

# B.TECH. PROGRAMME

## ELECTRONICS AND INSTRUMENTATION ENGINEERING

### CURRICULUM

**for 2010 admissions  
onwards**

#### GENERAL INFORMATION

In this section, category-wise distribution of credits for B.Tech (Electronics and Instrumentation Engineering) program for all semesters are given, followed by curriculum.

#### Code Numbering

Each course is assigned a code number consisting of two letters followed by three digits. The two-letter code indicates the department offering the course. The digit code indicates the level of the course (100,200,300,400 etc.). The odd number indicates courses offered in odd semesters and even number indicates courses offered in even semesters. When a subject is offered in both even and odd semesters, the digit code ends with a zero. Generally Elective courses begin with \* 51 and lab courses begin with \*90. Courses in humanity subjects (except language) are offered by any department where expertises are available.

#### ABBREVIATIONS

##### Curriculum

L	-	Lecture	H	-	Humanities
T	-	Tutorial	S	-	Science
P	-	Practical	M	-	Mathematics
Cr	-	Credit	G	-	General Engg.
Cat	-	Category	C	-	Core Engg.
ES	-	Exam Slot	Pr	-	Project

##### Departments

AES	-	Aerospace Engineering
CHE	-	Chemical Engineering
CHY	-	Chemistry
CSE	-	Computer Science and Engineering
CVL	-	Civil Engineering
ECE	-	Electronics and Communication Engineering
EEE	-	Electrical and Electronics Engineering
EIE	-	Electronics and Instrumentation Engineering
HUM	-	Humanities and Languages
MAT	-	Mathematics
MEC	-	Mechanical Engineering
PHY	-	Physics

**B Tech Programme**  
**ELECTRONICS AND INSTRUMENTATION ENGINEERING**  
**REVISED CURRICULUM**  
**(2010 admissions onwards)**

**SEMESTER I:**

Cat.	Code	Course Title	L-T-P	Cr	ES
H	ENG111	Communicative English	2 0 2	3	G
S	PHY100/ CHY100	Physics/ Chemistry	3 0 0	3	B
M	MAT111	Calculus, Matrix Algebra and Ordinary Differential Equations	3 1 0	4	A
G	EEE100	Electrical Engineering	3 0 0	3	C
G	MEC100/ CSE100	Engineering Mechanics/ Computer Programming	3 1 0 3 0 0	4 3	D
G	MEC181	Engineering Drawing	1 0 3	2	-
S	PHY181/ CHY181	Physics Lab./ Chemistry Lab.	0 0 3	1	-
G	MEC180/ EEE180	Workshop A/ Workshop B	1 0 2	2	-
G	CSE180	Computer Programming Lab.	0 0 3	1	-
H	CUL101	Cultural Education I	2 0 0	2	H

**H = 5 S = 4 M = 4 G = 11****Total = 24****SEMESTER II:**

Cat.	Code	Course Title	L-T-P	Cr	ES
H	ENG112	Technical Communication	2 0 2	3	G
S	CHY100/ PHY100	Chemistry/ Physics	3 0 0	3	B
M	MAT112	Vector Calculus, Fourier Series and Partial Differential Equations	3 1 0	4	A
G	ECE100	Electronics Engineering	3 0 0	3	C
G	CSE100/ MEC100	Computer Programming/ Engineering Mechanics	3 0 0 3 1 0	3 4	D
G	MEC182	Computer Aided Drawing	1 0 3	2	-
S	CHY181/ PHY181	Chemistry Lab./ Physics Lab.	0 0 3	1	-
G	EEE180/ MEC180	Workshop B/ Workshop A	1 0 2	2	-
G	CSE180	Computer Programming Lab.	0 0 3	1	-
H	CUL102	Cultural Education II	2 0 0	2	H

