Savitribai Phule Pune University Faculty of Commerce & Management Structure for Three - Year B.Com. Degree course (Choice Based Credit System) (2019 Pattern) With effect from June 2019

Preamble:-

Commerce education is that area of education, which develops the required knowledge, skills and attitudes for the handling of Trade, Commerce and Industry. Commerce education is entirely different from other disciplines. Hence, it must charter Course routes to service the aspirations of the nation. To meet the growing needs of the business society, there is greater demand for sound development of commerce education. The relevance of commerce education has become more imperative, this means a marked change in the way commerce and management education is perceived in India. The Commerce education is dedicated to developing tomorrow's leaders, managers, and professionals.

The existing education system of imparting commerce education needs to be more dynamic to incorporate all local and global changes in the field of trade and commerce. The curriculum needs to be restructured accordingly. The learning inputs are required to be more update, skill based and with appropriate applications. This will be achieved through the introduction of Choice based Credit System at undergraduate level.

The choice based credit system offers a cafeteria approach where the students have the liberty to choose courses of their own choice. The credit system allows students to opt for additional courses where he /she can score more than the required credits. The system will focus on student centric learning methods, which include use of Information and Communication Technology, innovative methods of teaching and learning and emphasis on industry interaction to enable the learners to take up professional challenges more effectively.

1. INTRODUCTION

The B.Com Degree Course (2019 pattern) will be introduced in the following order:-

| 2019-2020 |
|-----------|
| 2020-2021 |
| 2021-2022 |
| |

The B.Com. Degree Course will consist of six semesters divided into three Years. The first year (Semester I and II) choice based credit system examination will be held at the end of the each semester.

The Second Year (Semester III and IV) and Third Year (Semester V and VI) choice based credit system examination will be held at the end of each semester.

2. ELIGIBILITY

- a) No Candidates shall be admitted to the First Year of the B.Com. Degree Course (**2019 pattern**) unless he/she has passed the Higher Secondary School Certificate Examination of the Maharashtra State Board of Higher Secondary Education Board or equivalent or University with English as a passing Course.
- b) No candidate shall be admitted to the Third Semester examination of the second year unless he/ she has cleared first two semesters satisfactorily for the course at the college affiliated to this University.
- c) No candidate shall be admitted to the Third Year B.Com. (Fifth semester) Degree Course (**2019 pattern**) unless he/she has cleared all the papers of first and second semester Examination of F.Y. B.Com. and has satisfactorily kept terms for the second year (Third and Fourth Semester) and also fifth semester for the third year of B.Com) satisfactorily in a college affiliated to this University.

3. A.T.K.T. Rules :

- If a candidate fails in all the courses (subject heads) of passing of semester I shall be allowed to proceed semester II. However, a student who fails in four theory courses and two practical courses at semester I and II taken together may be admitted to semester III & IV.
- If a candidate fails in all the courses (subject heads) of passing of semester III shall be allowed to proceed to semester IV.
- If a candidate fails in all the courses (subject heads) of passing of semester V shall be allowed to proceed to semester VI. However, a student who fails in four theory courses and two practical courses at semester III and IV taken together may be admitted to semester V & VI.
- No candidate shall be allowed to proceed to semester V unless the candidate has cleared semester I & II in all courses (Subjects).
- ATKT rules are applicable for 2nd and 4th semester.

4. COURSES CARRYING PRACTICALS

- a) Each practical course will be of one credit.
- b) There will be practical and practical examination for semester I and II of the F.Y.B.Com. For the Course Financial Accounting.
- c) There will be practical and practical examinations for the special Courses (Discipline Special Elective) of S.Y.B.Com. (Semester III and IV) and of T.Y.B.Com. (Semester V & VI)
- d) There will be Practical for the S.Y.B.Com level Compulsory Course Business Communication (Semester III and IV) & for T.Y.B.Com Auditing and Taxation (Semester V) & (Semester VI)
- e) A Student must offer the same Special Course at T.Y.B.Com. (Semester V & VI) which he / she has offered at S.Y.B.Com. (Semester III and IV)
- f) In an exceptional case, a student may change the Course chosen by him at third and fourth semester of second year during the first semester of the third year provided he keeps the additional terms of the Course at S.Y.B.Com.

| Semester | Type of Course | Name of Practical Course | Course Code |
|----------|---------------------|-------------------------------------|--------------------|
| Ι | Core Course | Financial Accounting – I | PR - 112 |
| II | Core Course | Financial Accounting – II | PR – 122 |
| III | Core Course | Business Communication – I | PR - 231 |
| III | Discipline Specific | Special Course Paper (I) | PR- 236 |
| | Elective | a) Business Administration | |
| | | b) Banking and Finance | |
| | | c) Business Law and practices | |
| | | d) Cooperation and Rural | |
| | | Development | |
| | | e) Cost and Works Accounting | |
| | | f) Business Statistics | |
| | | g) Business Entrepreneurship | |
| | | h) Marketing Management | |
| | | i) Agricultural and Industrial | |
| | | Economics | |
| | | j) Defence Budgeting, Finance and | |
| | | Management | |
| | | k) Insurance, Transport and Tourism | |
| | | I) Computer Programming and | |
| | | Application | |
| IV | Core Course | Business Communication – II | PR- 241 |
| IV | Discipline Specific | Special Course Paper (I) | PR- 246 |
| | Elective | a) Business Administration | |
| | | b) Banking and Finance | |
| | | c) Business Law and practices | |
| | | d) Cooperation and Rural | |
| | | Development | |
| | | e) Cost and Works Accounting | |
| | | f) Business Statistics | |

Course having practical examination:-

| | | g) | Business Entrepreneurship | |
|-----|---------------------|---------------|--|---------|
| | | h) | Marketing Management | |
| | | i) | Agricultural and Industrial | |
| | | | Economics | |
| | | i) | Defence Budgeting, Finance and | |
| | | 5/ | Management | |
| | | k) | Insurance, Transport and Tourism | |
| | | Ď | Computer Programming and | |
| | | -/ | Application | |
| V | Core Course | Aud | iting & Taxation – I | PR- 354 |
| V | Discipline Specific | 11000 | Special Course Paper (II) | PR- 355 |
| · · | Elective | a) | Business Administration | TR 555 |
| | Elective | b) | Banking and Finance | |
| | | c) | Business Law and practices | |
| | | (b | Cooperation and Rural | |
| | | <i>u)</i> | Development | |
| | | e) | Cost and Works Accounting | |
| | | f) | Business Statistics | |
| | | g) | Business Entrepreneurship | |
| | | $\frac{b}{h}$ | Marketing Management | |
| | | i) | Agricultural and Industrial | |
| | | -/ | Economics | |
| | | i) | Defence Budgeting Finance and | |
| | | J/ | Management | |
| | | k) | Insurance Transport and Tourism | |
| | | N | Computer Programming and | |
| | | , , | Application | |
| V | Discipline Specific | | | PR- 356 |
| · | Elective | | Special Course Paper (III) | 110 550 |
| | Liccuve | a) | Business Administration | |
| | | b) | Banking and Finance | |
| | | c) | Business Law and practices | |
| | | a) | Cooperation and Rural | |
| | | | Development | |
| | | e) | Cost and Works Accounting | |
| | | I) | Business Statistics | |
| | | g) | Business Entrepreneursnip | |
| | | n) | Marketing Management | |
| | | 1) | Agricultural and industrial | |
| | | | Economics Defense Budgeting Finance and | |
| | | J) | Management | |
| | | 12) | Insurance Transport and Tourism | |
| | | | Computer Programming and | |
| | | 1 | Application | |
| V/I | Coro Course | المدر ٨ | Application I | DD 264 |
| | | Aud | iung & Taxauon – II Special Course Parts (II) | rK- 304 |
| VI | Discipline Specific | | Special Course Paper (II) | PR- 365 |
| | Elective | a) | Dusiness Auministration | |
| | | | Danking and Finance Rusinoss I aw and practices | |
| | | | Cooperation and Purel | |
| | | | Development | |
| 1 | 1 | 1 | Development | |

| | | e) Cost and Works Accounting f) Business Statistics g) Business Entrepreneurship h) Marketing Management i) Agricultural and Industrial Economics j) Defence Budgeting, Finance and Management k) Insurance, Transport and Tourism l) Computer Programming and Application | |
|----|---------------------------------|--|---------|
| VI | Discipline Specific Elective | Special Course Paper (III)a)Business Administrationb)Banking and Financec)Business Law and practicesd)Cooperation and RuralDevelopmente)e)Cost and Works Accountingf)Business Statisticsg)Business Entrepreneurshiph)Marketing Managementi)Agricultural and IndustrialEconomicsj)Defence Budgeting, Finance and Managementk)Insurance, Transport and Tourisml)Computer Programming and Application | PR- 366 |

5. MEDIUM OF INSTRUCTION

The medium of instruction for B.Com. Degree course shall be either Marathi or English except languages. The Medium of instructions for Business Communication (S.Y.B.Com) shall be English only.

6. UNIVERSITY TERMS

The dates for the commencement and conclusion of the first and the second terms shall be as determined by the University Authorities. Only duly admitted students can keep the terms. The present relevant ordinances pertaining to grant of terms will be applicable.

7. VERIFICATION AND REVALUATION

The candidate may apply for verification and revaluation or result through Principal of the College which will be done by the University as per ordinance framed in that behalf.

8. RESTRUCTURING OF COURSES

This revised course structure shall be made applicable to the colleges implementing 'Restructured Programme at the undergraduate level from June, 2019. The Colleges under the Restructured Programme which has revised their structure in the light of the "2019 Pattern" shall be introduced with effect from academic year 2019-20.

9. STANDARD OF PASSING.

A candidate is required to obtain 40% marks in Internal Assessment, Practical Examination and Semester End University Examination.

It means that passing separately at internal assessment, practical examination and semester end university examination is compulsory.

10. METHODS OF EVALUATION, PASSING, AND EVALUATION CRITERIA:-

The evaluation of students will be done on three parameters:-

- a. Internal assessment
- b. Practical Examination (list of Courses having practical is given in note No. 4)
- c. University examination

For university examination, question papers will be set for seventy marks (three hours duration)

Evaluation will be done on a continuous basis, three times during each semester. Internal assessment will be of 30 marks. The colleges need to adopt any three out of the following methods for internal assessment:-

- a. Written examination
- b. Quiz
- c. Presentations
- d. Projects
- e. Assignments
- f. Tutorials
- g. Oral examination

11. STRUCTURE OF TRANSCRIPT:

Conversion of percentage into credit(s) and grade(s): The following illustrations could be taken as an example for computing SGPA and CGPA from percentage to credits for Honours courses in all disciplines, degree Program courses in Science subjects and degree Program courses in Humanities, Social Sciences and Commerce subjects:

1.Percentage to Grades and Grade Points

The following formula may be used to convert marks (%) into letter grades.

Let \bar{X} = mean of % age marks of all student appeared in the paper.

 σ = Standard deviation

m = % of marks obtained

| Letter grade | Numerical grade | Formula |
|-------------------|-----------------|---|
| O (outstanding) | 10 | $m \ge \bar{X} + 2.5 a$ |
| A+ (Excellent) | 9 | $\bar{X} + 2.0 \sigma \le m < \bar{X} + 2.5 \sigma$ |
| A (Very Good) | 8 | $\bar{X} + 1.5 \sigma \le m < \bar{X} + 2.0 \sigma$ |
| B+ (Good) | 7 | $\bar{X} + 1.0 \sigma \le m < \bar{X} + 1.5 \sigma$ |
| B (Above average) | 6 | $\vec{X} \le m < \vec{X} + \sigma$ |
| C (Average) | 5 | $\bar{X} - 0.5 \sigma \le m < \bar{X}$ |
| D (Pass) | 4 | $\bar{X} - \sigma \le m < \bar{X} - 0.5 \sigma$ |
| F (Fail) | 0 | $m < \bar{X} - \sigma$ |
| Ab (Absent) | 0 | |

* Minor variations may be adjusted by the individual institution.

- 1 A student obtaining Grade F shall be considered failed and will be required to reappear in the examination.
- 2 For non credit courses 'Satisfactory' or "Unsatisfactory' shall be indicated instead of the letter grade and this will not be counted for the computation of SGPA/CGPA.
- 3 The Universities can decide on the grade or percentage of marks required to pass in a course and also the CGPA required to qualify for a degree taking into consideration the recommendations of the statutory professional councils such as AICTE, MCI, BCI, NCTE etc.,
- 4 The statutory requirement for eligibility to enter as assistant professor in colleges and universities in the disciplines of arts, science, commerce etc., is a minimum average mark of 50% and 55% in relevant postgraduate degree respectively for reserved and general category. Hence, it is recommended that the cut-off marks for grade B shall not be less than 50% and

12. RESTRUCTURING OF COURSES – EQUIVALENCE AND TRANSITORY PROVISION:

The University will conduct examination of old course (2013 Pattern) for next three academic years from the date of implementation of course.

