

Proposal for Dual Programme Curriculum

Department Linked EA/ES & BS Courses

1. Probability and Stochastic Process (Maths) □ 4cr
2. Signals & Systems (EE) – 4cr
3. Material Science (PHY) 3Cr
 - PHL 111: [Principles of Electronic Materials](#) OR
 - PHL 113: Physics of Nanomaterials
4. One of the following courses – 3-4cr
 - MAL 256 Modern Algebra
 - MAL 255 Linear Algebra: Theory, Methods and Applications
 - MAL 210 Optimization Methods and Applications

Total 14-15* cr

*If a student does 15 credits, then extra 1 credit will count towards DE.

	PROPOSED Departmental Core	LTP	Cr
1	COL 106: Data Structures & Algorithms	3-0-4	5
2	COL 202: Discrete Structures	3-1-0	4
3	COL 215: Digital Logic & Design	3-0-4	5
4	COL 216: Computer Architecture	3-0-2	4
5	COL 226: Programming Languages	3-0-4	5
6	COP 290: Design Practices	0-0-6	3
7	COL 331: Operating Systems	3-0-4	5
8	COL 333: Principles of Artificial Intelligence*	3-0-2	4*
9	COL 334: Computer Networks	3-0-2	4
10	COL 351: Algorithm Design & Analysis	3-1-0	4
11	COL 352: Intro to Automata & Theory of Computation	3-0-0	3
12	COL 362: Introduction to Database Management Systems*	3-0-2	4*
13	COL 380: Intro to Parallel & Distributed Programming	2-0-2	3
	Total 12 courses + 1 Design Lab		49

*Note: Student must do one of CSL333 or CSL362 as part of DC (if he does both, second course will count as DE)

Requirements for B.Tech Degree in CSE for Dual Programme:

- Department Core + 11 Credits of DE
 - 3 Courses of 3-4 credits each
- Overall Credit Requirements:
 - Institute core 55 + Dept Core 49 + 14 (PL-EAS) = 118core

- DE 11 + 10 (OC) = 21
- Total 139cr + 15 credits of Non Graded Core

Requirements for M.Tech CSE for Dual Degree:

- Students for Dual Degree would be required to complete total of 139 UG + 46 PG credits to earn the Dual Degree
Total 185 cr + 15 Non-Graded
- Continuation to M.Tech in Dual Programme would be subject to maintenance of **Minimum GPA 6.75** in UG part of the programme.

Structure:

Institute Core 55 + DC 49 + PLES 14 + DE 11 + OC 10= 139

+

Program Core (PC): 32 Cr

COL 703: Logic for CS	3-0-2	4 cr
COL 726: Numerical Algorithms	3-0-2	4 cr
COP 891: Minor Project	0-0-6	3 cr
COP 892: MTech Project Part I	0-0-14	7 cr
COP 893: MTech Project Part II	0-0-28	14 cr

+

Program Electives (PE): 14 Cr

4 Electives from list of departmental 700/800 level electives

Specializations offered

- Advanced Topics in CS
- Architecture & Embedded Systems (AES)
- Graphics & Vision (GV)
- Software Systems (SS)
- Theoretical Computer Science (TH)
- Data Analytics & AI (DAAI)
- Applications & IT (ITA)
- The list of available electives and relevant specialization is given in Annexure A.

CS5: Indicative Course Schedule: (Credits completed in 1st year: 34 Credits of Institute Core)

Sem	Lecture Course I	Lecture Course II	Lecture Course III	Lecture Course IV	Lecture Course V	other	L-T-P/Cr
III	COL 202: Discrete Structures 3-1-0 4 Cr/ DC	COL 215: Digital Logic & Design 3-0-4 5 Cr /DC	COL106: Data Structures 3-0-4 5 Cr /DC	Material Science [Physics] 3 [PLES2]	Probability & Stochastic Processes 3-1-0 [PLES1]	CON100 0-0-2 Non-Graded	21
IV	COL 226: Prog. Languages 3-0-4 5 Cr /DC	COL216: Computer Architecture 3-0-2 4 Cr/ DC	EEL205: Signals and Systems 3-1-0 [PLES3] 4Cr	Env (2-0-0) 2 Cr	HU1 4 Cr	COP 290: Design Practices in CS 0-0-6 3 Cr /DC	22
V	COL 333: Principles of AI 3-0-2 [DC] DE1	COL 331: Operating Systems 3-0-4 5 Cr /DC	COL 352: Theory of Computing 3-0-0 3 Cr / DC	Biology (3-0-2) 4 Cr	HU2 4 Cr		20
VI	COL 362: Data Base Mgmt Systems 3-0-2 [DC] DE1	COL 334: Computer Networks 4 Cr / DC	COL 351: Analysis & Design of Algorithms 3-1-0 4 Cr /DC	Math 3-0-0 [PLES 4]	HU3 4 Cr	COL 380: Intro to Parallel & Dist. Programming 2-0-2 3 Cr / DC	22
VII	DE2 3 Cr	DE3 4 Cr	COL 703: Logic for CS 4 Cr / PC		OC1 3 Cr	COP 891: Minor Project 3 Cr/ PC	17
VIII	PE1 3 Cr	COL 726: Numerical Algorithms 4 Cr / PC	OC2 3 Cr	PE2 3 Cr	HU4 3 Cr	PE3 3 Cr	19
IX	PE4 3 Cr	PE5 3 Cr	OC3 3 Cr			MTP Part-I 0-0-14 7 Cr	16
X						MTP Part-II 0-0-28 14 Cr	14

Total 185