

(CBCS BASED)
ORDINANCE, REGULATION & SYLLABUS
For
B.C.A.
[BACHELOR OF COMPUTER APPLICATION]



Offered by

NEHRU GRAM BHARTI
(DEEMED TO BE UNIVERVISITY),
KOTWA-JAMUNIPUR-DUBAWAL
PRAYAGRAJ-221505
UTTAR PRADESH

Session:
From 2019 – 2020



NEHRU GRAM BHARATI

(Deemed to be University) u/s-3 of UGC Act, 1956

Kotwa-Jamunipur-Dubawal, Prayagraj U.P. (INDIA)

Ref. No.

Date: 24/06/2019

आज दिनांक 24.06.2019 को अपराह्न 11.00 बजे से एम.सी.ए., बी.सी.ए. एवं पी.जी. डी.सी.ए. पाठ्यक्रम के Moderation हेतु Board of study की बैठक विश्वविद्यालय के हनुमानगंज परिसर में सम्पन्न हुई।

उक्त समिति में निम्नलिखित सदस्य उपस्थित रहें—

1. डॉ. रणधीर सिंह, यू0 आई0 एम0 इलाहाबाद (वाह्य विशेषज्ञ)। *Sumit*
2. डॉ. हरिमोहन सिंह, एस0एच0 आई0 ए0टी0एस0, नैनी, प्रयागराज (वाह्य विशेषज्ञ)।
3. डॉ. रोहित रमेश, अधिष्ठाता प्रबन्धन एवं कम्प्यूटर विज्ञान, नेहरु ग्राम भारती मानित विश्वविद्यालय, कोटवाँ, जमुनीपुर प्रयागराज (आन्तरिक) अनुपस्थित।
4. श्री अरविन्द कुमार शुक्ल, सहायक आचार्य नेहरु ग्राम भारती मानित विश्वविद्यालय, कोटवाँ, जमुनीपुर, प्रयागराज (आन्तरिक)। *AZvind*
5. श्री अनुराग त्रिपाठी, सहायक आचार्य, नेहरु ग्राम भारती मानित विश्वविद्यालय कोटवाँ जमुनीपुर प्रयागराज (आन्तरिक)। *Anurag*
6. श्री ललित कुमार त्रिपाठी, सहायक आचार्य नेहरु ग्राम भारती मानित विश्वविद्यालय, कोटवाँ जमुनीपुर प्रयागराज (आन्तरिक)। *K. Tripathi*
7. श्री उज्ज्वल दास, सहायक आचार्य नेहरु ग्राम भारती मानित विश्वविद्यालय, कोटवाँ जमुनीपुर प्रयागराज (आन्तरिक)। *Ujjwal*

उक्त समिति द्वारा एम.सी.ए., व बी.सी.ए. के पाठ्यक्रमों में संशोधन एवं च्याइस बेस्ड क्रेडिट सिस्टम एवं पी.जी.डी.सी.ए. में क्रेडिट सिस्टम स्वीकार एवं लागू किया गया। संशोधित पाठ्यक्रम का पठन-पाठन एवं परीक्षा का सम्पादन सत्र 2019-20 से किया जायेगा। यह निर्णय सर्वसम्मति से स्वीकार किया गया।

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NEHRU GRAM BHARATI

(Deemed to be University) u/s-3 of UGC Act, 1956

Kotwa-Jamunipur-Dubawal, Prayagraj U.P. (INDIA)

Ref. No.

Date: 22/06/2019

आज दिनांक 22.06.2019 दिन गुरुवार को कम्प्यूटर अनुप्रयोग विभाग में एक बैठक सम्पन्न हुई, जिसमें MCA, BCA के पाठ्यक्रम को संशोधित व च्वाइस बेस्ड क्रेडिट सिस्टम एवं, PGDCA क्रेडिट सिस्टम लागू करने की चर्चा हुई एवं आगामी सत्र 2019-20 हेतु AICTE के दिशा निर्देशों के आधार पर MCA Literal Entry के माध्यम से प्रवेश की चर्चा हुई एवं सर्वसम्मति से AICTE एवं विश्वविद्यालय के दिशा निर्देशों का अनुपालन करते हुए MCA Literal Entry प्रवेश एवं समस्त पाठ्यक्रम MCA, BCA, PGDCA के Moderation हेतु Board of Study कराने की सर्वसम्मति से निर्णय हुआ।

उक्त बैठक में विभाग के निम्नलिखित सदस्य उपस्थित रहे-

1- श्री अरविन्द कुमार शुक्ल (विभागाध्यक्ष)

Arvind

2- श्री अनुराग त्रिपाठी (सहायक आचार्य)

Anurag

3- श्री उज्ज्वल दास (सहायक आचार्य)

Ujjwal

4- श्री ललित त्रिपाठी (सहायक आचार्य)

Lalit

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**NEHRU GRAM BHARATI (Deemed to be University) KOTWA-
JAMUNIPUR-DUBAWAL, ALLAHABAD (U.P)
CHOICE BASED CREDIT SYSTEM (CBCS) ORDINANCE GOVERNING
THE DEGREE OF BACHELOR OF COMPUTER APPLICATIONS (BCA)
CHOICE BASED CREDIT SYSTEM (CBCS)**

The choice based credit system provides flexibility in designing curriculum and assigning credits based on the course content and hour of teaching. The choice based credit system provides an opportunity for the students to choose courses from be prescribed courses comprising core, elective and open elective courses. The CBCS provides a cafeteria type approach in which the students can take courses of their choice, learn at their own pace, undergo additional courses and acquired more than the required credits, and adopt in interdisciplinary approach to learning. The courses shall be evaluated on the grading system. Which is considered to be better than the conventional marks system It is necessary to introduce the grading system to make the uniformity among all technical institutions of India. This will benefit the students to move across institutions within India to begin with and across countries. The uniform grading system will also enable potential employers in assessing the performance of the candidates. In order to bring uniformity in evaluation system and computation of the Cumulative Grade Point Average (CGPA) based on student's performance in examinations, the AICTE has formulated the guidelines to be followed.

DEFINITIONS OF KEY WORDS:

- (i) **University:** NEHRU GRAM BHARATI (Deemed to be University)
- (ii) **Academic Year:** Two consecutive (one odd + one even) semesters constitute one academic year
- (iii) **Semester:** Each semester will consist of 15-18 weeks of academic work equivalent to 90 actual teaching days. The odd semester may be scheduled from July to December and even semester from January to June.
- (iv) **Choice Based Credit System (CBCS):** The CBCS provides choice for students to select from the prescribed courses (core, elective and Interdisciplinary Courses).
- (v) **Credit Based Semester System (CBSS):** Under the CBSS, the requirement for awarding a degree or certificate is prescribed in terms of numbers of credits to be earned by the students.
- (vi) **Program:** An educational program leading to award of a degree.
- (vii) **Course:** Usually referred to as papers is a component of a program all courses need not carry the same weight age. The courses should define

learning objectives and learning out comes. A course may be designed to comprise lectures /tutorials/ laboratory work/field work /outreach activities project work/ vocational training/ viva/seminars /term papers /assignments/presentations /self-study etc. or a combination of some of these.

- (viii) **Branch:** Bachelor of computer applications (BCA).
- (ix) **Letter Grade:** It is an index of the performance of students in a said course. Grades or denoted by letters O, A, B, C, D, and F.
- (x) **Grade Point:** It is a numerical weight age allotted to each letter grade on a 10-point scale.

1. ELIGIBILITY FOR ADMISSION

1.1 Admission to B.C.A First year through entrance examination.

For admission to First year of B.C.A. in university Candidate must have passed 10+2 level/Intermediate or equivalent examination.

2. ATTENDANCE.

- 2.1 Every student is required to attend all the lecture, tutorials, practical, classes and other prescribed curricular and co-curricular activities the attendance can be condoned a to 25% on medical grounds are for other genuine reasons beyond the control of students.
- 2.2 The attendance shall be counted for the date of admission in the university or start of academic session, whatever is later.

3. DURATION OF COURSE

- 3.1 Total duration of the BCA course shall be three years; each year comprising two semester each semester shall normally have teaching for the 90 working days or per prescribed by University to time to time.
- 3.2 The student admitted BCA First year course shall complete the course with in a period of (05 years.) academic years from the date of first admission, failing which he/she has to discontinue the course.
- 3.3 The minimum credit requirement. For B.C.A. degree is 144 credits.

4. CURRICULUM

- 4.1 The 03 year has been divided into 06 semesters and shall be include lectures, tutorials, practical labs, seminars and projects etc. In addition to industrial training as defined in the scheme and executive instructions issued by the university from time to time.

4.2 The curriculum will also include the other curricular, Co-curricular and extra-curricular activities as may be prescribed by the university from time to time.

5. EXAMINATION.

5.1 The performance of a student in a semester shall be evaluated through continuous class assessment and end semester examination. The continuous assessment shall be based on class test/assignments /tutorial/quizzes /viva voce and attendance. The marks for continuous assessment (sessional marks) shall be awarded at the end of the semester. The end semester examination shall be comprise of written paper, practical and viva-voce, record of Lab work, Project work, designed reports are by means of any combination of these methods.

5.2 The distribution of mark for sessional, end semester theory paper, practical and other examinations, seminar, project and industrial training shall be as prescribed by the university.

The practical vivo-voce, projects Reports shall be examined (evaluated) through the internal /external examiners.

6. ELIGIBILITY OF PASSING

6.1 A student who obtained grades A+ to D shall be considered as passed. If a student secured F grade, he/she to reappear for the examination. It is mandatory for a student to earn the required credits as mentioned in each semester.