The candidate of old course will be given three chances to clear his/her Courses as per the old course (2013 Pattern) and thereafter he/she will have to appear for the Courses as per the equivalence given to old course (2013 Pattern).

13. SCHEMES OF CREDITS -

Total credits for three year integrated B.Com. Course is as follows:-

| Sr. No. | Semester No | No. of courses | Lecture Hours | Credit per course | Credit for practical courses | Add on course credit (*) | Lectures + Practical + add on courses= Total Credits |
|------------|----------------|-------------------|------------------|-------------------------|---------------------------------------|--------------------------------------|---|
| 1 | Ι | 7 | 48 | 3 | 1 | 1 | 21 +2 =23 |
| 2 | II | 7 | 48 | 3 | 1 | 1 | 21 +2 =23 |
| 3 | III | 6 | 48 | 3 | 2 | 0 | 18+2 = 20 |
| 4 | IV | 6 | 48 | 3 | 2 | 2 | 18+2+2 =22 |
| 5 | V | 6 | 48 | 3 | 3 | 0 | 18+3=21 |
| 6 | VI | 6 | 48 | 3 | 3 | 2 | 18+3+2 =23 |
| | Tota | al No. of cre | edits | | | | 132 |

Suggested Add On courses (*)

| Sr. No. | Add on course | Class | Semester | Credit | | | | |
|---------|--|------------|----------|--------|--|--|--|--|
| 1. | Value added course - I | F.Y.B.Com. | Ι | 1 | | | | |
| 2. | Value added course – II | F.Y.B.Com. | II | 1 | | | | |
| 3. | Environment Awareness | S.Y.B.Com. | IV | 2 | | | | |
| 4. | Specific Add - on Course related to specialized Course/ Internship | T.Y.B.Com. | VI | 2 | | | | |
| | Total | | | | | | | |

Revised structure of Choice Based Credit System Course First Year B. Com. Semester – I w.e.f. 2019- 20

| Course | | Course | No. of lectures (Per Week) | No of | Internal | University Assessment | | Total | Duration of |
|---------|---|--|----------------------------------|---------|------------|--------------------------|-------------------|-------|-------------|
| No. | Course / Title of Paper | | | Credits | Assessment | Univ. Exam | Practical Exam | Marks | Examination |
| 111 | Compulsory English- I | Ability Enhancement Compulsory Course | 4 | 3 | 30 | 70 | | 100 | 3 Hours |
| 112 | Financial Accounting - I | Core Course | 4 | 4 | 30 | 50 | 20 | 100 | 3 Hours |
| 113 | Business Economics- I | Core Course | 4 | 3 | 30 | 70 | | 100 | 3 Hours |
| 114 (A) | Business Mathematics and Statistics - I | Core Course | 4 | 3 | 30 | 70 | | 100 | 3 Hours |
| 114 (B) | OR Computer Concepts and Application- I | | | | | | | | |
| 115 | Optional Group. (A) (Any one of the Following) a) Organization Skill Development b) Banking and finance c) Commercial Geography d) Defence Organization and Management in India e) Cooperation f) Managerial Economics | Generic Elective Course | 4 | 3 | 30 | 70 | | 100 | 3 Hours |

| Comment No. | Course / Title of Paper | Course | No. of lectures (Per Week) | No of | Internal Assessment | University Assessment | | Total | Duration of |
|-------------|---|----------------------------------|----------------------------------|---------|------------------------|--------------------------|-------------------|-------|-------------|
| Course No. | | | | Credits | | Univ. Exam | Practical Exam | Marks | Examination |
| 116 | Optional Group. (B) (Any one of the Following) | Generic Elective Course | 4 | 3 | 30 | 70 | | 100 | 3 Hours |
| | a) Essentials of E- Commerce b) Insurance & Transport c) Marketing & Salesmanship d) Consumer Protection and Business Ethics e) Business Environment & Entrepreneurship f) Foundation Course in Commerce | | | | | | | | |
| 117 | Any one of the following Language Additional English/ Marathi/ Hindi/ Guajarati/ Sindhi/ Persian/ Urdu/ French/ German / Sanskrit / Arabic | Ability Enhancement Course | 4 | 3 | 30 | 70 | | 100 | 3 Hours |

First Year B. Com. Structure of the Syllabus w.e.f. 2019- 20

Semester – II

| Course | Course / Title of Paper | Course | No. of lectures (Per Week) | No. of | Internal | University Assessment | | Total | Duration of Theory |
|--------|--|--|-------------------------------|---------|------------|--------------------------|-------------------|-------|-----------------------|
| No. | Course / 11tle of Paper | | | Credits | Assessment | Univ. Exam | Practical Exam | Marks | Examination |
| 121 | Compulsory English- II | Ability Enhancement Compulsory Course | 4 | 3 | 30 | 70 | | 100 | 3 Hours |
| 122 | Financial Accounting - II | Core Course | 4 | 4 | 30 | 50 | 20 | 100 | 3 Hours |
| 123 | Business Economics- II | Core Course | 4 | 3 | 30 | 70 | | 100 | 3 Hours |
| 124(A) | Business Mathematics and Statistics - II OR Computer Concepts and | Core Course | 4 | 3 | 30 | 70 | | 100 | 3 Hours |
| 124(B) | Application- II | | | | | | | | |
| 125 | Optional Group. – (A) (Any one of the Following) a) Organization Skill Development b) Banking and finance c) Commercial Geography d) Defence Organization and Management in India e) Cooperation f) Managerial Economics | Generic Elective Course | 4 | 3 | 30 | 70 | | 100 | 3 Hours |

| Course | Course / Title of Paper | Course | No. of lectures | No. of | Internal Assessment | University Assessment | | Total | Duration of Theory |
|--------|---|----------------------------------|--------------------|---------|------------------------|--------------------------|--------------------|-------|-----------------------|
| No. | | | (Per Week) | Credits | | Univ. Exam. | Practical Exam. | Marks | Examination |
| 126 | Optional Group. (B) (Any one of the Following) a) Essentials of E- Commerce b) Insurance & Transport c) Marketing & Salesmanship d) Consumer Protection and Business Ethics e) Business Environment & Entrepreneurship f) Foundation Course in Commerce | Generic Elective Course | 4 | 3 | 30 | 70 | | 100 | 3 Hours |
| 127 | Any one of the following Language- II Additional English/ Marathi/ Hindi/ Guajarati/ Sindhi/ Persian/ Urdu/ French/ German / Sanskrit / Arabic | Ability Enhancement Course | 4 | 3 | 30 | 70 | | 100 | 3 Hours |

Second Year B. Com. w.e.f. 2020-21.

Semester – III

| Course | | No | No. of | Total No. of Credits | Total No. of Internal | University Assessment | | Total | Duration of |
|--------|---|-----------------------------------|------------------------|-------------------------|-----------------------|--------------------------|-------------------|-------|-----------------------|
| No. | Course / Title of Paper | Course | lectures (Per Week) | | Assessment | Univ. Exam | Practical Exam | Marks | Theory Examination |
| 231 | Business Communication- I | Core Course | 4 | 4 | 30 | 50 | 20 | 100 | 3 Hours |
| 232 | Corporate Accounting- I | Core Course | 4 | 3 | 30 | 70 | | 100 | 3 Hours |
| 233 | Business Economics - I (Macro) | Core Course | 4 | 3 | 30 | 70 | | 100 | 3 Hours |
| 234 | Business Management - I | Core Course | 4 | 3 | 30 | 70 | | 100 | 3 Hours |
| 235 | Elements of Company Law- I | Core Course | 4 | 3 | 30 | 70 | | 100 | 3 Hours |
| 236 | Special Course Paper- I (Any One) a) Business Administration b) Banking and Finance c) Business Law and practices d) Cooperation and Rural Development e) Cost and Works Accounting f) Business Statistics g) Business Entrepreneurship h) Marketing Management i) Agricultural and Industrial Economics j) Defence Budgeting, Finance and Management k) Insurance, Transport and Tourism l) Computer Programming and Application | Discipline Special Elective | 4 | 4 | 30 | 50 | 20 | 100 | 3 Hours |

Second Year B. Com. w.e.f. 2020- 21

Semester – IV

| Course | Course / Title of Domon | Course | No. of | Total No. of | Internal | University A | Assessment | Total | Duration of |
|--------|---|-----------------------------------|------------|-----------------|------------|---------------|-------------------|-------|-------------|
| No. | Course / The of Paper | Course | (Per Week) | Credits | Assessment | Univ. Exam | Practical Exam | Marks | Examination |
| 241 | Business Communication- II | Core Course | 4 | 4 | 30 | 50 | 20 | 100 | 3 Hours |
| 242 | Corporate Accounting- II Core Course | | 4 | 3 | 30 | 70 | | 100 | 3 Hours |
| 243 | Business Economics – II (Macro) | Core Course | 4 | 3 | 30 | 70 | | 100 | 3 Hours |
| 244 | Business Management - II | Core Course | 4 | 3 | 30 | 70 | | 100 | 3 Hours |
| 245 | Elements of Company Law- II | Core Course | 4 | 3 | 30 | 70 | | 100 | 3 Hours |
| 246 | Special Course Paper- I (Any One) a) Business Administration b) Banking and Finance c) Business Law and practices d) Cooperation and Rural Development e) Cost and Works Accounting f) Business Statistics g) Business Entrepreneurship h) Marketing Management i) Agricultural and Industrial Economics j) Defence Budgeting, Finance and Management k) Insurance, Transport and Tourism l) Computer Programming and Application | Discipline Special Elective | 4 | 4 | 30 | 50 | 20 | 100 | 3 Hours |

Third Year B. Com. w.e.f. 2021- 22

Semester – V

| | | G | No. of lectures | No. of | Internal | University Assessment | | | Total | Duration of | |
|------------|---|------------------------------------|--------------------|---------|----------------|--------------------------|----------------|----------------|-------|-----------------|--|
| Course No. | Course / The of Paper | Course | (Per Week) | Credits | Assessme nt | Univ. Exam | Pract. Exam | Inter nship | Marks | Examinatio n | |
| 351 | Business Regulatory Framework - I | Core Course | 4 | 3 | 30 | 70 | | | 100 | 3 Hours | |
| 352 | Advanced Accounting - I | Core Course | 4 | 3 | 30 | 70 | | | 100 | 3 Hours | |
| 353 | Indian and Global Economic Development - I Or International Economics - I | Core Course | 4 | 3 | 30 | 70 | | | 100 | 3 Hours | |
| 354 | Auditing & Taxation - I | Core Course | 4 | 4 | 30 | 50 | 20 | | 100 | 3 Hours | |
| 355 | Special Course Paper – II (Same Special Course Offered at S.Y.B.Com) a) Business Administration b) Banking and Finance c) Business Law and practices d) Cooperation and Rural Development e) Cost and Works Accounting f) Business Statistics g) Business Entrepreneurship h) Marketing Management i) Agricultural and Industrial Economics j) Defence Budgeting, Finance and Management k) Insurance, Transport and Tourism l) Computer Programming and Application | Discipline Specific Elective | 4 | 4 | 30 | 50 | | 20 | 100 | 3 Hours | |

| Course | Course / Title of Demor | Course | No. of | No. of | Internal | University Assessment | | | Total | Duration of Theory |
|--------|---|------------------------------------|----------------------|--------|----------------|--------------------------|----------------|----------------|-------|-----------------------|
| No. | | Course | (Per Week) Credits A | | Assessme nt | Univ. Exam | Pract. Exam | Inter nship | Marks | Examinati on |
| 356 | Special Course Paper – III (Same Special Course Offered at S.Y.B.Com) a) Business Administration b) Banking and Finance c) Business Law and practices d) Cooperation and Rural Development e) Cost and Works Accounting f) Business Statistics g) Business Entrepreneurship h) Marketing Management i) Agricultural and Industrial Economics j) Defence Budgeting, Finance and Management k) Insurance, Transport and Tourism l) Computer Programming and Application | Discipline Specific Elective | 4 | 4 | 30 | 50 | | 20 | 100 | 3 Hours |

