



Regulations for B.Tech. in Electronics and VLSI Engineering (EVE)

1. Preamble

IIIT Delhi aims to encourage research and innovation in Information Technology (IT) and allied areas. The objective of the B.Tech. program in Electronics and VLSI Engineering (EVE) is to prepare students to undertake careers involving innovation and problem solving using suitable techniques and hardware and software technologies, or to undertake advanced studies for research careers.

In order to give due importance to applied as well as theoretical aspects of EVE, the curriculum for the B.Tech. (EVE) program covers most of the foundational aspects and also develops in students the engineering skills for problem solving. Towards this, the B.Tech. (EVE) program at IIIT-Delhi starts with computing and Electronics courses first, and allows the possibility of doing science courses later. Besides being better suited for developing engineering capabilities, it also enables the possibility of students seeing newer applications and possibilities of using computing and electronics in these subjects.

The first semester of the EVE program is common with all - this allows flexibility to students in moving from one program to the other. The second and third semester is common with the ECE program. The fourth and fifth semester of the program is relatively fixed, comprising mostly core courses for the program. From sixth semester onward the program can be mostly flexible, consisting of electives.

This document specifies the specific regulations for the B.Tech. (EVE) program – the general regulations for the B.Tech. program are given in a separate document. These regulations are in addition to the general regulations of the B.Tech. program.

2. Program Structure

2.1 The set of core courses are shown in the table below (courses mentioned in [] are electives and actual courses for these slots are as defined from semester to semester.)

SEMESTER 1	SEMESTER 2	SEMESTER 3	SEMESTER 4	SEMESTER 5
Introduction to Programming	Data Structures and Algorithms	Circuit theory and Devices	Fields & Waves	Digital VLSI Design
Digital Circuits	Basic Electronics	Embedded Logic Design	Integrated Electronics	Analog CMOS Design
Introduction to HCI	Computer Organization	Signals and Systems	Physics of Semiconductor Devices	VLSI Design Flow

SEMESTER 1	SEMESTER 2	SEMESTER 3	SEMESTER 4	SEMESTER 5
Maths I (Linear Algebra)	Maths II (Probability and Statistics)	Maths III (Multivariate Calculus)	Electronic System Design	
Communication Skills	[SSH]	[SSH/Advanced Programming]	[Open Elective]	Technical Communication + Environmental Sciences

2.2 First semester courses are common across all the B.Tech. programs. All students do one course each in Maths, Software, Hardware, Systems/practice, and Comm. All courses, except SSH, are core courses.

2.3 List of technical and non-technical courses of first year

Semester	Technical Courses	Non-Technical Courses
Semester 1	Introduction to Programming Digital Circuits Maths I (Linear Algebra) Introduction to HCI	Communication Skills
Semester 2	Data Structures and Algorithms Basic Electronics Maths II (Probability and Statistics) Computer Organization	SSH Elective

2.4 The semester mentioned for the core courses is indicative and suggested, and they can be done later/earlier also. However, the pre-requisite requirements must be kept in mind by a student, if he/she wishes to do a core course in some other semester.

2.5 Most courses in Semester 6-8 are electives (an elective course is one which is not compulsory, and a student may have choices from which to select the courses he/she wants to do).

2.6 Besides electives and streams for specialized areas, streams and electives from domain areas (e.g. health, life sciences, finance, economics, E-Governance, sciences, etc.) may also be offered. A student may also be able to take CSE courses.

Note: Specialization in the UG programs will not be shown on the transcript. However, the students may be guided about the courses belonging to a certain area during the course counseling session conducted at the beginning of the semester. Guidance on specialization may also be put up on the website for information of the students.

