

Standard of Deviation Sheets for UG Courses

B.Tech. Course Structure (without Minor or Second Major 2025-26 onwards)

Category	B.Tech. with Internship Program Components	Proposed	Recommended	
			Minimum	Maximum
HLM	Humanities, Social Science, Language and Management	11	10	--
IS	Institute Science	22	22	--
IE	Institute Engineering	18.5	15	--
EP	Engineering Drawing (Manual and Computer Aided), Manufacturing Practices, and Practice courses of Department/ School	8	8	--
^θ DC+DE	Department/Program Core +Elective	73.5	68	--
OE	Open Electives	6	6	--
Ind/RI/SUE	Industrial/research internship/Start-up or Entrepreneurship	15	15	--
DP	Exploratory project	3	3	3
^α Total		157	^α 147	^α 165
*SP	*Stream Projects for B.Tech. Honours	10	10	10
		167	^α 157	^α 175

^θDC+DE: The Department or Program Core (DC) should typically be between 50 to 70% of the total DC+DE credits

^α Shows the minimum and the maximum credit limits for a B.Tech. degree.

DE	21
DC	52.5
DC/(DE+DC)	0.714286

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B.Tech. Course Structure (with Minor or Second Major 2025-26 onwards)

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			Minimum	Maximum
HLM	Humanities, Social Science, Language and Management	11	10	--
IS	Institute Science	22	22	--
IE	Institute Engineering	18.5	15	--
EP	Engineering Drawing (Manual and Computer Aided), Manufacturing Practices, and Practice courses of Department/ School	8	8	--
^θ DC+DE	Departmental/Program Core +Elective	73.5	68	--
OE	Open Electives	0	0	--
MD	Minor discipline	12	12	18
IT/SUE/UG RP	Industrial/ research internship/Start-up or Entrepreneurship	15	15	--
DP	Exploratory project	3	3	3
^α Total		163	^α 153	^α 167
*SP	*Stream Projects for B.Tech. Honors	10	10	10
		173	^α 163	^α 177

θDC+DE: The Department or Program Core (DC) should typically be between 50 to 70% of the total DC+DE credits.

αShows the minimum and maximum credit limits for B.Tech. degree.

Standard of Deviation Sheets for UG Courses

B.Tech. with *Second Major Course Structure* (2025-26 onwards).

Category	B.Tech. with Internship and SM Program Components	Proposed	Recommended	
			Minimum	Maximum
HLM	Humanities, Social Science, Language and Management	11	10	--
IS	Institute Science	22	22	--
IE	Institute Engineering	18.5	15	--
EP	Engineering Drawing (Manual and Computer Aided), Manufacturing Practices, and Practice courses of Department/ School	8	8	--
[⊖] DC+DE (PD)	Departmental/Program Core +Elective	73.5	68	--
DC+DE (SM)	Departmental/Program Core +Elective	42	42	--
OE	Open Electives	0	0	6
Indl/RI/SUE	Industrial/ research internship/Start-up or Entrepreneurship/ UG research project	15	15	--
DP	Exploratory project	3	3	3
IDP	Interdisciplinary project	10	10	10
[⊕] Total		203	193	205

[⊖]DC+DE: The Department or Program Core (DC) should typically be between 50 and 70% of the total DC+DE credits.

DC+DE ~ The departmental or program core and elective credits have been merged. The UG program department will determine the exact DC and DE credits.

[⊕] Shows the minimum and the maximum credit requirement for B.Tech. degree with a second major.

Format of Semester-wise B.Tech. Course Structure

UG-CRC Code	Course Code	Course Name	L-T-P			Credits
Electronics Engineering : 4-Year B.Tech. I-Semester						
IH.H101.14	HLM101	Universal Human Values	2	0	0	2
GY.PE101.14	PE101	Elementary Physical Education	0	1	3	2.5
GY.CP101.14	CP101	Creative Practices #	0	1	3	2.5
		Total	2	2	6	7
LM.HL101.14	HLM102	English	2	0	0	2
		Total	4	2	6	9
#Creative Practices course to be announced by Dean Academic Office						
*Basic English course to be taken by student as recommended after Diagnostic Test						
Note: 1. Per semester load should not exceed 22 credits. 2. It is recommended that departments limit the maximum total credits to 161. Otherwise, because of the extra load the students may avoid taking a Minor discipline. The calculation of total credits excludes Basic English, Creative Practice, and Elementary Physical Education.						
Electronics Engineering : 4-Year B.Tech. I-Semester						
IS.PHY102.16	PHY 102	Introduction to Engineering Electromagnetics	3	1	2	5
IS.MA101.16	MA 101	Engineering Mathematics-I	3	1	0	4
IE.CSO101.16	CSO 101	Computer Programming	3	1	2	5
EP.ME106.16	ME 106	Manufacturing Practice-II	0	0	3	1.5
EP.ME104.16	ME 104	Engineering Drawing	1	0	3	2.5
		Total	10	3	10	18
Electronics Engineering : 4-Year B.Tech. II-Semester						
IS.PHY.101.16	PHY 101	Classical, Relativistic & Quantum Mechanics	3	1	2	5
IS.MA.102.16	MA 102	Engineering Mathematics-II	3	1	0	4
IE.EO.101.16	EO 101	Fundamental of Electrical Engineering	3	1	0	4
MC.CSO.102.19	CSO 102	Data Structures	3	0	0	3
EP.EC.171.25	EC 171	Electronic Circuit Workshop	1	0	3	2.5
IH	HLM	HLM Course	3	0	0	3
		Total	16	3	5	21.5