Third Year B. Com. w.e.f. 2021- 22

Semester – VI

| Course | Course / Title of Donor | Course | No. of lectures | No. of Interna | Internal | University Assessment | | | Total | Duration of |
|--------|---|------------------------------------|--------------------|----------------|------------|--------------------------|-----------------------|----------------|-------|-------------|
| No. | Course / Thue of Taper | Course | (Per Week) | Credits | Assessment | Univ. Exam | Practic al Exam | Interns hip | Marks | Examination |
| 361 | Business Regulatory Framework - II | Core Course | 4 | 3 | 30 | 70 | | - | 100 | 3 Hours |
| 362 | Advanced Accounting - II | Core Course | 4 | 3 | 30 | 70 | | - | 100 | 3 Hours |
| 363 | Indian and Global Economic Development - II Or International Economics - II | Core Course | 4 | 3 | 30 | 70 | - | - | 100 | 3 Hours |
| 364 | Auditing & Taxation - II | Core Course | 4 | 4 | 30 | 50 | 20 | - | 100 | 3 Hours |
| 365 | Special Course Paper – II (Same Special Course Offered at S.Y.B.Com) a) Business Administration b) Banking and Finance c) Business Law and practices d) Cooperation and Rural Development e) Cost and Works Accounting f) Business Statistics g) Business Entrepreneurship h) Marketing Management i) Agricultural and Industrial Economics j) Defence Budgeting, Finance and Management k) Insurance, Transport and Tourism l) Computer Programming and Application | Discipline Specific Elective | 4 | 4 | 30 | 50 | | 20 | 100 | 3 Hours |

| Course | Course / Title of Paper | Course | No. of | No. of | Internal | University Assessment | | | Total | Duration of Theory |
|--------|--|------------------------------------|------------|-------------------|----------|--------------------------|-----------------------|----------------|-------|-----------------------|
| No. | | Course | (Per Week) | Per Week) Credits | | Univ. Exam | Practi cal Exam | Inter nship | Marks | Examinati on |
| 366 | Special Course Paper – III (Same Special Course Offered at S.Y.B.Com) | Discipline Specific Elective | 4 | 4 | 30 | 50 | | 20 | 100 | 3 Hours |
| | a) Business Administration b) Banking and Finance c) Business Law and practices d) Cooperation and Rural Development e) Cost and Works Accounting f) Business Statistics g) Business Entrepreneurship h) Marketing Management i) Agricultural and Industrial Economics j) Defence Budgeting, Finance and Management k) Insurance, Transport and Tourism l) Computer Programming and Application | | | | | | | | | |

Revised syllabi (2019Pattern) for three years F.Y. B. Com. Degree course (CBCS)

Semester: I

Financial Accounting-I

Course Code - 112

No. of Credits :- 03 and for practical - 01

Objective of the Course:-

1. To impart knowledge of basic accounting concepts

2. To create awareness about application of these concepts in business world

3. To impart skills regarding Computerised Accounting

4. To impart knowledge regarding finalization of accounts of various establishments.

| Unit No. | Unit Title | Contents | Purposed Skills to be developed |
|-------------|---|---|---|
| 1 | Accounting Concepts, Conventions and Principles and an overview of Emerging Trends in Accounting | (A) Accounting Concepts, Conventions and Principles 1. Money Measurement 2. Business Entity 3. Dual Aspect 4. Periodicity Concept 5. Realization Concept 6. Matching Concept 7. Accrual / Cash Concept 8. Consistency Concept 9. Conservatism Principle 10. Materiality Concept 11. Going Concern Concept 12. Historical Cost Concept 13. Inflation Accounting 2. Creative Accounting | Knowledge about various accounting Concepts, Conventions and Principles. Understanding emerging trends in accounting and its effect on accounting Practices. |

| | | Environmental Accounting Human Resource Accounting Forensic Accounting | |
|---|--|---|---|
| 2 | Piecemeal Distribution of Cash | 1. Surplus Capital Method only, Asset taken over by a partner, | • Knowledge about process of dissolution of partnership firm. |
| | | 2. Treatment of past profits or past losses in the Balance sheet, | |
| | | 3. Contingent liabilities | |
| | | 4. Realization expenses/amount kept aside for expenses | |
| | | 5. adjustment of actual, Treatment of secured liabilities, | |
| | | Treatment of preferential liabilities like Govt. dues/labour dues etc., Excluding: Insolvency of partner and Maximum Loss Method. | |
| 3 | Accounts from Incomplete Records (Single Entry System) | Meaning of single entry system Features of Single Entry System Conversion of Single Entry into Double Entry | Knowledge about single entry systems. Purpose and advantages of double entry system Process of conversion of single entry into double entry system. |
| 4 | Introduction to Goods and Services Tax laws and Accounting | Constitutional Background of GST, Concepts and definition of GST. IGST, CGST and SGST | Knowledge about conceptual framework of the GST Knowledge about various components of GST. |
| | | 3. Input and Output Tax credit | • Types of taxes under GST |
| | | 4. Procedure for registration under GST | • Registration process under GST for business establishments. |

Practical for Semester-I

| Торіс | Mode of Practical |
|--|-----------------------------------|
| Constitutional Background of GST, Concepts and Implications of GST. | Library Assignment |
| IGST, CGST and SGST | Guest Lecture |
| Procedure for registration under GST | Visit to a business establishment |
| Input and Output Tax credit | PowerPoint Presentation |

Teaching methodology

| Topic | Total Lectures | Innovative methods to be used | Film shows and AV | Project | Expected Outcome |
|-------|-------------------|----------------------------------|--------------------------------|---|---|
| 1 | 12 | PowerPoint Presentations | Videos available on YouTube | Library assignment on Types of accounting principles and conventions with its usage and emerging trends in | Students will be able to acquire in-depth knowledge |
| 2 | 12 | Group Activity | Videos available on YouTube | | Students will be able to acquire in-depth knowledge |
| 3 | 12 | PowerPoint Presentations | Videos available on YouTube | Group activity of conversion of single entry into double entry system | Students will be able to understand the process and importance of conversion of single entry into double entry system |
| 4 | 12 | Visit and interview | Videos available on YouTube | Compilation of information about the contents in the syllabus in a journal | Students will gain knowledge about GST and its implications. |

References

| Sr. No. | Title of the Book | Author/s | Publication | Place |
|---------|--|--|--|-------------------------|
| 1. | Advanced Accounts | M.C. Shukla, T.S. Grewal, S.C. Gupta | S. Chand Publication | New Delhi. |
| 2. | Financial Accounting for B.Com | CA (Dr.) P.C. Tulsian S.C. Gupta | S. Chand Publication | New Delhi. |
| 3. | Introduction to Accountancy | S.R.N Pillai & Bhagavathi | S.Chand & CompanyLtd | New Delhi |
| 4. | Corporate Accounting | Raj Kumar Sah | Cengage Publications | Noida, Uttar Pradesh |
| 5. | Advanced Accounting | S. N. Maheshwari | | |
| 6. | GST Law and Analysis with Conceptual Procedures | Bimal Jain and Isha Bansal (Set of 4 Volumes) | Pooja Law Publishing Company | New Delhi |
| 7. | Guidance Note on GST by ICAI | | The Institute of Chartered Accountants of India | New Delhi |

Semester-I

Business Economics (Micro) - I

Course Code - 113

No. of Credits :- 03

Objectives of the course:-

- 1. To impart knowledge of business economics
- 2. To clarify micro economic concepts
- 3. To analyze and interpret charts and graphs
- 4. To understand basic theories, concepts of micro economics and their application

| Unit | Unit Title | Contents | Purpose & skills to be developed |
|------|---------------------------------------|--|--|
| No. | | | |
| 1 | Introduction and Basic Concepts | 1.1 Meaning, Nature, Scope and Importance of Business Economics 1.2 Concept of Micro and Macro Economics 1.3 Tools for Economic Analysis-Functional Relationship, Schedules, Graphs and Equations 1.4 Basic Concepts: Household, Consumer, Firm, Plant and Industry 1.5 Goals of Firms- Economic and Non- Economic | To make the students aware of concepts in micro economics To help the students understand the difference between micro and macro economics To make the students understand economic and non-economic goals of firms. Skills : Analyze and think critically, develop writing skills |
| 2 | Consumer Behavior | Utility: Concept and Types 2.2 Cardinal Approach: Law of Diminishing Marginal Utility and Law of Equi Marginal Utility 2.3 Consumer Surplus: Concept and Measurement 2.4 Ordinal Approach: Indifference curve Analysis- Concept, Characteristics, Consumer Equilibrium | To help the students understand the concept of utility To impart knowledge of cardinal and ordinal approach To make them understand the concept of consumer surplus Skills: Understanding complex theories and concepts Geometrical skills, mathematical aptitude, writing skills |

| 3 | Demand and | 3.1 Concept of Demand | • To understand the concept of demand and elasticity of |
|----|------------|--|---|
| 5. | Supply | 3.2 Determinants of Demand | demand |
| | Analysis | 3.3 Law of Demand | • To impart knowledge of law of supply and the determinants |
| | | 3.4 Elasticity of Demand | of law of supply |
| | | 3.4.1 Price Elasticity of Demand - Meaning, | • To help the students understand price determination in varied |
| | | Types, Measurement, Uses and Significance | demand and supply condition |
| | | 3.4.2 Income Elasticity of Demand-Meaning | Skills imparted: |
| | and Types | | Applying mathematical and statistical analysis methods |
| | | 3.4.3 Cross Elasticity of Demand-Meaning | extracting information, drawing conclusions |
| | | and Types | |
| | | 3.5 Supply : Concept, Determinants and | |
| | | Law of Supply | |
| | | 3.6 Equilibrium of Demand and Supply for Price Determination | |
| 4. | Production | 4.1 Concept of Production Function | • To help the students understand the relation between |
| | Analysis | 4.2 Total, Average and Marginal Production | revenue concepts |
| | | 4.5 Law of Variable Proportions | • To understand theories of production function |
| | | 4.4 Law of Returns to Scale | • To make students know about economies and diseconomies |
| | | Internal and External | of scale |
| | | | Skills: Interpret economic theories, writing skills, understand charts and graphs. |

Teaching methodology

| Topic No. | Total Lectures | Innovative methods to be used | Film shows and AV Applications | Project | Expected Outcome |
|--------------|-------------------|---|---|--|--|
| 1 | 12 | Open book discussion Case studies Problem solving based learning | You tube lectures on micro and macro economics | Functional relations Goals of firms | Students will understand basic concepts of micro economics, Will be able to analyze and interpret |
| 1. | 12 | Digital lecturesJigsaw reading | You tube lectures | Types of utility | Will know cardinal and ordinal approach Will understand the concept of consumer surplus |
| 2. | 12 | Game oriented classes Pair learning Group discussion | FilmsYou tube lectures | Type of goods and elasticity of demand | Will understand the concept of demand and elasticity of demand Will understand the concept of supply Able to interpret equilibrium in the market |
| 3. | 12. | Group discussion Teacher driven power point presentation Games and simulation | You tube lecturesOnline PPTs | Effect of economies of scale on industries (with example of an industry) | Will understand revenue concept Will know economies and diseconomies of scale |

References

| Sr. No. | Title of the Book | Author/s | Publication | Place |
|------------|-------------------|---|----------------------|----------|
| 1 | Microeconomics | B. Douglas Bernheim and Michael D. Whinston | Tata McGraw Hill | New York |
| 2 | Microeconomics | Pindyck, R.S. and D.L. Rubinfeld | Pearson Education | London |

| 3 | Principles of Economics | Stiglitz, J.E. and C.E. Walsh | Oxford Univ. Press | United Kingdom |
|---|---|-------------------------------|-----------------------|-------------------------------|
| 4 | Microeconomics: Theory and Applications | Salvatore, D.L | Oxford Univ. Press | United Kingdom |
| 5 | Intermediate Microeconomics: A Modern Approach | Varian, H.R., | W.W. Norton | United Kingdom, United states |
| 6 | Microeconomic Theory, | Sen, Anindya | Oxford Univ. Press | United Kingdom |
| 7 | Modern Microeconomics | Koutsoyiannis, A | MacMillan Press | India |
| 8 | Principles of Microeconomics | H.L. Ahuja | S. Chand | New Delhi |