6.1 (a) For pass in theory subject a student shall secure Minimum of 30% of the maximum marks prescribed in the university examination and 40% of marks in the aggregate marks in the subject including sessional marks i.e. minimum passing grade is 'D'.

6.1 (b) For a pass in a practical / project/ viva-voce examination a student shall secure minimum of 50% of the maximum marks prescribed by the university in the relevant subject of the semester.

6.2 The student who do not satisfy the condition of the clause 6.1 or the student who remain absent shall be deemed to have failed in that subject and may reappear for the university examination in the subsequent examination however the sessional marks awarded to the student at the previous attempt in the concerned subject will be carried forward.

7. ELIGIBILITY FOR PROMOTION

7.1 There shall not be any restriction for promotion from an odd semester to the next even semester.

7.2 A student obtaining 2.5 GPA will be Promoted to the next Semester but in the final Semester examination there will be no promotion. If a candidate obtains below 30% marks in any paper the result of the candidate will be treated as Incomplete/failed.

Minimum credit for Promotion

| Check Point | Credit threshold |
|---------------------------|--------------------------|
| First year to Second year | 24 credit in First year |
| Second year to Third year | 24 credit in second year |

7.3 The result of the semester shall be declared pass only on securing D.

8. CARRYOVER SYSTEM

8.1 Following rules shall be followed for carryover papers.

- (a) If a student secure F grade will be required to reappear in those theory paper Practicals during respecting and semester exam in which he/she failed.
- (b) A candidate satisfying clause 7.1 (b) will be required to exercise his/her choice of Theory paper in which he/she desired to appear in the examination to fulfillment the required of clause 7.1 (a).
- (c) A candidate shall be required to exercise his/her choice of minimum theory paper in which he/she desires to appear in the examination for improvement to fulfillment the requirement clause 7.3.
- (d) Candidate appearing for carry over paper in any semester shall be examined with the examination paper of that subject running in that semester.

9. RE- ADMISSION IN THE COLLEGE/UNIVERSITY

A candidate may be allowed for re-admission provided he/she satisfies one of the following condition-

- (a) A candidate is declared fail.
- (b) A candidate did not appear in a semester examination /or he/she was not granted permission to appear in the examination.
- (c) A candidate has been detained by the university and subsequently has been permitted to take re-admission.
- (d) A candidate has own desire to abandon the performance of semester (s)

10. COURSES

10.1 There will be three types of courses.

- (i) **Core course-** This is the course which is to be compulsory studied by a student as a core requirement to complete the requirement of a program in a said discipline of study.
- (ii) **Elective Course-** This is course which can be chosen from pool of papers.
- (iii) **Skill Development Course**

11. AWARD OF DIVISION. RANKED MEDALS

11.1 Division shall be awarded only after the final semester examination based on integrated Performance of the candidate for all the six semesters (four semesters for lateral entry) as per following details.

- (a) A candidate who qualifies for the award of degree securing D or above grades in all subjects pertaining to all semesters in his/her first attempt within six consecutive semester (three academic years) four consecutive semesters (two academic years) as applicable, and in addition secures a CGPA of 7.5 and above for the semesters I to VI and in case of lateral entry (III to VI) shall be declared to have passed the examination in First division with honors.
- (b) A candidate who qualifies for the award of the degree by securing D or above grades in all subjects of all the semesters within a maximum period of six semesters/four semesters as applicable. After his/her commencement of study in the 1st/3rd semester and secures. CGPA not less than 6.5 shall be declared to have passed the examination in first division.
- (c) All other candidates who qualify for the award of degree by securing D or above grades in all subjects of all semesters within a maximum period of six/four semesters as applicable. After his/her commencement of study in the 1st 3rd semester an addition secures CGPA not less than 5.0 shall be declared to have passed the examination in second division.

11.2 For award of ranks a minimum of 10 students should have appeared in the 6th semester examination. The total number of ranks awarded shall be 10% of total number of students appeared in 6th semester or 10 students. Whichever is less?

12. SCRUTINY AND REVALUATION

Scrutiny shall be allowed in only theory papers.

13. UNFAIR MEANS

Cases of unfair means shall be dealt as per the rules and regulations of the University.

14. AWARD OF SESSIONAL MARKS

Sesional marks for theory subjects, practical s and project shall be awarded as prescribed and at present the break-up of sessional marks shall be as follows:

(a) Theory Subjects :

- (i) Class test which will comprise 20% of total theory marks with three mid-term tests of equal weight age.
- (ii) Teacher Assessment Tutorial/Assignment/Quizzes/Attendance comprises 10% of total theory marks.

(b) Practical's:

- (i) Two mid-term viva-voce/tests of equal weight age 30% of total practical marks.
- (ii) Teacher Assessment: Lab, Record/Attendance 20% of total Practical marks.

- (c) Make-up test may be held only for those students who could not appear in any one of mid-term class tests due to genuine reasons for which the prior permission from the Head of Institution/College was taken. Make up test shall ordinarily be held about two weeks before the semester examination. The syllabus for the make-up test shall be the whole syllabus covered by the subject teacher up to that time.

15. AWARD OF SEMINAR INDUSTRIAL TRAINING, EDUCATIONAL TOUR MARKS AT INSTITUTION/COLLEGE LEVEL

15.1 The marks of Seminar, Industrial Training, Educational tour marks shall be awarded on the following basis:

- (i) Write-up/Report 50%
- (ii) Presentation 50%

15.2 The marks in Seminar, Industrial Training and Educational Tour committee consisting of following members:

- (i) Head of the Department or his/her nominee
- (ii) Concerned Officer In charge.
- (iii) Senior Faculty Member of the department nominated by the Head of Department.

16. CANCELLATION OF ADMISSION

The admission of a student at any stage of study shall be cancelled if:

- (i) He / She is not found qualified as per University / Central Government norms and guidelines or the eligibility criteria prescribed by the University. Or
- (ii) He / She is found unable to complete the course within the stipulated time as prescribed in clause 4.2 or
- (iii) He / She are found involved in creating indiscipline in the Institution / College or in the University.

17. The Academic Council shall have the power to relax any provision provided in the ordinance in any specific matter / situation subject to the approval of Executive Council of the University.

COURSE CURRICULUM (w.e.f. session 2019-20)
BACHELOR OF COMPUTER APPLICATION(BCA)

| BCA FIRST YEAR FIRST SEMESTER | | | | | | | | | | | | |
|----------------------------------|-------------|---|-----------------|---|---|-------------------|----|-------|-----|-------|--------|---------------------|
| S.NO. | COURSE CODE | SUBJECT CODE | TEACHING SCHEME | | | EVALUATION SCHEME | | | | | CREDIT | LECTURES HOUR /WEEK |
| | | | L | P | T | SESSIONAL EXAM | | | ESE | TOTAL | | |
| | | | | | | CT | TA | TOTAL | | | | |
| 1 | BCAC111 | FUNDAMENTAL OF COMPUTER & OFFICE AUTOMATION | 4 | 0 | 0 | 20 | 10 | 30 | 70 | 100 | 4 | 4 |
| 2 | BCAC112 | FUNDAMENTAL PROGRAMMING IN 'C' | 4 | 0 | 0 | 20 | 10 | 30 | 70 | 100 | 4 | 4 |
| 3 | BCAC113 | DISCRETE MATHMATICS | 4 | 0 | 0 | 20 | 10 | 30 | 70 | 100 | 4 | 4 |
| 4 | BCAE114 | ELECTIVE | 3 | 0 | 0 | 10 | 10 | 30 | 70 | 100 | 3 | 3 |
| 5 | BCAU115 | INTRODUCTION TO ICT RESOURCES | 3 | 0 | 0 | 10 | 10 | 30 | 70 | 100 | 3 | 3 |
| PRACTICALS | | | | | | | | | | | | |
| 1 | BCACP116 | FUNDAMENTAL OF COMPUTER & OFFICE AUTOMATION | 0 | 0 | 4 | 0 | 0 | 50 | 50 | 100 | 2 | 2 |
| 2 | BCACP117 | FUNDAMENTAL PROGRAMMING IN 'C' | 0 | 0 | 4 | 0 | 0 | 50 | 50 | 100 | 2 | 2 |
| 3 | BCAUP118 | INTRODUCTION TO ICT RESOURCES | 0 | 0 | 4 | 0 | 0 | 50 | 50 | 100 | 2 | 2 |
| TOTAL | | | | | | | | | | 800 | 24 | 24 |

COURSE CURRICULUM (w.e.f. session 2019-20)
BACHELOR OF COMPUTER APPLICATION(BCA)

| BCA FIRST YEAR SECOND SEMESTER | | | | | | | | | | | | |
|-----------------------------------|-------------|---------------------------------------|-----------------|---|---|-------------------|----|-------|-----|-------|--------|---------------------|
| S.NO. | COURSE CODE | SUBJECT CODE | TEACHING SCHEME | | | EVALUATION SCHEME | | | | | CREDIT | LECTURES HOUR /WEEK |
| | | | L | P | T | SESSIONAL EXAM | | | ESE | TOTAL | | |
| | | | | | | CT | TA | TOTAL | | | | |
| 1 | BCAC121 | DATA STRUCTURE USING 'C' | 4 | 0 | 0 | 20 | 10 | 30 | 70 | 100 | 4 | 4 |
| 2 | BCAC122 | OBJECT ORIENTED PROGRAMMING USING C++ | 4 | 0 | 0 | 20 | 10 | 30 | 70 | 100 | 4 | 4 |
| 3 | BCAC126 | COMPUTER ORGANIZATION | 4 | 0 | 0 | 20 | 10 | 30 | 70 | 100 | 4 | 4 |
| 4 | BCAE124 | ELECTIVE | 3 | 0 | 0 | 10 | 10 | 30 | 70 | 100 | 3 | 3 |
| 5 | BCAU125 | COMMUNICATION AND SOFT SKILLS | 3 | 0 | 0 | 10 | 10 | 30 | 70 | 100 | 3 | 3 |
| PRACTICALS | | | | | | | | | | | | |
| 1 | BCACP126 | DATA STRUCTURE USING 'C' | 0 | 0 | 4 | 0 | 0 | 50 | 50 | 100 | 2 | 2 |
| 2 | BCACP127 | OBJECT ORIENTED PROGRAMMING USING C++ | 0 | 0 | 4 | 0 | 0 | 50 | 50 | 100 | 2 | 2 |
| 3 | BCAUP128 | COMMUNICATION AND SOFT SKILLS | 0 | 0 | 4 | 0 | 0 | 50 | 50 | 100 | 2 | 2 |
| | TOTAL | | | | | | | | | 800 | 24 | 24 |

