



Faculty of Engineering and Technology

BCA

Syllabus

Bachelor of Computer Application Programme Ordinance

1. Scope:

This Ordinance will be applicable to the following programme: i) Bachelor of Computer Application (BCA)

2. Duration and Nomenclature:

The duration of BCA programme shall be three academic years. Each year shall be divided into two semesters. Thus this programme shall comprise six semesters spread over three years. On the completion of all the six semesters, the student will be awarded Bachelor degree with nomenclature as given under Clause 1 above. The student shall complete all the six semesters within a maximum period of 5 years from the date of admission to the first semester.

Admission to the Course:

Admission to the above programme shall be made on the terms & conditions as prescribed in Chapter 2 of the 1st Ordinance of SGT University, Gurgaon as amended from time to time.

Admission schedule and receipt of fees:

The admission schedule along with last date for the receipt of admission forms and fees shall be fixed by the Vice-Chancellor every academic year.

5. Eligibility for Admission:

Eligibility for admission to 1st Year (1st Semester):

- 5.1. Candidate should have passed "10+2" exam in any stream.
- 5.2. Admission will be based on academic record.
- 5.3. The Academic Council shall have power to amend or repeal the eligibility criteria laid down at clause 5.1& 5.2, if required.

6. Selection of candidates for admission:

The candidates shall be selected for admission to the above courses on the basis of their academic merit to be determined by the marks obtained either in Entrance Examination conducted by SGT University, or the qualifying examination whichever mode is decided by the University from time to time.

7. Syllabus:

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Each student shall be examined in the subject(s) as laid down in the curriculum and syllabi prescribed by the Board of Studies, Faculty of Engg. & Technology and approved by Academic Council.

8. Medium of Instruction and Examinations:

The medium of the instruction and the examination shall be English only.

9. Curriculum of Examinations:

The curriculum of Examinations shall be as approved by Board of Studies/Academic Council of the University from time to time.

10. University Examinations:

(i) End Term Examinations:

The examination for the 1st, 3rd and 5th semesters shall ordinarily be held in the month of December and those of the 2nd, 4th and 6th semesters in the month of May or on such dates as may be fixed by the Controller of Examinations with the approval of the Vice-Chancellor.

(ii) Supplementary/ Re-appear Examinations:

Supplementary examinations of the 1st, 3rd and 5th semesters will be held along with the regular semester examinations of 1st, 3rd and 5th semesters in December and those of 2nd, 4th and 6th semesters will be held along with regular semester examinations of 2nd, 4th and 6th semesters in May or on such dates as may be fixed by the Controller of Examinations with the approval of the Vice-Chancellor. However the supplementary examinations of 5th semester may be held in the month of May along with even semester examinations and of 6th semester may be held in the month December along with odd semester examinations. A candidate on the rolls of Department/ Faculty or an ex-student shall submit his/her application for admission to an examination on the prescribed form with the requisite certificate duly countersigned by the HoD/Dean of the Faculty.

11. Distribution of Marks:

The distribution of marks in various papers shall be as given in the Scheme of Examinations approved by the Board of Studies/the Academic Council.

12. Attendance Requirements/Eligibility to Appear in Examination:

The student should fulfill the following criteria to be eligible for appearing in the end term examination:

- (i) He/She should bear a good moral character.
- (ii) He/she should be on the rolls of the University during the Semester.
- (iii) He/She should have not less than 75% of the attendance during the respective semester. Twenty five (25%) of attendance relaxation shall account for illness and contingencies of serious and unavoidable nature.
- (iv) Dean of the Faculty of his own or on the recommendation of the HoD shall have the power to give relaxation upto 5% on genuine grounds over the minimum 75% attendance.
- (v) Further, the Vice Chancellor of his own or on the recommendation of the Dean shall have the power to give further relaxation upto 5% on genuine grounds over the above relaxation given the Dean.
- (vi) He/she should not be a defaulter in payment of tuition fee or any other dues of the University and no disciplinary action is pending against the student.

13. Exemption from Attendance / Shortage of attendance to be condoned:

The shortage of lectures to the maximum limit as under can be condoned by the competent authority:

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Sr. No	Exemptable No. of Lectures	Ground of Exemption	Competent Authority
1	All periods of the day of donation	Voluntarily blood donation to the Blood Bank.	Dean of the Faculty
2	All periods of the day of Examination	For appearing in the supplementary examinations(Theory /Practical/Viva- voce)	-do-
3	07 days attendance during a semester	For participation in University or Inter- Collegiate Sports Tournaments/ Youth Festivals, NCC/NSS Camps/University Educational Excursions/ Mountaineering Courses	-do-
4	10 days attendance during a semester	For participation in National/International Competition, Inter-University Sports / Youth Festivals	-do-

Provided:

- (i) that he/she has obtained prior approval of the Dean, Faculty of Physical Sciences.
- (ii) that credit may be given only for the days on which lectures were delivered or tutorials or practical work done during the period of participation in the aforesaid events.

14. Attendance Shortage Warning:

Attendance shortage warning will be displayed on the Student's Notice Board and University Website by 10th day of every month.

15. Detained students:

A student, who does not fulfill the criteria prescribed in Clauses 12-13, will not be eligible for appearing in the End Term Semester Examination in that particular paper and will be deemed as Detained in that paper. Such student will repeat the course/paper along with the regular students of the subsequent batch to fulfill the prescribed conditions to appear in the "End Term" examination of the course/paper.

16. Submission of Examination Forms and Payment of Fees:

The Dean, Faculty of Engineering & Technology shall submit the examination admission forms of those students who satisfy the eligibility criteria to appear in the examinations to the Controller of Examinations as per schedule of examination circulated by him from time to time.

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17. Setting of Question Papers:

- (i) The Head of the Department/Dean of the Faculty shall supply the panel of internal and external examiners, duly approved by the Board of Studies, to the Controller of Examinations. The paper(s) will be set by the examiner(s) nominated by the Vice-Chancellor from the panel of examiners.
- (ii) An examiner shall be allowed to set not more than two papers in a semester examination.
- (iii) The examiner(s) will set the question papers as per criteria laid down in the Scheme of Examinations as approved by the Board of Studies/Academic Council.
- (iv) All the question paper will be scrutinized by the internal expert committee and moderated up to 25% of original question paper with an approval of the concerned department head.

18. Evaluation Process - Theory, Practical and Viva Voce:

(A) Evaluation of Answer Books:

The answer books may be evaluated either by paper setter or any other internal or external examiner to be nominated by the Controller of Examiners with the approval of the Vice-Chancellor from the panel of examiners. In case, such examiner does not evaluate the answer book in time, the Controller of Examinations may get the answer book(s) evaluated from any other expert in the subject with the approval of the Vice-Chancellor. After evaluation of answer sheets the audit committee of the faculty of engineering and technology will be auditing for correctness of the evaluation.

(B) Re-evaluation of Answer Books:

- i) Re-evaluation will be permitted only for the theory /External Examinations conducted by this University.
- ii) No re-evaluation will be allowed for examination in practical/Viva-Voce/ Training Report/ Project Report/ sessional/ theses or dissertation, etc. or any other paper wherein there is a joint evaluation by two examiners.
- iii) The candidate must apply for re-evaluation in theory paper only on the prescribed form in an examination taken by him/her within the 10 days of the declaration of the result along with a copy of Detail-Mark Certificate or the downloaded result and prescribe fee. No re-evaluation form will be accepted thereafter under any circumstances.
- iv) The University will not be responsible for postal delay in the receipt of the form from the Candidate, if sent be post.
- v) Award of Re-Evaluation Marks/Score:

(a) When Increase/Decrease is up to 15% of the Maximum Marks of the paper concerned	Higher grade/marks will be awarded to the candidate
(b) When Increase/Decrease is more than 15% of the Maximum Marks of the paper concerned	Answer Book will be sent to the second Re-Evaluator and average of two highest scores will be given.

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vi) The final result of re-evaluation favorable or against will be binding upon the candidate and it will supersede the original score/result.

(C) . Practical Examinations:

- (i) Practical examinations shall be conducted by a Board of Examiners consisting of one internal and one external examiner to be nominated by the Vice-Chancellor from the panel of examiners.
- (ii) The candidate who fails to obtain pass marks in practical examination shall be allowed to re-appear before Board of Examiners as laid down under (i) above as per schedule specified for Supplementary Examinations.

(D) Viva-Voce:

- (i) Comprehensive Viva-Voce shall be conducted by a Board of Examiners consisting of one internal and one external examiner to be nominated by the Controller of Examinations with the approval of Vice-Chancellor from the panel of examiners.
- (ii) The Viva voce shall be conducted at the time of practical examinations.
- (iii) The marks obtained by the student for the viva-voce shall be taken into account when he/she appears in any future examination under re-appear clause.

A candidate who fails to obtain pass marks in viva-voce shall be allowed to re-appear in supplementary examinations before the Board of Examiners as laid down under (i) above.

19. Continuous Evaluation Process:

S.No	Course Category	Internal Assessment	External Assessment	Total Mark
1	Theory	50	50 .	100
2	Practical	60		100
3	Project/Seminar	150	50	200

(i) **Theory Course:** Fifty (50) Marks shall be assigned to each theory course as Internal Assessment and Fifty (50) Marks shall be assigned to each theory course as External Assessment which shall be awarded as per the criteria given below:

	Mode	Tentative Schedule	Marks Allotted	Marks Considered	Final Marks
	INTER	NAL ASSESSMEN'	Г		
	Seasonal Exam -1 / Continuous Assessment Test – I (CAT – I)	6 th Week from the commencement of semester	50	15	
Co	Seasonal Exam -11 / ntinuous Assessment Test – II (CAT – II)	12 th Week from the commencement of semester	50	15	50

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Quiz / Assignment / Micro Project / During entire Seminar semester (Based on Course Content Pre-Approval 50 15 (Pre-Announced / .from BOS / Course Committee is Unannounced) mandatory) Attendance Percentage (95% - 100% - 5 Marks, 90% - 94% - 4 Marks Throughout 5 5 85% - 89% - 3 Marks, 80% - 84% - 2 Semester Marks 75% - 79% - 1 Marks) **EXTERNAL ASSESSMENT** End Semester Examination As per Schedule (100% of Course Content should be 100 50 50 from COE covered) **TOTAL MARKS** 100

There will be at least two (2) Internal/Mid Tem Tests in each semester. Each Test will be of 50 marks of one and half hour duration and should cover 50% syllabus. The dates of Tests will be decided by the Dean/HoD. The answer books will be supplied by the Examination Branch.

(ii) Practical Course: Sixty (60) marks shall be assigned to each practical paper as Internal Assessment and Forty (40) marks shall be assigned to each practical paper as External Assessment which shall be awarded as per the criteria given below:

	Mode	Tentative Schedule	Marks Allotted	Marks Considered
	INTE	RNAL ASSESSMENT		
	Objective & Theory/ Principle	Before commencement of each Laboratory Session	5	
	Procedure, Precaution & Observation Table	During each Laboratory Session	15	
	Calculation / Programme	Before commencement of next Laboratory Session	10 .	
	Graph / Output	Before commencement of next Laboratory Session	10	
	Result & Inference	Before commencement of next Laboratory Session	10	60
(Continuous Assessment of Laboratory Performance	Throughout Semester	5	
(9 8	Attendance Percentage 95% - 100% - 5 Marks, 90% - 94% - 4 Marks 85% - 89% - 3 Marks, 80% - 84% - 2 Marks	Throughout Semester	5	

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75% - 79% - 1 Marks)			
EXTE	RNAL ASSESSMENT		1. 1.
End Semester Examination (100% of Course Content should be covered)	As per Schedule from COE	100	40
ΤΟΤΑ	L MARKS		100

(iii) Project/Seminar Course: One hundred and Fifty (150) marks shall as an Internal Assessment and Fifty (50) marks as External Assessment shall be assigned to Industry/Research project phase – II course which shall be awarded as per the criteria given below:

Mode	Tentative Schedule		Marks Considered		
INTE	CRNAL ASSESSMENT				
Zeroth Review	Before commencement of Project Phase (PP)	10	•		
First Review	4 th Week of PP	15			
Second Review	8 th Week of PP	30			
Third Review	12 th week of PP	40			
Final Review	14 th Week of PP	50	150		
Attendance Percentage (95% - 100% - 5 Marks, 90% - 94% - 4 Marks 85% - 89% - 3 Marks, 80% - 84% - 2 Marks 75% - 79% - 1 Marks)	Throughout PP	5	130		
EXTERNAL ASSESSMENT					
End Semester Examination (100% of Course Content should be covered)	As per Schedule from COE	100	50		
GRAND T	OTAL MARKS		200		

(iv) In case of ex-students, those appearing for re-appear / improvement examination in any semester, their previous Internal Assessment marks will be counted.

- (v) The concerned teacher shall preserve records on the basis of which the Internal Assessment marks have been awarded and shall make the same available to the Controller of Examinations whenever required.
- (vi) The Head of the Department/ Dean of the Faculty shall ensure:
 - (a) That the internal assessment marks are got displayed on the Notice Board for information of the students at least seven (07) days before the commencement of the examinations of each semester.
- 19. That the internal assessment marks are submitted to the Controller of Examinations at least seven (07) days before the commencement of the examinations of each semester.

20. Criteria for Promotion to Higher Semester:

- (i) A student will be promoted to 2nd semester automatically, however to appear in 3rd semester exam he or she must be passed in 60% of all the total registered courses/credit in 1st and 2nd semester taken together.
- (ii) A student will be promoted to 4th semester automatically however to appear in 5th semester exam he or she must be passed in 60% of all the total registered courses/credit from 1st to 4th semester aggregate.

21. Pass Percentage:

The minimum percentage of marks to pass the examination in each semester will be 50% of marks in all different type of courses namely Theory, Practical and Project; in this both internal and external assessment marks shall be taken together.

