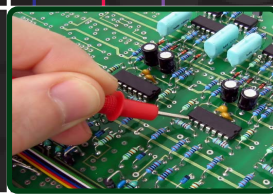


SANGAI INTERNATIONAL UNIVERSITY



Syllabus B.Sc. (Honours) Computer Science

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Proposed Syllabus and Scheme of Examination
for
B.Sc. (Honours) Computer Science

Submitted

to

University Grants Commission
New Delhi

Under

Choice Based Credit System

May 2015

CHOICE BASED CREDIT SYSTEM

**B.Sc. HONOURS WITH
Computer Science**

Course Structure (Computer Science-Major)

Details of courses under B.Sc.(Honors)

Course	*Credits	
	Theory+Practical	Theory+Tutorial
=====		
I.Core Course		
(14 Papers)	14X4=56	14X5=70
CoreCoursePractical/Tutorial*		
(14Papers)	14X2=28	14X1=14
II.ElectiveCourse		
(8Papers)		
A.1.DisciplineSpecificElective	4X4=16	4X5=20
(4Papers)		
A.2.DisciplineSpecificElective		
Practical/Tutorial*	4X2=8	4X1=4
(4Papers)		
B.1.GenericElective/		
Interdisciplinary	4X4=16	4X5=20
(4Papers)		
B.2.GenericElective		
Practical/Tutorial*	4X2=8	4X1=4
(4Papers)		
• OptionalDissertationorprojectworkinplaceofoneDisciplineSpecific		
Electivepaper(6credits)in6thSemester		
III.AbilityEnhancementCourses		
1.AbilityEnhancementCompulsory		
(2Papersof2crediteach)	2X2=4	2X2=4
EnvironmentalScience		
English/MILCommunication		
2.AbilityEnhancementElective(SkillBased)		
(Minimum2)	2X2=4	2X2=4
(2Papersof2crediteach)		
Totalcredit	140	140

Institute should evolve a system/policy about ECA/ General Interest/Hobby/Sports/NCC/NSS/related coursesonitsown.

***whereverthereisapracticaltherewillbenotutorialandvice-versa**

PROPOSED SCHEME FOR CHOICE BASED CREDIT SYSTEM IN
B. Sc. Honours (Computer Science)

SE ME ST ER	CORE COURSE (14)	Ability Enhancement Compulsory Course(AECC)(2)	Skill Enhancem en t Course (SEC)(2)	Elective: Discipline SpecificDS E (4)	Elective:G e neric (GE)(4)
I	Programmi ng Fundamentals using C/C++ (4 + 4)	(English/MIL Communication) /Environmental Science			GE – 1
	Computer System Architectur e (4 + 4)				
II	Programming in JAVA (4 + 4)	Environme nt al Science/ (English/MIL Communication)			GE – 2
	Discrete Structures (5 + 1)				
III	Data Structures (4 + 4)		SEC – 1		GE – 3
	Operating Systems (4 + 4)				
	Computer Networks (4 + 4)				

IV	Design and Analysis of Algorithms (4 + 4)		SEC – 2		GE – 4
	Software Engineering (4 + 4)				
	Database Management Systems (4 + 4)				
V	Internet Technologies (4 + 4)			DSE – 1	
	Theory of Computation (5 + 1)			DSE – 2	
VI	Artificial Intelligence (4 + 4)			DSE – 3	
	Computer Graphics (4 + 4)			DSE – 4	

SEMESTER	COURSE OPTED	COURSE NAME	Credits
I	Ability Enhancement Compulsory Course-I	English/MIL communications/ Environmental Science	2
	Core course-I	Programming Fundamentals using C/C++	4
	Core Course-I Practical/Tutorial	Programming Fundamentals using C/C++ Lab	2
	Core course-II	Computer System Architecture	4
	Core Course-II Practical/Tutorial	Computer System Architecture Lab	2
	Generic Elective-1	GE-1	4/5
	Generic Elective-1 Practical/Tutorial		2/1
II	Ability Enhancement Compulsory Course-II	English/MIL communications/ Environmental Science	2
	Core course-III	Programming in JAVA	4
	Core Course-III Practical/Tutorial	Programming in JAVA Lab	2
	Core course-IV	Discrete Structures	5
	Core Course-IV Practical/Tutorial	Discrete Structures Tutorial	1
	Generic Elective-2	GE-2	4/5
	Generic Elective-2 Practical/Tutorial		2/1
III	Core course-V	Data Structures	4
	Core Course-V Practical/Tutorial	Data Structures Lab	2
	Core course-VI	Operating Systems	4
	Core Course-VI Practical/Tutorial	Operating Systems Lab	2
	Core course-VII	Computer Networks	4
	Core Course-VII Practical/Tutorial	Computer Networks Lab	2
	Skill Enhancement Course-1	SEC-1	2
	Generic Elective-3	GE-3	4/5
	Generic Elective-3 Practical/Tutorial		2/1
IV	Core course-VIII	Design and Analysis of Algorithms	4
	Course-VIII Practical/Tutorial	Design and Analysis of Algorithms Lab	2
	Core course-IX	Software Engineering	4

