B. Tech. (IT) Course Structure

Semester I	**Semester II**	**Semester III**	**Semester IV**	**Semester V**	**Semester VI**	**Semester VII**	**Semester VIII**
Introduction to programming	Data Structures	R Programming	Database Management System	Cloud Computing	Elective II	Elective IV	
Fundamentals of Electronics Engineering	Digital Logic Design	Software Management	Software Engineering	Operating System	Elective III	Elective V	
Linear Algebra	Probability & Statistics	Discrete Mathematics	Differential equations & Numerical Methods	Elective I			
System Management	Digital and Data Communications	Calculus	Design and Analysis of Algorithms	Professiona l Ethics			
Professional Communication-I	Professional Communication-II	Theory of Computation	Computer Networks				

Note: The pool of electives may be appended accordingly based on the availability of faculties and their specializations.

B.Tech. (CS) Course Structure

Semester I	**Semester II**	**Semester III**	**Semester IV**	**Semester V**	**Semester VI**	**Semester VII**	**Semester VIII**
Introduction to programming	Data Structures	Advanced Programming Language	Database Management System	Computer Networks	Elective II	Elective IV	
Fundamentals of Electronics Engineering	Digital Logic Design	Computer Organization	Operating System	Software Engineering	Elective III	Elective V	
Linear Algebra	Probability & Statistics	Discrete Mathematics	Differential Equations & Numerical Methods	Elective I			
System Management	Digital and Data Communications	Calculus	Design and Analysis of Algorithms	Professional Ethics			
Professional Communication-I	Professional Communication-II	Theory of Computation	Advanced Computer Architecture				

B.Tech. (CS-AI) Course Structure

Semester I	Semester II	Semester III	Semester IV	Semester V	Semester VI	Semester VII	Semester VIII
Introduction to programming	Data Structures	R Programming	Intelligent Database Management	Deep Learning	Elective II	Elective IV	
Fundamentals of Electronics Engineering	Digital Logic Design	Design and Analysis of Algorithms	Operating System	Software Engineering	Elective III	Elective V	
Linear Algebra	Probability & Statistics	Discrete Mathematics	Optimization Techniques	Elective I			
System Management	Digital and Data Communications	Calculus	Artificial Intelligence	Professional Ethics			
Professional Communication-I	Professional Communication-II	Theory of Computation	Big-Data Analytics				

Pool of Electives
(Minimum classroom strength required - 25 students)

B.Tech. (IT)

1. E-Business
2. Data Mining and Warehousing
3. Machine Learning
4. Deep Learning
5. Cryptography & Network Security
6. Big Data Analytics
7. Complex Analysis & Integral Transforms
8. Convex Optimization
9. Intelligent Agents and Planning
10. Information Security
11. Internet of Things
12. Blockchain & Cryptocurrency
13. Soft Computing
14. Kubernetes
15. MongoDB
16. Organizational Behavior

B.Tech. (CS)

1. Reinforcement Learning
2. Natural Language Processing
3. Machine Learning
4. Artificial Intelligence
5. Image Vision Processing
6. Deep Learning
7. AI for IoT

B.Tech (CS-AI)

1. Reinforcement Learning
2. Natural Language Processing
3. Machine Learning
4. Deep Learning
5. Image and Vision Processing
6. IoT for AI Systems

B.Tech. Degree Requirements

For Award of a B.Tech. Degree,

- A student is required to earn a minimum of 152 credits (equivalent to 38 full courses, 4 credits each) over 8 semesters. In this pursuit, students must complete all the core courses.

- In the last 4 semesters, students are expected to earn a minimum of 32 credits from the courses offered in their discipline. The remaining credits may be earned through electives offered within or outside the discipline.

- A student can also earn credits via other means such as Independent Project, Independent Study, Undergraduate Research and Online courses.

- On average, a 4-credit course requires an effort of about 10 hours per week including lectures. Therefore, a student with a full load of 5 courses in a semester is expected to invest about 50 hours of effort per week throughout the semester.

Projects and other options:

B.Tech. (IT) students may choose any of these options in the 3rd and 4th year of the program.

PROJ - B.Tech project (8 Credits)
INST - Independent study (3 Credits)
INPR - Independent project (5 Credits)
UNRE - Undergraduate thesis of research (12 Credits)

- All B.Tech. (IT) students are eligible to register for PROJ.
- To register, they are required to obtain consent from the concerned faculty with whom they may work, followed by an approval from the Head of the Department.
- To register for UNRE, a minimum CGPA of 7.5 is required.
- A student can at most register for two of these; PROJ, INST, INPR and UNRE, in one semester. However, in any semester, the combined credit shall not exceed beyond 8, UNRE being the exception.

Courses and Allotment of Credits

- Courses offered in each semester will be taught by the faculty appointed by IIIT Lucknow.
- A course may be of 4, 2, or 1 credit and a student registered for a particular course will earn credits assigned to that course on passing it.

    - **For a 4-credit course:** There will be 3 hours of lectures per week, with a total of about 42 hours of lectures covered in 14 weeks. In addition to the lectures, tutorial or laboratory sessions may be held for an hour a week, as and when required.

    - **For a 2-credit course:** Faculties may choose to conduct 1.5 hour- long lectures per week for the entire semester or 3 hour-long lectures per week for half a semester, according to their need and availability. In any case, they must complete 21 hours of lectures in a semester.

      Intensive short-term courses of 2 credits are also possible, provided the duration of such courses shall not be less than 4 weeks. A 2-credit course may or may not have tutorial and laboratory sessions.

    - **For a 1-credit course:** It could be a short course on a very specialized topic which may be offered during vacations. Generally, a 1-credit course will have a total of about 11 hours of lecture over not less than 2 weeks.

- Even though earning credits by completing courses offered by the Institute is the top priority of students, they can also earn credits through projects, studying in other Institutions and transferring credits, etc. These provisions may be available after seeking approval from the competent authorities.