However the minimum passing mark in external examination will be 30% of total marks appeared and the passing minimum is not mandatory for internal assessment mark.

22. Improvement Examination:

The student may be permitted to improve his/her result subject to the following conditions:

- (i) The student will be permitted to appear in improvement examination as an ex-student with regular batches for the purpose of improvement.
- (ii) The student will be permitted to improve his/her CGPA only in those papers in which he/she has obtained grade less than 'First Division' in aggregate.
- (iii) Only one chance for a paper will be given. The chance must be availed of within a period of two years of initially passing of the final examination.
- (iv) If the status/nature of the student's result does not improve, his/her improvement result will be declared "PRS" (Previous Result Stands).
- (v) The candidate shall be allowed to appear in the improvement examination (s) along with regular candidates as and when the course is offered. No separate examination will be held for improvement of result. In case of change of syllabi, the student shall have to appear for improvement in accordance with the changed syllabii of the concerned course applicable to the regular students of that exam.

23. Credit Based Grading System:

i) Key Definitions:

Programme:	An educational programme leading to award of a Degree, Diploma or
	Certificate.
Course:	Usually referred to as 'paper' is a component of a programme. All courses need not carry the same weight.
Credit:	A unit by which the course work is measured. One credit is equivalent to one hour of teaching (lecture or tutorial) or two hours for practical work/field work per week. A Research Based Paper /Project is equal to 5 credits.
Credit Point:	It is the product of grade point and number of credits for a course i.e. Credit Point = No. of credits in a course X "grade value" of the grade obtained in the course.
Grade Point	There are two types of GPAs as given hereunder:

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Average (GPA):	a) Semester Grade Point Average (SGPA)
	b) Cumulative Grade Point Average (CGPA)
	Every student earns a distinct SGPA and a distinct CGPA at the end of each specified semester.
Semester Grade	SGPA is a measure for performance of student in a Semester. It is the
Point Average	ratio of sum of the product of number of credits with the grade points
(\$GPA):	scored by the student in all the courses taken by him/her and the sum of
	the number of credits of all the Courses undergone by the student i.e.
	SGPA (Si) = $\sum (CixGi) / \sum Ci$
Cumulative Grade	CGPA is a measure of performance up to any specified semester
Point Average	beginning from the first Semester. It is also calculated in the same
(CGPA)	manner as SGPA taking into account all the courses undergone by a
	student over all the semesters of programme i.e. $CGPA = \sum (Cix Si) / \sum Ci$
Grade Point:	It is a numerical weight allotted to each letter grade on a 10-point scale.
Letter Grades:	It is an index of the performance of a student in a said course. The
	Grades are denoted by letters O, A+, A, B+, B, C, P, F and Ab.

ii) Credits, Semesters, Courses and total Credit Points:

BCA : In the 6th semester programme (i.e. 3-year programme) of BCA, there will be, 24 theory courses and 21 practical courses and hence 141 total credits.

(iii) Grading Method

The grading method for evaluating students' performance involves award of grade according to the range of total marks in the course. The range of marks between any two grades is framed in such a manner that the effect of individual marking/checking techniques on the overall grading is minimal. The grades will be awarded based on marks out of 100 as under:

Score	Grade	Grade Point
85% and above	0	10
80% and above but less than 85%	A+	9
75% and above but less than 80%	A	8
70% and above but less than 75%	B+	7
55% and above but less than 70%	B	6
60% and above but less than 65%	C+	5
55% and above but less than 60%	C	4
50% and above but less than 55%	D	3
Below 50%	F.	0

(iv) Calculation of SGPA & CGPA

SGPA is calculated by dividing the sum of 'Credit Points' in a Semester divided by the sum of 'Course Credits' in that Semester.

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'CGPA is calculated by dividing the sum of 'Credit Points' by the sum of 'Course Credits' of the current semester + all pervious semesters.

Hypothetical Example for Computation of SGPA and CGPA:

Let us assume that Mr. X has registered for four courses in the 1st semester and his performance in these courses in this semester is given in the Table below:

Course/Paper	Course Credit	Grade Awarded	Grade Value	Credit Points
Code		to the Student		
Course/Paper I	* 4		9	36
Course/Paper II	4	A	8	32
Course/Paper III	4	В	6	24
Course/Paper IV	4	B+	7	28
TOTAL	16		30	120

Calculation of SGPA:

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'Credits' of the Courses registered by Mr. X in 1st Semester	= 16
'Credit Points' of Mr. X in 1st Semester	= 120
SGPA of 1 st Semester (120/16)	= 7.5

Calculation of CGPA:	
'Credits' of the courses registered by Mr. X upto1st Semester	= 16
'Credit Points' of Mr. X in 1 st Semester	= 120
CGPA of 1 st Semester (120/160)	= 7.5

Let us, now, assume that the Mr. X has performed in 2ndSemester as under :

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Course/Paper	Course Credit	Grade Awarded	Grade Value	Credit Points		
Code		to the Student	•			
Course/Paper V	4	C+	5	20	-3.	
Course/Paper VI	4	С	4	16	.	
Course/Paper VII	4	A+	9	36		
Course/Paper VIII	4	- B+	7	28		
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TOTAL	16		25	100	
Calculati	on of SCDA of 2 nd	Samaatau			
· Credits'	of the courses regi	stered by Mr. X in 2 nd Se	emester	= 16	
'Credit P	oints' of Mr. X in 2	2 nd Semester	0	= 100	
	SGPA of 2nd	Semester (100/16)		= 6.25	
<u>Calculati</u> 'Credits'	on of CGPA upto 2	nd Semester: stered Mr. X in			
Cicuits	of the courses regi	1 st & 2nd Semesters (1	6+16)	= 32	
'Credit P	oints' of Mr. X in 1	st & 2 nd Semesters (120+	-100)	= 220	
С	GPA ū pto2 nd Semes	ster (220/32)		= 6.87	

24. Declaration of Results:

- (i) After the semester examinations are over, the Controller of Examinations shall publish the results of those students who had appeared in the examinations as early as possible and endorse a copy to the Dean of the Faculty.
- (ii) Each successful student/ the student placed in reappear shall receive a copy of the Detailed Marks Card of each semester examination.
- (iii) The student whose result is declared late without any fault on his/her part may attend classes for the next higher semester provisionally at his /her own risk and responsibility, subject to his /her passing the concerned semester examination. In case, the student fails to pass the concerned semester examination, his/her attendance/internal assessment in the next higher semester in which he / she was allowed to attend classes provisionally will stand cancelled.

25. Classification of Performance:

Performance of the successful students after the 8^{th} i.e. last semester examinations on basis of final CGPA obtained by him / her in the 1^{st} to 8^{th} semester examinations shall be classified as under:

CGPA (with equivalent* % marks)	Classification of Performance
CGPA of 8.25 (equivalent to 75% marks) or more in first attempt	First Division with Distinction
CGPA of 8.25 (equivalent 75%) or more marks in second or subsequent attempt	First Division
CGPA of 6.75 (equivalent to 60% marks) or more but less than 8.25(equivalent to 75% marks)	First Division
CGPA above Pass Grade (equivalent to 50% marks). but less than 6.75 (equivalent to 60% marks)	Second Division
CGPA less than Pass Grade (equivalent to 50%) marks)	Fail

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*Formula for conversion from CGPA to % marks shall be: (CGPA -0.75) x10 = % of marks

25. Other Provisions:

- i) Provisions of Chapter 5 (Conduct of Examinations) of 1st Ordinance of the University will be applicable in case of matters which are not covered by this Subject Ordinance.
- ii) Each student shall study "Environmental Studies". It will be a qualifying compulsory paper. Its marks will not be taken into consideration while determining the Division/Grade. Paper for this course will be set and evaluated by the internal examiner to be appointed by the Controller of Examination with the approval of the Vice-Chancellor. It will be taken up for study by the student in the semester as prescribed in the Scheme of Examinations.
- iii) Nothing in the Ordinance shall debar the University from amending the Ordinance and the same shall be applicable to all the students whether old or new.
- iv) Any other provision not contained in the Ordinance shall be governed by the rules and regulations framed by the University from time to time.
- v) In case of any dispute, the Vice-Chancellor will be competent authority to interpret the rules and his interpretation shall be final.

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Note:

Degree will be given to only those students whose CGPA is minimum 3.0

Scheme of Examination and Syllabus

For

Bachelors of Computer Applications

Batch 2016 - 2019

SGT University, Gurgaon, Haryana

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SGT University, Gurgaon, Haryana

Scheme of Bachelor of Computer Applications for Batch 2016-2019

	Ducheior of Company		Ph.	icat	ions Sem	colei	-1		
			14. 1				2		
per de	Title	L	T	P	Total	Int	Ext	Total	Credits
0/0/	Computer Basics and PC Software	3	1	-	4	50	50	100	4
02	Computer Hardware & Trouble shooting	3	-	-	3	50	50	100	3 .
03	Basic Mathematics	3	1	-	4	50	50	100	4
OY	Communication & Soft Skills	4	-	-	4	50	50	100	4
05	Business Organisation	4	-	-	4	50	50	100	4
06	Word Processing Lab	-	-	4	4	60	40	100	2
07	PC Assembling And Trouble Shooting Lab	-	-	4	4	60	40	100	2
	Total	17	2	8.	27	320	380	700	23
Bachelor of Computer Applications Semester - II									
		- F	r			1		· · · ·	
er le	Title	L	T	P	Total	Int	Ext	Total	Credits
2201	Basic Accounting and Finance	4	-	-	4	50	50	100	4
02	Computer Organization	4	-		. 4	50	50	100	4 -
03'	Communication & Soft Skills -II	. 4	-		4	50	50	100	4
54	Discrete Mathematics	4	-	-	.4	50	50.	100	4
35	Programming in C	4	-	-	4	50	50	100	4
06	Computer Organization-Lab	-	-	4	4	60	40	100	2
07	Programming in 'C' Lab	-	-	4	4	60	40	100	. 2
08	Colloquium	-	-	2	2	60	40	100	VE 1
	Total	20	0	10	30	380	480	Ø80	25
	er le 0/0/0/ 0/0/0/ 0/0/0/ 0/0/0/ 0/0/0/ 0/0/0/ 0/0/0/0/	per de Title O/O/ Computer Basics and PC Software O/O/ Computer Hardware & Trouble shooting O Basic Mathematics O/O/ Communication & Soft Skills O/O/ Basic Mathematics O/O/ Computer Hardware & Trouble shooting O/O/ Basic Mathematics O/O/ Communication & Soft Skills O/O/ Word Processing Lab O/O/ Word Processing Lab O/O/ PC Assembling And Trouble Shooting Lab Total Bachelor of Computer er Title Basic Accounting and Finance Computer Organization O/O/ Basic Accounting and Finance O/O/ Basic Accounting and Finance O/O/ Basic Accounting and Finance O/O/ Discrete Mathematics Programming in C Computer Organization-Lab O/O/ Programming in 'C' Lab O// Programming in 'C' Lab O// Programming in 'C' Lab O// Colloquium Total	Direction of Computer A per Title L O/O/ Computer Basics and PC Software 3 O Computer Hardware & Trouble shooting 3 O Basic Mathematics 3 O Basic Mathematics 3 O Business Organisation 4 O Word Processing Lab - O PC Assembling And Trouble Shooting Lab - O PC Assembling And Trouble Shooting Lab 17 Defendence Image: Computer Organization 4 O Basic Accounting and Finance 4 O Basic Accounting and Finance 4 O Computer Organization 4 O Discrete Mathematics 4 O Computer Organization-Lab - O Programming in C 4 O Colloquium - O Colloquium -	Discrete of of Computer Application per de Title L T O/O/ Computer Basics and PC Software 3 1 O/O/ Computer Hardware & Trouble shooting 3 - O/O/ Computer Hardware & Trouble shooting 3 - O/O/ Basic Mathematics 3 1 O/O/ Communication & Soft Skills 4 - O/O/ Business Organisation 4 - O/O/ Word Processing Lab - - O/O/ PC Assembling And Trouble Shooting Lab - - O/O/ Basic Accounting and Finance 4 - <	Per de Title L T P 0/0/ Computer Basics and PC Software 3 1 - 0/2 Computer Hardware & Trouble shooting 3 1 - 0/3 Basic Mathematics 3 1 - 0/4 Communication & Soft Skills 4 - - 0/4 Communication & Soft Skills 4 - - 0/4 PC Assembling And Trouble Shooting Lab - - 4 0/4 Total 17 2 8 - Bachelor of Computer Application A Basic Accounting and Finance 4 - 0/4 Discrete Mathematics 4 - - 0/4 Discrete Mathematics 4 - - 0/4 Discrete Mathematics 4 - - 0	Per de Title L T P Total O/O/ Computer Basics and PC Software 3 1 - 4 O/O/ Computer Basics and PC Software 3 1 - 4 O/O/ Computer Hardware & Trouble shooting 3 - - 3 Basic Mathematics 3 1 - 4 - - O/O/ Communication & Soft Skills 4 - - 4 O/O/ Communication & Soft Skills 4 - - 4 O/O/ Communication & Soft Skills 4 - - 4 O/O/ Word Processing Lab - - 4 4 O/O Mord Processing Lab - - 4 4 O/O Resembling And Trouble Shooting Lab - - 4 4 O/O Resembling And Trouble Shooting Lab 17 2 8 27 Bachelor of Computer Applications Semee er It T P Total O/O	Per de Title L T P Total Int O/O/ Computer Basics and PC Software 3 1 - 4 50 O/O/ Computer Hardware & Trouble shooting 3 1 - 4 50 O/O/ Computer Hardware & Trouble shooting 3 1 - 4 50 O/O Basic Mathematics 3 1 - 4 50 O/O Communication & Soft Skills 4 - - 4 50 O/O Business Organisation 4 - - 4 4 60 O/O Word Processing Lab - - 4 4 60 O/O PC Assembling And Trouble Shooting Lab - - 4 4 60 Total I7 2 8 27 320 Bachelor of Computer Applications Semester er Title L T P Total Int	Direction of Computer Applications Semester – 1 per de Title L T P Total Int Ext S/O/ Computer Basics and PC Software shooting 3 1 - 4 50 50 O/O/ Computer Hardware & Trouble shooting 3 1 - 4 50 50 O/O/ Computer Mardware & Trouble shooting 3 1 - 4 50 50 O/O/ Communication & Soft Skills 4 - - 4 50 50 O/O/ Communication & Soft Skills 4 - - 4 460 40 O/O Word Processing Lab - - 4 4 60 40 O/O Word Processing Lab - - 4 4 60 40 O/O Resembling And Trouble Shooting Lab - - 4 4 60 40 Total Int Ext T P Total	Direction of Computer Applications Settlester - 1 per de Title L T P Total Int Ext Total O/O/ Computer Basics and PC Software 3 1 - 4 50 50 100 O/O/ Computer Hardware & Trouble shooting 3 - - 3 50 50 100 O/O Basic Mathematics 3 1 - 4 50 50 100 O/O Communication & Soft Skills 4 - - 4 50 50 100 O/O Business Organisation 4 - - 4 460 40 100 O/O Word Processing Lab - - 4 460 40 100 O/O PC Assembling And Trouble Shooting Lab - 4 4 60 40 100 Total Int Ext Total Int Ext Total er Title

