MTech(ICT): Detailed Program Structure

Specialization: Software Systems

Semester-I
- Communication and Technical Writing (2 credit)
- Programming lab (3 credit)
- Specialization Core I: Advanced Algorithm (4 credit)
- General Elective (Maths) (3/4 credit)
- General Elective (Technical) (3/4 credit)

Semester-II

- Specialization Core II – Advanced Software Engineering (4 credit)
- Minor Project (3 credit)
- Specialization Elective I (3/4 credit)
- Specialization Elective II (4/3 credit)

Summer: Major Project I (4 credit)

Semester-III

- Major Project I (Continued) (6 credit)
- Specialization Elective III (3/4 credit)
- Specialization Elective IV (4/3 credit)

Semester-IV

- Major Project II/Industrial Training Project (12 credit)

Representative List of General Elective (Mathematics)

- Probability & Random Variables
- Linear Algebra
- Optimization
- Graph Theory
- Any other relevant course

Representative List of General Elective (Technical)

- Operating Systems
- Machine Learning

- Natural Language Processing
- Cloud computing
- Artificial Intelligence
- Human Computer Interaction
- Any other relevant course

Representative List of Specialization Electives I and II

- Distributed Systems
- Distributed Databases
- Approximation Algorithms
- Information Security
- Multimedia Security & Forensic
- Any other relevant course

Representative List of Specialization Elective III and IV

- Big Data Processing
- Blockchains and Cryptocurrency
- Advanced Computer Networks
- Software Specification and Verification
- Any other relevant course

Specialization: Machine Learning

Semester-I
- Communication and Technical Writing (2 credit)
- Programming lab (3 credit)
- Specialization Core I: Foundations of Machine Learning (4 credit)
- General Elective (Maths) (3/4 credit)
- General Elective (Technical) (3/4 credit)

Semester-II

- Specialization Core II – Advanced Machine Learning (4 credit)
- Minor Project (3 credit)
- Specialization Elective I (3/4 credit)
- Specialization Elective II (4/3 credit)

Summer: Major Project I (4 credit)

Semester-III

- Major Project I (Continued) (6 credit)
- Specialization Elective III (3/4 credit)
- Specialization Elective IV (3/4 credit)

Semester-IV

- Major Project II/Industrial Training Project (12 credit)

Representative List of General Elective (Mathematics)

- Probability & Statistics
- Linear Algebra
- Optimization
- Graph Theory
- Any other relevant course

Representative List of General Elective (Technical)

- Advanced Algorithm
- Cloud computing
- Artificial Intelligence
- Human Computer Interaction

- Any other relevant course

Representative List of Specialization Electives I and II

- Digital Image Processing
- Information Retrieval
- Recommendation System
- Adversarial Machine Learning
- Deep Learning
- Multimedia Security & Forensic
- Speech Technology
- Any other relevant course

Representative List of Specialization Elective III and IV

- Computer Vision
- Natural Language Processing
- Reinforcement Learning
- Computational Shape Modeling
- Wavelet Image Processing
- Time Series Forecasting
- Any other relevant course

Specialization: VLSI & Embedded Systems

Semester-I
- Communication and Technical Writing (2 credit)
- Programming lab (3 credit)
- Specialization Core I: VLSI System Design (4 credit)
- General Elective (Maths) (3/4 credit)
- General Elective (Technical) (3/4 credit)

Semester-II

- Specialization Core II – Embedded Hardware Design (4 credit)
- Minor Project (3 credit)
- Specialization Elective I (3/4 credit) - Choose any one
    - ASIC Design
    - Analog VLSI Design
- Specialization Elective II (4/3 credit) - Choose any one
    - Digital System Architecture
    - Cyber Physical Systems and IoT

Summer: Major Project I (4 credit)

Semester-III

- Major Project I (Continued) (6 credit)
- Specialization Elective III (3/4 credit)
- Specialization Elective IV (3/4 credit)

Semester-IV

- Major Project II/Industrial Training Project (12 credit)

Representative List of General Elective (Mathematics)

- Probability & Random Variables
- Linear Algebra
- Optimization
- Graph Theory
- Any other relevant course

Representative List of General Elective (Technical)

- Digital Programming
- Internet of Things
- Machine Learning
- Robotics
- Edge Computing
- Any other relevant course

Representative List of Specialization Electives I and II

- ASIC Design
- Analog VLSI Design
- Digital System Architecture
- Cyber Physical Systems and IoT
- Any other relevant course

Representative List of Specialization Elective III and IV

- VLSI Testing and Verification
- Low Power VLSI Design
- VLSI for Digital Signal processing
- Device Modeling and Simulation
- Nanoelectronics
- Any other relevant course

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