2.7 There will also be a set of Social Sciences and Humanities (SSH) courses offered.

2.8 List of courses, and further information about the courses is available on the website: <https://www.iiitd.ac.in/academics/courses>

3 Requirements for Graduation

For a B.Tech. (EVE) degree, a student must satisfy all the following requirements:

1. Earn a total of 156 (inclusive of 2 credits each of SG and CW credits) credits (equivalent to 39 full courses of 4 credits).
2. Successfully complete all the core courses. Specifically, the core courses for the BTech EVE program (i.e., Physics of Semiconductor Devices, Digital VLSI Design, Analog CMOS Design, and VLSI Design Flow) must be completed.
3. Complete at least 12 credits of Social Science and Humanities (SSH) Courses.
4. Do 2 credits of Community Work and Self Growth each. These are pass/fail credits, which are required to be completed, and will count for fulfilling the credit requirements.
5. A student may take Online Courses. No more than 8 of these credits can count towards satisfying the credit requirements of the degree.
6. A student must do at least 16 credits (4 full courses) of EVE elective courses. The EVE elective courses are the courses which have course codes starting with EVE. B.Tech. Project /Independent Project/Independent Study/Undergraduate Research will not count towards this requirement. These 16 credits should come from 3xx or above level courses. AAC may approve some other relevant courses (e.g. from Maths, CSE, Computational Biology, etc.) to be counted as EVE courses for this purpose. Online courses of the respective discipline (i.e., online courses with EVE course code).
7. B.Tech. Project (BTP) is optional and can be started any time after the 2nd Year. A student opting for BTP, may take a total of 8 to 12 credits of BTP spread over minimum 2 semesters, with no more than 8 credits in a semester. A student not completing BTP credits will have to forgo the partial BTP credits earned earlier and it will not be counted towards the credit requirement of 156 credits.

Note: A BTP has to spanned at least over 2 regular consecutive semesters (i.e., Monsoon and Winter) and can spanned at most 3 consecutive semesters. However, in the case of a gap due to semester leave, the student will be allowed to continue the BTP with the consent of the advisor.

A detailed document on the guidelines and processes to complete the BTP is available on [this link](#).

8. A student may take “Independent Project” or “Independent Study” or “Undergraduate Research” courses for 1, 2, or 4 credits. No more than 8 of these credits can count towards satisfying the credit requirements of the degree.

9. A student can take maximum 2, 2xx level courses in 3rd and 4th year. The 2xx level core courses listed in Semester 5 or later will not count towards this clause.

4 Honors Program

The B.Tech. (EVE) program has the Honors option, requirements for which are the same as specified in the regulations for the B.Tech. program. Namely;

1. The student must earn an additional 12 discipline credits from in-class courses (i.e. must complete at least 168 credits)
2. The student's program must include a B.Tech. Project
3. At graduation time, the student must have a CGPA of 8.0 or more

5 List of EVE elective courses

The following existing ECE courses will be given EVE course codes also:

1. Solid State Devices: ECE318
2. Introduction to Nanoelectronics: ECE517
3. Photonics: Fundamentals and Applications: ECE545
4. Quantum Materials and Devices: ECE524
5. Integrated Circuit Fabrication: ECE522
6. Quantum Mechanics: ECE525
7. Memory Design and Testing: ECE611
8. Mixed Signal Design: ECE412
9. RF Circuit Design: ECE321
10. Linear Systems Theory: ECE570
11. Advanced Embedded Logic Design: ECE573
12. Computer Architecture: ECE511
13. Digital Signal Processing: ECE351
14. Digital Hardware Design: 510
15. System on Chip Design and Test: ECE516
16. Applied Optimization methods for machine learning: ECE5aom
17. Applied Fields & Waves ECE331/ECE531
18. Operating Systems CSE231
19. ADDV ECE527
20. Algorithm design and analysis CSE222/CSE 223 (two codes are assigned for this course on tech tree)
21. Edge AI CSE663
22. Foundation of Computer Security CSE345/CSE545
23. Artificial Intelligence CSE643
24. Machine learning ECE363/ECE563/CSE343

In future, more courses will be given EVE course code (as they are approved) and they will be considered as EVE elective courses.

- **May 2024 Release**

- (i) Point No. 8, CGPA bar has been removed for doing IP/IS/UR credits. (Ref: 53rd Senate Senate)
- (ii) 3.6 has been updated with (i) 3xx or higher should be different from the core courses

which will be applicable from 2022 admitted batch and (ii) replaced the phrase “3xx or above in the last four-semester” with “3xx or above” which will be applicable from ongoing batch. (Ref: 61st Senate)

- (iii) Clarification added for BTP in line with guidelines