



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 (CSSS) 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.

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.

2. Program Structure

The B.Tech. program at IIT-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]	
Maths I (Linear Algebra)	Maths II (Probability & Statistics)	Research methods in Social Science and Design	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. 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 System Management	Communication Skills
Semester 2	Data Structures and Algorithms Microeconomics Probability and Statistics Introduction to Engineering Design Critical Thinking and Readings in Social Sciences	

- C. 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.
- D. 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.
- E. List of courses, and further information about the courses is available on the website: <https://www.iiitd.ac.in/academics/courses>
- F. Other requirements as specified later.

3. Requirements for Graduation

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

1. Earn a total of 156 (inclusive of 2 credits each of SG/CW credits) credits (equivalent to 39 full courses – 21 courses in the first two years, and 18 courses in the last two years.)
2. Successfully complete all the core courses, and special electives (if specified).
3. 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.
4. A student may take Online Courses. No more than 8 of these credits can count towards satisfying the credit requirements of the degree.
5. Complete at least 12 credits from Liberal Arts, Communications, and Humanities (LACH) group of courses.
6. A student must complete 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. B.Tech. Project /Independent project/Independent study/Undergraduate Research will not count towards this requirement. UGC may approve some other relevant courses (e.g., Maths/CSE etc.) to be counted as CSE/SSH courses for this purpose. Online courses of the respective discipline (i.e. online courses with CSE/SSH course code), if done in last four semesters will count towards this requirement.
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, 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.
8. A student may take “Independent Project” or “Independent Study” or “Undergraduate Research” courses for 1, 2, or 4 credits in a semester. 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) and CGPA of atleast 7.0 can take these courses. These and BTP credits do not count towards elective/stream credit requirements and are treated as open electives.
9. Rest of the credits are considered as “open electives” and the student can choose any courses from these.
10. A student can take maximum 2, 2xx level courses in 3rd and 4th year.

4. 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 discipline credits (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.

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.

Change History

- **July 2017 release – Version 1**
- **January 2018 release – Minor changes**
- **July 2019 release**
 - (i) Counting of SG, CW credits in total credits. Applicable from 2017 batch onwards.
 - (ii) Total credits requirement for graduation and credit requirement for Honors students. Applicable from 2017 batch onwards.
 - (iii) Courses for Honors students. Applicable from 2017 batch onwards.
 - (iv) BTP to IP conversion. Applicable from AY2019-20.
 - (v) Technical Courses
 - (vi) 2xx level courses