

# B.Tech. Computer Science and Engineering (AI & ML)

This course is designed to deliver in-depth knowledge of fundamental and advanced concepts in Computer Science. This specialization offers focused training in cutting-edge AI and ML technologies. The curriculum covers key areas such as Machine Learning, Deep Learning, Natural Language Processing, Computer Vision, Explainable AI, Game Theory, and Cognitive Robotics.

## PROGRAMME STRUCTURE

### SEMESTER I (Physics Cycle)

- BMATS101 Mathematics-2 Optimization Techniques for CS stream
- BPHY102 Modern Physics for CSE stream
- BCS103 Python Programming for Beginners
- BEC104 Introduction to Electrical Engineering
- BCS105 Web Programming Fundamentals
- BENG106 Communicative English
- BCO107 Indian Constitution
- BCS108 Drafting Techniques with CAD

### SEMESTER I (Chemistry Cycle)

- BMATS101 Mathematics-I Complex Variables and Linear Algebra
- BCHE102 Applied Chemistry for CSE stream
- BCS103 Computational Problem-Solving Using C
- BEC104 Basics of Electronics and Communication
- BCS105 Introduction to Embedded System
- BDEPT106 Corporate Social Responsibility
- BK107 Kannada
- BCS109 Innovative Thinking & Design Strategies

### SEMESTER II (Physics Cycle)

- BMATS101 Mathematics-2 Optimization Techniques for CS stream
- BPHY102 Modern Physics for CSE stream
- BCS103 Python Programming for Beginners
- BEC104 Introduction to Electrical Engineering
- BCS105 Web Programming Fundamentals
- BENG106 Communicative English
- BCO107 Indian Constitution
- BCS108 Drafting Techniques with CAD

### SEMESTER II (Chemistry Cycle)

- BMATS101 Mathematics-2 Optimization Techniques for CS stream
- BCHE102 Applied Chemistry for CSE stream
- BCS103 Computational Problem-Solving Using C
- BEC104 Basics of Electronics and Communication
- BCS105 Introduction to Embedded System
- BDEPT106 Corporate Social Responsibility
- BK107 Kannada
- BCS109 Innovative Thinking & Design Strategies

### SEMESTER III

- BCS301 Mathematics-3: Probability and Statistics
- BCS302 Data Structures and Applications Strategies
- BCS303 Micro Processor and Controllers

- BCS304 Operating System and Computer Organization
- BCSL305 Data Visualization and Analysis Lab with Tableau/Python
- BCS306 Object Oriented Programming with Java
- BCS308 Project Management with Git
- BDEPT309 Skills for the Modern Professional -I (Soft skills)

#### **SEMESTER IV**

- BCS401 Mathematics-4: Graph Theory
- BCS402 Algorithm Design and Optimization
- BCS403 Database Systems and Administration
- BCSL404 Image Processing with MATLAB Laboratory
- BCS405 Image processing with MATLAB
- BCS406 UI/UX
- BDEPT408 Universal human values course
- BCS407 Internship –I\*
- BDEPT409 Skills for the Modern Professional -II (Quantitative & Qualitative Thinking)

\*Internship to be carried out in the interleaving holidays between semester 3 and start of semester 4.  
But Evaluated at the end of semester 4

#### **SEMESTER V**

- BCS501 Software Engineering & Project Management
- BCS502 Computer Network and Applications
- BCS503 Artificial Intelligence & Machine Learning
- BCSL504 Artificial Intelligence & Machine Learning Lab
- BCS505 Reinforcement Learning
- BCS506 Mini Project
- BDEPT507 Research Methodology and IPR
- BDEPT508 Environmental Studies
- BDEPT509 Skills for the Modern Professional -III (Technical)

#### **SEMESTER VI**

- BCS601 Full Stack Development
- BCS602 Generative AI and Introduction to Chatbots
- BCS603 Cyber Security and Cyber Forensics
- BCS604 Open Elective Course
- BCS605 Project Phase I
- BCSL606 Cyber Security and Cyber Forensics Lab
- BEC608 Introduction to R programming
- BCS607 Internship – II\*
- BDEPT609 Skills for the Modern Professional -IV (Industry Readiness Program)

#### **SEMESTER VII**

- BCS701 Cloud Computing
- BCS702 Natural Language Processing
- BCS703 Big Data Analytics
- BCS704 Robot Vision
- BCS705 Open Elective Course
- BCS706 Major Project Phase-II

#### **SEMESTER VIII**

- BCS801 \*NPTEL COURSE 1
- BCS802 \*NPTEL COURSE 2
- BCS803 Internship -III (Industry/Research) (14 - 20 weeks)