

Indian Institute of Technology Tirupati

Department of Electrical Engineering (EE)

B.Tech Curriculum Template (2023 batch onwards)

Semester 1

Course Code.	Course	L-T-P-C
PH104L/CY104L	Introduction to Classical Physics / Chemistry for Engineers	2-1-0-3
PH103P/CY103P	Physics Laboratory / Chemistry Laboratory	0-0-3-2
MA103L	Engineering Mathematics-I	3-1-0-4
ES104M	Computer Programming	2-0-3-4
ES105L	Foundations of Engineering Mechanics	2-1-0-3
ES106L	Introduction to Electrical Systems	2-0-0-2
ES101M	Concepts in Engineering and Design	1-0-2-2
HS10XN	Language Course (P/F)	2-0-0-2
	NSO/NSS [#]	
Life Skills courses (Creative Arts / Physical Wellness / Lifestyle Management)		
	Semester Credits (Cumulative Credits)	22 (22)

Semester 2

Course Code.	Course	L-T-P-C
CY104L/PH104L	Chemistry for Engineers /Introduction to Classical Physics	2-1-0-3
CY103P/ PH103P	Chemistry Laboratory / Physics Laboratory	0-0-3-2
MA104L	Engineering Mathematics-II	3-0-0-3
EA105M	Engineering Drawing	2-0-2-3
EA104P	Makers Laboratory	0-0-3-2
ES108L	Introduction to Electronic Systems	2-0-0-2
ES109L	Introduction to Data Science and Machine Learning	2-1-0-3
EE205L	Signals and Systems	3-1-0-4
Life Skills courses (Creative Arts / Physical Wellness / Lifestyle Management)		
	Semester Credits (Cumulative Credits)	22 (44)
Summer – Socially/locally relevant project through NSO/NSS [#]		

Semester 3		
Course Code.	Course	L-T-P-C
EE208L	Digital Systems	3-0-0-3
EE206P	Digital Systems Laboratory	0-0-3-2
EE209L	Digital Signal Processing	3-0-0-3
EE209P	Digital Signal Processing Laboratory	0-0-3-2
EE210L	Semiconductor Devices	3-1-0-4
EE213L	Electrical Circuits and Networks	3-1-0-4
MAE	Mathematics Elective	3-0-0-3
PH105L	Introduction to Quantum Science and Technology	2-1-0-3
Life Skills courses (Creative Arts / Physical Wellness / Lifestyle Management)		
	Semester Credits (Cumulative Credits)	24 (68)

Semester 4		
Course Code.	Course	L-T-P-C
EE207L	Analog Circuits	3-1-0-4
EE207P	Analog Circuits Laboratory	0-0-3-2
EE211L	Communication Systems	3-0-0-3
EE212M	Electronic Instrumentation and Measurement	3-0-2-4
EE302L	Electrical Machines	3-1-0-4
ES204L	Ecology, Environment and Sustainability	2-0-0-2
HSE-1	Humanities Elective 1	3-0-0-3
Life Skills courses (Creative Arts / Physical Wellness / Lifestyle Management)		
	Semester Credits (Cumulative Credits)	22 (90)
Summer – Socially/locally relevant project through NSO/NSS [#]		

Semester 5		
Course Code.	Course	L-T-P-C
EE302P	Electrical Machines Laboratory	0-0-3-2
EE303L	Control Engineering	3-1-0-4
EE305L	Power Systems	3-1-0-4
EE308L	Engineering Electromagnetics	3-1-0-4
DPE-1	Department Elective 1	3-0-0-3
FRE-1	Free Elective 1	3-0-0-3
HSE-2	Humanities Elective 2	3-0-0-3
Life Skills courses (Creative Arts / Physical Wellness / Lifestyle Management)		
Semester Credits (Cumulative Credits)		23 (113)

Semester 6		
Course Code.	Course	L-T-P-C
EE310L	Power Electronics	3-0-0-3
EE311L	Computer Organization and Processor Design	3-0-0-3
EE403P	Control and Automation Laboratory	0-0-3-2
DPE-2	Department Elective 2	3-0-0-3
FRE-2	Free Elective 2	3-0-0-3
FRE-3	Free Elective 3	3-0-0-3
Life Skills courses (Creative Arts / Physical Wellness / Lifestyle Management)		
Semester Credits (Cumulative Credits)		17 (130)
Summer – Industrial/Research Internship*		
* Internship is not mandatory. However, students who complete industrial or research internship (minimum of 8 weeks) will earn 2 credits against free elective in Semester 7, if recommended by the Department.. Students who complete a long industrial internship (minimum of 24 weeks) will earn 6 credits against Project 2 in Semester 8, if recommended by the Department. See the structure of the following Semesters for details.		

Choice of Study Plans Available

All students must choose one of the five study plans given below.

	Summer Internship (Min. of 8 weeks)	Extended Internship (Min. of 24 weeks)	Project 2
Study Plan A	√	×	√*
Study Plan B	√	×	×
Study Plan C	×	√	×
Study Plan D	×	×	√*
Study Plan E	×	×	×

** For these study plans, as per the Senate resolution, it is necessary to obtain Grade B or better in Project 1 done during Semester 7.*

- For Study Plans A and B: Summer Internship must be done after completion of Semester 6 and before the beginning of Semester 7 for a minimum of 8 weeks.
- For Study Plan C: Extended Internship must be done after completion of Semester 6 and before beginning of Semester 8 for a minimum of 24 weeks.
- For Study Plans D and E: No internship activity during summer after Semester 6 or in Semester 7.

