

WELCOME, FIRST-YEAR STUDENTS

Your Computer Science & Engineering Journey Starts Here

**A first look at the courses, evaluation schemes, learning outcomes, and applications
across Semester I & II**

**11
COURSES**

**2
SEMESTER**

A.Y. 2026–27

**COMPUTER SCIENCE & ENGINEERING DEPARTMENT
COEP TECHNOLOGICAL UNIVERSITY, PUNE**

THE ROADMAP

Your First Year, At a Glance

7 courses across two semesters to build your foundation

SEMESTER I

Fundamentals of Artificial Intelligence. FAI

Engineering Science Course · ES-I

3 Credits

AI for Multidisciplinary Applications. AIMA

Engineering Science Course · ES-II

3 Credits

Fundamentals of Cyber Security FCS

Engineering Science Elective · ES-III

3 Credits

Programming for Problem Solving. PPS

Vocational & Skill Enhancement Course · VSEC

2 Credits

Python Programming. PP

Vocational & Skill Enhancement Course · VSEC

2 Credits

Web Design. WD

Vocational & Skill Enhancement Course · VSEC

2 Credits

THE ROADMAP

Your First Year, At a Glance

7 courses across two semesters to build your foundation

SEMESTER II

Discrete Structures. DS

Program Core Course · PCC

3 Credits

AI for Multidisciplinary Applications. AIMA

Engineering Science Course · ES-II

3 Credits

Programming for Problem Solving. PPS

Vocational & Skill Enhancement Course · VSEC

2 Credits

Python Programming. PP

Vocational & Skill Enhancement Course · VSEC

2 Credits

Web Design. WD

Vocational & Skill Enhancement Course · VSEC

2 Credits

SEMESTER I

CS related skills

- Fundamentals of Programming
- Artificial Intelligence
- Cyber Security
- Web Technologies

These are some essential skills relevant for all branches.

Fundamentals of Artificial Intelligence (CSE and AIML)

ES - I (Compulsory)

3
credits

COURSE DETAILS

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EVALUATION SCHEME

■ **MSE-30** ■ **TA-20** ■ **ESE-50****KEY LEARNING**

- Foundations of Artificial Intelligence
- Solving Problems by Searching
- Introduction to Machine Learning and GenAI
- AI Ethics and Responsible AI.

**IMPORTANCE**

- Understand the fundamentals of Artificial Intelligence and its evolution.
- Apply AI techniques for problem-solving and searching in simple domains.
- Comprehend the basics of Machine Learning and their working principles.
- Recognize ethical and responsible AI practices.

**APPLICATION AREAS**

- **Computer Science / IT:** intelligent software, machine learning, automation.
- **Electronics & Communication:** robotics, smart systems, signal processing, embedded AI.
- **Mechanical:** robotics, automation, intelligent manufacturing.
- **Civil:** smart cities, infrastructure monitoring, predictive maintenance.
- **Electrical:** smart grids, power forecasting, automated control systems.

COURSE DETAILS

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EVALUATION SCHEME

■ MSE-30 ■ TA-20 ■ ESE-50



KEY LEARNING

- Foundations of AI
- Introduction to AI concepts
- Natural Language Processing Generative AI
- AI Tools and Prompt Engineering
- Case Studies



IMPORTANCE

- Understand AI fundamentals and evolution
- Use AI techniques for problem-solving and searching
- Apply basic NLP using Word2Vec and BERT
- Implement generative AI for text generation and fine-tuning
- Utilize AI tools and prompt engineering
- Analyze real-world AI case studies



APPLICATION AREAS

- **Computer Science/IT:** machine learning, data analytics, automation, intelligent software.
- **Electronics & Communication:** smart systems, robotics, signal processing, IoT.
- **Electrical:** smart grids, predictive maintenance, energy optimization, automation.
- **Mechanical:** robotics, autonomous systems, design optimization.
- **Civil:** smart infrastructure, structural monitoring, traffic management.

Fundamentals of Cyber Security

ES – III

3

credits

COURSE DETAILS

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EVALUATION SCHEME

■ MSE-30 ■ TA-20 ■ ESE-50



KEY LEARNING

- Introduction to Cyber security and Cyber Crime
- Computer Networks and Internet Basics
- Cyber Threats and Online Safety
- Cyber Laws
- Ethics and Privacy.