COURSE CURRICULUM (w.e.f. session 2019-20)
BACHELOR OF COMPUTER APPLICATION(BCA)

| BCA SECOND YEAR THIRD SEMESTER | | | | | | | | | | | | |
|-----------------------------------|-------------|--|-----------------|---|---|-------------------|----|-------|-----|-------|--------|---------------------|
| S.NO. | COURSE CODE | SUBJECT CODE | TEACHING SCHEME | | | EVALUATION SCHEME | | | | | CREDIT | LECTURES HOUR /WEEK |
| | | | L | P | T | SESSIONAL EXAM | | | ESE | TOTAL | | |
| | | | | | | CT | TA | TOTAL | | | | |
| 1 | BCAC231 | INTERNET AND INTRODUCTION TO 'JAVA' | 4 | 0 | 0 | 20 | 10 | 30 | 70 | 100 | 4 | 4 |
| 2 | BCAC232 | FUNDAMENTAL OF DATABASE MANAGEMENT SYSTEMS | 4 | 0 | 0 | 20 | 10 | 30 | 70 | 100 | 4 | 4 |
| 3 | BCAC233 | SOFTWARE ENGINEERING | 4 | 0 | 0 | 20 | 10 | 30 | 70 | 100 | 4 | 4 |
| 4 | BCAE234 | ELECTIVE | 3 | 0 | 0 | 10 | 10 | 30 | 70 | 100 | 3 | 3 |
| 5 | BCAU235 | FUNDAMENTAL OF ACCOUNTING WITH TALLY | 3 | 0 | 0 | 10 | 10 | 30 | 70 | 100 | 3 | 3 |
| PRACTICALS | | | | | | | | | | | | |
| 1 | BCACP236 | INTERNET AND INTRODUCTION TO 'JAVA' | 0 | 0 | 4 | 0 | 0 | 50 | 50 | 100 | 2 | 2 |
| 2 | BCACP237 | FUNDAMENTAL OF DATABASE MANAGEMENT SYSTEMS | 0 | 0 | 4 | 0 | 0 | 50 | 50 | 100 | 2 | 2 |
| 3 | BCAUP238 | FUNDAMENTAL OF ACCOUNTING WITH TALLY | 0 | 0 | 4 | 0 | 0 | 50 | 50 | 100 | 2 | 2 |
| | TOTAL | | | | | | | | | 800 | 24 | 24 |

COURSE CURRICULUM (w.e.f. session 2019-20)
BACHELOR OF COMPUTER APPLICATION(BCA)

| BCA SECOND YEAR FORTH SEMESTER | | | | | | | | | | | | |
|-----------------------------------|--------------|------------------------------------|-----------------|---|---|-------------------|----|-------|-----|------------|-----------|---------------------|
| S.NO. | COURSE CODE | SUBJECT CODE | TEACHING SCHEME | | | EVALUATION SCHEME | | | | | CREDIT | LECTURES HOUR /WEEK |
| | | | L | P | T | SESSIONAL EXAM | | | ESE | TOTAL | | |
| | | | | | | CT | TA | TOTAL | | | | |
| 1 | BCAC241 | INTRODUCTION OF PYTHON PROGRAMMING | 4 | 0 | 0 | 20 | 10 | 30 | 70 | 100 | 4 | 4 |
| 2 | BCAC242 | WEB TECHNOLOGY | 4 | 0 | 0 | 20 | 10 | 30 | 70 | 100 | 4 | 4 |
| 3 | BCAC243 | OPERATING SYSTEM | 4 | 0 | 0 | 20 | 10 | 30 | 70 | 100 | 4 | 4 |
| 4 | BCAE244 | ELECTIVE | 3 | 0 | 0 | 10 | 10 | 30 | 70 | 100 | 3 | 3 |
| 5 | BCAI245 | MULTIMEDIA SYSTEM | 3 | 0 | 0 | 10 | 10 | 30 | 70 | 100 | 3 | 3 |
| PRACTICALS | | | | | | | | | | | | |
| 1 | BCACP246 | INTRODUCTION OF PYTHON PROGRAMMING | 0 | 0 | 4 | 0 | 0 | 50 | 50 | 100 | 2 | 2 |
| 2 | BCACP247 | WEB TECHNOLOGY | 0 | 0 | 4 | 0 | 0 | 50 | 50 | 100 | 2 | 2 |
| 3 | BCAIP248 | MULTIMEDIA SYSTEM | 0 | 0 | 4 | 0 | 0 | 50 | 50 | 100 | 2 | 2 |
| | TOTAL | | | | | | | | | 800 | 24 | 24 |

COURSE CURRICULUM (w.e.f. session 2019-20)
BACHELOR OF COMPUTER APPLICATION(BCA)

| BCA THIRD YEAR FIFTH SEMESTER | | | | | | | | | | | | |
|----------------------------------|-------------|------------------------------------|-----------------|---|---|-------------------|----|-------|-----|-------|--------|---------------------|
| S.NO. | COURSE CODE | SUBJECT CODE | TEACHING SCHEME | | | EVALUATION SCHEME | | | | | CREDIT | LECTURES HOUR /WEEK |
| | | | L | P | T | SESSIONAL EXAM | | | ESE | TOTAL | | |
| | | | | | | CT | TA | TOTAL | | | | |
| 1 | BCAC351 | MICROSOFT VISUAL BASIC .NET | 4 | 0 | 0 | 20 | 10 | 30 | 70 | 100 | 4 | 4 |
| 2 | BCAC352 | FUNDAMENTALS OF ALGORITHMS | 4 | 0 | 0 | 20 | 10 | 30 | 70 | 100 | 4 | 4 |
| 3 | BCAC353 | INTRODUCTIONS TO COMPUTER NETWORKS | 4 | 0 | 0 | 20 | 10 | 30 | 70 | 100 | 4 | 4 |
| 4 | BCAE354 | ELECTIVE | 3 | 0 | 0 | 10 | 10 | 30 | 70 | 100 | 3 | 3 |
| 5 | BCAI355 | INTRODUCTION TO CLOUD COMPUTING | 3 | 0 | 0 | 10 | 10 | 30 | 70 | 100 | 3 | 3 |
| PRACTICALS | | | | | | | | | | | | |
| 1 | BCACP356 | MICROSOFT VISUAL BASIC .NET | 0 | 0 | 4 | 0 | 0 | 50 | 50 | 100 | 2 | 2 |
| 2 | BCACP357 | FUNDAMENTALS OF ALGORITHMS | 0 | 0 | 4 | 0 | 0 | 50 | 50 | 100 | 2 | 2 |
| 3 | BCAIP358 | INTRODUCTION TO CLOUD COMPUTING | 0 | 0 | 4 | 0 | 0 | 50 | 50 | 100 | 2 | 2 |
| | TOTAL | | | | | | | | | 800 | 24 | 24 |

COURSE CURRICULUM (w.e.f. session 2019-20)
BACHELOR OF COMPUTER APPLICATION(BCA)

| BCA THIRD YEAR SIXTH SEMESTER | | | | | | | | | | | | |
|----------------------------------|-------------|--------------------|-----------------|---|---|-------------------|-----|-------|-----|-------|--------|---------------------|
| S.NO. | COURSE CODE | SUBJECT CODE | TEACHING SCHEME | | | EVALUATION SCHEME | | | | | CREDIT | LECTURES HOUR /WEEK |
| | | | L | P | T | SESSIONAL EXAM | | | ESE | TOTAL | | |
| | | | | | | CT | TA | TOTAL | | | | |
| 1 | BCAJ361 | INDUSTRIAL PROJECT | 0 | 0 | 0 | 0 | 400 | 400 | 400 | 800 | 6 | 24 |
| | TOTAL | | | | | | | | | 800 | 6 | 24 |

FIRST SEMESTER

BCAC111: FUNDAMENTAL OF COMPUTER & OFFICE AUTOMATION

UNIT-1

Fundamental of Computer: Block diagram, Computer generation and classification, characteristics, Types & Applications.

Input/Output units & computer memory : Input devices ,Output devices ,Keyboard, Mouse ,Hard disk, Floppy disk, CD-ROM, DVD, Plotters ,Scanners , Printer, Monitor etc. Computer Memory, Types of Memory.

UNIT-2

Information Technology: Meaning and needs of Information Technology and IT application in India, Scientific, Business, Educational ,Entertainment Application Industry Automtion,Weather forecasting awareness of on going information technology in India.

Computer Languages: Programming, Machine& Assembly Language, High & Low level Language, Compiler, Interpreter & Assembler.