Bachelor of Computer Applications Semester -

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the second s	Scheme of Bachelor of Compu	ter 1	App	olica	tions for	Bate	h 201	6-201	9
	Bachelor of Computer	·Ap	plic	atio	ons Semes	ster -	- Ш		
Paper Code	Title	L	T	P	Total	Int	Ext	Total	, Credits
60301	Data Structure using C	4	-	-	4	50	50	100	4
02	Database Management System	4	-	-	4	50	50	100	4
03	Programming_in C++	4	-	-	4	50	50	100	4
04	System Analysis & Design	4	-	-	4	50	50	100	4
05	Programming in C++ Lab	-	-	4	4	60	40	100	2
06	Data Structure using C: Lab	-	-	4	4	60	40	100	2
07	Database Management Systems Lab	-	-	4	4 /	60	40	100	2
OZ	Colloquium	-	-	2	2	60	40	100	. 1
	Total	16	-	14	30	390	490	800	df 23
	Bachelor of Computer	Ap	plic	atio	ns Semes	ter –	·IV		
Paper Code	Title	L	Т	P	Total	Int	Ext	Total	Credits
060401	Computer Networks	4	-	-	4	50	50	100	4
02	Operating System	4.	-	-	4	50	50	100	4
03	Programming in Java	4	-	-	4	50	50.	100	4
04	Introduction to Algorithm Design	4	-	-	4	50	50	100	4
05	Java Lab		-	4	4 (60	40	100	2 .
06	Operating System Lab	-	-	4	4 .	60	40	100	2
07	Colloquium	-	'	2	2	160	40	100	1
08	Seminar	2	-	-	2	160	40	100	2
	Total	10		10		100	4.00	000	

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SGT University, Gurgaon, Haryana

Scheme of Bachelor of Computer Applications for Batch 2016-2019 Bachelor of Computer Applications Semester - V

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Title	L	T	P	Total	Int	Ext	Total	Credits	-
Software Engineering	4	-	-	4	50	50	100	4	
Microprocessor and Interfacing	4	-	-	4	50	50	100	4	-
Web Programming	4	-		4	50	50	100	4	-
ERP and E-commerce	4	-	-	4	50	50	100	4	-
Minor Project	-	-	4	4	60	40	100	2	-
Web Programming Lab	-	-	4	4	60	40	100	2	-
Microprocessor and Interfacing					60	40	100		_
Lab	-	-	4	4 /				2	
Seminar	2	-	-	2	60	40	100	2	
Total	18	-	12	30	400	40	800	25	JA
Bachelor of Compute	er Ap	pli	cati	ons Seme	ester ·	- VI			
Title	L	T	P	Total	Int	Ext	Total	Credits	-
Artificial Intelligence	4		-	4	50.	50	100	4	-
Computer Graphics	4	-	-	4	50	50	100	4	
AI- Lab	-	-	4	4	60	40	100	2	1
Computer Graphics Lab	-	-	4	4	60	40	100	2	-
Major Project	-	-	8	8	.50	150	200	8	-
Seminar	2	-	-	2 1	60	40	100	2.	- 1
and the second			-	-	the second second		100	-	
	Title Software Engineering Microprocessor and Interfacing Web Programming ERP and E-commerce Minor Project Web Programming Lab Microprocessor and Interfacing Lab Seminar Total Bachelor of Compute Title Artificial Intelligence Computer Graphics AI- Lab Computer Graphics Lab Major Project	TitleLSoftware Engineering4Microprocessor and Interfacing4Web Programming4ERP and E-commerce4Minor Project-Web Programming Lab-Microprocessor and Interfacing-Lab-Seminar2Total18Bachelor of Computer Applies4Artificial Intelligence4AI- Lab-Computer Graphics4AI- Lab-Seminar2	TitleLTSoftware Engineering4-Microprocessor and Interfacing4-Web Programming4-ERP and E-commerce4-Minor ProjectWeb Programming LabMicroprocessor and InterfacingLabSeminar2-Total18-TitleLTArtificial Intelligence4-Computer Graphics4-AI- LabComputer Graphics LabMajor ProjectSeminar2-	TitleLTPSoftware Engineering4Microprocessor and Interfacing4Web Programming4ERP and E-commerce4Minor Project4Web Programming Lab4Microprocessor and Interfacing4Microprocessor and Interfacing4Seminar24Seminar212Bachelor of Computer Application4TitleLTPArtificial Intelligence4AI- Lab4Computer Graphics Lab4Major Project8Seminar28	TitleLTPTotalSoftware Engineering44Microprocessor and Interfacing44Web Programming44Web Programming44ERP and E-commerce44Minor Project44Web Programming Lab44Microprocessor and Interfacing44Microprocessor and Interfacing44Seminar2230Bachelor of Computer Applications Seme44Artificial Intelligence44Al- Lab444Computer Graphics Lab44Major Project88Seminar224	Title L T P Total Int Software Engineering 4 - - 4 50 Microprocessor and Interfacing 4 - - 4 50 Web Programming 4 - - 4 50 Web Programming 4 - - 4 50 ERP and E-commerce 4 - - 4 60 Minor Project - - 4 4 60 Web Programming Lab - - 4 4 60 Microprocessor and Interfacing - - 4 4 60 Lab - - 4 4 - - Seminar 2 - - 2 50 Total 18 - 12 30 400 Bachelor of Computer Applications - - 4 50 Title L T P Total Int Artificial Intelligence 4 - -	Title L T P Total Int Ext Software Engineering 4 - - 4 50 50 Microprocessor and Interfacing 4 - - 4 50 50 Web Programming 4 - - 4 50 50 Web Programming 4 - - 4 50 50 ERP and E-commerce 4 - - 4 60 40 Web Programming Lab - - 4 4 60 40 Web Programming Lab - - 4 4 60 40 Microprocessor and Interfacing - - 4 4 60 40 Lab - - 4 4 - - - 4 4 60 40 Lab - - 4 4 - - - - 4 40 40 Seminar 2 - - 2 50 50 50 <td>Title L T P Total Int Ext Total Software Engineering 4 - - 4 50 50 100 Microprocessor and Interfacing 4 - - 4 50 50 100 Web Programming 4 - - 4 50 50 100 ERP and E-commerce 4 - - 4 40 60 40 100 Minor Project - - 4 4 60 40 100 Web Programming Lab - - 4 4 60 40 100 Microprocessor and Interfacing Lab - - 4 4 60 40 100 Microprocessor and Interfacing Lab - - 4 4 60 40 100 Seminar 2 - - 2 50 400 809 Bachelor of Computer Applications Semester – VI - - 4 50 50 100 Computer G</td> <td>Title L T P Total Int Ext Total Credits Software Engineering 4 - - 4 50 50 100 4 Microprocessor and Interfacing 4 - - 4 50 50 100 4 Web Programming 4 - - 4 50 50 100 4 ERP and E_commerce 4 - - 4 60 40 100 2 Web Programming Lab - - 4 4 60 40 100 2 Web Programming Lab - - 4 4 60 40 100 2 Microprocessor and Interfacing - - 4 4 - 2 2 Seminar 2 - - 2 50 400 100 2 Seminar 2 - - 2 50 400 809 25 Bachelor of Computer Applications Applion 50 50</td>	Title L T P Total Int Ext Total Software Engineering 4 - - 4 50 50 100 Microprocessor and Interfacing 4 - - 4 50 50 100 Web Programming 4 - - 4 50 50 100 ERP and E-commerce 4 - - 4 40 60 40 100 Minor Project - - 4 4 60 40 100 Web Programming Lab - - 4 4 60 40 100 Microprocessor and Interfacing Lab - - 4 4 60 40 100 Microprocessor and Interfacing Lab - - 4 4 60 40 100 Seminar 2 - - 2 50 400 809 Bachelor of Computer Applications Semester – VI - - 4 50 50 100 Computer G	Title L T P Total Int Ext Total Credits Software Engineering 4 - - 4 50 50 100 4 Microprocessor and Interfacing 4 - - 4 50 50 100 4 Web Programming 4 - - 4 50 50 100 4 ERP and E_commerce 4 - - 4 60 40 100 2 Web Programming Lab - - 4 4 60 40 100 2 Web Programming Lab - - 4 4 60 40 100 2 Microprocessor and Interfacing - - 4 4 - 2 2 Seminar 2 - - 2 50 400 100 2 Seminar 2 - - 2 50 400 809 25 Bachelor of Computer Applications Applion 50 50

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BCA 1st Semester Computer Basics and PC Software

L	Т	Р	Cr
3	1	-	4

External Marks: 50 Internal Marks: 50

Time Duration: 3 Hrs.

Total Marks: 100

NOTE: Ten questions are to be set in all by the examiners by taking three questions from each unit and one compulsory question having 05 short answer type questions from all the units. Students will be required to attempt six questions in all including compulsory Question i.e. question No. 1 and by selecting not more than two questions from each unit.

OBJECTIVES

- To aware students about computer, its functions and utilities.
- To promote the development of computer-related skills for immediate application to other curricular areas;
- To provide a foundation for post-secondary education;
- To facilitate the development and application of problem-solving skills in students.

UNIT -1

Computer Basics: Algorithms, A Simple Model of a Computer, Characteristics of Computers, Problem-solving Using Computers, Computer Generation & Classifications, Input & Output Devices.

The Data Representation: Data Representation, Number Systems, Decimal Representation in Computers, Alphanumeric Representation, Data Representation for Computation, Error Detection and Correction Codes.

Computer Memory: Memory Organization, Read Only Memory, Random Access Memory, Hard Disk, Compact Disk, Magnetic Tape Drives, Flash Drive.

Processor: Structure of Instructions, Description of a Processor, Machine Language and Instruction set. Processors used in desktops and lap tops, Specifications of processor, motherboard & chipset, memory, interface & capacity of hard disk & DVD drives, I/O ports for desktop and laptops.

UNIT - 2

Operating Systems: History and Evolution, Functions of OS.

Software: Software and its Types, Programming Languages.

Communications and Internet: Introduction to Computer Communications, Computer Networks, Types of Networks, LAN, MAN and WAN, Client and Servers, Host & Terminals, TCP/IP, World Wide Web, Hypertext, Uniform Resource Locator, Web Browsers, IP Address, Domain Name, Internet Services Providers, Internet Security, Internet Requirements, Web Search Engine, Net Surfing, Internet Services, Intranet.

UNIT-3

MS Word: Menus & Commands; Toolbars & Buttons; Wizards & Templates; Page Views & layouts; Text Attributes; Paragraph & Page Formatting; Text Editing; Printing & various print options; Spell Check, Thesaurus, Find & Replace; Headers & Footers; Inserting – Page Numbers, Pictures, Files, Autotexts, Symbols; Columns, Tabs & Indents; Creation & Working with Tables; Margins & Space management; Mail Merge

MS Excel: Working with MS Excel; Workbook & Worksheets; Inserting, Removing & Resizing of Columns & Rows; Column Hiding, Splitting; Use of Formulas, Calculations & Functions; Cell Formatting including Borders & Shading; Different Chart Types; Printing of Workbook & Worksheets.

MS PowerPoint: Creating a New Presentation; Wizards; Slides & its different views; Inserting, Deleting and Copying of Slides; Handouts, Columns & Lists; Adding Graphics, Sounds and Movies to a Slide; Objects; Designing & Presentation of a Slide Show; Printing Presentations.

References :

- 1. P.K. Sinha, Fundamentals of Computers, BPB Publications
- 2. V. Rajaraman, Fundamentals of Computers, 3rd Edition, PHI Publications
- 3. Anita Goel, Computer Fundamentals, Pearson Education.
- 4. Computers Today, D. H. Sanders, Fourth Edition, McGraw Hill, 1988
- 5. Marmel, Elauue, MS Office Projects 2007, Wiley India

BCA 1st Semester COMPUTER HARDWARE & TROUBLE SHOOTING

L	Т	Р	Cr
3	-	-	3

External Marks: 50 Internal Marks: 50

Total Marks: 100

Time Duration: 3 Hrs.

NOTE: Ten questions are to be set in all by the examiners by taking three questions from each unit and one compulsory question having 05 short answer type questions from all the units. Students will be required to attempt six questions in all including compulsory Question i.e. question No. 1 and by selecting not more than two questions from each unit.