Format of Semester-wise B.Tech. Course Structure

Electronics Engineering : 4-Year B.Tech. III-Semester						
IS.MA.202.16	MA 201	Mathematical Methods	3	1	0	4
IE.MO.201.16	MO 201	Material Science	3	1	0	4
MC.EO.201.16	EO 201	Network Analysis & Synthesis	3	1	0	4
DC.EC.201.25	EC 201	Solid State Electronic Devices	3	0	0	3
DC.EC.202.16	EC 202	Signal & Systems	3	0	0	3
IE.EO.103.25	EO 103	Basic Electrical Engineering Lab	0	0	2	1
DC.EC.203.25	EC 203	Digital Circuits & Systems	3	0	0	3
		Total	18	3	2	22
# Students can study one HLM course from the bouquet of HLM choices given.						
Electronics Engineering : 4-Year B.Tech. IV-Semester						
IE.ME.101.16	ME 101	Fundamentals of Mechanical Engineering	3	1	0	4
EP.ME.105.16	ME 105	Manufacturing Practice-I	0	0	3	1.5
DC.EC.204.25	EC 204	Analog Circuits & Systems	3	0	0	3
DC.EC.211.25	EC 211	Communication Systems	3	1	0	4
DC.EC.241.25	EC 241	Electromagnetic Waves & Transmission Lines	3	0	0	3
DC.EC.271.25	EC 271	Electronic Devices & Circuits Lab	0	0	2	1
DC.EC.272.19	EC 272	Digital Circuits & Systems Lab	0	0	2	1
DC.EC.273.25	EC 273	Communication Systems Lab	0	0	2	1
DP.EC.291.16	EC 291	Exploratory Project	0	0	6	3
		Total	12	2	15	21.5

Format of Semester-wise B.Tech. Course Structure

Electronics Engineering : 4-Year B.Tech. V-Semester						
DC.EC.341.19	EC 341	Antennas & Propagation	3	0	0	3
DC.EC.331.16	EC 331	Microelectronics	3	0	0	3
DC.EC.311.16	EC 311	Digital Signal Processing	3	0	0	3
DC.EC.321.19	EC 321	Microprocessor Engineering	3	0	0	3
DE.EC.3xx.25	DE-1	Departmental Elective (DE)-1	3	0	0	3
OE.XX	OE-1	Open Elective - 1	3	0	0	3
DC.EC.371.25	EC 371	Microprocessor Engineering Lab	0	0	2	1
		Total	18	0	2	19
Electronics Engineering : 4-Year B.Tech. VI-Semester						
DE	DE Swayam/NPT EL	NPTEL or Swayam Portal Course	3	0	0	3
II.EC.391.25/ RI.EC391.25/ SE.EC391.25	EC391	Internship	0	0	30	15
		Total credits in the semester	3	0	30	18

Format of Semester-wise B.Tech. Course Structure

Electronics Engineering : 4-Year B.Tech. VII-Semester						
DC	EC 441	Microwave Engineering	3	0	0	3
DC.EC.431.16	EC 431	Digital VLSI Design	3	0	0	3
DE.EC.4xx.25	DE	Department Elective (DE)-2	3	0	0	3
DE.EC.4xx.25	DE	Department Elective (DE)-3	3	0	0	3
OE-2	OE-2	Open Elective - 2	3	0	0	3
IH	HLM	HLM Course	3	0	0	3
		Total credits in the semester	18	0	0	18
DP.EC391S.16	EC 391S	Stream Project (Hons.)	0	0	5	5
		Total	18	0	5	23
Electronics Engineering : 4-Year B.Tech. VIII-Semester						
DC.EC.412.25	EC 412	Wireless Communication	3	0	0	3
DE.EC.4xx.25	DE-4	Department Elective (DE) - 4	3	0	0	3
DE.EC.4xx.25	DE-5	Department Elective (DE) - 5	3	0	0	3
DE.EC.4xx.25	DE-6	Department Elective (DE) - 6	3	0	0	3
EP.EC.401.25	EC 471	Computer Aided Design and Simulation	0	0	3	1.5
IH	HLM	HLM Course	3	0	0	3
DC.EC.471.25	EC 472	Microwave Engineering Lab	0	0	3	1.5
		Total credits in the semester	15	0	3	18
DC.EC.493.16	EC 493	Stream Project (Hons.)	0	0	5	5
		Total Credits in the Semester (Hons.)	15	0	8	23
IE.EO.102.25	EO 102	Fundamentals of Electronics Engineering	3	1	2	5
MC.EO.202.25	EO 202	Digital Circuits	3	0	0	3
MC.EO.274.25	EO 274	Digital Circuits Lab	0	0	2	1