Computer and Communication: Single user, Multi user, Workstations, and overview of LAN, WAN, MAN, Overview of modem, email internet facilities through WWW.

UNIT-3

DOS: Introduction to Operating System, Booting sequence, Warm and Cold boot, Definition of a file, File naming rules, Introduction to basic DOS commands, Types of DOS commands.

MS-Windows: Introduction to MS-Windows, Features of Windows, Various version of windows & its use, My computer ,Recyclebin,Desktop icons & windows explorer ,Screen descriptions,dialoge boxes and tool box, working with files & folders ,Shortcuts, accessories, Start Button & program List.

Introduction to MS-Office: Introduction to MS-Word, Features and area of use, Word Screen Description. Working with MS-Word, Word Processing terminology, editing document, Find and Replace, TAB Stops, Formatting the documents, spell check, Inserting clipart, Mail Merge, Creating and Formatting a table.

UNIT-4

MS-Excel: Introduction and area of use, Concepts of workbook & worksheets, using different features with data, cell and text, inserting, Removing & resizing of columns & rows, Different views of worksheet; column freezing, labels hiding, splitting. Using different features with data and text, use formats, Formula calculation & functions cell formatting including Borders & shading, working with different charts types.

UNIT-5

MS-PowerPoint: Introduction & areas of use, Working with MS-PowerPoint ,Creating new presentation, Using with wizards slides & its different views ,Inserting ,Deleting and Copying of slides, working with notes, handouts, Columns & lists and adding Graphics ,sound and movies to slides ,working with power points, objects ,designing and presentations of slides show, printing presentation notes handouts with print options.

REFERENCE BOOKS-

COURSE CURRICULUM (w.e.f. session 2019-20)
BACHELOR OF COMPUTER APPLICATION(BCA)

1. Fundamental of computer - V Raja Raman.
2. Fundamental of computer - B-Ram
3. Computer Fundamental - P.K.Sinha
4. Digital Computer Fundamentals – Thomas C Bartee
5. MS- Office 2000 by Jeo Harbraken, Prentice Hall of India.
6. MS Office 2000 - No Experience Required – Courter (BPB Publications)
7. Teach Yourself MS Office 2000 In 21 Days – Ulrich (BPB Publications)
8. Teach Yourself – DOS – Stevens (BPB Publications)
9. Teach Yourself Windows XP in 21 Days – Mueller (BPB Publications)

BCAC-112: FUNDAMENTAL PROGRAMMING IN ‘C’

UNIT-1

Introduction: History ,Algorithms, Flowcharts , Introduction to C Programming Language, Data types and sizes, Symbolic constants, Declaration of variables, Modifiers, Identifiers, and keywords compilation and execution of C – programs.

UNIT-2

Program structure in C, working with expressions, statements using C.

Operators: Unary, Arithmetic, Logical/Boolean, Ternary, Relational, Bitwise, Assignment, Increment and Decrement, Comma operator.

UNIT-3

Control statements: If else, switch, break, continue, Go to statement

Loop: for, while, do while.

UNIT-4

Functions: Built in and user defined, Function declaration, Definition and function call,

Parameter Passing: Call by value, Call by reference, Recursive functions.

Array: Array definition, Linear array,/one dimensional array, Two dimensional array.

UNIT-5

Structure & Union: Definition and Difference

Pointer: Memory allocations, using malloc and calloc functions.

File Handling – Opening & Closing Data file.

Reference Books -

- 1.C in Depth – S.K. Srivastva
- 2.Programming in C- E .Balaguruswami (YMH Publication)
- 3.Let us C- Y. Kanetkar
- 4.Exploring with C – Y. Kanetkar

BCAC113: DISCRETE MATHEMATICS

UNIT-1

Set Theory: Introduction, Basic concepts, Terminology and Notation, Subsets, Operations on sets, Algebra of set, Venn diagram, Collection of sets, multisets.

Relation: Introduction, Relation on sets, Types of relation in a set, Properties, Composition of relation.

Functions: Definition and introduction, Composition of function, Inverse functions.

UNIT-2

Graph Terminology: Terminology and Application of graphs, finite and infinite graph, Homomorphism, subgroups, walks, paths and circuit, connected graph. Euler line and Euler graphs, operations on graphs, Hamiltonian path and circuits.

UNIT-3

TREES: Properties of trees, pendent vertices in a tree, distance and centre in a tree. Rooted and binary trees, spanning trees.

UNIT-4

Elementary Theory of Groups: Algebraic systems, Examples and definitions, Semi groups and monoids, Groups, subgroups, homomorphism, Normal subgroups.

UNIT-5

Boolean Algebra: Boolean algebra, Uniqueness of Finite Boolean algebra, Boolean functions, DeMorgan's Theorem & Expression.

REFERENCE BOOKS -

1. Discrete mathematics with application to computer- Tremble Y J.P. and Menorah.
2. Discrete mathematics – Tremble. (McGraw Hill)
3. Discrete mathematics – Nino demi
4. Discrete Mathematics – Vine Kumar (BPB Publication)
5. Elements of combinatorial math-C.L.Liu.
6. Discrete Mathematics-Tremble
7. Graph Theory-Narsing H. Dev.
8. Discrete Mathematics- Olympic Nicodemi(CBS Publications)

BCAE(1)114: PRINCIPLES OF MANAGEMENT

UNIT-1

Management Basics: Meaning and definition of Management, Nature and scope and its various functions.

UNIT-2

Planning: Nature, Scope, Objective and significance of planning, types of steps in planning, decision making: strategic and operational decision, decision making process. Rationality in decision making.

UNIT-3

Organizing: Definition, Process of organizing, Span of control, organizational structure. Staffing- Definition, recruitment and selection process.

UNIT-4

Motivation: Definition, Motivation and Behavior, Theories of Motivation, Maslow's Need Hierarchy, McClands's Need theory, X and Y Theory.

UNIT-5

Personnel Management: Functions, Objectives, Principles, Policies, Duties and responsibilities of personal manager.

Training and Development: Importance, Training Process.

Reference Books -

1. Principles & Practice of management - L.M. Prasad
2. Essentials of Managements - Joseph L. Massie
3. Management Today - Burton & Thakur
4. Principle of Practice of Management - Gupta
5. Management Principles & Practices : Parag Diwan & L.N. Agarwal

BCAE(2)114: ORGANIZATIONAL BEHAVIOUR

UNIT I (8 Sessions)

Concept, Nature, Characteristics, Conceptual Foundations and Importance, Models of Organizational Behaviour, Management Challenge, A Paradigm Shift, Relationship with Other Fields, Organisational Behaviour: Cognitive Framework, Behaviouristic Framework and Social Cognitive Framework.

UNIT II (10 Sessions)

Perception and Attribution: Concept, Nature, Process, Importance. Management and Behavioural Applications of Perception.

Attitude: Concept, Process and Importance, Attitude Measurement. Attitudes and Workforce Diversity.

Personality: Concept, Nature, Types and Theories of Personality Shaping, Personality Attitude and Job Satisfaction.

Learning: Concept and Theories of Learning.

UNIT III (10 Sessions)

Motivation: Concepts and Their Application, Principles, Theories, Employee Recognition, Involvement, Motivating a Diverse Workforce.

Leadership: Concept, Function, Style and Theories of Leadership-Trait, Behavioural and Situational Theories.

Analysis of Interpersonal Relationship, Group Dynamics: Definition, Stages of Group Development, Group Cohesiveness, Formal and Informal Groups, Group Processes and Decision Making, Dysfunctional Groups.

UNIT IV (12 Sessions)

Organisational Power and Politics: Concept, Sources of Power, Distinction Between Power, Authority and Influence, Approaches to Power, Political Implications of Power: Dysfunctional Uses of Power.

Knowledge Management & Emotional Intelligence in Contemporary Business Organisation

Organisational Change : Concept, Nature, Resistance to change, Managing resistance to change, Implementing Change, Kurt Lewin Theory of Change.

Conflict: Concept, Sources, Types, Functionality and Dysfunctionality of Conflict, Classification of Conflict Intra, Individual, Interpersonal, Intergroup and Organisational, Resolution of Conflict, Meaning and Types of Grievance and Process of Grievance Handling.

Stress: Understanding Stress and Its Consequences, Causes of Stress, Managing Stress.

Organisational Culture : Concept, Charactersitics, Elements of Culture, Implications of Organisation culture, Process of Organisational Culture.

Suggested Reading:

1. Newstrom John W. - Organizational Behaviour: Human Behaviour at Work (Tata Mc Graw Hill, 12th Edition)
2. Luthans Fred - Organizational Behaviour (Tata Mc Graw Hill)
3. Mc Shane L. Steven, Glinow Mary Ann Von & Sharma Radha R. - Organizational Behaviour (Tata Mc Graw Hill, 3rd Edition)
4. Robbins Stephen P. - Organizational Behaviour (Pearson Education, 12th Edition)
5. Hersey Paul, Blanchard, Kenneth H and Johnson Dewey E. - Management of Organsational Behavior: Leading Human Resources (Pearson Education, 8th Edition)
6. Greenberg Jerald and Baron Robert A. - Behavior In Organisations: Understanding and Managing the Human Side of Work (Prentice Hall of India)
7. Davis, Keith - Human Behaviour at Works – Tata Mc Graw Hill, New Delhi.
8. Pareek, Udai - Behavioural Process in Organization (Oxford 4 IBH, New Delhi).