OBJECTIVES

It is mandatory to know about various components of computers, its maintenance and assembly. Troubleshooting of Computer system should know to BCA students. Installation of various OS and software is essential part of this course.

UNIT -1

Personal / Micro Computers : PC Main Parts: CPU Box, Monitor, & Peripherals [Keyboard, Mouse, Speaker] (A Brief introduction).Inside CPU Box: Motherboard, I/O Cards, Cables, Floppy Drivers, HDD, CD-Drive, SMPS (Brief introduction of each, with their function).

Mother Board: Study of Motherboard RAM, ROM, CMOS, POST, BUS, (Address, Data, and SYSTEM) Connections of various devices such as Display Adapter, Ports (Serial, Parallel, and USB) & Modem on the Mother Board. Importance of CPU Cooling, Motherboard Troubleshooting.

UNIT -- 2

Serial Devices: Key Board: Switches, Keyboard organization, Key board type, Wireless Keyboard Trouble shooting. Mouse: Mouse type- Scroll & Optical Mouse, Function Connecting Mouse, Troubleshooting Mouse. Ports, Modems

UNIT - 3

PC-Assembly and CMOS Setup and Troubleshooting: Types of PC'S (Desktop. Laptop. Palmtop. BIOS/ CMOS setting),Boot process and Power Supply, Observation of all parts of Floppy drives, HDD, CD, and SMPS. Identification of cables and computers. Mounting Motherboard in cabinet Installation of cards, devices and then connecting cables. Fitting of cabinet. CMOS – Setup Troubleshooting.

References :

- 1. Hardware bible By : Winn L Rosch, Techmedia Publications
- 2. Trouble shooting, maintaining and repairing PCs By :Stephon J Bigelow Tata McGraw Hill Publication
- 3. Modern all about printers By: Manohar Lotia, Pradeep Nair, Bijal Lotia BPB Publications.
- 4. The complete PC upgrade and maintenance guide By : Mark Minasi, BPB Publications.

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BCA 1st Semester BASIC MATHEMATICS

L T P Cr 3 1 - 4

Time Duration: 3 Hrs.

External Marks: 50 Internal Marks: 50

Total Marks: 100

NOTE: Ten questions are to be set in all by the examiners by taking three questions from each unit and one compulsory question having 05 short answer type questions from all the units. Students will be required to attempt six questions in all including compulsory Question i.e. question No. 1 and by selecting not more than two questions from each unit.

OBJECTIVES

- To extend student's mathematical maturity and ability to deal with abstraction and to introduce most of the basic terminologies used in computer science courses and application of ideas to solve practical problems.
- To develop logical and analytical skills of BCA students.

UNIT - 1

Set relations and functions: elements of set, methods of describing a set, types of set, Venn diagram, operations on sets, union, intersection and difference of set, Duality, partitioning of a set, trigonometric functions.

UNIT-2

Binomial theorem and principle of mathematics induction, Introduction to matrix, properties of matrix; evaluation of determinant, minor and cofactors and properties of determinant.

Statistics: introduction to statistics, collection, and tabulation of data, mean, median and mode.

UNIT-3

Linear Equations- Translating algebraic expressions, combining like terms solving linear equations: Addition property. Solving linear equations: Multiplication property, combining rules. Literal equations. Solving linear inequalities

Systems of Linear Equations - Systems of equations in two variables (addition/elimination).

Graphing Linear Equations - Linear equations in two variables. The Cartesian coordinate system. The graph of a linear equation, Slope Point-slope form of a line graphing linear inequalities.

References:

- 1. Refresher Course On Mathematics Vol: 2--- Manjit Singh
- 2. ABC Of Mathematics J.P Mahendru
- 3. Discrete Mathematical Structure with application to Computer Science, Tremblay J.P. and Manohar R, McGraw Hill.
- 4. Applied Discrete Structure of Computer Science, Doerr A & Kenneth L., Paperback Edition, Galgotia Publications

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BCA 1st Semester COMMUNICATION & SOFT SKILLS

L	Т	Р	Cr		
4	-	-	4		

External Marks: 50 Internal Marks: 50

Time Duration: 3 Hrs.

Total Marks: 100

NOTE: Ten questions are to be set in all by the examiners by taking three questions from each unit and one compulsory question having 05 short answer type questions from all the units. Students will be required to attempt six questions in all including compulsory Question i.e. question No. 1 and by selecting not more than two questions from each unit.

Objectives:

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- To encourage the all round development of students by focusing on Soft Skill.
- To make student aware about the importance, the role and the content of soft skill through instruction, knowledge acquisition, and practice.
- To develop and nurture the soft skills that help develop student as a team member, leader, and all round professional in long run have been identified and listed here for references.

UNIT-1

Business Communication: Meaning and definition, its importance, process, types, channels, principles of effective communication and barriers to communication. **Listening skill**: Difference between listening and hearing, barriers to listening, listening exercises

UNIT-2

Speaking skills: Just a minute, extempore speaking and Group Discussion Sessions. Reading & writing skills: Reading comprehension, Paragraph writing, Formal letter writing, Leave Application, Permission Letter, notice writing, memorandum writing, email etiquette and advertisement.

UNIT-3

Presentation skills: Preparation of presentation, strategies for effective presentation. Vocabulary Building: Technical words, antonyms, synonyms

Sentence Syntax: Active and Passive Voice, Narration, Transformation of sentences, sentence correction.

Reference Books

- 1. Communication Skill for Effective Mgmt., Ghanekar, EPH
- 2. English for Technical communication, Laxminarayanan, Scitech
- 3. Simon Sweeney, "English for Communication", CUP.
- 4. Leo Jones and Richard Alexander, "New International Business English", CUP.

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BCA 1st Semester

BUSINESS ORGANIZATION

L	Т	Р	Cr
4	-	-	4

Time Duration: 3 Hrs.

External Marks: 50 Internal Marks: 50

Total Marks: 100

NOTE: Ten questions are to be set in all by the examiners by taking three questions from each unit and one compulsory question having 05 short answer type questions from all the units. Students will be required to attempt six questions in all including compulsory Question i.e. question No. 1 and by selecting not more than two questions from each unit.

OBJECTIVE

Knowledge on the principles of management is essential for all kinds of people in all kinds of organizations. After studying this course, students will be able to have a clear understanding of the managerial functions like planning, organizing, staffing, leading and controlling. Students will also gain some basic knowledge on international aspect of management.

UNIT-1

Management: Nature and scope ,Planning: - Nature, Types, Steps in planning, the process of planning, setting of objectives, strategies policies and planning premises, the process of decision making.Organizing: nature, Process of organizing, departmentation, line and staff arrangement, organization structure and design, project and matrix organization, authority, decentralization, delegation, creating an effective span of management.

UNIT-2

Need, recruitment and selection techniques, types of interview co-ordination: Need and importance, types and techniques. Controlling: Control process, control techniques.

UNIT-3

Directing: - Conception, motivation, communication and leadership. Introduction of the following function Areas: Production: Production systems Production planning and control, work study HRD: Concept, different functions of HRD

Reference

- 1. Chabbra: Business Organization and Management
- 2. T.N.Prasad: Principles & Practice of Management
- 3. L.M.Arun Kumar & R. Sharma: Principles of Business Management
- 4. Koontz & O' Donnell: Essentials of Management
- 5. Stephen P. Robbins Management

BCA 1st Semester WORD PROCESSING LAB

External Marks: 40 Internal Marks: 60

Total Marks: 100

NOTE: The breakup of marks for the practical university examination will be as under

Lab record	10 marks
Viva Voce	10 marks
Execution of commands	20 marks

MS WORD

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T

- a. Adding text, editing text, finding and replacing text, formatting text, character/line/paragraph spacing, working with styles and text indentation.
- b. Saving document with and without password:

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- c. Working with page layout, page setup i.e. setting margins, changing page size, changing page orientation and applying page background.
- d. Printing a document.

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- e. Inserting page numbers, headers and footers, footnote, endnote, date and time, pictures, objects, shapes etc.
- f. Creating bulleted and numbered lists.
- g. Working with tables, paragraphs and columns.
- h. Reviewing (track changes, adding comments etc.) and proof reading a document i.e. spell check, grammar etc.
- i. Creating and working with table of content.
- j. Mail merge.

MS EXCEL

- a. Entering data, formatting data i.e. applying borders, various formats (currency formats, number formats etc.), fonts etc.
- b. Creating custom lists, using auto fill, find and replace and editing text (cut, copy, paste and paste special).
- c. Working with formulae and functions.
- d. Applying conditional formatting to data.
- e. Sorting and filtering data (auto and advanced filter).
- f. Performing Subtotals.
- g. What-if-analysis using goal seek, scenarios and solver.
- h. Pivot tables and data tables (one and two table input)
- i. Working with charts (2D and 3D).
- j. Adding comments, applying password protection to the workbook.
- k. Working with page layout and printing options.

MS POWERPOINT

- a) Creating and formatting slides in a presentation.
- b) Create a master slide with a logo, footer, and font.
- c) Add notes to each slide.
- d) Insert a graphic or picture.

Implement a background. e)

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- Place a text box in the title slide with your name. f)
- g) Insert transitions for each slide.
- h) Applying various effects (custom animation and transitional effects) in a presentation.
 i) Adjust text alignment in the title slide so it is centered.
- j) Printing the slides of a presentation

BCA 1st Semester PC ASSEMBLING AND TROUBLE SHOOTING LAB

L	Т	P	Cr
-	-	4	2

External Marks: 40 Internal Marks: 60

Total Marks: 100

NOTE: The breakup of marks for the practical university examination) will be as under

Lab record		10 marks
Viva Voce		10 marks
Execution		20 marks

PC Hardware

- 1. Identification of the peripherals of a computer.
 - 2. To prepare a report containing the block diagram of the CPU along with the configuration of each peripheral and its functions.
 - 3. Installation of MS windows and LINUX on a PC.
 - 4. Exposure to Basic commands and system administration in Linux including: Basic Linux commands in bash, Create hard and symbolic links.

Hardware Troubleshooting (Demonstration):

Students will be given a PC which is not bootable due to improper assembly or defective peripherals. Identification of a problem and fixing it for getting to working condition.

Software Troubleshooting (Demonstration): Students have to be given a malfunctioning CPU due to system software problems.

BCA 2nd Semester BASIC ACCOUNTING AND FINANCE

L	Т	Р	Cr	
4	-	-	4	
Tim	e Dura	tion: 3	Hrs.	

External Marks: 50 Internal Marks: 50 Total Marks: 100

NOTE: Ten questions are to be set in all by the examiners by taking three questions from each unit and one compulsory question having 05 short answer type questions from all the units. Students will be required to attempt six questions in all including compulsory Question i.e. question No. 1 and by selecting not more than two questions from each unit.

OBJECTIVES:

The financial aspect of business and management will be taught to student through this subject. This will benefit student in understanding and analyzing financial statements of a business. Student will learn Financial Accounting, Managerial Accounting and Cost Accounting.

UNIT-1

Accounting: Principles, concepts and conventions, double entry system of accounting, introduction to basic books of accounts of sole proprietary concern, closing of books of accounts and preparation of trial balance.

Final Accounts: Trading, Profit and Loss accounts and Balance sheet of sole proprietary concern (without adjustment)

UNIT-2

Financial Management: Meaning, scope and role, a brief study of functional areas of financial management. Introduction to various FM tools: Ration Analysis, Fund Flow statement and cash flow statement (without adjustments).

Costing: nature, importance and basic principles. Marginal costing: Nature scope and importance, Break even analysis, its uses and limitations, construction of break-even chart, Standard costing: Nature, scope and variances (only introduction)

UNIT-3

Computerized accounting: Meaning and advantages, Computer Programs for accounting, Balancing accounts, Trial balance and final accounts in computerized, Accounting, control, and Audit, Sub-Modules of computerized accounting systems

Reference Books

- 1. I.M.Pandey, Financial Management, Vikas Publications.
- 2. P.H.Barrett, Computerized Accounting, BPB Publications.
- 3. Jain and Narang, Cost Accounting.
- 4. Katyal, Cost Accounting.
- 5. J.C.Katyal, Principles A Book-Keeping.
- 6. Jain and Narang, Principles of Accounting.
- 7. Sharma, Gupta & Bhalla, Management Accounting.

BCA 2nd Semester COMPUTER ORGANIZATION

T P Cr - - 4 External Marks: 50 Internal Marks: 50

Time Duration: 3 Hrs.

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Total Marks: 100

NOTE: Ten questions are to be set in all by the examiners by taking three questions from each unit and one compulsory question having 05 short answer type questions from all the units. Students will be required to attempt six questions in all including compulsory Question i.e. question No. 1 and by selecting not more than two questions from each unit. **OBJECTIVES:**

- To understand different methods used for the simplification of Boolean functions
- To design and implement combinational circuits
- To design and implement synchronous/ asynchronous sequential circuits

UNIT-1: Introduction to Digital Circuits

Combinational Circuits : Logic Gates and Circuits, , Canonical and Standard Forms, Minimization of Gates, Design of Combinational Circuits, Examples of Logic Combinational Circuits, Adders, Decoders/Encoder, Multiplexer / De-Multiplexer.

Sequential Circuits: Flip Flops, Basic Flip-Flops, Excitation Tables, Master Slave Flip Flops, Edge Triggered Flip-flops, Sequential Circuit Design, Examples of Sequential Circuits, Registers, Counters – Asynchronous Counters, Synchronous Counters, RAM, Design of a Sample Counter.