Suggested references

Web reference

| Sr. no | Lectures | Films | Animation | PPTs | Articles |
|-----------|---|---|---|---|--|
| 1. | https://mitpress.mit.edu/ books/lectures- microeconomics | https://www.economicsnetw ork.ac.uk/teaching/Video%2 0and%20Audio%20Lectures/ Principles%20of%20Microec onomics | https://www.youtube.com/redir ect?q=http%3A%2F%2Fwww. thateconstutor.com&v=Zre4tp 90Aog&redir_token=6U11cd7 zsOZt8fGKACK3B5JHJNh8 MTU1NzkyNzkzMUAxNTU3 ODQxNTMx&event=video_de scription | https://ctaar.rutgers.edu /gag/ppc2_files/ppc2.p pt | http://scholar.google .co.in/scholar?q=arti cles+on+microecono mics&hl=en&as_sdt =0&as_vis=1&oi=sc holart |
| 2. | https://www.amazon.co m/Lectures- Microeconomics- Questions-Approach- Press/dp/0262038188 | https://nptel.ac.in/cours es/109104125/ | https://www.youtube.com/watc h?v=ewPNugIqCUM | https://www.slideshare. net/tribhuwan64/presen tation-on-importance- of-microeconomics | http://theconversatio n.com/global/topics/ microeconomics- 3328 |

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Semester: I

Business Mathematics & Statistics- I

Course Code – 114 (A)

No. of Credits :- 03

Objective of the Program

1. To introduce the basic concepts in Finance and Business Mathematics and Statistics

2. To familiar the students with applications of Statistics and Mathematics in Business

3. To acquaint students with some basic concepts in Statistics.

4. To learn some elementary statistical methods for analysis of data.

5. The main outcome of this course is that the students are able to analyze the data by using some elementary statistical methods

| Unit No. | Unit Title | Contents | Purpose/Skills to be developed |
|----------|----------------------------|---|---|
| 1 | Interest and Annuity | Interest: Concept of Present value and Future value, Simple interest, Compound interest, Nominal and Effective rate of interest, Examples and Problems Annuity: Ordinary Annuity, Sinking Fund, Annuity due, Present Value and Future Value of Annuity, Equated Monthly Installments (EMI) by Interest of Reducing Balance and Flat Interest methods, Examples and Problems. | To understand the concept of Simple interest, compound interest, effect of compounding. To understand the concept of Annuity and its applications for EMIs and Amortization Schedule. |
| 2 | Shares and Mutual Funds | Shares: Concept of share, face value, market value, dividend, brokerage, equity shares, preferential shares, bonus shares. Examples and Problems Mutual Funds: Concept of Mutual Funds, Problems on calculation of Net Income after considering entry load, Dividend, Change in Net Asset Value (NAV) and exit load. Averaging of price under the Systematic Investment Plan (S.I.P.). Examples and Problems | To understand the concept of shares and mutual funds. To understand contribution of shares and mutual funds in systematic investment plans To solve problems related to shares and mutual funds |
| 3 | Population and Sample | Definition of Statistics, Scope of Statistics in Economics, Management Science and Industry. Concept of population and sample, methods of data collection: Census and sampling with illustration. Methods of random sampling – SRSWR, SRSWOR, Stratified, Systematic (Description of sampling procedures only). | Collection of data Analyzing and interpreting data. Knowing different method of sampling |

| Δ | Measures of | Frequency distribution: Raw data, attributes and 1. To classify and represent data in tabular and |
|---|-------------------------|---|
| - | Central Tendency | variables, Classification of data, frequency distribution, graphical form. |
| | and Measures of | cumulative frequency distribution, Histogram and ogive 2. To compute various measures of central |
| | Dispersion | curves. tendency and measures of dispersion. |
| | | Requisites of ideal measures of central tendency, |
| | | Arithmetic Mean, Median and Mode for ungrouped and |
| | | grouped data. Combined mean, Merits and demerits of |
| | | measures of central tendency, Geometric mean: |
| | | definition, merits and demerits, Harmonic mean: |
| | | definition, merits and demerits, Choice of A.M., G.M. |
| | | and H.M. |
| | | |
| | | Concept of dispersion, Measures of dispersion: Range, |
| | | Variance, Standard deviation (SD) for grouped and |
| | | ungrouped data, combined SD, Measures of relative |
| | | dispersion: Coefficient of range, coefficient of variation. |
| | | Examples and problems. |

Teaching methodology

| Topic No. | Total Lectures | Innovative methods to be used | Expected Outcome |
|--------------|-------------------|-------------------------------|--|
| 1 | 16 | ICT | Students will be able to apply concepts of interests and annuities to calculate EMI, prepare amortization schedule, calculate insurance premiums etc |
| 2 | 8 | ICT | Students will be able calculate dividend, brokerage on shares and mutual funds. Also students will be able to able to identify the contribution of shares and mutual funds in systematic investment plans and to select best investment options |
| 3 | 8 | ICT | Students will be able to recognize and classify different types of data. Students will be able to take a sample of appropriate size using suitable method of sampling. |
| 4 | 16 | ICT | Students will be able to calculate measures of central tendency and measures of dispersion. Students will be able to use appropriate measure of central tendency or measure of dispersion for given data to given problems from business or economics. |

References:

| Sr. No. | Title of the Book | Author/s | Publication | Place |
|---------|--|---|--------------------------------------|------------------------------------|
| 1 | Practical Business Mathematics | S. A. Bari | New Literature Publishing Company | New Delhi |
| 2 | Mathematics for Commerce | K. Selvakumar | Notion Press | Chennai |
| 3 | Business Mathematics with Applications | Dinesh Khattar & S. R. Arora | S. Chand Publishing | New Delhi |
| 4 | Business Mathematics and Statistics | N.G. Das & Dr. J.K. Das | McFraw Hill | New Delhi |
| 5 | Fundamentals of Business Mathematics | M. K. Bhowal | Asian Books Pvt. Ltd | New Delhi |
| 6 | Operations Research | P. K. Gupta & D. S. Hira | S. Chand Publishing | New Delhi |
| 7 | Mathematics for Economics and Finance: Methods and Modeling | Martin Anthony and Norman Biggs | Cambridge University Press | Cambridge |
| 8 | Financial Mathematics and Its Applications | Ahmad Nazri Wahidudin | Ventus Publishing ApS | Denmark |
| 9 | Fundamentals of Mathematical Statistics | Gupta S. C. and Kapoor V. K.:, | Sultan Chand and Sons | 23, Daryaganj, New Delhi 110002 |
| 10 | Statistical Methods | Gupta S. P.: | Sultan Chand and Sons | 23, Daryaganj, New Delhi 110002 |
| 11 | Applied Statistics | Mukhopadhya Parimal | New Central Book Agency Pvt. Ltd. | Calcutta. |
| 12 | Fundamentals of Statistics | Goon A. M., Gupta, M. K. and Dasgupta, B. | World Press | Calcutta. |
| 13 | Fundamentals of Applied Statistics | Gupta S. C. and Kapoor V. K.:, | Sultan Chand and Sons | 23, Daryaganj, New Delhi 110002 |

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Semester: I Computer Concepts and Application - I

Course Code – 114 (B)

Objective:

1. To make the students familiar with Computer environment.

2. To make the students familiar with the basics of Operating System and business communication tools.

3. To make the students familiar with basics of Network, Internet and related concepts.

4. To make awareness among students about applications of Internet in Commerce.

5. To enable make awareness among students about e-commerce and M commerce.

Unit 1 Introduction to Computer and Operating system

Introduction to Computer

Definition, Block Diagram, Computer Hierarchy, (Classification), Characteristics of Computer

Computer System Hardware

Computer Memory Input and Output Devices

Definition – Software

Software Types - System Software, Application Software

Definition of Operating System

Types of Operating Systems, Functions of Operating Systems

Working with Windows Operating System:

No. of Credits :- 03

[12]

Introduction, The Desktop, Structure of Windows, Windows Explorer, File and Folder Operations, The Search, The Recycle Bin, Adding or Removing New Programs using, Control Panel, Applications in windows (Paint, Notepad, WordPad, and Calculator)

Introduction to Free and Open Source Software

Definition of Computer Virus, Types of Viruses, Use of Antivirus software.

Unit 2 Office automation tools

Definition of Information Technology (IT) Benefits of Information Technology (IT) Applications of Information Technology (IT)

Office automation tools

MS-Word: Introduction, Starting MS-Word, MS-Word Screen and its Components, Elementary Working with MS-Word

MS-Excel: Introduction, Starting MS-Excel, Basics of Spread sheet, MS-Excel Screen and Its Components, Elementary Working with MS-Excel

MS-PowerPoint: Introduction, Starting MS-PowerPoint, Basics of PowerPoint, MS-PowerPoint Screen and Its Components, Elementary Working with MS PowerPoint

Data Processing: Files and Records, File Organization (Sequential, Direct/Random, Index)

Unit 3 Introduction to Computer Network

Introduction Importance of Networking Computer Network (LAN, WAN, MAN)

Network Components (Hub, Switch, Bridge, Gateway, Router, Modem)

[12]

Network Topology, Wireless Network Internet and Internet application Introduction, Internet evolution, Working of Internet, Use of Internet

Overview of World Wide Web (Web Server and Client) Introduction to Search engine and Searching the Web, Downloading files, Introduction to Web Browsers, Working with E-mail (creation and use of the same)

Introduction to Internet Security Security, Privacy, Ethical Issues & Cyber Law

Unit 4 Computer applications in Commerce[12]

Computer Applications in Business – Need and Scope

Computer Applications in various fields of Commerce:

Personnel Administration, Accounting, Cost and Budgetary Management, Purchasing, Banking, Insurance and Stock-broking, egovernance

E-Commerce

Defining e-Commerce, Main Activities of Electronic Commerce, Benefits of E-Commerce; Broad Goals of Electronic Commerce; Main Components of E-Commerce; Functions of Electronic Commerce – Communication, Process Management, Service Management, Transaction Capabilities;

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Semester: I Organizational Skills Development- I

Course Code – 115 - A

No. of Credits :- 03

Objectives of the course

- 1. To introduce the students to the emerging changes in the modern office environment
- 2. To develop the conceptual, analytical, technical and managerial skills of students efficient office organization and records management
- 3. To develop the organizational skills of students
- 4. To develop Technical skills among the students for designing and developing effective means to manage records, consistency and efficiency of work flow in the administrative section of an organisation
- 5. To develop employability skills among the students

| Depth of the | program – | Fundamental | Knowledge |
|--------------|-----------|--------------|-----------|
| Depth of the | prosium. | I unuumonoui | imonicago |

| Unit Unit Title | Contents | Purpose Skills to be developed |
|--|--|--|
| No. | | |
| 1 Concept of Modern Office | a. Modem Office :- Definition, Characteristics, importance and functions b. Office environment:- Meaning and Importance c. Office Location :- Meaning, Principles and factors affecting Office location d. Office Layout :- Meaning, Principles and factors affecting Office Layout | Conceptual Clarity on the meaning of a modern office Developing understanding on the internal and external factors of an office environment Developing analytical and technical skills to contribute towards planning office location and layout |
| 2 Office Organisation and Management | a. Office Organisation : Definition, Importance, Principles and Types of Organisation b. Office Management:- Definition, Functions c. Scientific Office Management :- Meaning, Aims, Techniques of Scientific Office Management and Steps for installation of Scientific Office Management | Conceptual clarity on the meaning of Scientific office management Development of understanding in various techniques for scientific management |

| 3 | Office Records Management | a. Office Records Management -Definition, Objectives, Scope of Records Management, Significance, Principles of Records management. b. Digitalization of records:- Advantages and Problems of Digitalization c. Form Design:- Objectives, types of forms, Significance, Principles of form designing d. Office Manual – Definition, Contents Types , benefits and limitations | Introduction to concept of digitalization of records Technical skills and critical analysis skills for designing of various office documents for effective records creation and maintenance |
|---|------------------------------|---|--|
| 4 | Office work | Office work :-Meaning and Characteristics, Flow of work :- Significance, Features of Ideal flow of work ,benefits of flow of work ,problems in smooth flow of work , suggestions for even flow of work | 1. Analytical skills for process improvement in office work. |

Teaching Methodology

| Topic | Total | Innovative methods to be | Film shows and AV | Project | Expected Outcome |
|-------|----------|--------------------------|-------------------|---|--|
| No. | Lectures | used | Applications | | |
| 1 | 12 | Power Point Presentation | Online Videos | Making a model of office layout in groups | Conceptual Clarity on meaning of Modern Office, internal and external factors of an office environment |
| 2 | 12 | Power Point Presentation | | | Conceptual clarity on the meaning of Scientific office management and understanding various techniques for scientific management |

| 3 | 12 | Guest Lectures by Experts | Visit to any organization, | Report on the | Technical skills and Critical |
|---|----|---------------------------|----------------------------|------------------|-------------------------------|
| | | | college, bank etc (group | records | analysis skills |
| | | | assignment) | management | |
| | | | | system based on | |
| | | | | the visit | |
| 4 | 12 | PPT, Educational Videos | Visit to any organization, | Report on the | Development of Technical and |
| | | | college, bank etc (group | visit and | Analytical abilities |
| | | | assignment) | suggestions for | |
| | | | | improvement in | |
| | | | | work flow of the | |
| | | | | organization | |
| | | | | visited | |