BCAI115: INTRODUCTION TO ICT RESOURCES

UNIT I: PC Assembly and Operation

Assembly and Disassembly of PC and its various Parts, Startup Process (Booting), BIOS Setup, CMOS Setup and meaning of its various setting, Installation of Windows XP operating System, Installation of Other Software Packages such as Ms Office etc. Operation of Printer, Installation of printer driver, Backup and Restore Operations
Troubleshooting PC Problems

UNIT II: Utilities

Compression Utilities: WinZip, PKZIP, Concept of compression, Defragmenting Hard, disk using defrag, Scan Disk for checking disk space, lost files and recovery, Formatting Hard disk, Floppy Disk, Setting System Date and Time, Antivirus Package
CD Writing Software – Nero etc.

UNIT III: Networking Concepts

What is Networking, Local Area Networking (LANs), Metropolitan Area Network , MAN), Wide Area Network (WAN), Networking Topologies, Transmission media & method of communication, Cabling: straight through and cross over, Study of components like switches, bridges, routers, Wifi router etc., communication Protocols, TCP/IP, IP addressing, MAC address, Subnetting

UNIT IV: Network Administration

Installing and configuring the network using Windows NT based System, Administration of Windows NT based network, Creation of user and groups, File Sharing, Printer Sharing

RECOMMENDED BOOKS

1. Scott and Mueller, “Upgrading and Repairing PCs”, Techmedia, New Delhi
2. Troubleshooting, Maintenance and Repairing PCs, Fifth Edition, by Stephen J.

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Bigelow, Tata McGraw-Hill Publishing Company Limited, New Delhi.

3. PC Upgrade and Maintenance Guide, 15th Edition, by Marks Minasi, BPB

Publications

4. Basic of Networking. "NIIT ", Prentice, Hall of India Private Limited.

5. Networking Protocols and Standards. "NIIT ", Prentice, Hall of India Private Limited.

6. William Stallings, "Data and Computer Communication", Prentice, Hall of India

Private Limited.

SECOND SEMESTER

BCAC121: DATA STRUCTURE USING 'C'

UNIT-1:

Introduction: Basic Terminology, Elementary Data Organization, Data Structure operations, Algorithm

Complexity and Time-Space trade-off.

Arrays: Array Definition, Representation and Analysis, Single and Multidimensional Arrays, address

calculation, application of arrays, Character String in C, Character string operation, Array as Parameters,

Ordered List, Sparse Matrices.

UNIT-2:

Stacks: Array Representation and Implementation of stack, Operations on Stacks: Push & Pop, Array

Representation of Stack, Linked Representation of Stack, Operations Associated with Stacks,

Application of stack: Conversion of Infix to Prefix and Postfix Expressions.

UNIT-3

Queues: Array and linked representation and implementation of queues, Operations on Queue: Create, Add, Delete, Full and Empty. Circular queue.

Linked list: Representation and Implementation of Singly Linked Lists, Two-way Header List, Traversing and Searching of Linked List, Overflow and Underflow, Insertion and deletion to/from Linked Lists,

UNIT-4

Trees: Basic terminology, Binary Trees, Binary tree representation, algebraic Expressions, Complete

Binary Tree. Extended Binary Trees, Array and Linked Representation of Binary trees, Traversing Binary Trees, Threaded Binary trees. Traversing Threaded Binary trees.

UNIT-5

Searching and Hashing: Sequential search, binary search, Hash Table, Hash Functions, Collision Resolution Strategies, Hash Table Implementation.

Sorting: Insertion Sort, Bubble Sorting, Quick Sort, Two Way Merge Sort, Heap Sort.

Binary Search Trees: Binary Search Tree (BST), Insertion and Deletion in BST, AVL Trees, B-trees.

Reference Books -

1. Data Structures using C – E.Balaguruswami (YMH Publication)
2. Data Structures using C - Lip Schutz
3. Data Structures using C - Radhakrishanan
4. Data Structures using C in Depth - Srivastava
5. A M Tenenbaum etal, "Data Structures using C & C++", PHI
6. Horowitz and Sahani, "Fundamentals of data Structures", Galgotia

BCAC122: OBJECT ORIENTED PROGRAMMING USING C++

UNIT-1

Introduction: Object oriented programming, characteristics of object oriented languages, classes. C++ basics: program statements, variables and constants, loops and decision.

UNIT-2

Functions in C++: Defining a Function, The main function, function prototyping, call, inline functions, function overloading, friend and virtual function.

UNIT-3

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

UNIT-4

Inheritance: Derived class & base class multiple inheritance, polymorphism.

UNIT-5

Input/output files- Streams, buffers & I/O streams, header files redirection etc.

Reference Books -

1. E.Balaguru Swamy- Object oriented programming with C++ (Tata McGrawhill)
2. Ravichandram- Programming with C++
3. Schild, Headers: Object oriented programming using Turbo C++
4. P.B. Mahapalra: Thinking in C++

BCAC123: COMPUTER ORGANIZATION

Unit-1: Digital Electronics

Data Representation in Computer Systems

Introduction, Positional Numbering Systems, Converting Between Bases, Signed Integer Representation, Floating-Point Representation, Character Codes

Arithmetic

Overview, Fixed Point Addition and Subtraction, Fixed Point Multiplication and Division, Floating Point Arithmetic

Boolean Algebra and Digital Logic

Introduction, Boolean Algebra, Boolean Expressions, Boolean Identities, K-Maps & Map minimization , Logic Gates, Digital Components, Combinational Circuits, Sequential Circuits

Unit-2: Memory, Register and Register transfer

Register Transfer Language, Bus and Memory Transfers, Bus Architecture, Bus Arbitration, Arithmetic Logic, Shift Micro-operation, Arithmetic Logic Shift Unit, Design of Fast address, Arithmetic Algorithms (addition, subtraction, Booth Multiplication), IEEE standard for Floating point numbers.

Memory Hierarchy, Main Memory (RAM and ROM Chips), organization of 2D and 2 1/2D, Auxiliary memory, Cache memory, Virtual Memory, Memory management hardware

Unit 3: Control Design

Hardwired & Micro Programmed (Control Unit): Fundamental Concepts (Register Transfers, Performing of arithmetic or logical operations, Fetching a word from memory, storing a word in memory), Execution of a complete instruction, Multiple-Bus organization, Hardwired Control, Micro programmed control(Microinstruction, Microprogram sequencing, Wide-Branch addressing, Microinstruction with Next-address field, Prefetching Microinstruction).

Unit 4:

Processor Design: Processor Organization: General register organization, Stack organization, Addressing mode, Instruction format, Data transfer & manipulations, Program Control, Reduced Instruction Set Computer.

Input-Output Organization:I/O Interface, Modes of transfer, Interrupts & Interrupt handling, Programmed I/O, Direct Memory access, Input-Output processor, Serial Communication.

Unit 5:

RISC & CICS Architecture, Basic MIPS Implementation, Pipelining, Instruction-level Parallelism, Parallel Processing Challenges, Flynn's Classification, Hardware Multi-threading, Multicore processing.

Text-Books(TB)

1. Logic and Digital Design, *Morris mano and Kimicharels 4th Edition, Prentice Hall.*
2. Computer System Architecture, M. Mano(PHI)
3. Computer Organization, Vravice, Zaky&Hamacher (TMH Publication)

Reference Books (RB)

1. Structured Computer Organization, Tannenbaum(PHI)
2. Computer Organization, Stallings(PHI)
3. Computer Organization, John P.Hayes (McGraw Hill)

BCAE(1)124: SYSTEM ANALYSIS AND DESIGN

UNIT-1:

System Concept & Information in system Environment: Definition, Characteristics, Physical & Abstract System, Open and Close System, Formal System, Informal information system, Computer Based information system.

UNIT-2 :

System Development Life Cycle: Recognition of need, Impetus for system change, Feasibility study, Analysis, Design, Implementation & Maintenance.

UNIT-3:

The Role of System Analyst: Role & Task, Multi Faceted Role of the Analyst. The Analyst/ User interface behavioral issues, Strategies for determining information requirement, problem definition in project initiation, background analysis, fact analysis, review of written documents, on site observation, interviews & questionnaires.

UNIT-4:

Information Gathering: the tools of structure analysis, what kind of system do we need?, information about the firms the art of interviewing, types of interviews, the data flow diagram, construction of DFD's, data dictionary and decision tree.

UNIT-5:

Feasibility Study: Hardware & Software, H/w and S/w Maintenance, system performance, Economic feasibility, technical feasibility, behavior feasibility, steps in feasibility study, the computer industry and software industry. Procedure: for H/w, S/w selection, major phases in selection, criteria for selection.

Reference Books -

1. SAD – Ellias M. Awad. (Galgotia Publication New Delhi)
2. SAD – IT. Harry & zkiwycz
3. SAD – Daniels and Reats.
4. Introducing System Design – NCC – Skidmore (BPB Publication)

BCAE(2)124: ENTERPRISE RESOURCE PLANNING

UNIT I: Introduction to ERP

Enterprise wide information system, Custom built and packaged approaches, Needs and Evolution of ERP Systems, ERP and Related Technologies: Business Process Reengineering and Information Technology, Supply Chain Management, Relevance to Data Warehousing, Data Mining and OLAP, ERP Drivers, Decision support system.

UNIT II :Market & Life Cycle

ERP Domain, ERP Benefits, Classification, Present global and Indian market scenario, pitfalls, Forecast, Market players and profiles, Evaluation criterion for ERP product, ERP Life Cycle: Adoption decision, Acquisition, Implementation, Use & Maintenance, Evolution and Retirement phases, ERP Modules.

UNIT III: Evaluation

Framework for evaluating ERP acquisition, Analytical Hierarchy Processes (AHP), Applications of AHP in evaluating ERP, Role of consultants, vendors and users in ERP implementation, Vendors Evaluation Criterion, ERP Implementation approaches and methodology, ERP implementation strategies, ERP Customization, ERP-A manufacturing Perspective.