UNIT-2: Basic Computer Organisation

The Memory System : The Memory Hierarchy, RAM, ROM, Flash Memory, Secondary Memory and Characteristics, Hard Disk Drives, Optical Memories, CCDs, Bubble Memories, RAID and its Levels, The Concepts of High Speed Memories, Cache Memory, Cache Organisation, Memory Interleaving, Associative Memory, Virtual Memory, Input / Output Devices or External or Peripheral Devices,

The Central Processing Unit: Instruction Set Architecture Instruction Set Characteristics, Instruction Set Design Considerations, Operand Data Types, Types of Instructions, Number of Addresses in an Instruction, Addressing Modes, Stack organisation and Addressing, Instruction Set and Format Design Issues.

Unit -3: Registers and Instruction Execution

Register Organization: Basic CPU Structure, Register Organization, Programmer Visible Registers, Status and Control Registers, General Registers in a Processor.

ALU Organisation: ALU Organisation, A Simple ALU Organization, A Sample ALU Design, Arithmetic Processors.

The Control Unit: The Control Unit, The Hardwired Control, The Micro-Programmed Control, The Micro-Instructions, Types of Micro-Instructions, Control Memory Organisation, Micro-Instruction Formats, The Execution of Micro-Program, RISC and CISC and its characteristics.

Reference Books

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- 1. Modern Digital Electronics- R. P. Jain, Tata McGraw Hill Pub. Company
- 2. Digital Principles and Applications, A.P. Malvino, McGraw Hill International Editions.
- 3. Computer System Architecture, M.M. Mano, Third Edition, PHI
- 4. Computer Organization and Architecture, J.P. Hayes, Third Edition, TMH
- 5. Computer Organization and Architecture, Stallings, Eighth Edition, PHI

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BCA 2nd Semester COMMUNICATION AND SOFT SKILLS- II

L T P Cr 4 - - 4

External Marks: 50 Internal Marks: 50

Time Duration: 3 Hrs.

Total Marks: 100

NOTE: Ten questions are to be set in all by the examiners by taking three questions from each unit and one compulsory question having 05 short answer type questions from all the units. Students will be required to attempt six questions in all including compulsory Question i.e. question No. 1 and by selecting not more than two questions from each unit.

Objectives:

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- To develop various Communication Skills by using telephone technique, Group Technique, Interviews etc.
- To develop Business Presentation skills.

UNIT-1

The Process of Communication : Introduction of Communication. Types of Communication, Written vs. Oral Communication, Different Types of Face-to-Face Interactions, Characteristics and Conventions of Conversation.

Telephone Techniques, Job Applications and Preparing for Interviews, Preparing for Group Discussions

UNIT-2

Managing Organisational Structure : Warm Up:Ability to Influence and Lead, Reading: The Role of a Manager, Vocabulary: Leadership, Speaking and Listening, Language Focus: Degree of Probability, Grammar: Modals, Writing: Reports, Pronunciation.

Meetings : Reading: A Successful Meeting, Speaking: One to One Meetings, Language Focus: Opening, Middle and Close, Study Skills: Editing, Listening: Criteria for Successful Meetings, Vocabulary, Grammar: Reporting Verbs, Writing: Memos, Taking Notes and Preparing Minutes

UNIT-3

Presentation Skills : Reading: Presentation Skills, Grammar: Verbs often required in Presentations, Language Focus, Listening: Importance of Body Language in Presentations, Speaking: Preparing an Outline of a Presentation, Pronunciation.

Reading: Structure of Presentation, Study Skills: Visual Aids, Ending the Presentation. Language Focus: Talking about Increase and Decrease, Grammar: Prepositions,

Listening: Podium Panic, Speaking, Pronunciation: Emphasizing the Important Words in Context.

Negotiation Skills : Language Focus: Idiomatic Expressions, Study Skills: Process of Negotiations, Grammar: Phrasal Verbs, Listening: Effective Negotiations, Speaking, Writing.

Reference Books

1. People Skills For Business: Essential Tools to Improve Your Communication Skills and Relationships at Work. Kindle Edition, Melissa Contreras

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- 2. Communication Skills for Engineers and Scientists by Sharma Sangeeta, Mishra Binod, PHI
- 3. Simon Sweeney, "English for Communication", CUP.

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BCA 2nd Semester Discrete Mathematics

L T P Cr 4 - - 4

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External Marks: 50 Internal Marks: 50

Total Marks: 100

Time Duration: 3 Hrs.

NOTE: Ten questions are to be set in all by the examiners by taking three questions from each unit and one compulsory question having 05 short answer type questions from all the units. Students will be required to attempt six questions in all including compulsory Question i.e. question No. 1 and by selecting not more than two questions from each unit. **OBJECTIVE**

To extend student's mathematical maturity and ability to deal with abstraction and to introduce most of the basic terminologies used in computer science courses and application of ideas to solve practical problems.

UNIT-1

Relations and Functions: basic definitions of relations and functions, graphics of relations, properties of relations; injective, surjective and bijective functions, composition...

UNIT-2

Recursion and recurrence: The many faces of recursion, recurrence, relations, and some common recurrence relations, generating functions.

UNIT-3

Combinations: Rule of products, permutations, combinations.

Algebra of Logic: Propositions and logic operations, truth tables and propositions generated by set, equivalence and implication laws of logic, mathematical system, and propositions over a universe, mathematical induction.

References

- 1. Discrete Mathematical Structure with application to Computer Science, Tremblay J.P. and Manohar R, McGraw Hill.
- 2. Applied Discrete Structure of Computer Science, Doerr A & Kenneth L., Paperback Edition, Galgotia Publications
- 3. Elements of Discrete Mathematics, C.L Liu, McGraw Hill, New Delhi.
- 4. Discrete Mathematical Structures, B. Kolman and R.C. Busby, PHI, New Delhi.

BCA 2nd Semester PROGRAMMING IN C

L T P Cr 4 - - 4

External Marks: 50 Internal Marks: 50

Time Duration: 3 Hrs.

Total Marks: 100

NOTE: Ten questions are to be set in all by the examiners by taking three questions from each unit and one compulsory question having 05 short answer type questions from all the units. Students will be required to attempt six questions in all including compulsory Question i.e. question No. 1 and by selecting not more than two questions from each unit.

OBJECTIVES

- To Know the Basics of programming
- To understand how to use programming in day to day Applications.

UNIT-1

Introduction to 'C' Language & Fundamentals: Character set, C Tokens, Keywords, Identifiers, Variables, Constant, Data Types, and Comments.

Build in Operators and function: Console based I/O and related built in I/O function: printf(), scanf(), getch(), getchar(), putchar(); Concept of header files.

Operators: Types of operators, Precedence and Associativity, Expression, Statement and types of statements

Control structures: Decision making structures: If, If-else, Nested If-else, Switch.

UNIT-2

Loop Control structures: While, Do- while, for, Nested for loop; other statements: break, continue, goto, exit.

Functions: Introduction to Functions, Function Declaration, Function Categories, Standard Functions, Parameters and Parameter Passing

Call by value, Call by reference, Recursion, Global and Local Variables, Storage classes.

UNIT-3

Arrays: One Dimensional Arrays, Two Dimensional Arrays, Operations with Arrays, structures, union, string.

Pointers: Declaration, operations on pointers, array of pointers, pointers to arrays. Structure & Union, File Handling.

Reference Books

- 1. Introduction to Computers, Peter Norton- Tata MGHill
- 2. Structured programming approach using C, Forouzah & Ceilber, Thomson learning Publication.

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3. Let us C-Yashwant Kanetkar, BPB Publications

BCA 2nd Semester COMPUTER ORGANIZATION LAB

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External Marks: 40 Internal Marks: 60 Total Marks: 100

Note: The breakup of marks for the practical university examination will be as under:

Lab record	10 marks
Viva Voce	10 marks
Execution of commands	20 marks

List if Experiments (Not limiting to)

- 1. Study of Logic Gates: Truth-table verification of OR, AND, NOT, XOR, NAND and NOR gates; Realization of OR, AND, NOT and XOR functions using universal gates.
- 2. Half Adder / Full Adder: Realization using basic and XOR gates.
- 3. Half Subtractor / Full Subtractor: Realization using NAND gates.
- 4. 4-Bit Binary-to-Gray & Gray-to-Binary Code Converter: Realization using XOR gates.
- 5. 4-Bit and 8-Bit Comparator: Implementation using IC7485 magnitude comparator chips
- 6. Multiplexer: Truth-table verification and realization of Half adder and Full adder using IC74153 chip.
- 7. Demultiplexer: Truth-table verification and realization of Half subtractor and Full subtractor using IC74139 chip.
- 8. Flip Flops: Truth-table verification of JK Master Slave FF, T-type and D-type FF using IC7476 chip.
- 9. Asynchronous Counter: Realization of 4-bit up counter and Mod-N counter using IC7490 & IC7493 chip.
- 10. Synchronous Counter: Realization of 4-bit up/down counter and Mod-N counter using IC74192 & IC74193 chip.
- 11. Shift Register: Study of shift right, SIPO, SISO, PIPO, PISO & Shift left operations using IC7495 chip.

Implementation all experiments with be with the help of Bread-Board.

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BCA 2nd Semester Programming In 'C' LAB

External Marks: 40 Internal Marks: 60

Total Marks: 100

Note: The breakup of marks for the practical university examination will be as under:

Lab record		10 marks
Viva Voce		10 marks
Execution of commands		20 marks

List if Experiments (Not limiting to)

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[1] Write a program sum of two numbers

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- [2] Write a program to check either the number is even or odd
- [3] Write a program calculate simple interest.
- [4] Write a program to calculate the marks of four subject and percentage.
- [5] Write a program to check either the year is leap year or not.
- [6] Write a program to find out the grade using if/else if statement.
- [7] Write a program to find out the greater number between two number.
- [8] WAP to read base and height of a triangle, calculate the area using formula : Area =1/2*base*height
- [9] WAP to read marks obtained and maximum marks of a student and calculate its percentage and display it.
- [10] Write a program to print even number up to n.
- [11] Write a program to print odd number up to n.
- [12] Write a program to print table.
- [13] Write a program using while to print the sum of any numbers.
- [14] Write a program to find the sum of first 100 +ve integers.
- [15] Write a program to find the sum of even or odd number from 100+ve integers.
- [16] Write a program to find whether the given number is prime or not.
- [17] Write a program to print first N prime numbers.
- [18] Write a program to check whether the given number is an Armstrong number.
- [19] Write a program whether the character is a vowel or not by using switch statement
- [20] WAP to divide a number with 2 using bitwise operator
- [21] WAP to read a number between 1 to 7 and print day of the week using switch statement.
- [22] WAP to read marks of a student in three subjects and calculate its percentage and division acc to conditions:
 - Per>=60 implies division=First
 - 50<=per<60 implies division=Second
 - 40<=per<50 implies division=Third
 - Per<40 implies result =fail
- [23] WAP to generate a series of prime numbers between 2 to n.

[24] WAP to print

1
22
333
4444
55555
4444
333
22
1 .

[25] WAP to find roots of a quadratic equation.

[26] WAP to find sum of Fibonacci series upto n.

[27] WAP to reverse the elements of an array.

[28] WAP to add two matrices

[29] WAP to multiply two matrices.

[30] WAP to enter a string and check if it is palindrome or not.

[31] WAP to find a substring in a given string S.

Note: Each program should be fully documented with Input Output data and Flow charts need to be developed.
BCA 2nd Semester COLLOQUIUM

L T P Cr 2 1

Time Duration: 3 Hrs.

NOTE: Is related to seminar, extempore which is in curriculum

External Marks: --**Internal Marks: 50**

Total Marks: 50

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BCA 3rd Semester

Data Structure using C

L T P Cr 4 - - 4 External Marks: 50 Internal Marks: 50

Time Duration: 3 Hrs.

Total Marks: 100

NOTE: Ten questions are to be set in all by the examiners by taking three questions from each unit and one compulsory question having 05 short answer type questions from all the units. Students will be required to attempt six questions in all including compulsory Question i.e. question No. 1 and by selecting not more than two questions from each unit.

Objectives:

- To learn the systematic way of solving problem.
- To understand the different methods of organizing large amounts of data.
- To efficiently implement the different data structures.
- To efficiently implement solutions for specific problems.

UNIT-1

An introduction to various types of data structures, various operations associated with each data structure, Implementation of Data Structures. Basic concepts and notations, mathematical notation and functions, algorithmic complexity and time space trade off. Arrays: Types of arrays, Operations on Arrays Creation, Insertion, Deletion,

UNIT-2

Recursion: Introduction, Direct and Indirect Recursion, Tail Recursion, Efficiency of Recursion. Link List: Representation of linked list, Link list operations, Circular Linked List, Multi linked structures, Memory Representation: Fixed Block Storage and Variable Block Storage, Applications of Linked List

Stack: Memory Representation of Stacks via arrays and Linked List, Operations on Stack: Push, pop, Application of stack: Infix to postfix and prefix forms for expressions, Evaluation of postfix expressions, Tower of Hanoi Problem, Code Generation for Stack Machines.

UNIT-3

Queue: Representation using array and linked List, Operations on Queue, Insertion, deletion, Types of queues, Applications: Simulation etc.

Trees: Definitions and basic concepts, linked tree representation, representations in contiguous storage, binary trees and its types, Physical Implementation of Binary Tree in Graph:Representation of Graphs, Traversals in Graphs, Applications of Graphs – Shortest Path Problem, Minimum Spanning Trees

References:

- Seymour Lischutz, Data Structures, McGraw-Hill Book Company, Schaum's Outline Series, New York.
- 2. Trembley, J.P. and Sorenson P.G. An Introduction to Data Structures with Applications, McGraw-Hill International Student Edition, New York.
- 3. Yedidyah Langsam, Moshe J Augernstein and Aarson M.Tanenbaum, Data Structures using C and C ++, PHI, New Delhi.

BCA 3rd Semester Database Management Systems

T P Cr - - 4 External Marks: 50 Internal Marks: 50

Time Duration: 3 Hrs.

