



## Regulations for B.Tech. in Computer Science and Social Sciences (CSSS) Program

### 1. Preamble

Universities have traditionally separated the study of science and technology from that of the social sciences and humanities. But today the influence of Science and Technology, particularly IT, over human lives and societies has increased so dramatically, that this division in knowledge can no longer be supported.

Going forward we are likely to see even more convergence of IT with social systems, and the role social sciences will play in technology and business solutions will increase. At the same time, the role IT will play in addressing society's problems, as well as answering the human questions posed by social scientists, will increase. This will lead to an increase in demand for IT experts who are well versed in the social sciences and also of social scientists who understand IT and apply it innovatively to solve problems in their own domain.

This unique B Tech in Computer Science (CS) and Social Sciences (SS), aims to develop IT knowledge and expertise in students, with a strong input from relevant social science disciplines. The program will develop knowledge and capabilities that will allow a student to pursue a career in IT, or further studies in social science or CS/IT and many interdisciplinary programs. As it is a 4 year program, the B Tech (CS&SS) will satisfy the requirements of almost all higher studies programs in India as well as overseas. It may be an ideal program for those students who like Social Science but also enjoy Mathematics and Programming or those are not sure if they want to pursue IT as a career or Social Sciences.

### 2. Program Objectives:

The program aims to develop capabilities in Computer Science as well as Social Science. At the end of the program, a student will have:

1. Understanding of foundations, limits, and capabilities of computing
2. Ability to design and implement efficient software solutions using suitable algorithms, data structures, and other computing techniques.
3. Understanding of foundations of social sciences and articulate the ways in which different social science disciplines (at least two) enhance our understanding of society.
4. Ability to use analytical methods, including data collection and evaluation for understanding issues from different social science perspectives.
5. Ability to synthesize concepts and methods from different social science disciplines and computing and apply these to address issues relating to society.

In addition, the graduate of this program will also have the following general skills that are common with other B.Tech. programs:

6. Ability to function effectively in teams to accomplish a common goal.
7. An understanding of professional and ethical responsibility.
8. Ability to communicate effectively with a wide range of audiences.
9. Ability to self-learn and engage in life-long learning.
10. Ability to undertake research tasks and projects.
11. Ability to take an idea and develop into a business plan for an entrepreneurial venture.
12. Understanding of the impact of solutions in an economic, societal, and environment context.

### 3. Program Structure

The B.Tech. program at IIIT-D follows a philosophy of having a small set of core-courses, allowing students significant flexibility in designing their curriculum and specialization.

A. In the first few semesters mostly core courses are done. The structure for first few semesters is:

Semester 1	Semester 2	Semester 3	Semester 4	Semester 5
Introduction to Programming	Data Structures and Algorithms	Computer Architecture and Operating Systems	Algorithm Design (B)	Computer Networks
Digital Circuits	Microeconomics	Introduction to Psychology	[LACH Elective]	
Math I-Linear Algebra	Maths II - Probability & Statistics	Social Science Research Methods	Database Management Systems	
Systems Management	Introduction to Engineering Design	Advanced Programming	[SS Elective]	Technical communication + Environmental Sciences
Communication Skills	Critical thinking and Readings in Social Sciences	Introduction to Sociology/Anthropology		

**Note:** 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.

- B. Rest of the program consists mostly of elective courses. 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.
- C. 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 as open electives.
- D. Other requirements as specified later.

#### **4. Requirements for Graduation**

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

1. Earn a total of 152 credits (equivalent to 38 full 4 credit courses).
2. In addition, do 2 credits of Community Work and Self Growth each. These are pass/fail credits, which are required to be completed, but do not count for fulfilling the credit requirement.
3. Successfully complete all the core courses, and special electives (if specified).
4. Do at least 12 credits from Liberal Arts, Communications, and Humanities group of courses.
5. Do at least 16 credits of Computer Science electives, and at least 16 credits each in at least two Social Sciences Streams. The structure of streams is defined in Appendix.
6. Rest of the credits are considered as “open electives” and the student can choose any courses from these.
7. A B.Tech. Project (BTP) is not compulsory for this program. A student opting for BTP, may take a total of 8 to 12 credits of BTP, with no more than 8 credits in a semester
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. Only students with satisfactory CGPA (at least 7.5) or with a strong interest in some area (the faculty advisor to determine this) can take these courses. These and BTP credits do not count towards elective/stream credit requirements and are treated as open electives.

#### **5. Honors Program**

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

1. The student must earn an additional 12 credits (i.e. must complete at least 164 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.

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## **Appendix: Tentative list of Electives**

Tentative list of electives is given below. For Social Sciences, currently three streams are planned – each of them is defined below. Some courses in each stream are compulsory. Remaining courses can be done from other courses offered for that stream. If a course of the stream is included as a core course, it can be counted towards satisfying the credit requirement for the stream. The list of courses in each stream is indicative, and will evolve with time.

### **Computer Science Electives**

The set of possible elective courses for computer science stream will be a subset of CSE courses that are regularly offered. These will likely to include courses like HCI, Social Media analytics, Data Mining, Machine learning, Natural Language Processing, etc.

### **Liberal Arts, Communications, and Humanities Group**

- Critical Thinking and Readings in Social Sciences (Compulsory)
- History of Information
- Perspectives on Knowledge
- Law and Ethics
- Social Informatics
- ICT and Social Transformation

### **Economics Stream (ECO)**

- Microeconomics (Compulsory)
- Macroeconomics(Compulsory)
- Game Theory (Compulsory)
- Econometrics I (Compulsory)
- Econometrics II
- Market Design
- Industrial Organization

### **Sociology/Anthropology Stream (SOC)**

- Introduction to Sociology/Anthropology (Compulsory)
- Contemporary India: Sociological perspectives (Compulsory)
- Information Technology and Society (Compulsory)
- Urban Sociology
- Sociology of New Media

### **Psychology Stream (PSY)**

- Introduction to Psychology (Compulsory)
- Cognitive Psychology (Compulsory)
- Social psychology (Compulsory)
- Organizational Psychology
- Cultural psychology
- Positive Psychology
- Media Psychology

### **Note:**

**The scheduling of courses in semesters, as well as the list of elective courses is illustrative and will change with time.**