Department of Computer Science and Engineering
Indian Institute of Technology

CSE UG Curriculum
applicable for the batch of 2007

This document lists the semester-wise structure of the B.Tech program and the requirements of the B.Tech (Honors), Dual Degree, and B.Tech (Minor) programs.

Courses may have pre-requisites and co-requiaites. Some core courses are identified as floating courses. Floating courses are associated with either even or odd semesters. In the document, floating courses are identified with a '*'. Students may take them anytime subject to pre-requisite and co-requisite requirements. They will be offered every year in the designated semester. Prequisites/Corequisites are listed separately in course syllabi.

Summary of the course structure

Breakup of Over all credits structure for the B.Tech Programme

Department Credits	Institute Credits #	Total Credits
147	105	252

12 Core CSE theory courses, excluding CS 101.

11 Core CSE laboratory courses

6 Electives

Though this document also includes institute courses, their placements and credits breakup, these may change from time to time. Please refer to ASC/academic office pages for latest information.

Semester 1						
Number	Course Title	L	T	P	C	Inst./Dept.
MA 105	Calculus	3	1	0	8	Inst.Core
CH 103	Chemistry I	2	1	0	6	Inst.Core
CS 101	Comp.Programing and Utilization	2	0	2	6	Inst.Core
HS 101	Economics	3	0	0	6	Inst.Core
CH 117	Chemistry Lab	0	0	3	3	Inst.Core
ME 113	Workshop Practice	0.5	0	3	4	Inst.Core

	Semester Credits		Commulative Credits			
	Department	Institute	Total	Department	Institute	Total
	0	33	33	0	33	33

Semester 2						
Number	Course Title	L	T	P	C	Inst./Dept.
MA106+ MA 108	Linear Algebra and Ordinary Differential Equations	3	1	0	8	Inst.Core
PH 105	Modern Physics	2	1	0	6	Dept.Option
IC 102	Data Analysis and Interpretation	2	1	0	6	Inst.Core
CS 152	Abstractions and Paradigms in Programming	3	0	0	6	DIC
PH 117	Physics Lab	0	0	3	3	Inst.Core
CS 154	Abstractions and Paradigms in Programming	0	0	3	3	DIC
ME 119	Engineering Graphics and Drawing	0.5	1	3	5	Inst.Core

	Semester Credits		Commulative Credits			
	Department	Institute	Total	Department	Institute	Total
	9	28	37	9	61	70

Semester 3							
Number	Course Title		L	T	P	C	Inst./Dept.
EE 101	Introduction to Electrical and Electric Circuits		3	1	0	8	Inst.Core
ES 200	Environmental Studies					3	Inst.Core
HS 200	Environmental Studies :Science and Engineering					3	Inst.Core
CS 207	Discrete Structures		3	0	0	6	Dept.Core
CS 213	Data Structures and Algorithms		6	0	0	6	Dept.Core
IC 211	Experimentation and Measurement Lab		0	0.5	3	4	Inst.Core
CS 293	Data Structures and Algorithms		0	0	3	3	Dept.Core
	Semester Credits		Commulative Credits				
	Department	Institute	Total	Department	Institute	Total	
	15	18	33	24	79	103	

Semester 4							
Number	Course Title		L	T	P	C	Inst./Dept.
MA 214	Numerical Analysis		3	1	0	8	Inst.Core
CS208	Automata Theory and Logic *		3	0	0	6	Dept.Core
CS 218	Design and Analysis of Algorithms *		3	0	0	6	Dept.Core
CS 210	Logic Design		3	0	0	6	Dept.Core
CS 296	Software Systems Lab		2	0	2	6	Dept.Core
CS 288	Logic Design Lab		0	0	3	3	Dept.Core
	Semester Credits		Commulative Credits				
	Department	Institute	Total	Department	Institute	Total	
	27	8	35	51	87	138	

Semester 5						
Number	Course Title	L	T	P	C	Inst./Dept.
HS 301	Literature/Philosophy/Psychology/Sociology	3	0	0	6	Inst.Core
CS 305	Computer Architecture *	3	0	0	6	Dept.Core
CS 347	Operating Systems *	3	0	0	6	Dept.Core
CS 317	Database and Information Systems *	3	0	0	6	Dept.Core
CS 387	Database and Information Systems Lab *	0	0	3	3	Dept.Core
CS 341	Computer Architecture Lab *	0	0	3	3	Dept.Core
CS 377	Operating Systems Lab *	0	0	3	3	Dept.Core