Total Marks: 100

NOTE: Ten questions are to be set in all by the examiners by taking three questions from each unit and one compulsory question having 05 short answer type questions from all the units. Students will be required to attempt six questions in all including compulsory Question i.e. question No. 1 and by selecting not more than two questions from each unit.

Objectives

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- To learn the fundamentals of data models and to conceptualize and depict a database system using ER diagram
- To make a study of SQL and relational database
- To know the fundamental concepts of transaction processing- concurrency control techniques and recovery procedure.

UNIT-1

Introduction: Overview of Database Management System: Various views of data Models, Schemes and Introduction to database Languages & Environments, Advantages of DBMS over file processing systems, Responsibility of Database Administrator. Three level architecture of Database Systems: Introduction to client/Server architecture. Data Models: E-R Diagram (Entity Relationship), mapping Constraints, keys, Reduction of E-R diagram into tables.

UNIT-2

Network & Hierarchical Models, File Organization: Sequential File, index sequential files, direct files, Hashing, B-trees Index files, Inverted Lists., Relational Models, Relational Algebra & various operations (set operations, select, project, join, division), Order, Relational calculus: Domain, Tuple, Well Formed Formula, specification, quantifiers, Introduction to Query Language, QBE

UNIT-3

Integrity constrains, functional dependencies & Normalization, 1st, 2nd, 3rd and BCNF. Introduction to Distributed Data processing, Concurrency control: Transactions, Time stamping, Lock-based Protocols, Serializability and Recovery Techniques.

Reference Books:

- 1. Fundamentals of Database Systems by R.Elmasri and S.B.Navathe, 3rd Edition, Pearson Education, New Delhi.
- 2. An Introduction to Database Systems by C.J. Date, 7th Edition, Pearson Education, New Delhi.
- 3. A Guide to the SQL Standard, Data, C. and Darwen, H.3rd Edition, Reading, Addison-Wesley Publications, New Delhi.
- 4. Introduction to Database Management system by Bipin Desai, Galgotia Pub, New Delhi.



- Database System Concepts by A. Silberschatz, H.F.Korth and S.Sudarshan, 3rd Edition, McGraw-Hill, International Edition.
- 6. SQL / PL/SQL, by Ivan Bayross, BPB Publications.

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BCA 3rd Semester Programming in C++

L T P Cr 4 - - 4 External Marks: 50 Internal Marks: 50

Total Marks: 100

Time Duration: 3 Hrs.

NOTE: Ten questions are to be set in all by the examiners by taking three questions from each unit and one compulsory question having 05 short answer type questions from all the units. Students will be required to attempt six questions in all including compulsory Question i.e. question No. 1 and by selecting not more than two questions from each unit.

Objectives:

- To Know the Basics Of Programming
- To Understand how to use programming in day to day Applications.

UNIT-1

Introduction: Object oriented programming, characteristics of object orientated languages, classes, C++ basics: Program Statements, Variables and constants, Loops and Decisions.

UNIT-2

Functions: Defining a function, function arguments & passing by value, arrays & pointers, function & strings, functions & structures.

Classes & Objects: Defining class, class constructors and destructors, operator overloading.

UNIT-3

Class Inheritance: Derived class & base class; Virtual, Friends and Static functions; Multiple inheritance, Polymorphism.

Input/output files: Streams, buffers & iostreams, header files, redirection, file input and output

Reference books:

- Object Oriented Programming with C++ by E Balagurusamy, 2001, Tata McGraw-Hill, New Delhi.
- Object Oriented Programming in Turbo C+ + by Robert Lafore, Pearson Education, New Delhi.
- The Complete Reference in C++ by Herbert Schildt, 2002, TMH, New Delhi.
- Object Oriented Programming Using C++ by Kamthane, Pearson Education, New Delhi.
- C + + How to Program by H M Deitel and P J Deitel, 1998, Prentice Hall, India, New Delhi.



BCA 3rd Semester SYSTEM ANALYSIS AND DESIGN

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External Marks: 50 Internal Marks: 50

Time Duration: 3 Hrs.

Total Marks: 100

NOTE: Ten questions are to be set in all by the examiners by taking three questions from each unit and one compulsory question having 05 short answer type questions from all the units. Students will be required to attempt six questions in all including compulsory Question i.e. question No. 1 and by selecting not more than two questions from each unit.

Objectives:

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The objective of this course is to teach the student about the area of systems analysis and design and to develop abilities in this area. At the completion of this course, the following objectives should have been accomplished:

The student will have prepared a portfolio of their work that can be used in job searches.

- The student should understand how an analyst does a preliminary and detailed analysis
- The student should understand how an analyst does a systems design The decision should be able to make and use decision tables and other logical tools

UNIT-1

System Concepts: Definition, characteristics, elements & types of system.

System development life cycle: Recognition of need: Feasibility study, system analysisintroduction, information collection, interviews, questionnaires, observation, record searching and document analysis

UNIT-2

Analysis tools, data flow diagram, data dictionary, decision tree, structured English and decision table.

System Design: The process and stages of systems design, input/output and file design

UNIT-3

System Implementation: System implementation, system testing:Black box, White Box, Alpha, Beta Testing, Unit Testing and System Testing, implementation process and implementation methods: Parallel Run, Phased Adoption; system maintenance: Corrective maintenance, Adaptive maintenance and Perfective maintenance.

Reference Books

- Awad Elias N., System analysis and design (Galgotia)
- Sen James A., Analysis and design of information system (Tata McGraw)
- Burd, Stephen. D System architeure (PHI)
- Shelly Garry, B Rosan Belt System analysis and Design-9th(Tata McGraw)

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BCA 3rd Semester Programming in C++ Lab

L T P Cr - - 4 2

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External Marks: 40 Internal Marks: 60

Time Duration: 3 Hrs.

Total Marks: 100

NOTE: The breakup of marks for the practical will be as under

Lab Record Viva Voce Program development And execution. 10 marks 10 marks 20 marks

- ➤ Write a program to display "Hello World" in 'C++' language
- Implementation of input and output statements
- Implementation of control statements.
- Implementation of functions.
- > Implementation of single dimension, two dimension and three dimension array
- Write a C++ program that uses a recursive function for solving Towers of Hanoi problem.
- Write a C++ program to implement the matrix ADT using a class. The operations supported by this ADT are:
 - a) Reading a matrix.
 - b) Addition of matrices.
 - c) Printing a matrix.
 - d) Subtraction of matrices.
 - e) Multiplication of matrices.
- Write a C++ program that overloads the + operator and relational operators (suitable)to perform the following operations:
 - a) Concatenation of two strings.
 - b) Comparison of two strings.
- Write C++ programs that illustrate how the following forms of inheritance are supported:
 - a) Single inheritance
 - b) Multiple inheritance
 - c) Multi inheritance
 - d) Hierarchical inheritance
- Write a C++ program that illustrates the order of execution of constructors and destructors when new class is derived from more than one base class.
- Write a C++ program that illustrates how run time polymorphism is achieved using virtual functions.
- Write a C++ program that illustrates the role of virtual base class in building class hierarchy.
- Write a C++ program that illustrates the role of abstract class in building class hierarchy.

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- Write a C++ program that uses functions: a)To create a singly linked list of elements
 - b)To display the elements of the above list.
 - Note: Use the following in solving the above problems wherever they make sense: a) Constructors and destructors.
 - b) Overloaded functions.
 - c) Overloaded operator.

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- d) Function and class templates. e) Exception handling mechanism.
- ▶ Write a C++ program to display the contents of a text file.
- Write a C++ program which copies one file to another.
- > Write a C++ program to that counts the characters, lines and words in the text file.
- Write a C++ program to change a specific character in a file. Note: Filename, number of the byte in the file to be changed and the new character are specified on the command line.
- Write a C++ program to reverse the first n characters in a file.

BCA 3rd Semester Data Structure using C Lab

L T P Cr - - 4 2

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External Marks: 40 Internal Marks: 60 Total Marks: 100

NOTE: The breakup of marks for the practical will be as under

Lab Record Viva Voce Program development And execution. 10 marks 10 marks 20 marks

List of the Programs not limiting to:

- 1) Revision of programs of Data Structures from pervious semester: Insertion Sort, Bubble Sort, Selection Sort, Linear Search, Binary Search
- 2) Write a Program to Implement a Linked List
- 3) Write a Program to Implement a Doubly Linked List
- 4) Write a Program to Implement a Stack Dynamically
- 5) Write a Program to Implement a Queue dynamically
- 6) Write a Program to Implement a Circular Linked List
- 7) Write a Program to Implement Binary Search Tree
- 8) Write a Program to Implement Inorder
- 9) Write a Program to implement Postorder
- 10) Write a Program to implement Pretorder
- 11) Write a Program to implement Heapsort
- 12) Write a program to implement Breadth First search
- 13) Write a program to implement Depth First search
- 14) Write a Program to implement Dijkstra's Algorithm
- 15) Write a Program to Implement Bubble Sort using Recursion
- 16) Write a Program to Implement Insertion Sort using Recursion
- 17) Write a Program to Implement Selection Sort using Recursion
- 18) Write a Program to Implement Linear Search using Recursion
- 19) Write a Program to Implement Linear Search using Recursion

BCA 3rd Semester Database Management Systems Lab

T P Cr - 4 2

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External Marks: 40 Internal Marks: 60

Total Marks: 100

NOTE: The breakup of marks for the practical will be as under

Lab Record	10 marks
Viva Voce	10 marks
Program development	20 marks
And execution	

List of the Programs not limiting to:

> Creating Database

- Creating a Database
- > Creating a Table
- Specifying Relational Data Types
- Specifying Constraints
- Creating Indexes

> Table and Record Handling

- > INSERT statement
- Using SELECT and INSERT together
- DELETE, UPDATE, TRUNCATE statements
- > DROP, ALTER statements

> Retrieving Data from a Database

- The SELECT statement
- Using the WHERE clause
- Using Logical Operators in the WHERE clause
- ▶ Using IN, BETWEEN, LIKE, ORDER BY, GROUP BY and HAVING
- > Clause
 - Using Aggregate Functions
 - Combining Tables Using JOINS
 - > sub- queries

> Database Management

- Creating Views
- Creating Column Aliases
- Creating Database Users
- Using GRANT and REVOKE

BCA3rd Semester COLLOQUIUM

P 2 L Т Cr 1

Time Duration: 3 Hrs.

External Marks: --Internal Marks: 50

Total Marks: 50

NOTE: Is related to seminar, extempore which is in curriculum



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BCA 4th Semester Fundamentals of Computer Network

L T P Cr 4 - - 4

External Marks: 50 Internal Marks: 50

Time Duration: 3 Hrs.

Total Marks: 100

NOTE: Ten questions are to be set in all by the examiners by taking three questions from each unit and one compulsory question having 05 short answer type questions from all the units. Students will be required to attempt six questions in all including compulsory Question i.e. question No. 1 and by selecting not more than two questions from each unit.

Objectives ~

- To Know the Basics Structure Networks
- · To Understand various phases Data Transfer.

UNIT-1

Data communications concepts: Digital and analog parallel and serial synchronous and asynchronous, simplex, half duplex, full duplex, multiplexing.

Communication channels: Wired transmissions: Telephone lines, leased lines, switch line, coaxial cables-base band, broadband, optical fiber transmission.

UNIT-2

Wireless transmission: Microwave transmission, infrared transmission, laser transmission, radio transmission, and satellite transmission. Communication switching techniques; Circuit switching, message switching, packet switching

Network reference models: Network topologies, OSI references model, TCP/IP reference model, comparison of OSI and TCI reference model.

UNIT-3

Data link layer design issue: Services provided to the network layer, framing, error control, flow control HDLC, SDLC, data link layer in the internet (SLIP, PPP). **The Network Layer:** Design Issues, Routing Algorithms: Optimality principled, shortest path routing. Concept of Internet Working.

References

- Data Communication & Networking, Frozen Tata McGraw Hill Publications, New Delhi.
- Computer Networks, Tannan Baun, Andrew (PHI)
- Data & Computer Communications, Stallings PHI, New Delhi.

BCA 4th Semester Operating System

L T P Cr 4 - - 4 External Marks: 50 Internal Marks: 50

Time Duration: 3 Hrs.

Total Marks: 100

NOTE: Ten questions are to be set in all by the examiners by taking three questions from each unit and one compulsory question having 05 short answer type questions from all the units. Students will be required to attempt six questions in all including compulsory Question i.e. question No. 1 and by selecting not more than two questions from each unit.

OBJECTIVES:

To understand the basic concepts and use of Operating system and it's working with architecture.

UNIT-1

Introduction to operating system, its need and operating system services; operating system classification – single user, multi user, simple batch processing, Multiprogramming, Multitasking, parallel Systems, Distributed system, Real time system **Process Management**: Process concept, Process scheduling, threads, overview of Inter process communication, CPU scheduling: Basic concepts, Scheduling Criteria, Scheduling algorithms.

UNIT-2

Memory management: Logical versus Physical address space, Swapping, Partition, Paging and segmentation.

Virtual memory: Demand paging, Page replacement algorithms, Allocation algorithms, Thrashing.

File Management: File concept, access methods, and Directory structure – single level, two lever, tree structures, acrylic graph and general graph directory, file protection. Allocation methods: Contiguous, linked and index allocation, free space management.

UNIT-3

Device management: Disk structure, disk scheduling, FCFS scheduling, SSTF scheduling, SCAN scheduling, C-SCAN scheduling, Selecting Disk Scheduling Algorithms

Deadlock: Deadlock characteristics, Prevention, Avoidance, Detection and Recovery, critical section, synchronization hardware, semaphores, combined approach to deadlock handling

Reference Books

- Operating System Concepts by Peterson, J.L. & Silberschatz, A. Addison Wesley, New Delhi.
- Operating System Principles by Brinch, Hansen, PHI, New Delhi.
- Operating System by Tanenbaum, A.S., PHI, New Delhi.
- Operating System by Stalling Willams, PHI, Delhi.