IMPORTANCE

- Understand fundamental cyber security concepts and common cyber threats
- Develop awareness of safe online practices and methods to protect digital information
- Understand basic networking concepts, cyber laws, privacy, and ethical responsibilities



APPLICATION AREAS

- **Computer Science/IT:** network security, secure software, data protection, ethical hacking.
- **Electronics & Communication:** secure communication, IoT security, network protection
- **Electrical:** smart-grid, control-system and critical-infrastructure protection. Mechanical: industrial automation and smart-manufacturing security.
- **Civil:** smart infrastructure, surveillance, connected systems.

Programming for Problem Solving

VSEC

2
credits

COURSE DETAILS

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EVALUATION SCHEME

■ LAB-50 ■ TA-20 ■ ESE-30



KEY LEARNING

- Basic Programming Constructs
- Conditional and Control Flow Statements
- Array and Function
- Structure and Pointers



IMPORTANCE

- Represent real-life data using data types and variables
- Solve problems using expressions, conditional statements, arrays and loops
- Design modular solutions using functions



APPLICATION AREAS

- Relevant to all engineering branches for basic programming and computational skills
- Strengthens logical thinking, algorithmic problem-solving and coding abilities for simulations, automation, data processing and technical problem-solving

Python Programming

VSEC

2

credits

COURSE DETAILS

1	-	1	1
L	T	P	S

EVALUATION SCHEME

■ LAB-50 ■ TA-20 ■ ESE-30



KEY LEARNING

- Introduction
- Python Control Flow
- Python Data Structures
- Strings and Functions



IMPORTANCE

- Represent real-life data using data types and variables
- Solve problems using expressions, conditional statements and loops
- Design modular solutions using functions
- Demonstrate the ability to process files of various types



APPLICATION AREAS

- **Computer Science/IT:** software development, data science, AI, automation
- **Electronics & Communication:** signal processing, IoT, embedded systems
- **Electrical:** power-system analysis, simulation, control, automation. **Mechanical:** numerical analysis, CAD automation, simulation, robotics.
- **Civil:** structural analysis, data processing, modelling, project automation.

COURSE DETAILS

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EVALUATION SCHEME



LAB-50



TA-20



ESE-30



KEY LEARNING

- Web Essentials
- Markup languages
- HTML
- Design of web pages
- Client-Side Programming



IMPORTANCE

- Install and configure a web server
- Design web pages using HTML and CSS
- Manipulate DOM objects using JavaScript



APPLICATION AREAS

- **Computer Science/IT:** website development, UI/UX, web applications. **Electronics & Communication:** web interfaces for IoT and smart systems.
- **Electrical:** web-based monitoring, control and data visualization.
- **Mechanical:** product showcases and engineering dashboards.
- **Civil:** project websites, infrastructure visualization, digital presentations.

SEMESTER II

CS related skills

- Fundamentals of Programming
- Artificial Intelligence
- Discrete Structures
- Web Technologies

These are some essential skills relevant for all branches.

COURSE DETAILS

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EVALUATION SCHEME

■ MSE-30 ■ TA-20 ■ ESE-50



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COURSE DETAILS

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EVALUATION SCHEME

■ MSE-30 ■ TA-20 ■ ESE-50



KEY LEARNING

- Foundations—Logic and Proofs
- Basic Structures—Sets
- Functions
- Sequences and Sums
- Induction and Recursion
- Counting
- Relations, Graphs
- Algebraic Structures



IMPORTANCE

- Exposure to formal logic and proof techniques
- Recognize relations between entities using sets, functions and relations
- Solve problems related to counting
- Apply discrete-structure concepts in other computer science and engineering subjects



APPLICATION AREAS

- **Computer Engineering:** algorithms,, databases, networking and logic
- **Electronics & Communication:** digital logic, networks, coding theory, signal processing.
- **Electrical:** digital systems, control logic, networks, system modelling
- **Mechanical:** computational modelling, automation, robotics
- **Civil:** optimization, network analysis, scheduling

Programming for Problem Solving

VSEC

2
credits

COURSE DETAILS

1	-	1	1
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EVALUATION SCHEME

■ LAB-50 ■ TA-20 ■ ESE-30

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- Basic Programming Constructs
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Python Programming

VSEC

COURSE DETAILS

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EVALUATION SCHEME

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EVALUATION SCHEME

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Two semesters
Eleven Courses
Strong CSE foundation

From programming and discrete structures to AI,
cybersecurity and web technologies every course
covers an essential skill relevant for using computers
in your domain

COMPUTER SCIENCE & ENGINEERING DEPARTMENT

COEP Technological University, Pune
A.Y. 2026–27