

Course Curriculum of Ph.D Programme.

Semester First – Four electives and one compulsory course (18 Credits)

Courses	Minimum Credits
Elective 1	04
Elective 2	04
Elective 3	04
Elective 4	04
Professional Communication Skills (Compulsory)	02

Semester Second – Four elective courses (17 Credits)

Courses	Minimum Credits
Elective 5	04
Elective 6	04
Elective 7	04
Elective 8	04
Teaching work	01

Semester Third – Thesis work and Graduate Seminar (19 Credits)

Courses	Minimum Credits
Thesis work	16
Progress Seminar	02
Teaching work	01

Semester Fourth – Thesis work and Graduate Seminar (19 Credits)

Courses	Minimum Credits
Thesis work	16
Progress Seminar	02
Teaching work	01

Semester Fifth – Thesis work and Graduate Seminar (19 Credits)

Courses	Minimum Credits
Thesis work	16
Progress Seminar	02
Teaching work	01

Semester Sixth – Thesis work and Graduate Seminar (18 Credits)

Courses	Minimum Credits
Thesis work	16
Progress Seminar	02

Notes:

1. Elective courses will be floated as per the decision of the disciplines
2. An elective can be substituted by three EMFs of 2 credits each
3. Two electives can be substituted by two units of thesis load(s) of 4 credits each with the consent of faculty of concerned discipline.
4. The student is supposed to pass a Comprehensive Examination designed to test the overall comprehension of the student in various subjects relevant for his/her field of specialization. A student can appear in the Comprehensive Examination only after he/she has completed the minimum course requirements and satisfied the minimum specified CPI requirement.
5. The evaluation process of Ph. D programme will be as per the guidelines given in PG manual.

Requirements of M.Tech. Programme

Requirements	PhD	PhD
	[after MTech/ME]	[after B Tech/BE]
Minimum total number of credits	76	100
Minimum number of credits through the course work	16	40
Minimum number of credits through Graduate/Progress Seminar	06	06
Credits through Teaching Work	04	04
Credits through the course “Professional Communication Skills”	02	02
Minimum number of credits through thesis research	32	32
Minimum number of courses to be cleared	04	10
Minimum number of postgraduate courses to be cleared	02	06
Maximum number of undergraduate courses of Level 3 or above	02	04
Minimum courses from the discipline	3	Nil

Electives Offered by Different Disciplines

CSE

CS409	DESIGN AND ANALYSIS OF ALGORITHMS	4
CS651	MACHINE LEARNING	4
CS661	WAVELETS FOR COMPUTER GRAPHICS	4
CS501	BIOMETRIC TECHNOLOGIES & APPLICATIONS	4
CS504	OBJECT-ORIENTED SOFTWARE ENGINEERING	4

ECE

EC612	PATTERN RECOGNITION	4
EC611	IMAGE PROCESSING	4
EC501	WAVELET TRANSFORMS AND APPLICATIONS	4
EC631	RF AND MICROWAVE ENGINEERING	4
EC502	SEMICONDUCTOR DEVICES & MODELS FOR CIRCUIT SIMULATION	4
EC632	MICROWAVE AND ANTENNA ENGINEERING	4
EC614	ADVANCED MATHEMATICAL METHODS	4
EC533	COMPUTATIONAL ELECTRONOMAGNETICS	4
EC633	ANALOG IC DESIGN	4
EC634	ADVANCED VLSI DESIGN	4

ME

ME613	ENGINEERING OPTIMIZATION	4
ME501	MECHATRONICS	4
ME640	ANALYTICAL METHODS FOR MECHANICAL ENGINEERING	4
ME612	VIBRATIONS OF MECHANICAL SYSTEMS	4