References :

List of Books Recommended :-

- 1. Modern Office Management By Mills, Geoffrey
- 2. Office Management By Dr. R.K. Chopra, Priyanka Gauri
- 3. Office Management By R.S.N. Pillai
- 4. Office Management By K.L.Maheshwari , R.K . Maheshwari
- 5. Modern Office Management : Principles and Techniques By J.N.Jian , P.P.Singh

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Semester: I

BANKING & FINANCE-I

(Fundamentals of Banking I)

Course Code – 115 - B

Objectives -

- To provide knowledge of fundamentals of Banking
- To create awareness about various banking concepts
- To conceptualize banking operations.

| Unit | Unit Title | Contents | Purpose Skills to be developed |
|------|----------------------|---|---|
| No. | | | |
| 1. | Evolution of Banking | Meaning, Definition and Origin of 'Bank' Evolution of Banking in Europe and Asia Evolution of Banking in India Structure of Indian Banking System | Knowledge of evolution of banking. Understanding structure of Indian Banking |
| 2. | Functions of Bank | Primary Functions: Accepting Deposits: Demand Deposits - Current Deposit and Savings Deposits; Time Deposits - Fixed Deposit and Recurring Flexi Deposits (Auto Sweep) Granting Loans and Advances- Short Term Loan- Overdraft Facility, Cash Credit Facility, Purchasing and Discounting of Bills, Term Loan | Understanding primary and secondary functions of a bank. Understanding the concepts related to lending and ratios. |

No. of Credits :- 03
| Secondary | Functions: | |
|----------------------|--|--|
| A. | Agency Functions- Payment and Collection of a Cheque, Bill and Promissory Note, Execution of standing instructions, Acting as a Trustee and Executor | |
| B. | General Utility Functions- Safe Custody, Safe Deposit Vaults, Remittance of funds, Pension payments, Acting as a Dealer in Foreign Exchange (FOREX) Market. | |
| C. | Distribution of Third Party Products, Bancassurance, Mutual Funds, Issuance of Credit Card and Debit Card | |
| D. | Non Fund Based Credit Facilities- Letter of Credit, Bank Guarantee and Deferred Payment. | |
| E. | Government Business – Collecting GST, Stamp Duty, Excise Payment, etc. | |
| Concept Security | s of Priority and non- priority sector lending Based and Purpose Oriented Lending, Bridge | |
| Loans, I and Cree | Reserve Ratios- CRR and SLR. Credit Appraisal dit Monitoring | |

| 3. | Procedure for Opening and Operating of Deposit Account | Procedure for Opening of Deposit Account: Know Your Customer Norms, (KYC Norms), Application Form, Introduction, Proof of Residence, Specimen Signature, and Nomination Facility: Their Importance. No Frill Account | • | Understanding the process of opening and operating procedure of bank accounts. |
|----|--|--|---|---|
| | | Procedure for Operating Deposit Account: Pay-in-slip, Withdrawal slip, Issue of Pass Book, (Current, Savings or Recurring Deposit), Issue of Cheque Book, Issue of Fixed Deposit Receipt, Premature encashment of a Fixed Deposit and Loan against Fixed Deposit. Recurring Deposit: Premature encashment and Ioan against Recurring Deposit. a) Closure of Account b) Transfer of Account c) Death Claim Procedure | • | Understanding various types of bank accounts holders |
| | | c) Death Claim Procedure Types of Account Holders a) Individual Account Holders- Individual Account, Joint Account, Illiterate, Minor, Married Woman, Pardahnashin Woman, Non-Resident Account b) Institutional Account Holders- Sole Proprietorship, Partnership Firm, Joint Stock Company, Hindu Undivided Family, Clubs, Associations, Societies and Trusts. | | |

| 4 | Methods of Remittance | Demand Draft, Bankers' Cheque | • Understanding various |
|---|-----------------------|--|-------------------------|
| | | Electronic Funds Transfer (EFT) – Real Time Gross Settlement (RTGS), National Electronic Funds Transfer (NEFT), Procedure of fund transfer through NEFT/ RTGS, Society for Worldwide Interbank Financial Telecommunication (SWIFT) | methods of remittance. |
| | | Immediate Payment Service (IMPS) - Interbank (Bank to | |
| | | Bank) and Intra Bank (Branch to Branch) Fund Transfer | |

Teaching Methodology

| Topic | Total | Innovative methods to be | Film shows and AV | Project | Expected Outcome |
|-------|----------|--|-------------------------|-------------------------------------|---|
| No. | Lectures | used | Applications | | |
| 1. | 10 | Lecture, PPT/ Poster Presentation, Group Discussion, Library / Home Assignment | Relevant YouTube videos | NA | Knowledge of evolution of banking. Understanding structure of Indian Banking |
| 2. | 14 | Lecture, PPT/ Poster Presentation, Group Discussion, Library / Home Assignment | Relevant YouTube videos | Report writing of expert lecture | Understanding primary and secondary functions of a bank. Understanding the concepts related to lending and ratios. |

| 3. | 14 | Lecture, Expert Lecture, PPT/ Poster Presentation, Group Discussion, Library / Home Assignment, | Relevant YouTube videos | Visit to a bank | Understanding the process of opening and operating procedure of bank accounts. Understanding various types of bank accounts holders |
|----|----|---|-------------------------|-----------------|--|
| 4. | 10 | Lecture, Expert Lecture, PPT / Poster Presentation, Group Discussion, Library / Home Assignment, | Relevant YouTube videos | Visit to a bank | • Understanding various methods of remittance. |

References:

- Majumdar N. C., 'Fundamentals of Modern Banking', New Central Book Agency (P) Ltd., New Delhi.
- 2. Arondekar A.M. & Others, 'Principles of Banking', Macmillan India Pvt. Ltd.
- 3. Srinivasan D. & Others, 'Principles & Practices of Banking', Macmillan India Pvt. Ltd.
- **4.** Agarwal O.P., (4th Edition, 2017), 'Banking and Insurance', Himalaya Publishing House.
- **5.** Gopinath M. N.,(1st Edition, 2008),'Banking Principles and Operations', Snow White Publications Pvt. Ltd, Mumbai
- 6. Gordon E. & Natarajan K., 'Banking Theory, Law and Practice', (21st Revised Edition), Himalaya Publishing House.
- 7. Joshi Vasant & Joshi Vinay, (3rdEdition), 'Managing Indian Banks', Sage Publication, New Delhi.
- 8. VarshneyP.N. (12th Edition, 2003), 'Banking Law and Practice', Sultan Chand & Co. New Delhi
- 9. Kothari V., (26th Edition) 'Tannan's Banking Law & Practice in India,' Lexis Nexis Publication.

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Semester- I

Defense Organization and Management in India

DEFENSE ORGANISATION AND MANAGEMENT IN INDIA-I

Course Code – 115 - D

No. of Credits :- 03

Objectives:

1) To understand the role of Armed Forces and Defense structure of Indian Armed Forces.

2) To know the vital elements of Indian Defense Organization in India.

3) To know the second line of Defense in India

| Unit | Торіс | No. of | Teaching | Skills to be developed |
|------|---|----------|--|--|
| No. | | Lectures | Method | |
| 1. | Development of Defense Organization after Independence 1.1 Reconstruction of Indian Armed Forces since 1947. 1.2 Development of the Army after Independence. 1.3 Development of the Navy after Independence. 1.4 Development of the Air Force after Independence. 1.5 Principles of Defense Organisation. | 12 | Lecture, PPT, Group Discussion, Library Work, Assignment | Understanding defence organization after independence. Understanding the principles of Defense organization |
| 2. | Elements of Defense Organization in India. 2.1 Powers of the President in relation to the Armed Forces. 2.2 Defense Committee of the Cabinet. 2.3 Ministry of Defense – its organizational & function. | 12 | Lecture, PPT, Group Discussion, Library Work, Study Visit | • Understanding the elements of defense organization in India. |

| | 2.4 National Security Council. | | | |
|----|--|----|---|--|
| 3. | Defense Structure of Indian Armed Forces 3.1 Chief of Staff Committee. 3.2 Organization of Army, Naval & Air Headquarters. 3.3 Organization of Army, Naval & Air Commands. | 12 | Lecture,PPT, Group Discussion, Library Work, | • Understanding the defense structure of Indian Armed Forces |
| 4. | Para Military Forces of Defense 4.1 Border Security Force. 4.2 Coast Guard. 4.3 Territorial Army. 4.4 Home Guard. 4.5 Civil Defense. 4.6 National Cadet Corps (N.C.C.) 4.7 Central Reserve Police Force. 4.8 State Reserve Police Force. | 12 | Lecture,PPT, Group Discussion, Library Work, Assignment | • Understanding the paramilitary force of defense. |
| | Total | 48 | | |

References:

- 1) Ron Mathews, "Defense Production in India" ABC, New Delhi.
- 2) Raju G. C. Thomas (1978), 'The Defense of India a Budgetary Perspective of Strategy and Politics', Mac Millan Publication, New Delhi.
- 3) Sam C.Sarhesian The Military Industrial Complex a Reassessment', Sage Publication, New Delhi.
- 4) Maj. Gen. Pratap Narain [Retd] (1998), India's Arms Bazar," Shilpa Publication, New Delhi.
- 5) L t. Gen. R. K. Jasbir Singh(1999), Indias Defense Year Books', Nataraj Publication, Dehradun.
- 6) Chaudhari A.P., 'सरंरअणशा∖€' Nilkantha Publication, Pune
- 7) Jadhav V.Y, 'भारताची राष्ट्रिय सुर¾ा', Snehvardhan Publication, Pune.
- 8) Venkateshwaram A. L. 'Defense Organisation in India'
- 9) C. Lakshmi (1998) 'Trends in India's Defense Expenditure,' ABC, New Delhi.

Revised Syllabi (2019 Pattern) for three years B.Com Degree Course (CBCS) Semester- I Theory and Practice of Co-operation- I

Course Code – 115 - E

No. of Credits :- 03

Objectives of the course:

- 1. To acquaint the students with the concept of co-operative movement.
- 2. To introduce the scope of Co-operation.
- 3. To make students build their career in the field of Co-operation and Rural Development.

Depth of Programme: - Fundamental Knowledge

| Unit No. | Unit Title | Contents | | Purpose Skills to be developed |
|-------------|---------------|---|-------------------|--|
| 1 | Co-operation- | Meaning & Definitions, Objectives, Nature and Scope of Co-operation, Strength and Weakness of Co-operative Movement ,Principles of Co- operative International Co-operative Alliance (ICA) Meaning ,objectives, ICA Board Code of Governance, International Co-operative Alliance (I.C.A) Committee-1937,1966,1995 Problems & Challenges faced by the Co- operative sector | i. ii. iii. | To understand the objectives, Nature and scope of co-operation To understand the Co-operative Movement To understand International Co-operative Alliance and ICA Committee 1937,1966,1995 |

| 2 | History of Co- operative Movement in India | Introduction and Development of Co-operative Movement in Pre Independence period. Strength and weakness of Co-operative Movement, Sir Fedrick Nicholson Report 1904, Maclagen Committee Report 1912, Study of eminent supporters and their contribution | i. ii. | To understand the development of Co- operative Movement in India To understand Sir Fedrick Nicholson Report and Maclagen Committee Report To understand eminent supporters and their contribution in Co-operative Movement of India |
|---|--|--|-------------------|---|
| 3 | Development of Co- operative Movement in India in post Independent Era | Contribution of Co-operative Leaders in post Independent Era up to the present Stage, Gorewala Committee Report 1954, Vaidyanathan Committee Report 2005, Development of Co-operative Movement in Maharashtra, Current scenario of Co-operative Movement in India | i. ii. iii. | To understand the Contribution of Co- operative Leaders in India To understand the Gorewala Committee Report, Vaidyanathan Commiittee Report To understand Current scenario of Co- operative Movement in India |
| 4 | Government and Co- operative Movement | Role of Central Government , Role of State Government Co-operative Vs Capitalism & Communism | i. ii. | To understand the role of Government in Co- operative Movement To understand Co-operative Vs Capitalism & Communism |