**H = 5 S = 4 M = 4 G = 11****Total = 24**

**III Semester**

Cat.	Code	Course Title	L-T-P	Cr	ES
M	MAT211	Integral Transforms and Complex Analysis	3 1 0	4	A
C	ECE210	Digital Systems	3 1 0	4	C
C	ECE220	Signals and Systems	3 1 0	4	D
C	EEE212	Electric Circuits	3 1 0	4	E
S		Science Elective I	3 0 0	3	B
H		Humanities Elective I	1 0 2	2	H
C	ECE290	Digital Systems Lab.	0 0 3	1	-
C	ECE291	Signals and Systems Lab.	0 0 3	1	-

**M = 4 H = 2 S = 3 C = 14****Total = 23****IV Semester**

Cat.	Code	Course Title	L-T-P	Cr	ES
M	MAT212	Mathematical Statistics and Numerical Methods	3 1 0	4	A
C	EIE210	Industrial Instrumentation I	3 1 0	4	C
C	ECE211	Electronic Circuits I	3 1 0	4	E
C	ECE221	Digital Signal Processing	3 1 0	4	D
S		Science Elective II	3 0 0	3	B
H		Humanities Elective II	1 0 2	2	H
C	ECE292	Digital Signal Processing Lab.	0 0 3	1	-
C	ECE293	Electronic Circuits Lab. I	0 0 3	1	-
H	SSK111	SOFT SKILLS I	0 0 3	1	-

**M = 4 H = 3 S = 3 C = 14****Total = 24****V Semester**

Cat.	Code	Course Title	L-T-P	Cr	ES
C	EIE310	Electrical and Electronic Measurements I	3 1 0	4	B
C	ECE310	Introduction to Microcontrollers and Applications	3 1 0	4	C
C	ECE311	Electronic Circuits II	3 1 0	4	D
C	EEE342	Control Engineering	3 1 0	4	E
C		Elective I	3 0 0	3	F
C	EIE390	Measurements and Control Systems Lab.	0 0 3	1	-
C	ECE390	Microcontroller Lab.	1 0 3	2	-
H	SSK112	SOFT SKILLS II	0 0 3	1	-

**H = 1 C = 22****Total = 23****VI Semester**

Cat.	Code	Course Title	L-T-P	Cr	ES
C	EIE311	Industrial Instrumentation II	3 0 0	3	F
C	EIE330	Process Control	3 1 0	4	C
C	EIE331	Electrical Machines	3 1 0	4	E
C	ECE313	VLSI Design	3 1 0	4	B
H	ENV200	Environmental Studies	3 1 0	4	D
C	EIE391	Process Control Lab.	0 0 3	1	-
C	ECE392	VLSI Design Lab.	0 0 3	1	-
Pr	EIE397	Seminar	2 0 0	2	-
H	SSK113	SOFT SKILLS III	0 0 3	1	-

**H = 5 C = 17 Pr = 2****Total = 24**

**VII Semester**

Cat.	Code	Course Title	L-T-P	Cr	ES
C	EIE413	Biomedical Instrumentation	3 0 0	3	B
C	EIE440	Industrial Automation	3 1 0	4	D
C	EEE341	Power Electronics	3 1 0	4	A
C		Elective II	3 0 0	3	E
C		Elective III	3 0 0	3	F
H	MNG400	Principles of Management	3 0 0	3	C
C	EIE490	Industrial Automation Lab.	0 0 3	1	-

**H = 3 C = 18****Total = 21****VIII Semester**

Cat.	Code	Course Title	L-T-P	Cr	ES
C		Elective IV	3 0 0	3	F
H		Management Elective	3 0 0	3	C
Pr	EIE499	Project		10	-

**H = 3 C = 3 Pr = 10****Total = 16****Total credits for the programme=179****ELECTIVES****SIGNAL PROCESSING/VLSI/COMPUTER SCIENCE**