UNIT IV : Critical success and failure factors for implementation

ROI of ERP implementation, Hidden costs, ERP success inhibitors and accelerators, Management concern for ERP success, Useful guidelines for ERP Implementations.

UNIT V : ERP Technology

ERP Software, Functionality of ERP Packages, Multimedia, Virtual Reality, Persuasive Computing and Internet in ERP, ERP and Ecommerce.

Text Books:

1. Textbook of Enterprise Resource Planning, Mahadeo Jaiswal, Ganesh Vanapalli, Macmillan

Publishers India, 2005.

2. ERP: A Managerial Perspective Book Description, Sadagopan S, Tata McGraw Hill, 2013

References:

1. ERP tools techniques and applications for integrating the supply chain by Carol A. Ptak, Eli Schragenheim.

2. ERP A-Z Implementer's Guide for Success, Travis Anderegg, Resource Publishing, 2000.

3. Enterprise Resource Planning Systems System, Lifecycle, Electronic Commerce and Risk by Daniel E.O. Leary, 2011

4. Enterprise Resource Planning (ERP): The Dynamics of Operations Management by Avraham Shtub. 2011

BCAI125: COMMUNICATION AND SOFT SKILLS

UNIT-1

Introduction: Definition and Role of communication in organization effectiveness, Process of communication, Essential of an effective system of communication,

UNIT-2

Verbal and Non Verbal Communication. ORAL & Written communication. Facilitator and Barriers in organizational and managerial communication.

UNIT-3

Need of Documentation in Business: Kinds of Documents: Reports, Memos, Circulars, Press Notes, Official Correspondence etc. Principles of Letter Writing. Use of computer for documentation process and Advantages.

UNIT-4

Elements of Structure, Preparing the Resume, Do's & Don'ts of Resume, Helpful Hints. Importance of Presentation Skills, Capturing Data, Voice & Picture Integration, Guidelines to make Presentation Interesting, Body Language, Voice Modulation, Audience Awareness, Presentation Plan, Visual Aids, Forms of Layout, Styles of Presentation.

UNIT-5

Preparation of Documents: Performa of memos, Press notes, Business Correspondence, Managerial Reports, Project reports/feasibility study, need of time management in Technical Documentation, MS-Word, WordPad, and Notepad.

Reference Books -

1. Wren & Martin: English Grammar and Composition
2. Thomson & Martinet: A Practical English Course.
3. Berid David: The Process of Communication.
4. Bhende.D.S : Business Communication

THIRD SEMESTER

BCAC231: INTERNET AND INTRODUCTION TO 'JAVA'

UNIT-1

Introduction to Internet, Connection to Internet: Telephone, Satellite connection, Cable & ISP, Internet services, Addressing in Internet, IP & Domain, Email, Sending & Receiving secure email services, Voice & Video Conferencing, Web Browser, Search Engines.

UNIT-2

An Introduction to Java: Java-the Language of the Internet, The Benefits of Java, The Essential Building Blocks of JDK, Data types, Variables, and Methods: Data types, Variables, Constants, and Literals Storing and Retrieving Values Methods. Classes and Instances, Methods Properties, Inheritance, Abstraction and Encapsulation, Modifiers, Overloading Methods, Constructors, Using Inner Classes, Encapsulation

UNIT-3:

General Components, Build an Application, Building an Applet, Passing Parameters
Java Language-Statements and Expressions: Statements and Expressions, Automatic and Explicit Type Conversions, Garbage Collection.

UNIT-4:

Branching and Looping: Making Decisions, Looping.
The Java Class Library: Standard Packages, Standard Interfaces, The Collections Framework
Exploring java. Lang: Classes and Interfaces, The String Class, The Math Class, Fonts, Graphics, and Images

UNIT-5:

Handling Events: Event Handling, Key Events, Mouse Events, Threads and Animations: Applet Architecture, Exception Handling, Threads, AWT and GUI: The Abstract Window Toolkit (AWT) Package, Building the GUI.

Reference Books

1. Balaguruswamy E, "Programming in JAVA", TMH
2. Naughton, Schildt, "The Complete Reference JAVA2", TMH
3. Steven Holzner, "Java2 Clack Book", Dreamtech.
4. Margaret Levine Young, "The Complete Reference Internet", TMH
5. Vanhelsuwe, Laurence et.al, Bacheloring Java, BPB, 1996.
6. Andrew Cobby, The Complete Guide to Java, Comdex
7. Anuff, (ed). The Java Source Book, Galgotia
8. Somasundaram, K., Programming in Java 2, Jaico Pub., 2005.

BCAC232: FUNDAMENTAL OF DATABASE MANAGEMENT SYSTEMS

UNIT-1

An overview of database management system: Database Administrator and his responsibilities. Database system concepts and Architecture .Data model schema and instances, data independence (physical and logical independence) DDL, & DML

UNIT-2

Introduction to data models: Entity relationship model, notation for E-R Diagram, mapping Constrains, Keys, concepts of super key, Candidate key and primary key. Hierarchical, network and relational model.

UNIT-3

SQL: Characteristics of SQL. Advantage of SQL. SQL data types and literals. Types of SQL commands.SQL operators and their procedure. Tables, views and indexes. Queries and sub queries. Aggregate functions. Insert, update and delete operations. Joins, Unions, Intersection, Minus, Cursors in SQL.Introduction to PL/SQL.

UNIT-4

Normalization: Normalization concept and update anomalies functional dependencies, Multi valued and join dependencies, normal forms (1NF, 2NF, 3NF, BCNF).

UNIT-5

Database protection: Recovery, concurrency, security, integrity and control.

Reference Books

- 1.C.J.Date: “An Introduction to Data base System” Narosa Publications
- 2.Desai Bipin : An Introduction to data base system
- 3.Ullman:”Principles of Database System”(Galgoria publication)
4. Navin Prakash-“Introduction to database management “ TMH
5. Henry F. Korth-“Database system Concepts” (Mc Grahill)
6. Sql Pl/sql 3rd Revised Edition Ivan Bayross Bpb Publications
7. Oracle 9i PL/SQL Programming Scott Urman McGraw-Hill

BCAC233: SOFTWARE ENGINEERING

UNIT-1

Introduction: Definition of Software engineering, importance of software, software characteristics, software components, software crises, software development life cycle.

UNIT-2

Software Requirement Specification: Software process models, water fall model, prototyping, spiral, Role of management in software development, Role of matrices and measurements, Requirement specification, monitoring and control.

UNIT-3

Software Project planning-Objectives, Decomposition techniques: software sizing cost estimation models, coco mo model. System analysis: principal of structured analysis, DFD, ER diagram, data dictionary.

UNIT-4

Software Design: Design principles, Top-down and bottom up design, design specification and verification, monitoring and control.

UNIT-5

Coding-Top: down and bottom up programming, structured programming information hiding, programming style etc. Testing fundamentals- objective principles testability/ test cases: while box & black box testing. Testing Strategies- verification & validation unit test/ integration test, validation tests / system testing.

Reference Books -

- 1- Roger s. Pressman, software engineering- “A Prachtioner’s Approach”, Third edition, McGrowHill,
- 2- R.E. Fairley- “software engineering concepts” McGrowHill,
- 3- Jalole/ Pankaj “ software engineering edition 2”, New Delhi Naras-2002.
- 4- Alexis, Lcon and Mathews lcon, ”Fundamental of Software are Engineering Vikas Fairly, “software Engineering” New Delhi.TMN

BCAE(1)234: E-COMMERCE

UNIT-1

Introduction: Electronic Commerce, Definition of E-commerce, Force behind E-commerce, Advantages and disadvantages, Architectural framework, Impact of E-commerce on business

UNIT-2

Mobile Commerce: Introduction, wireless application protocol, WAP technology, Mobile computing information.

UNIT-3

Web Security: Security issues on web, Importance of firewall, Components of firewall, Factors to consider in firewall design, Limitation of firewall

UNIT-4

Encryption Techniques: Symmetric Encryption keys and data Encryption standards, Triple Encryption, Public & Private keys, Digital signature, Virtual private network.

UNIT-5

Electronic Payments: Overview, The SET Protocol, Payment gateway, Certificate, Smart Card, Credit Card, On-line banking-Commerce law, Forms of agreement

Reference Books

1. Ravi Kalakota, Andrew Winston, "Frontiers of Electronic Commerce", Addison Wesley
2. Bajaj and Nag, "E-Commerce the cutting edge of Business", TMH.
3. P.Loshin, John Vacca, "Electronic Commerce", Firewall Media, New Delhi

BCAE(2)234: MANAGEMENT INFORMATION SYSTEM

UNIT 1

Foundation of Information System: Introduction to Information System in Business. Fundamentals of Information System, solving business problems with information system. Types of Information System. Effectiveness and efficiency criteria in information system.

UNIT 2

An overview of MIS: Definition, characteristics, components of MIS, MIS V/s Data processing, MIS and DSS, Formal V/s Informal System.

UNIT3

Concept of Planning & Control: Concept of organizational planning, the planning process, computational support for planning. The Nature of Control in an organization.

UNIT4

Business Application of information technology: Internal Electronic Commerce, external information system for Business operation & managerial decision support.

UNIT5

Managing information Technology: Enterprise & global management/ Security & ethical challenges.

Advanced Concept in information system: ERP/SCM, Customer Relationship Management (CRM) & Procurement Management.

Reference Books -

1. J.Kanter, "Management/information systems", PHI
2. Gordon B. Davis & M.H.Olson, "Management information system".
3. Lucas, "Analysis, Design & implementation of information system".