Teaching Methodology

| Topic | Total | Innovative Methods to be used | Film Shows and | Project | Expected Outcome |
|-------|----------|-------------------------------------|-----------------------|------------------|--|
| No. | Lectures | | AV Application | | |
| 1 | 12 | Pre reading, Class discussion, | Short Film Show | Project on | Understanding of basic knowledge of |
| | | examples from real life through | on Co-operative | Current scenario | co-operative movement |
| | | newspapers and internet resources. | Movement, AV | of Co-operative | Understanding Scope, Strength and |
| | | Debate on The Strength and Weakness | Application (Audio | Movement in | Weakness of co-operative movement. |
| | | of co-operative movement in | and Visual | Maharashtra | Understanding International Co-operative |
| | | Maharashtra, Poster presentation | Application) | | Alliance |
| | | - | | | |

| 2 | 12 | Organise Semesterinar/workshop for students, Pre reading, Class discussion, Internet resources. case studies, Field visit to Co-operative Sugar Factory, visit to Agriculture Co-operative and Non Agriculture Co-operative society, Survey report | You Tube Video on History of Co- operative Movement in India | Project Report on Co-operative Sugar Factory, Rural Co- operative and Urban Co- operative credit Society | Understanding History and current scenario of Co-operative Movement in India |
|---|----|--|--|---|---|
| 3 | 12 | Guest Lectures of eminent personalities in co-operative movement and Rural Development, experience sharing, Pre reading, Class discussion, examples from real life through newspapers and internet resources, case studies, PPT, Interview of co-operative leader | Presentation on Contribution of Co-operative Leaders in post Independent Era up to the present Stage | Project Report on Development of Co-operative Movement in Maharashtra | Understanding Contribution of Co- operative Leaders in post Independent Era up to the present Stage , Development of Co-operative Movement in Maharashtra |
| 4 | 12 | Pre reading, Class discussion, examples of various co-operative institution through Newspapers and internet resources, Guest Lectures of eminent personalities,PPT | Group discussion on Co-operative Vs Capitalism & Communism | Project Report on Role of Government in Co-operative Movement | Understanding Role of Government in Co-operative Movement |

References

| Sr. No | Title of Book | Author/s | Publication | Place | | |
|--------|---|------------------------------------|--------------------|-----------|--|--|
| 1 | Co-operation and Rural Development | Principal Dr.Nitin Ghorpade | Success | Pune | | |
| 2 | Co-operation- Principles and Practice- | Dr. D.G. Karve | | | | |
| 3 | Theory, History and Practice of Co- operation | Dr. R.D. Beddy | | | | |
| 4 | Bhartiya Sahkari Chalval- Tatve va Vyavhar | Prof. Jagdish Killol; Prof. Arvind | | | | |
| | (Marathi) | Bondre; Prof. A. C. Bhavsar | | | | |
| 5 | Sahkari Chalval 1904-2004 (Marathi) | Prof. K. L. F ale | | | | |
| 06 | Rural Development in India-Policies and | Abdul Azees NP and S.M. Javed | Kalpaz Publication | | | |
| | Programme | Aktar | | | | |
| 07 | Human Resource Management Practices in | Principal Dr.Shaikh Aftab Anwar | Idea Publication | New Delhi | | |
| | Co-operative sector | | | | | |
| 08 | Report of the High Power Committee on Co-operative May 2009 Ministry of Agriculture Government of India | | | | | |
| 09 | Journal of Commerce and Management Th | nought(JCMT) | | | | |
| 10 | Journal Co-operative Organization and Ma | anagement, Journal of Co-operati | ve studies | | | |

Revised Syllabi (2019 Pattern) for three years B.Com Degree Course (CBCS)

Defense Organization and Management in India

Semester - I

Managerial Economics- I

Course Code – 115 - F

No. of Credits :- 03

Objectives:

- 1. To acquaint the students with the concepts and techniques used in micro and macroeconomics.
- 2. To give the introduction to basic principles of microeconomics and to demonstrate how application of economic theory can improve decision making.

3. To build a perspective necessary for the application of modern economic concepts, precepts, tools and techniques in evaluating business decision taken by a firm.

| Unit | Unit Title. | Content | Purpose Skills to be developed |
|------|--------------|--|--|
| No. | | | |
| 1 | Introduction | 1.1 Nature, Scope and significance of managerial economics. | i) To know the meaning, nature of managerial |
| | | 1.2 Managerial economics and microeconomics. | economics |
| | | 1.3 Managerial economics and macroeconomics. | ii) To understand fundamental principles of |
| | | 1.4 Main characteristics of managerial economics. | economics. |
| | | 1.5 Fundamental economic concepts- opportunity cost, | iii) To know the application of principles of |
| | | Discounting Principle, Time perspective, incremental | managerial economics in business decision making. |
| | | reasoning, equi-marginal concept. | |
| | | 1.6 Application of economics in managerial decision making. | |
| | | 1.7 Role and responsibilities of managerial economist in | |
| | | business. | |
| 2 | Demand | 2.1 Basis for demand - concept of utility | i. To understand the concept of utility. |
| | Analysis | 2.2 Cardinal Utility approach- Law of marginal utility, | ii. To understand the law of diminishing marginal |
| | | maximization of utility, consumer surplus. | utility in law of demand. |
| | | 2.3 Ordinal Utility approach- Indifference Curve, | iii. To understand the concept of elasticity and its |
| | | maximization of utility. | importance in managerial decision making process. |
| | | 2.4 Law of demand- determinants of demand. | |
| | | 2.5 Elasticity of demand- Price, Income and Cross elasticity | |
| | | of demand. | |
| | | 2.6 Managerial application and importance of elasticity of | |
| | | demand. | |

| 3 | Demand | 3.1 Demand forecasting-Meaning, Methods of demand | i. To understand the concept of demand forecasting |
|---|-------------|--|---|
| | forecasting | forecasting- Expert opinion, surveys and market experiments, | and its utility in demand forecasting of new product. |
| | | Time series analysis, Trend | ii. To make the students understand different |
| | | Projection, Barometric forecasting. | methods of demand forecasting |
| | | 3.2 Demand forecasting for a new product.(Developing, | |
| | | Testing and launching of new products) | |
| 4 | Production | 4.1 Law of supply- Determinants of supply. | i. To understand the law of supply. |
| | and Cost | 4.2 Theory of production- Meaning and concept of | ii. To know the various concept of costs and |
| | Analysis | production, | revenues. |
| | | 4.3 Law of Variable Proportions and Returns to a Scale. | |
| | | 4.4 Cost Analysis- Types of Cost - Economic cost and | |
| | | accounting cost, Private cost and social cost, Actual cost and | |
| | | opportunity cost, Past cost and future cost, Explicit cost and | |
| | | implicit cost, Incremental cost and Sunk cost. | |
| | | 4.5 Cost and cost curves under short-run and long run- Fix | |
| | | cost and variable cost, Average cost and marginal cost, | |
| | | Relation between average cost and marginal cost. | |
| | | 4.7 Revenue Curves- Concept of average, marginal and total | |
| | | revenue under different market conditions, relation between | |
| | | average and marginal revenue. | |

Teaching methodology

| Topic No. | Total Lectures | Innovative methods to be used | Film shows and AV Applications | Project | Expected Outcome |
|--------------|-------------------|--|--|--|--|
| 1 | 14 | i. Open book discussion ii. Interactive lectures | i. Online PPTs ii. You tube lectures | i. Study costs in a local project.ii. Application of cost principles | The students will be able to decipher, analyze and apply the theory and practice of Managerial Economics |
| 2 | 12 | i. Open bookdiscussion.ii. Groupdiscussion withexamples. | i. Online PPTs ii. You tube lectures | i. Study of types of elasticity of demand.ii. Study of elasticity of demand in managerial decision. | Students will develop an understanding of the need of businessman to locate the various factors affecting demand of the product and plans of marketing and business strategies accordingly. |
| 3 | 08 | i.) Interactive lectures | i. Online PPTsii. You tube lectures | i. Study of methods of demand forecasting in a local firm. | Students will understand the demand forecasting of existing and new |

| | | ii.) Case studies. | | ii. | Comparative | stud | y of | product | and | its | importance making | e in |
|---|----|--------------------|-----------------------|-----|-------------------|----------|----------|-----------|----------|--------|----------------------|-------|
| | | power point | | | demand forecast | ing. | 01 | manage | | .15101 | i maxing. | |
| | | presentation. | | | | | | | | | | |
| 4 | 14 | i. Case studies. | i. Online PPTs | i. | Study of law | of v | variable | Student | s wi | 11 | understand | the |
| | | iiInteractive | ii. You tube lectures | | proportions in a | firm. | | analytic | s of s | upply | y and its va | rious |
| | | lectures. | | ii. | Study of concept | t of cos | sts in | uses. | Student | ts v | will follow | the |
| | | | | | short run and lor | ıg run. | | relation | ship be | twee | n costs, rever | nue, |
| | | | | | | - | | profit aı | nd losse | es. | | |

References

| Sr. No. | Title of the Book | Author/s | Publication | Place | |
|---------|---|--|--|--|--|
| 1 | Managerial Economics | Domnik Salvatore- | Oxford University Press | Oxford University Press | |
| 2 | "Managerial Economics- | Mark Hirschey, . | 2. Mark Hirschey, Log "managerial Economics-An Integrative Approach", Cengage Learning. | 2. Mark Hirschey, Log "managerial Economics-An Integrative Approach", Cengage Learning. | |
| 3 | Managerial Economics- | D.M.Mithani, | Himalaya Publishing House | Mumbai | |
| 4 | Managerial Economics, | P.L.Mehatha, | S.Chand Publishing | Mumbai | |
| 5 | Managerial Economics, Pearson Education | Craig Peterson, Lewis and Jain, | Pearson Education | Pearson Education | |
| 6 | Modern Economic Theory | K.K.Dewett, | | | |
| 7 | Managerial Economics, Margham Publications, Madras | Shankaran S. | Margham Publications, Madras | Madras | |
| 8 | Managerial Economics, | Thomas Christopher R. and Charles, Maurice S. | McGraw Hill Irwin, Boston. | McGraw Hill Irwin, Boston. | |

Suggested references Web reference

- 1. https://nptel.ac.in/courses/110101005/2
- 2. https://nptel.ac.in/downloads/110101005/
- 3. http://cec.nic.in/Pages/Home.aspx
- 4. http://en.wikipedia.org/wiki/Economics
- 5. http://www.investopedia.com/university/economics/#axzz1XwhFTmtm
- 6. http://www.tutor2u.net/blog/index.php/economics/
- 7. http://www.economicshelp.org/
- 8. https://www.intelligenteconomist.com/economics-blogs/
- 9. https://www.coursera.org/courses?query=managerial%20economics
- 10. https://www.edx.org/course/introduction-to-managerial-economics-0
- 11. https://www.mooc-list.com/tags/managerial-economics
- 12. https://online.stmary.edu/mba/courses/managerial-economics
- 13. https://www.tru.ca/distance/courses/econ3041.html
- 14. https://www.euromba.org/managerial-economic

Revised syllabi (2019 Pattern) for three years B.Com. Degree course (CBCS) Semester - I

Essentials of E- Commerce

Course Code – 116 A

No. of Credits :- 03

Objectives of the course

- 1. To acquaint the learner with knowledge on the basics of E-commerce.
- 2. To develop knowledge on various types of E-commerce business.
- 3. To develop practical knowledge on effective design of Website and Domain Registration.
- 4. To Develop knowledge on various modes of online transaction for crating convenience in day to day financial transactions and promoting cashless economy.
- 5. To introduce the learner to the concept of Electronic Data Inter exchange and its significance.