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BCA 4th Semester PROGRAMMING IN JAVA

L T P Cr

External Marks: 50 Internal Marks: 50

Time Duration: 3 Hrs.

Total Marks: 100

NOTE: Ten questions are to be set in all by the examiners by taking three questions from each unit and one compulsory question having 05 short answer type questions from all the units. Students will be required to attempt six questions in all including compulsory Question i.e. question No. 1 and by selecting not more than two questions from each unit.

Objectives:

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- Object oriented technology is successfully incorporated in various fields of computer science. Since its arrival on the scene, Java has been accepted as one of the primary programming language.
- This course is designed to give you exposure to basic concepts of object-oriented technology. This course will help in learning to write programs in Java using object-oriented paradigm.

UNIT-1

Object Oriented Methodology : Classes and Objects, Abstraction and Encapsulation, Inheritance, Method Overriding and Polymorphism.

Java Language Basics : Introduction To Java, Basic Features, Java Virtual Machine Concepts, A Simple Java Program, Primitive Data Type And Variables, Java Keywords, Integer and Floating Point Data Type, Character and Boolean Types, Declaring and Initialization Variables, Java Operators.

Expressions, Statements and Arrays

Expressions, Statements, Control Statements, Selection Statements, Iterative Statements, Jump Statements, Arrays.

UNIT-2

Class and Objects : Class Fundamentals, Creating objects, Assigning object reference variables, Introducing Methods, Static methods, Constructors, Overloading constructors, This Keyword, Using Objects as Parameters, Argument passing, Returning objects, Method Overloading, Garbage Collection, The Finalize () Method.

Inheritance and Polymorphism, Packages and Interfaces, Exceptions Handling, Multithreading, I/O and String Handling, I/O in Java

UNIT-3

Applets, Graphics and User Interfaces, Socket Overview, Reserved Parts and Proxy Servers, Internet Addressing: Domain Naming Services (DNS), JAVA and the net: URL, TCP/IP Sockets, Datagrams.

Advance Java : Java Database Connectivity, Establishing A Connection, Transactions with Database, An Overview of RMIApplications, Remote Classes and Interfaces, RMIArchitecture, RMI Object Hierarchy, Security.

Reference Books

- JAVA: The Ultimate Beginner's Guide! by Andrew Johansen
- Patrick Naughton and Herbertz Schildt, "Java-2 The Complete Reference" 199, TMH.
- Shelley Powers, "Dynamic Web Publishing" 2nd Ed. Techmedia, 1998.
- Ivor Horton, "Beginning Java-2" SPD Publication

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- Jason Hunter, "Java Servlet Programming" O'Reilly
- Shelley Powers, "Dynamic Web Publishing" 2nd Ed. Techmedia, 1998 rd
- Hans Bergsten, "Java Server Pages", 3 Ed. O'reilly.

BCA 4th Semester INTRODUCTION TO ALGORITHM DESIGN

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External Marks: 50 Internal Marks: 50

Time Duration: 3 Hrs.

Total Marks: 100

NOTE: Ten questions are to be set in all by the examiners by taking three questions from each unit and one compulsory question having 05 short answer type questions from all the units. Students will be required to attempt six questions in all including compulsory Question i.e. question No. 1 and by selecting not more than two questions from each unit.

Objectives:

To learn about properties of algorithm and how to design an algorithm, discuss asymptotic notations, Design and measure time complexity analysis of searching, sorting and Graph traversal algorithms. Make comparison of different type of algorithm likes Linear, Quadratic, Polynomial and Exponential, Describe how greedy approach facilitate solving the problem. Discuss Divide and Conquer approach for solving the problem.

UNIT-1

Basics of an Algorithm : Definition and Example of an algorithm, Characteristics of an algorithm, Steps in Designing of Algorithms, Growth of function, Recurrence, Problem Formulation (Tower of Hanoi), Substitution Method, Iteration Method, Master Method. Asymptotic Bounds : Asymptotic Notations, Concept of efficiency of analysis of an algorithm Comparative efficiencies of algorithms: Linear, Quadratic, Polynomial and Exponential.

UNIT-2

Searching and Sorting : Euclid's algorithm for GCD, Horner's Rule for polynomial evaluation, Simple Matrix (n x n) Multiplication, Exponent evaluation e.g. an Searching, Linear Search, Sorting, Bubble sort, Insertion Sort, Selection sort.

Greedy Technique : Elements of Greedy strategy, Activity Selection Problem, Continuous Knapsack Problem, Coin changing Problem, More Examples.

UNIT-3

Divide and Conquer Approach : General Issues in Divide and Conquer, Binary Search, Merge Sort, Quick Sort, Integer Multiplication, More Examples.

Graph Algorithm : Representation of Graphs, Adjacency Matrix, Adjacency List, Depth First Search and Examples, Breadth First Search and Examples.

Reference Books

- Introduction to the Design and Analysis of Algorithms (2nd Edition) by Anany Levitin.
- Fundamentals of Computer Algorithms. 2nd Edition, E. Horowitz, S. Sahni, and S.Rajsekran, University Press, Hyderabad.
- Introduction of Computer Algorithm, T. H Cormen, Leiserson, Rivest and Stein, PHI, New Delhi.

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BCA 4th Semester **JAVA Lab**

Cr L T P 4 2

External Marks: 40 Internal Marks: 60

Time Duration: 3 Hrs.

Total Marks: 100

NOTE: The breakup of marks for the practical will be as under

Lab Record 10 marks 10 marks Viva Voce Program development 20 marks and execution.

Programs using constructor and destructor. 1.

Creation of classes and use of different types of functions. 2.

3. Count the number of objects created for a class using static member function.

4. Write programs on interfaces.

5. Write programs on packages.

Write programs using function overloading. 6.

7: Programs using inheritance.

8. Programs using IO streams.

9. Programs using files.

10. Write a program using exception handling mechanism.

11. Programs using AWT

12. Programs on swing.

13. Programs using JDBC

BCA 4th Semester Operating System Lab

L T P Cr - - 4 2

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External Marks: 40 Internal Marks: 60

Time Duration: 3 Hrs.

Total Marks: 100

NOTE: The breakup of marks for the practical will be as under

Lab Record Viva Voce Program development and execution. 10 marks 10 marks 20 marks

List of the Programs not limiting to:

- Install Linux on the system dual boot with the windows operating System.
- Create, remove, and resize various types of partitions through GUI
- Create and remove various types of partitions through command line.
- Resize various types of partitions through command line.
- Internal Command like creating the files, directories, help, date, append
- External commands like at, batch, cron, tab.
- Filters on the contents of a file using grep, egrep, fgrep.
- · Creating, Removing of Swap space as well as swap file.
- Managing Users and Groups in Linux
- Program to Add and Modify the Password.
- Shell script to find the factorial value of any number entered through the keyboard.
- Script to create a DMC of a student.
- To study various file-directories handling commands.
- To study the various shell commands in Linux.
- Write a script to Implement Menu driven calculator.
- Implement Mount, Unmount and Make file systems.

BCA 4th Semester COLLOQUIUM

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Time Duration: 3 Hrs.

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External Marks: --Internal Marks: 50

Total Marks: 50

NOTE: Is related to seminar, extempore which is in curriculum

BCA 4th Semester SEMINAR

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Time Duration: 3 Hrs.

External Marks: --Internal Marks: 50

Total Marks: 50

Industry Seminar Industry seminars are suggested to enable the students of BCA to appreciate the software development which are going on in industries in India. These seminars will help the students to face interviews with some confidence. The students should attend these and submit a report. The following points are listed to enable the college to organize these seminars.

BCA 5th Semester PROBABILITY & STATISTICS

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External Marks: 50 Internal Marks: 50

Total Marks: 100

Time Duration: 3 Hrs.

NOTE: Ten questions are to be set in all by the examiners by taking three questions from each unit and one compulsory question having 05 short answer type questions from all the units. Students will be required to attempt six questions in all including compulsory Question i.e. question No. 1 and by selecting not more than two questions from each unit.

OBJECTIVE

To extend student's mathematical maturity and ability to deal with abstraction and to introduce most of the basic terminologies used in computer science courses and application of ideas to solve practical problems.

UNIT-1

Statistics: Introduction, Data Collection, Techniques of Data Collection, Data Analysis: Measure of Central Tendency, Frequency distribution, Mean, Median, Mode, Mean Deviation, Measures of Dispersion: Range Quartile Deviation, Mean Deviation, and Standard Deviation Standard Deviation.

UNIT-2

Correlation & Regression: Meaning, Significance, Causes and Effect Relationship. Types of Correlation. Meaning, Uses of Regression Analysis, Relationship between Correlation and Regression analysis

UNIT-3

Probability: Multiplication theorem on Probability. Conditional probability, independent events, total probability, Random variable and its probability distribution, mean and variance of haphazard variable. Repeated independent (Bernoulli) trials and Binomial distribution.

Reference Books

- 1. Fundamental of Mathematical Statistics, S.C. Gupta, V.K. Kapoor, Sultan Chand and Company.
- 2. Introduction to Probability & Statistics, Seymour Lipschutz, Jack Schiller, Jack Schiller S, McGraw-Hill Publishers.
- 3. Probability & Statistics for Engg, Dr. J. Ravichandran, Willey Publications
- 4. Probability And Statistics, Dr. B. Krishna Gandhi, Dr. T.K.V Iyengar, M.V.S.S.N. Prasad, S. Chand Publishing Co.

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BCA 5th Semester SOFTWARE ENGINEERING

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Time Duration: 3 Hrs.

Total Marks: 100

NOTE: Ten questions are to be set in all by the examiners by taking three questions from each unit and one compulsory question having 05 short answer type questions from all the units. Students will be required to attempt six questions in all including compulsory Question i.e. question No. 1 and by selecting not more than two questions from each unit.

Objectives

- · To Know the Basics of Software Architecture
- · To Understand various phases of Software Development Cycle

UNIT-1

Software: Characteristics, Components, Applications, And Software Process Models: Waterfall, Spiral, Prototyping, Fourth Generation Techniques, Concepts of Project Management, Role of Metrics & Measurements.

UNIT-2

S/W Project Planning: Objectives, Decomposition techniques: S/W Sizing, Problembased estimation, Process based estimation, Cost Estimation Models: COCOMO Model, The S/W Equation, System Analysis: Principles of Structured Analysis, Requirement analysis, DFD, Entity Relationship diagram, Data distinguese

Data dictionary.

UNIT-3

S/W Design: Objectives, Principles, Concepts, Design methodologies: Data design, Architectural design, procedural design, Object -oriented concepts

Testing fundamentals: Objectives, principles, Testability, Test cases: White box & Black box testing, Testing strategies: verification & validation, unit test, integration testing, validation testing, system testing.

References

- 1. Software Engineering A Practitioner's Approach, Roger S. Pressman, MGH, NEW DELHI., NEW DELHI. Publications, New Delhi.
- 2. Fundamentals of Software Engineering, Rajib Mall, PHI, New Delhi.
- 3. An Integrated Approach to Software Engineering by Pankaj Jalote, Narosa Publications, New Delhi.
- 4. Software Engineering by Ian Summerville, Pearson Education, 5th Edition, New Delhi.

BCA 5th Semester MICROPROCESSORS AND INTERFACING

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External Marks: 50 Internal Marks: 50

Time Duration: 3 Hrs.

Total Marks: 100

NOTE: Ten questions are to be set in all by the examiners by taking three questions from each unit and one compulsory question having 05 short answer type questions from all the units. Students will be required to attempt six questions in all including compulsory Question i.e. question No. 1 and by selecting not more than two questions from each unit.

Objectives

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- The Microprocessor is a general -purpose programmable logic device. A thorough understanding of the microprocessor demands concepts and skills from two different disciplines: hardware concepts from electronics and programming skills from computer science.
- Microprocessor is an exciting, challenging and growing field. It will pervade industry for decades to come.

UNIT-1

Introduction to Micro Computers, Microprocessors and Assembly Languages - Microprocessor architecture and its operations - 8085 MPU - 8085 Instruction set and classifications.

Writing assembly levels programs - Programming techniques such as looping, counting and indexing addressing nodes - Data transfer instructions - Arithmetic and logic operations - Dynamic debugging.

UNIT - 2

Counters and Time delays - Hexadecimal counter - Modulol 0 counter - Pulse Timings for flashing lights - Debugging counter and time delay program - stack - subroutine - conditional call and return instructions.

BCD to Binary and Binary to BCD conversions - BCD to HEX and HEX to BCD conversions - AS CII to BCD and BCD to ASCII conversions - BCD to Seven segment LED Code conversions - Binary to ASCII and ASCII to Binary conversions - Multibyte Addition - Multibyte subtraction - BCD addition - BCD Subtraction - Multiplication and Division.

UNIT-3

Interrupt - Implementing interrupts - Multiple interrupt - 8085 - trap - Problems on implementing 8085 interrupt - DMA - Memory interfaces - Ram & Rom - I/O interface - Direct I/O - Memory mapped I/O. **References:**

- 1. R. S. Gaonkar, 'Microprocessor Architecture, Programming and Applications with 8085/8080A', Wiley East em limited, 1990.
- 2. A. Mathur, 'Introduction to Microprocessor', Third Edition, Tata McGraw-Hill Publishing Co. Ltd., 1993.

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- 3. Fundamentals of Microprocessors and Microcomputers B.RAM, Dhanpat Rai Pub.
- 4. The Intel Microprocessors8086/8080, 186/286, 386, 486, Pentium and Pentium Pro processor Architecture, Programming and Interfacing – Barry R. Brey, PHI.

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BCA 5th Semester WEB PROGRAMMING

Time Duration: 3 Hrs.

