minor Elective 6 ● Training Elective 1

- **B.Tech in Chemical Engineering (CHE)**

Semester III	Semester IV

- Chemical Engineering Laboratory 1 - Chemical Engineering Laboratory 2 - Computational Methods in Chemical Engineering - Computer Programming - Fluid Mechanics - Heat Transfer - Language Elective 2 - Particle and Fluid Particle Processing - Thermodynamics 2	- Chemical Engineering Laboratory 3 - Chemical Reaction Engineering 1 - Engineering Minor Elective 1 - Instrumentation and Control Lab - Instrumentation and Process Control - Mass Transfer 1 - Object Oriented Programming - Open Minor 1 - Process Technology and Economics
Semester V	**Semester VI**
- Chemical Engineering Lab 4 - Chemical Reaction Engineering 2 - Engineering Minor Elective 2 - Introduction to AL, ML, and Emerging Technologies - Legal Issues and Industry Standards - Mass Transfer 2 - Open Minor 2 - Open Monir 3 - Pathway Elective 1 - Seminar on Summer Internship	- Engineering Minor Elective 3 - Open Minor 4 - Pathway Elective 2 - Plant Design and Economics - Process Modeling and Simulation - Process Modelling and Simulation Lab - Transport Phenomena
Semester VII	**Semester VIII**
- Capstone Project 1 - Engineering Minor Elective 4 - Industry Co-Op Project 1 - Pathway Elective 3 - Pathway Elective 4	- Capstone Project 2 - Engineering Minor Elective 5 - Engineering Minor Elective 6 - Training Elective 1

- **B.Tech in Electrical and Electronics Engineering (EEE)**

Semester III	Semester IV
- Computer Programming - Electrical Machines - Electrical Machines Laboratory - Language Elective 1 - Network Analysis and Synthesis - Networks and Measurements Laboratory - Probability Theory and Stochastic Processes - Professional Ethics and Legal Compliance - Signal and Systems	- Control System Laboratory - Control Systems - Electromagnetic field Theory - Engineering Minor Elective 1 - Fundamentals of microprocessors and Microcontrollers - Measurements and Instruments - Microcontroller and Applications Laboratory - Object Oriented Programming - Open Minor 1

Semester V	Semester VI
- Analog and Digital communications - Database Management Systems - Digital Logic Design Lab - Engineering Minor Elective 2 - Open Minor 2 - Open Minor 3 - Pathway Elective 1 - Power Electronics - Power Electronics Laboratory - Seminar on Industrial Training	- Electrical Machines 2 - Engineering Minor Elective 3 - Industrial Automation - Open Minor 4 - Pathway Elective 2 - Power Systems - Power Systems Laboratory - Programming in Java
Semester VII	**Semester VIII**
- Capstone Project 1 - Engineering Minor Elective 4 - Industry Co-Op Project 1 - Pathway Elective 3 - Pathway Elective 4	- Capstone Project 2 - Engineering Minor Elective 5 - Engineering Minor Elective 6 - Training Elective 1

- **B.Tech in Civil Engineering (CE)**

Semester III	Semester IV
- Building Planning and Drawing - Computer Programming 1 - Engineering Surveying - Engineering Surveying Laboratory - Fluid Mechanics - Highway and Traffic engineering - Language Elective 2 - Numerical Methods and Probability Theory - Numerical Methods and Probability Theory - Structural Analysis 1	- Computer programming 2 - Concrete technology - Concrete Technology Laboratory - Engineering Minor Elective 1 - Environmental Engineering Laboratory - Open Minor 1 - Soil Mechanics - Structural Analysis 2 - Water Supply and Waste Water Engineering
Semester V	**Semester VI**
- Computer-Aided Analysis and Design Lab 1 - Computing System and Technologies - Engineering Hydrology - Engineering Minor Elective 2 - Hydraulics and Hydraulic Machinery Laboratory - Open Minor 2 - Pathway Elective 1	- Computer-Aided Analysis and Design Lab 2 - Construction Project Management - Design of Steel Structures - Engineering Minor Elective 3 - Open Minor 4 - Pathway Elective 2 - Professional Ethics and Anti-Corruption Law

● Reinforcement Cement Concrete Design ● Seminar on Summer Training	● Project Management Laboratory ● Quantity Survey and Estimation ● Soil Mechanics Laboratory ● Transportation Engineering Laboratory
Semester VII	**Semester VIII**
● Capstone Project 1 ● Engineering Minor Elective 4 ● Industry Co-Op Project 1 ● Pathway Elective 3 ● Pathway Elective 4	● Capstone Project 2 ● Engineering Minor Elective 5 ● Engineering Minor Elective 6 ● Training elective 1