Depth of the program – Fundamental Knowledge

| Unit No. | Unit Title | Contents | Purpose Skills to be developed | | |
|-------------|---|--|---|--|--|
| 1 | Overview of Electronic Commerce(EC) | Concept, Features and Functions of e-commerce practices v/s traditional practices ,scope and limitations of e-commerce , Recent trends in e-commerce , Risks in e- commerce and preventive measures | 1. Conceptual understanding of basics of e- commerce | | |
| 2 | Types of e- Commerce Business | Definition and types of e-commerce business : B2B, B2C, C2B, C2C,B2G, C2G, B2A, C2A and P2P, B2B service provider. | 1. Awareness on the various forms of e- commerce | | |
| 3 | Infrastructure | Internet and its role in e-commerce, Mobile and its role in e-commerce, procedure of registering an Internet domain, establishing connectivity to Internet, tools and services of Internet, Requisites of selecting an appropriate domain name, Website – Essential factors in designing and importance of an effective website | Technical knowledge on registration of a domain Practical Knowledge on role of Internet in e- commerce Analytical skills and Creative skills for web page designing | | |

| | | A. <u>E- Payment :</u> Transactions through Internet , | 1. Practical Oriented Skills on E-commerce |
|---|--|--|---|
| | | requirements of e-payments systems, functioning | 2. Conceptual Clarity on Online Payment |
| | | of Debit and credit cards, pre and post payment | Process |
| | | services | 3. Conceptual Clarity on EDI and Electronic |
| | Overview on Online Payment Portals and apps in | | |
| | | India, CC Avenue, Paytm, BHIM, UPI, Phone Pe | |
| | E- Payment and | etc. | |
| 4 | Electronic Data | Concept of Payment Gateway and Payment | |
| | Inter exchange | Processor | |
| | | B. Electronic Data Inter exchange: Evolution, uses, | |
| | | benefits, Working of EDI, EDI standards (includes | |
| | | variable length EDI standards), Cost Benefit | |
| | | Analysis of EDI, Electronic Trading Networks, | |
| | | EDI Components, File types, EDI Services, EDI | |
| | | Software. | |

Teaching Methodology

| Topic | Total | Innovative methods to be | Film shows and AV | Project | Expected Outcome |
|-------|----------|---|--|--|--|
| No. | Lectures | used | Applications | | |
| 1 | 10 | Lecture Methods / Guest Lectures | Online Educational Videos | | Developing understanding on E- commerce |
| 2 | 12 | Guest Lectures by subject Experts / Case Study | Online Educational Videos and Success stories | Case study on any one success story | Awareness on various e-commerce platforms |
| 3 | 12 | PPT / Lectures / Guest Lectures | Demonstration by Industry Expert | | Technical , Practical , Analytical and Creative Skills |
| 4 | 14 | Live Demonstrations/PPT/Lectures | Online Educational Videos | Actual online transactions of Money transfer and online purchase via online payment for small value orders (can be | Technical and Practical Skills |

| | | undertaken as a group) | |
|--|--|-------------------------|--|
| | | Payments to vendors via | |
| | | various payment apps | |
| | | apps | |

Method of Evaluation

| Subject | Internal Evaluation | External Evaluation | Suggested Add on Course |
|------------|-------------------------------------|-------------------------|--------------------------------|
| Unit – I | MCQ /Written Test /PPT | As per University norms | Certificate Web Page Designing |
| Unit – II | MCQ/Written test /Report Writing | As per University norms | Certificate course on Digital |
| | | | Marketing |
| Unit – III | Written Test/ Report and /or PPT on | As per University norms | |
| | any 5 well designed websites | | |
| Unit – IV | Written Test / MCQ | As per University norms | |

References :

List of Books Recommended :-

- 1. The Complete E-Commerce Book By Janice Reynolds
- 2. E-Commerce Website optimization By Dan Corxen- John and Johaan van Tonder
- 3. E- Commerce An Indian Perspective By P.T.Joseph S.J.
- 4. E- Commerce Business, Technology, Society By Kenneth c. Laudomn and Carol Guercio Traver
- 5. Essentials of E-Commerce Technology By. V.Rajaraman
- 6. E Business R(Evolution)- By Daniel Amor
- 7. E-Commerce Management By Krishnamurthy
- 8. E-Commerce: Strategy, Technologies and Applications By David Whiteley

Revised Syllabi (2019 Pattern) for three years B.Com Degree Course (CBCS)

Semester - I Insurance and Transport- I (Insurance)

Course Code – 116 - B

No. of Credits :- 03

Objectives:

1. To acquaint students with the concepts of Insurance.

2. To create awareness regarding basic knowledge about Life Insurance, Fire Insurance and Marine Insurance.

3. To make the students aware of career opportunities in the field of Insurance

| Unit | Торіс | No. of | Teaching Method | Proposed skills to be |
|------|--|----------|------------------------|-----------------------------|
| No. | | Lectures | | developed |
| 1. | Introduction to Insurance | 16 | Lecture, | • Understanding the concept |
| | 1.1 Meaning and Nature of Insurance | | PPT, | of insurance |
| | 1.2 Importance of Insurance | | Group Discussion, | |
| | 1.3 Scope of Insurance | | Library Work, | |
| | 1.4 Principles of Insurance | | Assignment | |
| | 1.5 Risk and Insurance | | Companies | |
| | 1.6 Types – Life and General Insurance | | | |
| | 1.7 Difference between Life and General | | | |
| | Insurance | | | |
| | 1.8 Career opportunities in Insurance Sector | | | |
| 2. | Life Insurance | 16 | Lecture, | • Understanding the concept |
| | 2.1 Meaning and Features of LifeInsurance | | PPT, | of life insurance. |
| | 2.2 Nature of Life Insurance | | Group Discussion, | |
| | 2.3 Origin of Life Insurance | | Library Work, | |
| | 2.4 Importance of Life Insurance | | Study Visit to Office | |
| | 2.5 Principles of Life Insurance | | of the Insurance | |
| | 2.6 Types of Life Insurance Policies | | | |
| | 2.7 Procedure of Life Insurance Contract | | | |

| 3. | Fire Insurance | 08 | Lecture,PPT, | • | Understanding the concept |
|----|--|----|-------------------|---|---------------------------|
| | 3.1 Meaning and Features | | Group Discussion, | | of fire insurance |
| | 3.2 Nature of Fire Insurance Contract | | Library Work, | | |
| | 3.3 Types of Fire Insurance Policies | | | | |
| 4. | Marine Insurance | 08 | Lecture,PPT, | • | Understanding the concept |
| | 4.1 Meaning and Features | | Group Discussion, | | of marine insurance |
| | 4.2 Marine Insurance Contract | | Library Work, | | |
| | 4.3 Types of Marine Insurance Policies | | Assignment | | |
| | Total | 48 | | | |
| | | | | | |

References:

- 1. Khan M.Y. (1997), Financial Services, Tata McGrew-Hill Publishing Company Limited New Delhi .
- 2. Mishra M.N. (2004) Insurance Principles and Practice, S. Chand and Company Ltd. New Delhi.
- 3. Gulati Neelam C., Principles of Insurance Management, Excel Books.
- 4. Haridas R., Life Insurance in India, New Century Publication New Delhi.
- 5. Godwin Frank, The Principles and Practice of Fire Insurance, Isaac Pitman and Sons Ltd. London.
- 6. Panda G.S., Principles and Practice of Insurance, Kalyani Publishers Ludhiyana.
- 7. Kanwal L.S., Text Book of Insurance, Kalyani Publishers Ludhiyana.
- 8. Mathhew M.J., Insurance, RBSA Publisher Jaipur.
- 9. सराफमोहन,tवमाशा\€्सी

.जमन**ाद**ासआध्णकःं पन**ी**

Semester - I

Marketing and Salesmanship- I

(Fundamentals of Marketing)

Course Code – 116 - C

No. of Credits :- 03

Objectives of the Course

- 1. To introduce the basic concepts in Marketing.
- 2. To give the insight of the basic knowledge of Market Segmentation and Marketing Mix
- 3. To impart knowledge on Product and Price Mix.
- 4. To establish link between commerce, business and marketing.
- 5. To understand the segmentation of markets and Marketing Mix.
- 6. To enable students to apply this knowledge in practicality by enhancing their skills in the field of Marketing.

| Unit | Unit Title | Contents | Purposed Skills To Be |
|------|------------------------|---|-------------------------------|
| No. | | | Developed |
| 1 | Introduction to Market | 1.1 Meaning and Definition of Market | The basic knowledge of Market |
| | and Marketing | 1.2 Classification of Markets | and Marketing will be |
| | | 1.3 Marketing Concept: Traditional and Modern | developed amongst students. |
| | | 1.4 Importance of Marketing | |
| | | 1.5 Functions of Marketing: | |
| | | Buying, Selling, Assembling, Storage, Transportation, | |
| | | Standardization, Grading, Branding, Advertising, | |
| | | Packaging, Risk Bearing, Insurance, Marketing | |
| | | Finance, Market Research and Marketing Information. | |
| | | 1.6 Selling vs. Marketing | |
| | | | |

| 2 | Market Segmentation | 2.1 Market Segmentation: - | Students will develop the |
|---|-----------------------|--|----------------------------------|
| | and Marketing Mix | 2.1.1 Introduction | Marketing Segmentation |
| | | 2.1.2 Meaning and Definition | knowledge along with the basic |
| | | 2.1.3 Importance | concept of Marketing Mix. |
| | | 2.1.4 Limitations | |
| | | 2.1.5 Bases for Segmentation | |
| | | 2.2 Marketing Mix | |
| | | 2.2.1 Introduction | |
| | | 2.2.2 Meaning & Definition | |
| | | 2.2.3 Elements of Marketing Mix- Product, Price, Place | |
| | | and Promotion | |
| | | 2.2.4 Importance of Marketing Mix | |
| 3 | Product Mix and Price | 3.2 Product Mix | Students will get proper insight |
| | Mix | 3.2.1 Meaning and Definition | of Product and Price Mix. |
| | | 3.2.2 Product Line and Product Mix | |
| | | 3.2.3 Product Classification | |
| | | 3.2.4 Product Life Cycle | |
| | | 3.2.5 Factors Considered for Product Management | |
| | | 3.3 Price Mix | |
| | | 3.3.1 Meaning and Definition | |
| | | 3.3.2 Pricing Objectives | |
| | | 3.3.3 Factors Affecting Pricing Decision | |
| | | 3.3.4 Pricing Methods | |
| | | | |
| | | | |

| 4 | Place Mix and | a. Place | e Mix | Students will develop the skills |
|---|---------------|----------|--|----------------------------------|
| | Promotion Mix | i. Mear | ning and Definition of Place Mix | of promoting a product along |
| | | ii. | Importance | with gaining knowledge about |
| | | iii. | Types of Distribution Channels – consumer | the distribution channels. |
| | | | goods and Industrial Goods | |
| | | iv. | Factors Influencing selection of Channels | |
| | | 4.2 Prom | otion Mix | |
| | | 4.2.1 | Meaning of Promotion Mix | |
| | | 4.2.2 | Elements of Promotion Mix- Personal Selling, | |
| | | | Public Relation and Sales Promotion | |
| | | 4.2.3 | Factors Affecting Market Promotion Mix | |
| | | 4.2.4 | Promotion Techniques or Methods | |

| Topic | Total | Innovative Methods | Film shows and AV | Expected Outcome |
|-------|----------|---------------------|-------------------|--|
| No. | Lectures | to be used | Applications | |
| 1 | 14 | Power Point | Short Film | Student will get acquainted with the basics of |
| | | Presentation, | AV Application | marketing field. |
| | | Survey Analysis | | |
| 2 | 07 | Power Point | Short Film | It will highlight on the core marketing concepts |
| | | Presentation, | AV Application | namely 'Marketing Mix'. It will help students to |
| | | Survey Analysis, | | implement this knowledge in practicality by |
| | | Group Discussion | | enhancing their skills in the field of market |
| | | | | segmentation. |
| 3 | 14 | Conceptual Learning | AV Application | Students will develop the skills of Pricing the |
| | | Group Discussion | | product along with gaining knowledge on Product |
| | | | | Mix |
| 4 | 13 | Conceptual | Short Film, | It will help the students to apply the various |
| | | Learning, | AV Application | techniques of Promotion and understand the |
| | | Power Point | Use of You Tube | various channels of distribution |
| | | Presentation, | | |
| | | Group Discussion | | |

References

| Sr. | Title of the Book | Author/s | Publication | Place |
|-----|---------------------------------|-----------------------------------|-----------------------|-------|
| No. | | | | |
| 1 | Marketing Management | Philip Kotler | Pearson Publication | |
| 2 | Marketing Management | Rajan Saxena | McGraw Hill Education | |
| 3 | Principles of Marketing | Philip Kotler | Pearson Publication | |
| 4 | Sales & Distribution Management | Tapan K Panda | Oxford Publication | |
| 5 | Advertising Management | Rajiv Batra | Pearson Publication | |
| 6 | Retail Management | Swapna Pradhan | McGraw Hill | |
| | | | Publication | |
| 7 | Retail Management | Gibson Vedamani | Jayco Publication | |
| 8 | Marketing Management | V. S. Ramaswamy & S. | Macmillan Publication | |
| | | Namakumari | | |
| 9 | Supply Chain Management | Sunil Chopra, Peter Meindl& D. V. | Pearson Publication | |
| | | Karla | | |

Revised syllabi (2019 Pattern) for three years B.com Degree course (CBCS)

Semester - I

Consumer Protection and Business Ethics - I

Course Code – 116 - D

No. of Credits :- 03

Objectives of the Program

- 1. To develop general awareness of consumerism among the students.
- 2. To understand the consumers rights, responsibility and role of United Nations.
- 3. To have a comprehensive understanding about the existing law on consumer protection in India.
- 4. To create awareness among the students about dispute redresses machinery and basic procedures for handling consumer dispute.
- 5. To understand the issues relating to e-commerce, e-Banking emerging issues and internet regulations.