List of DE-1

DE.EC.312.25	EC 312	Communication Networks
DE.EC.322.19	EC 322	Embedded System Design
DE.EC.332.19	EC 332	Optoelectronic Devices
DE.EE.311.25	EE 311	Control Systems
DE.PHY.201.25	PHY 201	Quantum Physics

List of DE-2 & 3

DE.EC.411.19	EC 411	Optical Communication
DE.EC.421.19	EC 421	Advanced Digital Design
DE.EC.401.25	EC 401	Artificial Intelligence
DE.EC.402.25	EC 402	Internet of Things
DE.EC.432.19	EC 432	Advanced VLSI Technology
DE.EC.442.25	EC 442	RF Circuit Design
DE.EC.443.25	EC 443	Applications of Microwave
	EC 593	MIC & MMIC
	EC 597	Microwave Solid State Devices & Applications
	EC 599	Radar System
	EC 585	Computational Signal Processing
	EC 587	Advanced Wireless Sensor Networks
	EC 591	Modern Coding Theory
	EC 565	Physics of Nano- Devices
	EC 567	Hybrid Integrated Circuits
	EC 577	FPGA Design Fundamentals
	EC 583	5G and Beyond Wireless Technology

List of DE-4, 5 & 6

DE.EC.413.19	EC 413	Information Theory
DE.EC.414.25	EC 414	Stochastic Processes
DE.EC.415.25	EC 415	Optimization Methods for Signal Processing
DE.EC.422.25	EC 422	Digital Image Processing
DE.EC.423.25	EC 423	Robotics and Autonomous Systems
DE.EC.424.25	EC 424	Logic Design of Digital Systems
DE.EC.425.25	EC 425	Switching Theory, Finite Machines & Automata
DE.EC.433.19	EC 433	Advanced Field Effect Devices
DE.EC.434.25	EC 434	Analog IC Design
DE.EC.435.25	EC 435	Memory Technology & Neuromorphic Computing
DE.EC.444.19	EC 444	Microwave Tubes
	EC 592	Microwave Communication Systems
	EC 594	Milli-meter Wave Devices and Systems
	EC 437	Semiconductor Characterization and Metrology
	EC 417	Advanced Signal Processing
	EC 596	Electromagnetic Metamaterials and Metasurfaces
	EC 598	Advanced Satellite Communication
	EC 580	MIMO Signal Processing
	EC 584	Data Communication Network
	EC 566	Hetrojunction Devices and Technology
	EC 572	Cyber -Physical Systems Design

Discipline_Name : Minor V Sem						
Minor-I	EC 202	Signals and Systems	3	0	0	3
Minor-II	EC 201	Solid State Electronic Devices	3	0	0	3
		Total credits in the semester	6	0	0	6

Discipline_Name : SM. VII-Semester						
Minor-III	EC 321	Microprocessor Engineering	3	0	0	3
		Total credits in the semester	3	0	0	3

Discipline_Name : SM. VIII-Semester						
Minor-IV	EC 241	Electromagnetic Waves & Transmission Lines	3	0	0	3
		Total credits in the semester	3	0	0	3

Exclusive OE Courses

EC 301	Optical Communication Networks
EC 401	Artificial Intelligence
EC 403	Introduction to Quantum Communication
EC 205	Linear Algebra and its applications
EC 206	Applied Electronics
EC 402	Internet of Things

Discipline_Name : SM-V Sem						
Minor-I	EC 202	Signals and Systems	3	0	0	3
Minor-II	EC 201	Solid State Electronic Devices	3	0	0	3
Total credits in the semester			6	0	0	6
Discipline_Name : SM. VII-Semester						
Minor-III	EC 321	Microprocessor Engineering	3	0	0	3
Total Credits in the Semester			3	0	0	3

