

The MTech programme with Communication, Signal Processing and Machine Learning (CSPML)

Semester wise credits distribution

Semester 1	Semester 2	Semester 3	Semester 4
Core Course 1 (6 credits)	Basket Elective Course 3 (6 credits)	MTech Project I (32 credits)	MTech Project II (32 credits)
Core Course 2 (6 credits)	Basket Elective Course 4 (6 credits)		
Core Course 3 (6 credits)	Institute Elective Course 1 (6 credits)		
Basket Elective Course 1 (6 credits)	Institute Elective Course 2 (6 credits)		
Basket Elective Course 2 (6 credits)	Institute Elective Course 3 (6 credits)		
P/NP Communication Skills Course (0 credits)	Seminar (4 credits)		

Proposed Programme Rules

- **Core Courses:** 18 credits (mandatory)
- **Basket Elective Courses:** 24 credits (mandatory)
 - Minimum 1 course (≥ 6 Credits) from each basket required:
 1. Communications
 2. Signal Processing and Controls
 3. Machine Learning (ML)
 - Any course not in the three baskets is considered an Institute Elective Course
- **UG-Level Electives:** Maximum of 2 UG-level courses allowed from Basket Elective

Course baskets

- **Seminar Guide:** Assigned at the end of Semester 1
- **MTP Guide:** Assigned at the end of Semester 2
 - By default, the Seminar guide continues as the MTP guide

Core Theory Courses (18 Credits)

Course Code	Course Title	Credit	Semester
EE618T	Linear Algebra and Applications	6	Autumn
EE614T	Probability Models and Applications	6	Autumn
EE635T	CSPML in Practice	6	Autumn

Basket Elective Courses

Basket 1: Communication

Autumn (Odd) Semester	Spring (Even) Semester
1. EE301C Digital Communication and Coding Theory (6 Credits, UG) 2. CS607T FPGA for communication networks prototyping (6 Credits)	1. EE602T Next Generation Wireless Networks (6 credits) 2. EE606T Wireless Communications (6 credits) 3. EE601T Information Theory

Basket 2: Signal Processing & Controls

Autumn (Odd) Semester	Spring (Even) Semester
1. EE305T Digital Signal Processing (Currently a half-semester course of 3 credits, it will be offered as a 6-credit course starting next academic year. This is a UG course.) 2. EE501T Speech Processing (6 credits) 3. EE501L Speech Processing Lab (3 credits) 4. EE609T Multivariable Control Systems (6 credits)	1. EE634T Detection and Estimation Theory (6 credits) 2. EE611T Optimization Theory and Algorithms (6 credits) 3. EE630T Computer vision and Digital Image Processing (6 Credits)

Basket 3: Machine Learning

Autumn (Odd) Semester	Spring (Even) Semester
1. CS503T Statistical Pattern Recognition (6 Credits) 2. CS501L Statistical Pattern Recognition Laboratory (3 Credits) 3. EE604T Pattern Recognition	1. EE608T Neural Networks and Deep Learning (NNDL) (6 credits) 2. EE601L NNDL Lab (3 credits) 3. EE611T Optimization Theory and Algorithms (6 credits)

and Machine Learning (PRML) (6 Credits) 4. EE602L PRML Lab (3 Credits)	
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Note: Students can either take CS 616 (CS 612) or EE 609 (EE 612), not both.