ECE312	Microprocessors
ECE351	Image Processing
ECE376	Embedded Systems
ECE377	Digital IC Design
ECE450	Digital Signal Processors and Applications
ECE451	Introduction to Soft Computing
ECE452	Adaptive Signal Processing
ECE453	Biomedical Signal Processing
ECE454	Speech Processing
ECE455	Wavelet-based Signal Processing and Applications
ECE456	Spoken Language Processing
ECE457	Pattern Recognition Techniques & Algorithms
ECE458	Kernel Methods in Spoken Language Processing
ECE476	Analog IC Design
ECE477	VLSI Technology
ECE478	VLSI System Design
CSE360	Introduction to Data Structures and Algorithms
CSE380	IT Essentials

**INSTRUMENTATION**

EIE361	Fibre Optic Sensors and Applications
EIE461	Analytical Instrumentation
EIE462	Advanced Sensors
EIE463	Principles of Communication Engineering
EIE464	Virtual Instrumentation
EIE465	Electrical and Electronic Measurements II
EIE466	Instrumentation System Design
EIE467	Environmental and Pollution Monitoring Instrumentation
EEE361	Power Plant Instrumentation

**PROCESS CONTROL**

EEE462	Digital Control Systems
EIE471	Robotic Control
EIE472	Advanced Process Control

**MANAGEMENT ELECTIVES**

ECE480	Financial Engineering
ECE482	Econometrics
ECE484	Signal Processing for Business Applications
MEC401	Operations Research
MEC481	Total Quality Management
MEC482	Financial Management
MEC490	Enterprise Management

**SCIENCE ELECTIVES (3 0 0 3)**

CHY250	Catalytic Chemistry
CHY251	Chemistry of Engineering Materials
CHY252	Chemistry of Advanced Materials
CHY253	Advanced Polymer Chemistry
CHY254	Polymers for Electronics
CHY255	Chemistry of Toxicology
CHY256	Chemistry of Nanomaterials
CHY257	Biomaterials Science
CHY258	Environmental Chemistry
CHY259	Instrumental Methods of Analysis
CHY260	Organic Synthesis and Stereochemistry
CHY261	Unit Processes in Organic Synthesis
CHY262	Medicinal Organic Chemistry
CHY263	Organic Reaction Mechanisms
CHY264	Green Chemistry and Technology
CHY270	Corrosion Science
CHY271	Electrochemical Energy Systems and Processes
CHY272	Computational Chemistry and Molecular Modelling
CHY273	Fuel Cells – Principles and Applications
CHY274	Solid State Chemistry
PHY250	Electrical Engineering Materials
PHY251	Optoelectronic Devices
PHY252	Physics of Semiconductor Devices
PHY253	Electromagnetic Fields and Waves
PHY254	Microelectronic Fabrication
PHY255	Electronic Material Science
PHY260	Physics of Lasers and Applications
PHY261	Lasers in Materials Processing
PHY262	Non-linear Dynamics
PHY263	Concepts of Nanophysics and Nanotechnology
PHY264	Thin Film Physics
PHY270	Medical Physics
PHY271	Advanced Classical Dynamics
PHY272	Quantum Physics and its Applications
PHY273	Computational Physics
PHY274	Astrophysics

**HUMANITIES ELECTIVES (1 0 2 2)**

CUL151	Achieving Excellence in Life - An Indian Perspective
CUL152	Exploring Science and Technology in Ancient India
CUL153	Excellence in Daily Life
CUL154	Yoga Psychology
ENG250	Professional Communication
ENG251	Business Communication
ENG252	Indian Thought in English
ENG253	Insights into Life through English Literature
FRE201	Proficiency in French Language (Lower)
FRE202	Proficiency in French Language (Higher)
GER201	Proficiency in German Language (Lower)
GER202	Proficiency in German Language (Higher)
GER211	German for Beginners I
GER212	German for Beginners II
HUM250	Indian Classics for the Twenty-first Century
HUM251	Introduction to India Studies
HUM252	Glimpses of Eternal India
HUM253	Glimpses into the Indian Mind - The Growth of Modern India
HUM254	Glimpses of Indian Economy and Polity
HUM255	Science and Society – An Indian Perspective
JAP201	Proficiency in Japanese Language (Lower)
JAP202	Proficiency in Japanese Language (Higher)