BCAI235: FUNDAMENTAL OF ACCOUNTING WITH TALLY

UNIT-1

Introduction to Accounting: Meaning and definition of Book Keeping and accounting, Functions of Accounting, Users of accounting, Accounting Principles: Concepts and Conventions, Basic Accounting Equation.

UNIT-2

Double Entry System, Types of Accounts (Real A/c, Personnel A/c, Nominal A/c), Golden Rules of Debit and Credit, Journalisation, Subsidiary Books of Accounts.

UNIT-3

Ledger: Preparation and balancing of Ledger A/c, Preparation of trial Balance, Types of Errors, Trading and Profit and loss Account, Balance Sheet.

UNIT-4

Funds Flow Statement and Cash Flow Statement.

UNIT-5

- Ratio analysis: Meaning, advantage, limitation of ratio analysis, types of ratios and its implications.
- Tallys Accounting Procedures & Practices.

Reference Books:

- 1.An Introduction to Accountancy: Grewal, T. S.
- 2.Advanced Accountancy: Maheshwari S.N.
- 3.Introduction to Accountancy: Sharla. S.M.

FOURTH SEMESTER

BCAC241: INTRODUCTION OF PYTHON PROGRAMMING

UNIT I: Introduction: History, Features

Working with Python: Basic Syntax, Variable and Data Types, Operator

Conditional Statements: If, If- else, Nested if-else, elif

Looping: For, While, Nested loops

Control Statements: Break, Continue, Pass

String Manipulation: Accessing Strings, Basic Operations, String slices, Function and Methods

Lists: Introduction, Accessing list, Operations, Working with Lists, List

Tuple: Introduction, Accessing tuples, Operations Working, Functions and Methods

Dictionaries: Introduction, Accessing values in dictionaries, working with dictionaries, Properties and Functions

Functions and Methods

Functions: Defining a function, calling a function, Types of functions, Function Arguments, Anonymous functions, Global and local variables.

UNIT II :

Modules: Importing a module, Math module, Random module, Packages, Composition

Input-Output: Printing on screen, Reading data from keyboard, Opening and closing file, Reading and writing files, Inbuilt-Functions

Exception Handling: Exception, Exception Handling, Except clause, Try & finally clause, User Defined Exceptions

OOPs concept: Class and object, Attributes, Inheritance, Overloading, Overriding, Data hiding, Use of self method, `_init_` method

UNIT III:

Regular expressions: Match function, Search function, Matching VS Searching, Modifiers, Patterns

Database: Introduction, Connections, Executing queries, Transactions, Handling error

Multithreading: Thread, Starting a thread, Threading module, Synchronizing threads, Multithreaded Priority Queue.

Text Books:

- Charles Severance, “Python for Informatics”, 1st Edition, CreateSpace Independent Publishing Platform, 2013.
- Peter Wentworth, Jeffrey Elkner, Allen B. Downey, and Chris Meyers, “How to Think Like a Computer Scientist: Learning with Python”, 2nd Edition, Open Book Project, 2012

Reference Books:

- Mark Lutz, “Learning Python”, 5th Edition, O’Reilly Media, 2013.
- Wesley Chun, “Core Python Applications Programming”, Prentice Hall, 3rd Edition, 2012
- Alex Martelli, “Python in a Nutshell”, 2nd Edition, O’Reilly Media, 2006

BCAC242: WEB TECHNOLOGY

Unit-1

Introduction: History of WEB, Growth of WEB, Protocols governing the WEB, Introduction to Cyber Law in India. Introduction to International Cyber Law, WEB Project, WEB Team.

Unit-2

Communication Issues: Quality insurance and testing, Technological advances and impact on web team.

Unit-3

HTML: Formatting Tags, Links, List, Table, Forms, Comments in HTML, DHTML,

Java script: Introduction, Documents, Forms, Statements, Functions & Objects, Events and Handling, Arrays, Forms, Buttons, Checkboxes, Text fields and text areas.

Unit-4

XML: Introduction, Displaying an XML document, Document interchanges with an XML, parsers using XML, client side usage, server side usage.

Unit-5

Common Gateway Interface (CGI), PERL, RMI, COM/DCOM, VB Script, Active Server Page (ASP)

Reference Books -

1. Burdman,"Collaborative Web Development", Addition Wesley.
2. Sharma & Sharma,"Developing E-Commerce Sites", Addition Wesley.
3. Ivan Bayross,"Web Technologies Part-II",BPB
4. Shishir Gundavarma,"CGI Programming on the World Wide Web", O'Reilly & Associate.
5. DON Box," Essential COM", Addition Wesley.
6. Greg Buczek,"ASP Developer Guide", TMH.

BCAC243: OPERATING SYSTEM

UNIT-1

Introduction to operating system: What is an OS, its need and services, operating system classification – single user, multi user, simple batch processing, multiprogramming, multi tasking, Time sharing system, distributed system, real time system.

UNIT-2

Process management: process concept, process scheduling, overview of inter process communication, CPU concepts, scheduling criteria, scheduling algorithm.

UNIT-3

Deadlocks: Deadlocks characterization method for Handling deadlocks, deadlocks presentation, deadlock Avoidance, Deadlock detection recovery from deadlocks.

UNIT-4

Memory Management: Logical versus physical address space, swapping partition, paging and segmentation, concepts of virtual memory

UNIT-5

Security: Authentication program threats, system threats and Encryption.

Reference Books

1. Operating system concepts - Silerschatz Galxin
2. Operating Systems (Mc-Graw Hill Book comp.) : Madnick & DonovanMilan Milenkovic- operating system
3. O.S. principles (PHI) - P,Britch Hansen
4. Operating Systems_A Design Approach (TMH) - Growley, Charles

BCAE(1)244: SOFTWARE PROJECT MANAGEMENT

UNIT I

Fundamentals of Software Project Management (SPM), Need Identification, Vision and Scope document, Project Management Cycle, SPM Objectives, Management Spectrum, SPM Framework, Software Project Planning, Planning Objectives, Project Plan, Types of project plan.

Structure of a Software Project Management Plan, Software project estimation, Estimation methods, Estimation models, Decision process, Project Elements, Work Breakdown Structure (WBS), Types of WBS, Functions, Activities and Tasks.

UNIT II

Project Life Cycle and Product Life Cycle, Ways to Organize Personnel, Project schedule, Scheduling Objectives, Building the project schedule, Network Diagrams: PERT, CPM, Bar Charts.

Dimensions of Project Monitoring & Control, Budgeted Cost for Work Scheduled (BCWS), Cost Performance Index (CPI), Schedule Performance Index (SPI), Types of Review: Inspections, Walkthroughs, Code Reviews

UNIT III

Testing Objectives, Testing Principles, Test Plans, Test Cases, Types of Testing, Test Strategies, Testing Automation & Testing Tools, Concept of Software Quality, Software Quality Attributes, Software Quality Metrics and Indicators.

Software Configuration Management: Software Configuration Items and tasks, Plan for Change, Change Control, Change Requests Management, Version Control, Risk Management, Risk Breakdown Structure (RBS)

Text Book:

- Kelkar, S. A. Software Project Management. New Delhi: Prentice Hall India Publications.
- Cotterell, M. Software Project Management. New Delhi: Tata McGraw-Hill Publication

Reference Books:

- Royce. Software Project Management. New Delhi: Pearson Education
- Conway, K. Software Project Management. New Dehi: Dreamtech Press

BCAE(2)244:SOFTWARE TESTING

UNIT I

Review of Software Engineering: Overview of software evolution, SDLC, Testing Process, Terminologies in Testing: Error, Fault, Failure, Verification, Validation, Difference between Verification and Validation, Test Cases, Testing Suite, Test Oracles, Impracticality of Testing All data; Impracticality of testing All Paths.

Verification: Verification methods, SRS verification, Source code reviews, User documentation verification, Software project audit, Tailoring Software Quality Assurance Program by Reviews, Walkthrough, Inspection, and Configuration Audits.

UNIT II

Functional Testing: Boundary Value Analysis, Equivalence Class Testing, Decision Table Based Testing, Cause Effect Graphing Technique.

Structural Testing: Control flow testing, Path testing, Independent paths, Generation of graph from program, Identification of independent paths, Cyclomatic Complexity, Data Flow Testing, Mutation Testing.

Regression Testing: What is Regression Testing? Regression Test cases selection, Reducing the number of test cases, Code coverage prioritization technique.

UNIT III

Software Testing Activities: Levels of Testing, Debugging, Testing Techniques and their applicability, Exploratory Testing.

Automated Test Data Generation: Test Data, Approaches to test data generation, test data generation using genetic algorithm, Test Data Generation Tools, Software Testing Tools, and Software test Plan.

Text Book:

• Yogesh Singh(2012), “Software Testing”, Cambridge University Press, New York, 3rd edition.

Reference Books:

• Roger S. Pressman (2001), “Software Engineering – A Practitioner’s Approach”, Fifth Edition, McGraw-Hill International Edition, New Delhi.

• Marc Roper (2012), “Software Testing”, McGraw-Hill Book Co., London, .5th edition.

• Alexis Leon, Methews Leon, (1999), “Fundamentals of Information Technology”, Vikas Publishing, New Delhi.

BCAI245: MULTIMEDIA SYSTEM

UNIT-1

Introduction of Multimedia: Definition, Type of medium, Properties of multimedia system, Application of multimedia.

UNIT-2

Multimedia Hardware and Software Tools, input/output Hardware tools communication devices, Sound editing tools, Animation tools, image editing tools.

UNIT-3

Text: Using text in multimedia, computer and text, Hypertext and Hypermedia.