Design, HS & NS

DS511	PRODUCT DESIGN I	4
NS501	ADVANCES IN PROBABILITY THEORY	4
HS501	PROFESSIONAL COMMUNICATION SKILLS	2

EMFs

EM646a	PRECISION GEAR PRODUCTION TECHNOLOGY	2
EM646c	FABRICATION AND MANUFACTURING OF COMPOSITE MATERIA	2
EM644a	ADVANCED NOISE AND VIBRATION DESIGN OG AUTOMOBILE	2
EM601e	SMART GRID	2
EM605c	ADVANCED ALGORITHMS	2
EM604b	DEPENDABLE COMPUTING	2
EM601d	PARALLEL PROCESSING	2
EM602b	ARTIFICIAL INTELLIGENCE IN PRACTICE	2
EM664d	COMPUTATIONAL GEOMETRY FOR WIRELESS NETWORKS	2
EM664c	MOBILE COMPUTING	2
EM667b	SYSTEM MODELLING AND SIMULATION	2
EM605a	NETWORK FLOWS AND MATCHINGS	2
EM666a	MEMS AND BioMEM	2
EM546a	ADVANCED MACHINING PROCESSES	2
EM551a	NANO-PRECISION MANUFACTURING	2
EM624b	ADVANCED ROBOTICS AND INTELLIGENT SPACE	2
EM601a	ADVANCED TOPICS IN COMPUTER ARCHITECTURE	2
EM683b	FORECASTING MODELS	2
EM605b	NP COMPLETENESS AND APPROXIMATION ALGORITHMS	2
EM601b	ADVANCED COMPUTER ARCHITECTURE	2
EM664b	ADVANCED WIRELESS COMMUNICATION TECHNOLOGIES	2
EM669a	EVOLUTION OF PATTERN RECOGNITION	2
EM670a	INFORMATION THEORY AND CODING	2
EM671a	IMAGE AND VIDEO CODING	2
EM668c	SOFTWARE TESTING AND QUALITY ASSURANCE	2
EM642a	ADAPTIVE SIGNAL PROCESSING	2
EM667a	NEURAL NETWORKS	2
EM661a	THEORY OF INVENTIVE PROBLEM SOLVING	2
EM665a	RECENT TRENDS IN DESIGN AND MANUFACTURING	2
EM662a	MEASUREMENT OF INTERFACE PRESSURE BY MEANS OF ULTRSONIC WAVES	2
EM602a	NLP FOR INFORMATION MANAGEMENT SYSTEMS	2
EM603a	OPTIMIZATION TECHNOLOGY IN COMPILER DESIGN	2
EM668a	INFORMATION ARCHITECTURE	2
EM668b	QUANTITATIVE METHODS IN SOFTWARE ENGINEERING	2
EM667a	NEURAL NETWORKS	2
EM669a	EVOLUTION OF PATTERN RECOGNITION	2
EM652a	SENSORS AND ACTUATORS	2
EM663a	PRINCIPLES OF PROGRAMMING LANGUAGES	2
EM664a	WIRELESS PROTOCOLS & MOBILE COMMUNICATION	2
EM561a	BIOMETRICS	2

Rules for course numbering for EMF and PG Courses:

1. EMF: The code will be 6 characters long.

- a. The first two characters will be EM representing EMF,
- b. Third character will stand for type of EMF:
 - i. 6 for PG EMF and open to UG (open EMF),
 - ii. 5 for only PG EMF,
 - iii. 4 for only UG EMF,
- c. Fourth and Fifth characters will stand for EMF discipline
 - i. 01-20: CSE,
 - ii. 21-40: ECE,
 - iii. 41-60: ME,
 - iv. 61 to 99: open to other disciplines (cross discipline), (80 series is reserved for Humanities)
 - v. 90 series for Design Courses
- d. Sixth and the last digit will represent the course series
 - i. a to z are series in a particular area (For example: different courses on Networking may be offered with series a, b, c,....so on)

2. PG Courses: The code will be 5 characters long.

- a. The first two characters will represent discipline:
 - i. CS for Computer Science & Engineering
 - ii. EC for Electronics & Communication Engineering
 - iii. ME for Mechanical Engineering
 - iv. DS for Design
 - v. ES for Engineering Sciences
 - vi. NS for Natural Science
 - vii. HS for Humanities and Social Sciences
 - viii. MS for Management
- b. Third character will stand for type of course:
 - i. 6 for PG course and open to UG (Open Elective)
(Instructor consent is required)
 - ii. 5 for only PG course,
- c. Fourth and Fifth characters will stand for series of the course:
 - i. 01-30: open to other discipline
 - ii. 31 to 95: specific to particular discipline (CS, EC, ME, DS)
- d. Following last three digits are reserved:

MTech / MDes		PhD	
596	Summer Internship	794	Teaching work-I
597	Teaching Work	795	Teaching work-II
598	Seminar I	796	Seminar I
599	Seminar II	797	Seminar II
699	Master's Thesis	798	Seminar III
		799	PhD Thesis