	Semester Credits		Commulative Credits			
	Department	Institute	Total	Department	Institute	Total
	27	6	33	78	93	171

Semester 6						
Number	Course Title	L	T	P	C	Inst./Dept.
CS 344	Artificial Intelligence *	3	0	0	6	Dept.Core
CS 302	Implementation of Programming Languages *	3	1	0	8	Dept.Core
CS 348	Computer Networks*	3	0	0	6	Dept.Core
CS 386	Artificial Intelligence Lab *	0	0	3	3	Dept.Core
CS 306	Implementation of Programming Languages Lab *	0	0	3	3	Dept.Core
CS 378	Computer Networks Lab *	0	0	3	3	Dept.Core
CS 308	Embedded Systems Lab.	0	0	4	4	Dept.Core

	Semester Credits		Commulative Credits			
	Department	Institute	Total	Department	Institute	Total
	33	0	33	111	93	204

Semester 7							
Number	Course Title		L	T	P	C	Inst./Dept.
	Elective 1		3	0	0	6	
	Elective 2		3	0	0	6	
	Elective 3		3	0	0	6	
	Institute Elective 1		3	0	0	6	
	Semester Credits		Commulative Credits				
	Department	Institute	Total	Department	Institute	Total	
	18	6	24	129	99	228	

Semester 8							
Number	Course Title		L	T	P	C	Inst./Dept.
	Elective 4		3	0	0	6	
	Elective 5		3	0	0	6	
	Elective 6		3	0	0	6	
	Institute Elective 1		3	0	0	6	
	Semester Credits		Commulative Credits				
	Department	Institute	Total	Department	Institute	Total	
	18	6	24	147	105	252	

List of Electives

We list some of the elective courses here. As per Institute rules all PG courses are available as electives to those UG students whose CPI is 6.5 and above. The list will be updated from time to time.

CS 329 Principles of Programming Languages
CS 336 Computer Aided Geometric Deign
CS 346 Software Engineering
CS 352 Machine Learning
CS 406 Cryptography and Network Security
CS 407 Digital Signal Processing
CS 408 Graph Theory
CS 414 Introduction to Wireless Networks
CS 415 Numerical Computation
CS 435 Linear Optimization
CS 444 Database Management Systems
CS 449 Topics in Artificial Intelligence Programming
CS 451 Distributed Systems
CS 460 Natural Language Processing
CS 462 Analytical Models of Computing Systems
CS 467 Functional and Logic Programming
CS 468 Computational Models in Pattern Recognition and Learning
CS 470 Modelling and Simulation
CS 474 Cognitive Psychology
CS 475 Computer Graphics
CS 497 R& D Project I
CS 498 R& D Project II

3. Requirements for B.Tech. (Honours)

A student should earn 30 additional credits over the minimum B.Tech. Requirements to be eligible for the B.Tech. (Honours) degree. Of these, 12 credits have to be earned through elective CSE courses. The remaining 18 credits can be earned in any of the following ways:

- CSE Elective courses.
- A 6 credit B.Tech project I
- A 12 credit B.Tech Project II.

  - B.Tech. Project II will be available to a student only if the student gets a minimum BB grade in B.Tech. Project I.

  - B.Tech. Project II must be a continuation of B.Tech. Project I under the supervision of same faculty.

4. Requirements of the DD Programme

A dual degree student is required to earn the following additional credits beyond the requirements of the B.Tech Degree

54 credits through CSEelective courses, of which 24 credits must be through graduate-level courses

A two-stage DD project of 72 credits

In the entire DD programme, a student can do at most 3 R &D Projects as electives.

5. Requirements of the Minor Programme

If and when such students earn 30 credits through CSE courses meant for minors, they will qualify for a minor in CSE. Since Data Structures is a pre-requisite for almost all CSE courses, the department will make two offerings of the course every year: A regular offering for CSE students in third semester and a separate offering for minor students. A minor students can do up to one R&D project.

CSE students who fail a course in a regular offering will be allowed to clear the course by registering for a equivalent course meant for minor students.