Discipline_Name : SM-VIII Sem						
Minor-IV	EC 241	Electromagnetic Waves & Transmission Lines	3	0	0	3
Total credits in the semester			3	0	0	3

Discipline_Name : SM. IX-Semester						
Major I	EC 311	Digital Signal Processing	3	0	0	3
Major II	EC 331	Microelectronics	3	0	0	3
Major III	EC 441	Microwave Engineering	3	0	0	3
Major IV	EC 527	Information and Coding Theory	3	0	0	3
Major V	EC 521	Logic Design and VLSI Architecture	3	0	0	3
Interdisciplinary BTP			0	0	10	5
Total Credits in the Semester (Hons.)			15	0	5	20

Discipline_Name : SM. X-Semester						
Major VI	EC 413	Wireless Communication	3	0	0	3
Major VII	EC 526	Microwave Circuits and Measurements	3	0	0	3
Major VIII	EC 524	IC Technology	3	0	0	3
Major IX	EC 520	Sensors and Systems Design	3	0	0	3
Major X	DE	PG Elective Sem II	3	0	0	3
Interdisciplinary BTP			0	0	10	5
Total Credits in the Semester (Hons.)			15	0	5	20

Semester	Credit	HLM	IS	IE	EP	DC+DE+MC	OE	INDL/RI/SUE	DP	Row-wise sum
1	Indv.	2	9	5	4	0	0	0	0	20
	Cuml.	2	9	5	4	0	0	0	0	20
2	Indv.	3	9	4	2.5	3	0	0	0	21.5
	Cuml.	5	18	9	6.5	3	0	0	0	41.5
3	Indv.	0	4	5	0	13	0	0	0	22
	Cuml.	5	22	14	6.5	16	0	0	0	63.5
4	Indv.	0	0	5.5	0	13	0	0	3	21.5
	Cuml.	5	22	19.5	6.5	29	0	0	3	85
5	Indv.	0	0	0	0	16	3	0	0	19
	Cuml.	5	22	19.5	6.5	45	3	0	3	104
6	Indv.	0	0	0	0	3	0	15	0	18
	Cuml.	5	22	19.5	6.5	48	3	15	3	122
7	Indv.	3	0	0	0	12	3	0	0	18
	Cuml.	8	22	19.5	6.5	60	6	15	3	140
8	Indv.	3	0	0	1.5	13.5	0	0	0	18
	Cuml.	11	22	19.5	8	73.5	6	15	3	158

Min Requirements

10	22	15	8	68	6	15	3
HLM	IS	IE	EP	DC+DE	OE	INDL/RI/SUE	DP

Total **11** **22** **19.5** **8** **73.5** **6** **15** **3** **158**

Format of Semester-wise B.Tech. Course Structure

Category	B.Tech. with Minor in Quantum Technologies	Proposed	Recommended	
		Minimum	Maximum	
MD	Minor Discipline	18	12	18

As per DST norms, the minimum quantum in the minor is 18. Therefore, we have to select six courses in the quantum minor, which is different from the institute minor.

UG-CRC Code	Course Code	Course Name	L-T-P			Credits
Minor in Quantum Technologies : 4-Year B.Tech. V-Semester						
MD.	PHY304	Foundations of Quantum Technology	3	0	0	3
MD.	EC351	Basic Laboratory Course For Quantum Technologies	2	0	2	3
Total credits in the semester			5	0	2	6
Minor in Quantum Technologies : 4-Year B.Tech. VII-Semester						
MD.	EC451	Survey of Quantum Technologies and Applications	3	0	0	3
MD.DE	DE1	Minor elective 1	3	0	0	3
Total credits in the semester			6	0	0	6
List of electives						
MD.DE	PHY401	Introduction to Quantum Computation	3	0	0	3
MD.DE	EC403	Introduction to Quantum Communication	3	0	0	3
Minor in Quantum Technologies : 4-Year B.Tech. VIII-Semester						
MD.DE	DE2	Minor elective 2	3	0	0	3
MD.DE	DE3	Minor elective 3	3	0	0	3
Total credits in the semester			6	0	0	6
List of electives 2 and 3						
MD.DE	EC452	Solid State Physics for Quantum Technologies	3	0	0	3

Format of Semester-wise B.Tech. Course Structure

MD.DE	PHY535	Quantum Optics	3	0	0	3
MD.DE	EC453	Introduction to Quantum Sensing	3	0	0	3
MD.DE	MSX XX	Introduction to Quantum Materials	3	0	0	3
MD.DE	PHY524	Spintronics and Quantum Circuits	3	0	0	3
MD.DE *	CSXXX *	Introduction to Quantum Machine Learning	3	0	0	3

***to be confirmed from CS department**