Image: Concept of image, bitmap, vector drawing images, colors, Types of colors, RGB function.

UNIT-4

Sound: Basics concept of sound, computer representation on sound, audio formats,

Music: MIDI concept, MIDI Devices, MIDISIWI, Speech, Analysis, difference between digital and MIDI

UNIT-5

Video and Animation: Analog V/s digital video, working of video standard, methods of controlling/display animations.

Reference Books

1. Principles of interactive multimedia by Elsom—Cook
2. Tay Vaughan “Multimedia making it work” Tata Mc Gruw Hill
3. Sleinneitz, “Multimedia Systems Addison Wesley”
4. Multimedia Making It Work (TMH) 1997 : Tay Vaughan
5. Multimedia Power Tools, 2 Edition : Peter Jerram and M. (Random House Electronic Publishing) Gosney

BCAC351: MICROSOFT VISUAL BASIC .NET

UNIT--1

Introduction to Visual Basic .NET (VB .NET): The .NET Framework, The .NET Programming Framework, .NET Languages, The .NET Class Library, About ASP .NET, Basic difference between C# and VB .NET, Visual Studio .NET, about VB .NET, Windows Applications using VB .NET, Object Oriented concept in VB .NET.

UNIT -2

Programming building blocks: Variables, Data Types, Assignment Operators, Arithmetic Operators. Comparison Operators, Logical Operators, Type Conversion, **Control Structure:** if Statements, controls used for if statements, **Loop Structures:** For.... Next Statements, While..... End Statements, Do Statements.

UNIT-3

Programming Concepts: Arrays-Declaring an array, useful Array function, properties & Methods, Resizing an array. Procedures-Types of Procedures, Built-in Vs Programmer defined Procedures, Methods Contrasted. Subroutine-Declaring a Subroutine, Calling the subroutine. Functions-Declaring Functions, Calling functions. Arguments-Passing arguments by Val & by Ref, optional arguments, parameters array. Procedure Overloading.

UNIT - 4

User Interface: Helper forms, Message process, Dialog Process, Owned Forms. Menus-Creating a menu, Functionality to the menu items, Enhancing the menu, Disabling Items on Windows form menus, creating context menu, Add functionality to the menu items. Toolbar-Adding the toolbar and buttons, defining an Icon for a toolbar and buttons, Adding Functionality to the toolbar.

UNIT-5

Error Handling & Prevention: Structured Exception Handling - Exception, Structured Vs Unstructured Exception Handling, Try.... Catch ... Finally Statement, Exception Class. Debugging - Break mode, starting Debugging, controlling the flow during debugging, Debugging Tools.

Reference Books

1. Visual Basic .NET by Jeffrey Kent - Tata McGraw- Hill.
2. The Complete Reference - Tata McGraw- Hill.
3. Sams Teach Yourself Visual Basic .NET Web Programming in 21 Days
4. Visual Basic .NET – Wrox

BCAC352: FUNDAMENTALS OF ALGORITHMS

UNIT-1

Introduction: Algorithms, Analysis of Algorithms, Design of Algorithm and complexity, Asymptotic Notation, Growth of Function.

UNIT-2

Elementary data Structure: Stacks, queues, Linked List, Binary Search Tree, Hash Table. Advanced Data Structure-Red Black Trees, Binomial Heap and B-Tree.

UNIT-3

Advanced Design and Analysis Techniques: Dynamic Programming, Greedy Algorithm, Back Tracking, Amortized Analysis.

UNIT-4

Graph Algorithm: Elementary Graph Algorithm, BFS, DFS, Minimum Spanning Tree, Kruskal's Algorithm, Prism Algorithm, Travelling Salesman Problem.

UNIT-5

String Matching, NP hard and NP completeness, Approximation Algorithm-Polynomial & the FFT number.

Reference Books

1. Fundamentals of Computer Algorithms-Horwitz, Sahni
Introduction to Algorithm-Cormen, Le Serson, Rivest,(MIT Press)

BCAC353: INTRODUCTIONS TO COMPUTER NETWORKS

UNIT-1

Introductory Concepts: Goals and Applications of Networks, Network structure and architecture, networks topology (Ring, Bus, Star, Hybrid), switching methods, Integrated services digital networks (ISDN).

UNIT-2

Network Software: Protocol Hierarchies/ Design issues for the Layers, Interfaces and services, Connection oriented & connectionless services

UNIT-3

Reference Models: The OSI models, comparison of OSI & TCP/IP model.
Introduction to transmission media –multiplexing, analog and Digital transmission

UNIT-4

Network Layer Design Issue, Routing Algorithm, IP Protocol.
Transport Layer: Series, TCP & UDP

UNIT-5

Application Layer Network Security, Cryptography, DNS, E-Mail, Session and presentation Layer, Design issue.

Reference Books -

1. Data Communication & Networking - by Forouzen.
2. Computer Networks - by Andrew S. Tanenbassm.
3. Computer Communication Networks and ISDN Systems - Aggarwal R.B
4. Computer Networks, (PHI) - Tanenbaum, A.S.

BCAE(1)354: ARTIFICIAL INTELLIGENCE

UNIT-1

Introduction to artificial Intelligence: Definition, AI Problems, The under line assumption, and AI techniques, level of model, criteria for success.

UNIT-2

Problem, Problem space and search: Problem as a state space search, production system, problem characteristics, issues in design of search program.

UNIT-3

Knowledge representation Issues: Representation and mapping, Approaches to knowledge representation, issues in knowledge representation the frame problem.

UNIT-4

Knowledge Representation using predicate Logic: Representation simple facts in logic/representation instance and is a relationship, resolution.

UNIT-5

Weak-slot and filler structure:-Semantic nets, frames as set and instances.

1. Strong slot and filler structure:-
2. Conceptual Dependency, Scripts, Cyc.
3. Natural language processing: Synlactic processing, semantic analysis, discourse and pragmatic processing.

Reference books:

- 1.E. RICH AND K. KNIGHT,"Artificial Intelligence" Tata Mc Grow hill.
- 2.E. Charnaik and D. Mc Dermott "introduction to artificial intelligence"EditionWesley publishing company.

BCAE(2)354:MACHINE LEARNING

An overview of Machine learning, Inductive learning: ID3, C4.5,C5; Learning Concepts and rules from Examples; Learning by analogy; Learning from observation and discovery; Learning by experimentation; Learning by training Neural Networks; Genetic Algorithm; Analysis learning; Reinforcement learning ;Applications to KDD.

References:

1. Mitchell, Machine Learning McGraw-Hill.
2. Marsland, Machine learning: an algorithmic perspective, CRC Press,Taylor and Francis Group.

BCAI355:INTRODUCTION TO CLOUD COMPUTING

UNIT I:

Overview of Computing Paradigm – Recent trends in Computing Grid Computing, Cluster Computing, Distributed Computing, Utility Computing, Cloud Computing Evolution of cloud computing, Business driver for adopting cloud computing.

Introduction to Cloud Computing Cloud Computing – (NIST Model) Introduction to Cloud Computing, History of Cloud Computing, Cloud service providers Properties, Characteristics & Disadvantages Pros and Cons of Cloud Computing, Benefits of Cloud Computing, Cloud computing vs. Cluster computing vs. Grid computing Role of Open Standards.

UNIT II:

Cloud Computing Architecture – Cloud computing stack Comparison with traditional computing architecture (client/server), Services provided at various levels, How Cloud Computing Works, Role of Networks in Cloud computing, protocols used, Role of Web services Service Models (XaaS) Infrastructure as a Service(IaaS) , Platform as a Service(PaaS), Software as a Service(SaaS) Deployment Models Public cloud, Private cloud, Hybrid cloud, Community cloud

UNIT III:

Infrastructure as a Service (IaaS) – Introduction to IaaS, Introduction to virtualization, Different approaches to virtualization, Hypervisors, Machine Image, Virtual Machine (VM) Resource Virtualization Server.

Cloud Security – Infrastructure Security Network level security, Host level security, Application level security Data security and Storage Data privacy and security Issues

Text Book:

• **Rajkumar Buyya, James Broberg, Andrzej M. Goscinski, (2011), Cloud Computing: Principles and Paradigms, Wiley.**

Reference Books:

• **Nikos Antonopoulos, Lee Gillam, Cloud Computing, (2012), Principles, Systems and Applications, Springer.**

• **Ronald L. Krutz, Russell Dean Vines Cloud Security, (2010), A Comprehensive Guide to Secure Cloud Computing, Wiley-India.**

• **Anthony T. Velte, Cloud Computing: A Practical Approach, (2009), Tata McGraw Hill.**

YEAR-III SEMESTER-VI

BCA 601: PROJECT REPORT

In the B.C.A. – VIth Semester every student shall be required to complete a Project under supervision of a Faculty Member approved by Director/ Head of the Department which will have to be submitted by a fixed dated in duplicate. The Semester Project-Report will carry, 200 marks and will be evaluated by two examiners: one external examiner to be appointed by the university and one internal examiner i.e. the faculty member under whose supervision the project was completed. The average of the marks awarded by the external and the internal examiners shall be incorporated in the examination result.

The project- report should produce a comprehensive picture of the work actually done by him/ her which must be duly forwarded by the faculty member under whose supervision this academic exercise was carried out for not less than four months or so.

COMPREHENSIVE PRESENTATION & VIVA-VOCE

At the end of B.C.A. VI semester examination there shall be a comprehensive viva-voce examination of 300 marks. The viva-voce shall be conducted by a board consisting of one external examiners appointed by the Director/ Head of dept.

The Viva-voce may concern with the project development by the candidates or different academic exercise carried in semester.