Study Plan A (for B.Tech. programs)

Students must have grade B or better in Project 1 to choose this study plan

Course Code.	Course	L-T-P-C
Semester 7		
EE491G	Project Phase - I	- - - 3
DPE-3	Department Elective 3	3-0-0-3
DPE-4	Department Elective 4	3-0-0-3
EE391G	Industrial/Research Internship (Evaluation of internship done in the preceding summer, P/F course)	- - - 2
	Semester Credits (Cumulative Credits)	11 (141)
Semester 8		
EE492G	Project Phase - II	- - - 6
FRE-4	Free Elective 4	3-0-0-3
HS4XXL	Professional Ethics	1-0-0-1
	Semester Credits (Cumulative Credits)	10 (151)

Study Plan B (for B.Tech. programs)

Course Code.	Course	L-T-P-C
Semester 7		
EE491G	Project Phase - I	- - - 3
DPE-3	Department Elective 3	3-0-0-3
DPE-4	Department Elective 4	3-0-0-3
EE391G	Industrial/Research Internship (Evaluation of internship done in the preceding summer, P/F course)	- - - 2
	Semester Credits (Cumulative Credits)	11 (141)
Semester 8		
DPE-5	Department Electives 5	3-0-0-3
DPE-6	Department Electives 6	3-0-0-3
FRE-4	Free Elective 4	3-0-0-3
HS4XXL	Professional Ethics	1-0-0-1
	Semester Credits (Cumulative Credits)	10 (151)

Study Plan C (for B.Tech. programs)

Course Code.	Course	L-T-P-C
Semester 7		
EE392G	Industrial/Research Internship (Evaluation of internship to be done before beginning of Semester 8, P/F course)	--- 6
	Semester Credits (Cumulative Credits)	6 (136)
Semester 8		
EE491G	Project Phase - I	--- 3
DPE-3	Department Elective 3	3-0-0-3
DPE-4	Department Elective 4	3-0-0-3
FRE-4	Free Elective 4	2-0-0-2
FRE-5	Free Elective 5	3-0-0-3
HS4XXL	Professional Ethics	1-0-0-1
	Semester Credits (Cumulative Credits)	15 (151)

Study Plan D (for B.Tech. programs)

Students must have grade B or better in Project 1 to choose this study plan

Course Code.	Course	L-T-P-C
Semester 7		
EE491G	Project Phase - I	--- 3
DPE-3	Department Elective 3	3-0-0-3
DPE-4	Department Elective 4	3-0-0-3
FRE-4	Free Elective 4	2-0-0-2
	Semester Credits (Cumulative Credits)	11 (141)
Semester 8		
EE492G	Project Phase - II	--- 6
FRE-5	Free Elective 5	3-0-0-3
HS4XXL	Professional Ethics	1-0-0-1
	Semester Credits (Cumulative Credits)	10 (151)

Study Plan E (for B.Tech. programs)

Course Code.	Course	L-T-P-C
Semester 7		
EE491G	Project Phase - I	- - - 3
DPE-3	Department Elective 3	3-0-0-3
DPE-4	Department Elective 4	3-0-0-3
FRE-4	Free Elective 4	2-0-0-2
	Semester Credits (Cumulative Credits)	11 (141)
Semester 8		
DPE-5	Department Elective 5	3-0-0-3
DPE-6	Department Elective 6	3-0-0-3
FRE-5	Free Elective 5	3-0-0-3
HS4XXL	Professional Ethics	1-0-0-1
	Semester Credits (Cumulative Credits)	10 (151)

Details of NSS Activity and Socially/Locally Relevant Project

At present 80 hours of NSS work is mandatory requirement for UG degree. A student is allowed to earn these hours by participating in different activities organized by the NSS team.

In the proposed curriculum NSS activity will be divided into three segments for a total of 90 hours.

- (a) 30 hours of mandatory participation in activities organized by the NSS team as earlier.
- (b) 30 hours of mandatory project work in a socially/locally relevant project during the summer after Semester 2. The student will identify, formulate and propose a solution to socially/locally relevant issues. The students are encouraged to work in their local communities. NSS team will form detailed guidelines for the same.
- (c) The project work in point (b) will be evaluated by an appropriate committee formed by NSS.
- (d) If the project is recommended for the next phase, in the summer after Semester 4 the students can complete the same and submit a final report to earn 30 hours of work.
- (e) If the project is not recommended by the NSS committee, then the student must earn another 30 hours through regular NSS activity.

Few of the best projects, if any, will be recognized and recommended by the NSS committee to the Institute's Innovation Council for consideration of financial support.

Details of Life Skills courses

To complete this course requirement, a student must register in any of the Life Skills courses such as creative arts (music/dance/painting etc.), physical wellness (sports/yoga/martial arts etc.) and lifestyle management courses (organized by GCU/health center etc.) during course registration on ERP. These activities (of about 30 hours) must be completed by Semester 6 with a Pass Grade.