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External Marks: 50 Internal Marks: 50

Total Marks: 100

NOTE: Ten questions are to be set in all by the examiners by taking three questions from each unit and one compulsory question having 05 short answer type questions from all the units. Students will be required to attempt six questions in all including compulsory Question i.e. question No. 1 and by selecting not more than two questions from each unit.

Objectives:

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After going through this course a student should be able to: Use XHTML tags to create simple static web pages; format a simple Web page using Cascading Style sheets; state the concepts applicable to web programming; create an interactive and dynamic Web site using JavaScript; represent data over the Web using XML; appreciate the use of Ajax and Rich Internet Applications, and perform server side scripting using Java Server Pages (JSP).

UNIT-1

Web 2.0 and XHTML : What IsWeb 2.0? Introduction toWeb 2.0 terms: Search, Content Networks, Blogging, Social Networking, Social Media, Rich Internet Applications (RIAs), Web Services, Mashups, Widgets and Gadgets, Introduction to XHTML and WML, Syntactic Differences between HTML and XHTML, Standard XHTML Document Structure, An example of XHTML covering Basic Syntax, Images, Hypertext Links, Lists and Tables, Creation of an XHTML Form, Internal Linking and Meta Elements.

Using Style Sheets : CSS: Inline Styles, Embedded Style Sheets, Linking External Style Sheets, Style Specification Formats Selector Forms, Colour, Property Value Forms, Font Properties, List Properties, Alignment of Text, The Box Model, Background Image, The and <div> Tags.

UNIT-2

Introduction to XML : XML Basics, XML Document Structure, XML Namespaces, Document Type Definitions, XML Schemas, Displaying XML Documents.

Programming with Java Script – DOM and Events: The Document Object Model, ElementAccess in JavaScript, Traversing and Modifying a DOM Tree, DOM Collections and Styles, Events, Examples of Event Handling from Body, Button, Text Box and Password Elements, Dynamic Documents using JavaScript – element moving, visibility, positioning etc., Example program (s),Introduction and example of AJAX.

Introduction to WAP and WML : WAP and WML Basics, WML formatting and links, WML input, WML tasks, WML timer, WML variables, Example.

UNIT-3

The Server Side Scripting : Server side scripting and its need, Two-Tier, Three-Tier, N-Tier and Enterprise Architecture, Various Languages/ Technologies for server scripting ,HTTP Methods (such as GET, POST, HEAD, and so on), Purpose, Technical

characteristics, Method selection, Use of request and response primitives, Web container - Tomcat.

JSP – Basic : Basic JSP Lifecycle, JSP Directives and Elements, Scriptlets, Expressions, Action Elements, Standard Actions, Comments and Template Data, JSP variables, The out Object, Request, response, sessions and application objects.

JSP – Applications : Exceptions and exception handling using JSP, Cookies and sessions, Managing Email using JSP.

JSP Application Development : Example applications using JSP, What is JDBC? Need for JDBC, Database Drivers, Connection using JDBC API, Application development and deployment.

References:

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- 1. XHTML Black Book by Steven Holzner, 2000.
- 2. CGI Programming on the World Wide Web. O'Reilly Associates.
- 3. Web Technologies By Achyut S Godbole, Atul Kahate, 2003, T.M.H.
- 4. Scott Guelich, Shishir Gundararam, Gunther Birzniek; CGI Programing with Perl 2/e O'Reilly.
- 5. Doug Tidwell, James Snell, Pavel Kulchenko; Programming Web services, O'Reilly
- 6. Intranets by James D.Cimino, 1997, Jaico Publ.
- 7. Internet and Web Technologies Raj Kamal; 2002, T.M.H.

BCA 5th Semester ERP AND E-COMMERCE

L T P Cr 4 - - 4 External Marks: 50 Internal Marks: 50

Time Duration: 3 Hrs.

Total Marks: 100

NOTE: Ten questions are to be set in all by the examiners by taking three questions from each unit and one compulsory question having 05 short answer type questions from all the units. Students will be required to attempt six questions in all including compulsory Question i.e. question No. 1 and by selecting not more than two questions from each unit.

Objectives:

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The Objectives of the Course are:

- To make the student aware about the basics of E-commerce, its processes and some of the services/products supporting these processes.
- After studying this course, the students shall be able to understand the basic related business processes like B2B, C2B & B2C involved in the area of E-Commerce with an overview of the technical support for the processes.

UNIT-1

Introduction to E-Commerce : Introduction of E-Commerce and M-Commerce, E-Commerce trade cycle, Electronic Markets, Internet Commerce, Benefits and Impacts of E-Commerce.

Elements of E-Commerce :Various elements, e-visibility, e-shops, Delivery of goods and services, Online payments, After - sales services, Internet E-Commerce security.

EDI and Electronic Payment Systems : Introduction and definition of EDI, EDI layered Architecture, EDI technology and standards, EDI communications and transactions, Benefits and applications of EDI with example, Electronic Payment Systems: credit/debit/smart cards, e-credit accounts, e-money.

UNIT-2

Introduction to EC models :Inter-organization and intra-organization E-Commerce, E-Commerce Models: B2B, B2C, C2B, C2C, G2C, C2G.

E-Business :Introduction to Internet bookshops, Grocery Suppliers, Software Supplies and support, Electronic newspapers, Virtual auctions, Online share dealing, e-diversity.

UNIT-3

E-Security and Legal Issues: Security concerns in E-Commerce, Privacy, integrity, authenticity, non-repudiation, confidentiality, SSL, Digital Signatures and fire walls, IT Act 2000, Cyber crimes and cyber laws.

Mobile Commerce and Future of E-Commerce :Introduction to Mobile Commerce, Benefits of Mobile Commerce, Impediments of M-Commerce, M-Commerce framework, Emerging and future trends.

References:

1. Alexis Leon, "ERP Demystified", Tata McGraw Hill

2. Rahul V. Altekar "Enterprisewide Resource Planning", Tata McGraw Hill,



- 3. Vinod Kumar Garg and Venkitakrishnan N K, "Enterprise Resource Planning Concepts and Practice", PHI
- 4. Joseph A Brady, Ellen F Monk, Bret Wagner, "Concepts in Enterprise Resource Planning", Thompson Course Technology -
- 5. Mary Summer, "Enterprise Resource Planning"- Pearson Education

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6. Schneider P. Gary, Perry T.James, E-Commerce, Thomson Learning, Bombay.

BCA 5th Semester MINOR PROJECT

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Time Duration: 3 Hrs.

External Marks: 40 Internal Marks: 60

Total Marks: 100

(GUIDELINES FOR MINOR PROJECT)

- The aim of the Minor Project(s) is to lay a foundation for Major Project to be carried out by the student during 6th Semester of BCA Programme.
- Each student should carry out Minor Project(s) using the software development tools/languages/technologies that they have learnt and/or have studied during the concerned semester.
- It should be compulsorily done by the student in-house under the supervision of the staff(s) assigned by Head of the Department/Director/Principal.

The Minor Project(s) will be assessed by the concerned supervisor(s) and shall award marks out of 25 for each student as Internal Assessment.

BCA 5th Semester SEMINAR

L T P Cr - - 2 1

Time Duration: 3 Hrs.

External Marks: --Internal Marks: 50

Total Marks: 50

Industry Seminar Industry seminars are suggested to enable the students of BCA to appreciate the software development which are going on in industries in India. These seminars will help the students to face interviews with some confidence. The students should attend these and submit a report. The following points are listed to enable the college to organize these seminars.

BCA 6th Semester ARTIFICIAL INTELLIGENCE

L T P Cr 4 - - 4

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External Marks: 50 Internal Marks: 50

Time Duration: 3 Hrs.

Total Marks: 100

NOTE: Ten questions are to be set in all by the examiners by taking three questions from each unit and one compulsory question having 05 short answer type questions from all the units. Students will be required to attempt six questions in all including compulsory Question i.e. question No. 1 and by selecting not more than two questions from each unit.

Objectives:

- AI must improve with the progression of time and technology.
- Al must evolve in a direction that the masses demand.
- AI must have a mechanism whereby it can be reliably patched/updated, once it has been installed on a user's PC.
- AI must be developed in a modular fashion, by different contributors, where modules can be removed, added, modified and interchanged where necessary.
- AI's 'consciousness' must be fully transferable from PC to PC, to home/building, to car/vehicle, to robot.

UNIT - 1

Overview of A.I: Introduction to AI, Importance of AI, AI and its related field, AI techniques, Criteria for success. Problems, problem space and search: Defining the problem as a state space search, Production system and its characteristics, Issues in the design of the search problem Heuristic search techniques :Generate and test, hill climbing, best first search technique, problem reduction, constraint satisfaction.

UNIT - 2

Knowledge representation: Definition and importance of knowledge, Knowledge representation, various approaches used in knowledge representation, Issues in knowledge representation Using Predicate Logic: Represent ting Simple Facts in logic, Representing instances and is a relationship, Computable function and predicate.

UNIT-3

Expert System: Introduction, Representing using domain specific knowledge, Expert system shells. LISP and other AI Programming Language Natural language processing, Introduction syntactic processing, Semantic processing, Discourse and pragmatic processing Learning: Introduction learning, Rote learning. **Reference :**

- 1. D.W. Patterson, "Introduction to AI and Expert Systems", PHI, 1999
- Nils J Nilsson, "Artificial Intelligence A new Synthesis" 2nd Edition (2000), Harcourt Asia Ltd.
- 3. E. Rich and K. Knight, "Artificial intelligence", TMH, 2nd ed., 1999.

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BCA 6th Semester COMPUTER GRAPHICS

L T P Cr 4 - - 4

External Marks: 50 Internal Marks: 50

Time Duration: 3 Hrs.

Total Marks: 100

NOTE: Ten questions are to be set in all by the examiners by taking three questions from each unit and one compulsory question having 05 short answer type questions from all the units. Students will be required to attempt six questions in all including compulsory Question i.e. question No. 1 and by selecting not more than two questions from each unit. **Objectives:**

- This course is designed to provide a comprehensive introduction to computer graphics leading to the ability to understand contemporary terminology, progress, issues, and trends.
- A thorough introduction to computer graphics techniques, focusing on 3D modeling, image synthesis, and rendering.
- The interdisciplinary nature of computer graphics is emphasized in the wide variety of examples and applications.

UNIT -1

Input Devices: Keyboard, Touch Panel, Light Pens, Graphic Tablets, Joysticks, Trackball, Data Glove, Digitizers, Image Scanner, Mouse, Voice & Systems. Hardcopy Devices: Impact and Non Impact Printers, Such as Line Printer, Dot Matrix, Laser, Inkjet, Electrostatic, Flatbed and Drum Plotters

UNIT -2

Video Display Devices: Refresh Cathode-Ray Tube, Raster Scan Displays, Random Scan Displays, Color CRT-Monitors, Direct View Storage Tube, Flat-Panel Displays; 3-D Viewing Devices, Raster Scan Systems, Random Scan Systems, Graphics Monitors and Workstations. Scan Conversion Algorithms for Line, Circle and Ellipse, Bresenham's Algorithms, Area Filling Techniques, Character Generation

UNIT-3

2-Dimensional Graphics: Cartesian and Homogeneous Co-ordinate System, Geometric Transformations (Translation, Scaling, Rotation, Reflection, Shearing), Two-dimensional Viewing Transformation and Clipping (Line, Polygon and Text). 3-Dimensional Graphics: Geometric Transformations (Translation, Scaling, Rotation, Reflection, Shearing), Mathematics of Projections (Parallel & Perspective). 3-D Viewing Transformations and Clipping.

Reference Books:

- 1. Foley, Van Dam, Feiner, Hughes, Computer Graphics Principles& practice, 2000.
- D.J. Gibbs & D.C. Tsichritzs: Multimedia programming Object Environment& Frame work, 2000

- 3. Ralf Skinmeiz and Klana Naharstedt, Multimedia: computing, Communication and Applications, pearson, 2001
- 4. D.Haran & Baker. Computer Graphics Prentice Hall of India, 1986

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BCA 6th Semester COMPUTER GRAPHICS LAB

External Marks: 60

Time Duration: 3 Hrs.

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Total Marks: 100

Internal Marks: 40

List of programs to be developed :

- 1. Write a program for 2D line drawing as Raster Graphics Display.
- 2. Write a program for circle drawing as Raster Graphics Display.
- 3. Write a program for polygon filling as Raster Graphics Display
- 4. Write a program for line clipping.
- 5. Write a program for polygon clipping.
- 6. Write a program for displaying 3D objects as 2D display using perspective transformation.
- 7. Write a program for rotation of a 3D object about arbitrary axis.
- 8. Write a program for Hidden surface removal from a 3D object.

Note:

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At least 5 to 10 more exercises to be given by the teacher concerned.

BCA 6th Semester ARTIFICIAL INTELLIGENCE LAB

L T P - 4 External Marks: 60 Internal Marks: 40

Time Duration: 3 Hrs.

Total Marks: 100

List of programs to be developed using Prolog:

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- 1. Study of PROLOG.
- 2. Write a program to solve 8 queens problem.
- 3. Solve any problem using depth first search.
- 4. Solve any problem using best first search.
- 5. Solve 8-puzzle problem using best first search
- 6. Solve Robot (traversal) problem using means End Analysis.
- 7. Solve traveling salesman problem.

Note:

At least 5 to 10 more exercises to be given by the teacher concerned.

BCA 6th Semester SEMINAR

P Cr L T 2 1

Time Duration: 3 Hrs.

External Marks: --Internal Marks: 50

Total Marks: 50

Industry Seminar Industry seminars are suggested to enable the students of BCA to appreciate the software development which are going on in industries in India. These seminars will help the students to face interviews with some confidence. The students should attend these and submit a report. The following points are listed to enable the college to organize these seminars.