	Core Course-IX Practical/Tutorial	Software Engineering Lab	2
	Core course-X	Database Management Systems	4
	Core Course-X Practical/Tutorial	Database Management Systems Lab	2
	Skill Enhancement Course-2	SEC-2	2
	Generic Elective-4	GE-4	4/5
	Generic Elective-4 Practical		2/1
V	Core course-XI	Internet Technologies	4
	Core Course-XI Practical/Tutorial	Internet Technologies Lab	2
	Core course-XII	Theory of Computation	5
	Core Course-XII Practical/Tutorial	Theory of Computation Tutorial	1
	Discipline Specific Elective-1	DSE-1	4
	Discipline Specific Elective-1 Practical/Tutorial	DSE-1 Lab	2
	Discipline Specific Elective-2	DSE-2	4
	Discipline Specific Elective-1 Practical/Tutorial	DSE-2 Lab	2
VI	Core course-XIII	Artificial Intelligence	4
	Core Course-XIII Practical/Tutorial	Artificial Intelligence Lab	2
	Core course-XIV	Computer Graphics	4
	Core Course-XIV Practical/Tutorial	Computer Graphics Lab	2
	Discipline Specific Elective-3	DSE-3	4
	Discipline Specific Elective-3 Practical/Tutorial	DSE-3 Lab	2
	Discipline Specific Elective-4	DSE-4	4
	Discipline Specific Elective-4 Practical/Tutorial	DSE-4 Lab	2
Total Credits			140

Core Papers(C): (Credit: 06 each)(1 period / week for tutorials or 4 periods / week of practical)

1. Programming Fundamentals using C/C++ (4 + 4 Lab)

2. Computer System Architecture (4 + 4 Lab)
3. Programming in JAVA (4 + 4 Lab)
4. Discrete Structures (5 + 1 Tutorial)
5. Data Structures (4 + 4 Lab)
6. Operating Systems (4 + 4 Lab)
7. Computer Networks (4 + 4 Lab)
8. Design and Analysis of Algorithms (4 + 4 Lab)
9. Software Engineering (4 + 4 Lab)
10. Database Management Systems (4 + 4 Lab)
11. Internet Technologies (4 + 4 Lab)
12. Theory of Computation (5 + 1 Tutorial)
13. Artificial Intelligence (4 + 4 Lab)
14. Computer Graphics (4 + 4 Lab)

Discipline Specific Elective Papers: (Credit: 06 each) (4 papers to be selected) – DSE 1 – 4

1. Information Security (4) + Lab (4)
2. Network Programming (4) + Lab (4)
3. Microprocessor (4) + Lab (4)
4. Computational Linguistics (4) + Lab (4)
5. Digital Image Processing (4) + Lab (4)
6. Machine Learning (4) + Lab (4)
7. Introduction to Data Sciences (4) + Lab (4)
8. Cloud Computing (4) + Lab (4)
9. Numerical Methods (4) + Lab (4)
10. System Programming (4) + Lab (4)
11. Combinatorial Optimization (4) + Lab (4)
12. Data Mining (4) + Lab (4)
13. Project Work / Dissertation (4) + Lab (4)
14. Big Data Analytics (4) + Lab (4)
15. Soft Computing (4) + Lab (4)

Note: Universities may include more options or delete some from this list

Other Discipline (Four papers of anyone discipline) – GE 1 to GE 4

1. Mathematics
2. Statistics
3. Operational Research
4. Physics
5. Electronics
6. Commerce
7. Economics

Any one discipline of importance

Skill Enhancement Courses (02 to 04 papers) (Credit: 02 each) – SEC1 to SEC4

1. Android Programming (1) + Lab (2)
2. Programming in MATLAB (1) + Lab (2)
3. HTML Programming (1) + Lab (2)
4. XML Programming (1) + Lab (2)
5. Oracle (SQL/PL-SQL) (1) + Lab (2)
6. Programming in Python (1) + Lab(2)
7. PHP Programming (1) + Lab (2)
8. UNIX/LINUX Programming (1) + Lab (2)
9. R Programming (1) + Lab (2)
10. Software Testing (1) + Lab (2)

Note: Universities may include more options or delete some from this list

Generic Elective Papers (GE) (Minor – Computer Science) (any four) for other Departments/Disciplines: (Credit: 06 each)

1. Computer Fundamentals (4) + Lab (4)
2. Introduction to Database Systems (4) + Lab (4)
3. Introduction to Programming (4) + Lab (4)
4. Computer Networks and Internet Technologies (4) + Lab (4)
5. Multimedia and Applications (4) + Lab (4)
6. Programming in Python (4) + Lab (4)
7. Programming in Visual Basic / Gambas (4) + Lab (4)
8. Information Security and Cyber Laws (4) + Lab (4)
9. Web and E-Commerce Technologies (4) + Lab (4)

Note: Universities may include more options or delete some from this list

Important:

1. Each University/Institute should provide a brief write-up about each paper outlining the salient features, utility, learning objectives and prerequisites.
2. University/Institute can add/delete some experiments of similar nature in the Laboratory papers.
3. The size of the practical group for practical papers is recommended to be 10-15 students.
4. The size of tutorial group for papers without practical is recommended to be 8-10 students.
5. University/Institute can add to the list of reference books given at the end of each paper.