| Unit | Unit Title | Contents | Purpose Skills to be developed |
|------|---------------|--|-----------------------------------|
| No. | | | |
| 1 | Consumer | Consumerism- Meaning, Evolution, Rational, Need and | understand the concept of |
| | Protection - | Importance of Consumerism, | consumerism |
| | An Overview | Consumer protection- objectives, scope and importance, | Equip the students with knowledge |
| | | Consumer rights and Standardization | the evolution, need and |
| | | United Nations guideline on consumer protection- | importance, of consumerism |
| | | Objectives, scope of application , general principles and | Understand the role of United |
| | | framework for consumer protection | Nations to protect consumer's |
| | | | interest. |
| 2 | Consumer | Consumer education-Need and importance, Consumer | Handling the emerging issues |
| | Education and | Responsibility | about consumer protection |
| | Awareness | Role of consumer Association and Councils in consumer | |
| | | education and Awareness- Voluntary organization, | Acquaint knowledge and skills for |
| | | Consumer protection councils, Media, Educational Institute | career opportunity. |
| | | and Government | |
| | | Skills required for career in Consumer studies field | |

| 5. | Consumer | Consumer Protection Movement in India | Compressive understanding about |
|----|----------------|---|----------------------------------|
| | Protection | Consumer Protection Act 1986- Overview features, | the existing consumer protection |
| | Law in India * | important definitions-consumers, Goods, services, Defect, | Act 1986. |
| | | Deficiency, unfair trade practices, Dispute, Complaint - | Apply the Law for consumer |
| | | Objectives, Consumer Disputes Redressal Agencies. | protection |
| | | (Composition, Jurisdiction, Powers and Functions.) | |
| | | Procedure of filling complaint and Procedure to deal with | |
| | | complain. | |
| | | | |
| 6. | E -Commerce | E Commerce- scope and limitations, Need and importance | Understand the concept of E |
| | and consumer | of E commerce, Prospects and challenges of Ecommerce | commerce and Consumer |
| | Protection | and its effect on consumer | Protection |
| | | Need and importance of E-Education | Acquaint students about various |
| | | consumer Protection in E-Banking | issues of E commerce. |
| | | Recent Emerging Issues in E-Commerce | Able to appreciate the emerging |
| | | | questions and policy issues |

[Note: Recent amendments in the Acts and relevant Landmark cases decided by courts are expected to be studied]

Teaching Methodology

| Topic | Total | Innovative | Film shows and | Project | Expected Outcome |
|-------|----------|---|---|---|---|
| No. | Lectures | methods to be | AV Applications | | |
| | | used | | | |
| 1 | 12 | Documentary, PPT, Narration, Quiz, Survey Analysis Article review | Short film about consumer movement, Role of UN | Report Review | Acquaint knowledge and maturity to understand the consumers interest |
| 2 | 12 | Project making, Street play, jingles, slogan Competition, | Use of You tube, Review of Movie | New Emerging Issues in consumer protection | To get training to face emerging issues. To seek career opportunity in this field. |

| 3 | 12 | Case study, Poster making, Interview of lawyer, Mute court | Case Analysis, Mute court ,E filing of the case | Recent Laws and silent feature | To Acquaint knowledge and application of laws |
|---|----|---|---|---|---|
| 4 | 12 | Virtual Learning, Group Discussion, | Film on cyber security, Internet precautions | Project on E COMMERCE and Consumer protection | To defend and safety in e commerce. To learn e skills |

References

| Sr. No. | Title of the Book | Author/s | Publication | Place |
|---------|---|-------------------------------------|-----------------------------------|------------------------------|
| 1 | Grahak Darshan | Mr. Bindu Madhav Joshi | Akhil Bhartiy Grahak Panchayat | Pune |
| 2 | Grahak Sanrakshan Adhiniyam | Ad Ghare S S | Mukund Publication | Pune |
| 3 | E- Commerce : An Indian Perspective | Dr.P. T. Joshep | PHI Publication | New Delhi |
| 4 | E Banking in India | Dr R K Uppal | New Century Publication | New Delhi |
| 5 | Consumer education and empowerment | Dr. S. S. Singh, Dr.Sapna Chadah | Abhijit Publication | New Delhi |
| 6 | GrahakRaja Jaga Ho | Prof. G. V. Kayandepatil | Chaitanya Publication | Nashik |
| 7 | United Nations Guidelines on Consumer Protection | unctad.org | UNCTAD | UNCTAD Geneva Switzerland |
| 8 | The Consumer Protection Act, 1986 | Act | Govt of India | Delhi |
| 9 | The law of E Commerce | Dr A Alghamdi | Auther House | Mumbai |

Revised syllabi (2019 Pattern) for three years B.com Degree course (CBCS)

Semester - I

Business Environment & Entrepreneurship - I

Course Code – 116 - E

No. of Credits :- 03

Objectives of the course:

- 1) To understand the concept of Business Environment and its aspects
- 2) To make students aware about the Business Environment issues and problems of Growth
- To examine personality competencies most common to majority of successful entrepreneurs and to show how these competencies can be developed or acquired
- 4) To understand the difference between Entrepreneurial and non-Entrepreneurial behaviour
- 5) To provide knowledge of the significance of Entrepreneurship in economy
- 6) To familiarize the students with the contribution of selected institutes working to promote Entrepreneurship
- 7) To generate entrepreneurial inspiration through the study of successful Entrepreneurs

| Unit | Unit Title | Contents | Purpose Skills to be developed |
|------|-------------|---|---|
| No. | | | |
| 1 | Business | Concept- Importance - Inter relationship, between | Understanding the concept of Business Environment |
| | Environment | environment and entrepreneur, Aspects of | and its aspects |
| | | Environment- Natural- Economic - Political - | Skill-correlating aspects of business environment |
| | | Social - Technical - Cultural - Educational - Legal | and entrepreneur |
| | | & Cross-cultural – Geographical etc. | |
| 2 | Environment | Pollution-Concept and types –Causes of pollution- | Making students aware about business environment |
| | Issues | Remedies of Pollution, Remedies of pollution- | issues and problems of growth |
| | | protecting the natural environment-Conservation | Skills-capable of understanding and analysing |
| | | of natural resources - Opportunities in Environment | environment issues and finding out solutions to |
| | | | resolve these issues |

| 3 | Problems of | Unemployment- Concept-Types-Causes- | Understanding the problem of growth |
|---|--------------|--|--|
| | growth | Remedies, Poverty- Concept- Causes- Remedies, | Skill-Application of mind to resolve the problem of |
| | | Regional Imbalance- Concept-Effects -Solutions, | growth |
| | | Social injustice- Concept, Effects, Solutions ,Black | |
| | | Money -Meaning - Sources -Effects- Measures, | |
| | | Lack of technical knowledge and information- | |
| | | Problems-Remedies | |
| 4 | The | Evolution of the term entrepreneur -Definition - | Understanding the concept of entrepreneur, |
| | Entrepreneur | Competencies of an Entrepreneur – Distinction | competencies of a successful entrepreneur, realising |
| | | between a) entrepreneur and manager- | the difference between various concepts |
| | | b)Entrepreneur and Enterprise, Intrapreneur- | Skill-knowing the entrepreneurial competencies and |
| | | Concept and importance –Distinction between | imbibing the same by students |
| | | Entrepreneur and Intraprenuer | |

Teaching Methodology- F.Y.B.Com Semester-I, Paper-I

| Topic | Total | Innovative Methods to be | Film Shows and A.V. | Project | Expected Outcome |
|-------|----------|---|---|---|--|
| No. | Lectures | used | Application | | |
| 1 | 12 | Case Study-Role play | Related videos and PPT | Distribute aspects of business environment in group and ask them to prepare in brief report on it- Field Assignment | Understanding of various aspects business environment useful for would be entrepreneurs |
| 2 | 12 | Conducting survey and collecting information about various types of pollution | Film shows with the help of environment related organizations | Undertake survey of pollution level, its ill effects and remedies | Understanding of various aspects of pollution and its ill effects |
| 3 | 12 | Collecting necessary information through various resources | Related videos and PPT | Compilation of facts, figures and remedies | UnderstandingofProblemsandtheircauses and remedies |
| 4 | 12 | Case Study | Biographical CDs of successful entrepreneurs | Interview of various types of entrepreneurs e.g. First Generation entrepreneur, Women entrepreneur, Social entrepreneur and collect entrepreneurial competencies, Collection of success stories | Understanding the concept of entrepreneur, competencies of a successful entrepreneur |

| | of persons organisat | on in the | |
|--|----------------------|-----------|--|
| | area, arranging gues | t lecture | |
| | by eminent entrepre | neurs on | |
| | various aspects | of | |
| | entrepreneur | and | |
| | entrepreneurship | | |

References

| Sr. No | Title of Book | Author/s | Publication | Place |
|--------|------------------------------|-------------------------------|---------------------|-----------|
| 1 | Business Environment | Francis Cherunilam | Himalaya Publishing | New Delhi |
| 2 | Dynamics of Entrangeneyushin | Dessi Vesent | Himalaya Dublishing | Now Dolla |
| 3 | Development and Management | Desar vasant | House | New Deim |
| 4 | Entrepreneurial Development | Khanka S.S. | S. Chand | New Delhi |
| 5 | Entrepreneurial Development | Gupta, Shrinivasan | S. Chand | New Delhi |
| 6 | Udyog | | Udyog Sanchalaya | Mumbai |
| 7 | Indian Economy | Ruddar Datt, K.P.M. Sundharam | S. Chand | New Delhi |

Revised syllabi (2019 Pattern) for three years B.com Degree course (CBCS)

Semester – I

Foundation Course in Commerce

Course Code – 116 – F

No. of Credits :- 03

Objectives of the course

1. To acquaint the student with knowledge of forms of business organizations and new business models.

2. To understand the latest government regulations and policies with relation to business in Indi .

3. To introduce the students to the various entrepreneurial development programmes in India.

4. To update the students with the latest developments in Service sector in India.

Depth of the program – Fundamental Knowledge

| Unit No. | Unit Title | Contents | Purpose Skills to be developed |
|-------------|--------------------------------------|---|---|
| 1 | Forms of Business Organization | A. Organization – Meaning , Importance B. Sole Proprietorship , Partnership , LLP , Joint Stock Companies, Joint Ventures , Cooperative, Government form of Business Organization(Departmental, Corporation , Government company), Non Government Organizations – Meaning , Definition , Structure , Advantages and Disadvantages | Conceptual Understanding on the various forms of Business Organization, |
| 2 | Types of Business Models | Franchise, Brick and Mortar, e- Commerce, Bricks and Clicks ,Nickel and Dime, Freemium , Subscription ,Aggregator, Online Market Place , Data Licensing/ Data Selling , Digital Advertising ,Affiliate Marketing, Drop Shipping , Agency Based, Peer to Peer Catalyst/Platform, Block Chain | 1. Overview of the emerging types of business models |

| | | 1. Overview of recent Industrial Policies in India – New Industrial Policy 1991, EXIM Policy , India New | 4. Overview of the various policies supporting business in India |
|---|------------------|---|--|
| | | Foreign Trade Policy 2015 – 2020, FDI Policy | 5. Awareness on the recent |
| | | 2. Overview of : | progmammes to promote and |
| | Industrial | a. Start up India | support for business |
| | Policies and | b. Attal Innovation Mission (AIM) | |
| 2 | Recent | c. Make in India | |
| 3 | Programmes | d. Digital India | |
| | for Start ups in | e. Support To Training And Employment Programme | |
| | India | For Women (STEP) | |
| | | f. Trade-Related Entrepreneurship Assistance | |
| | | And Development (TREAD) | |
| | | g. Pradhan Mantri Kaushal Vikas Yojana | |
| | | (PMKVY) | |
| | | Overview of Recent trends – | 4. Awareness of Recent Trends in the |
| | | 1. Banking Sector - Internet and Mobile Banking | Service Sector |
| | | 2. Indian Post Payments Bank | |
| | Emerging | 3. Insurance Sector – Malhotra Committee Report | |
| 4 | Trends in | 4. Logistics | |
| | Service Sector | 5. BPO, KPO, TPO, and LPO | |
| | | 6. New trends in Tourism- Religious, Rural, & Medical | |
| | | trourism | |
| | | | |

Teaching Methodology

| Topic | Total | Innovative methods to | Film shows and AV | Project | Expected Outcome |
|-------|----------|---|--|---|---|
| No. | Lectures | be used | Applications | | |
| 1 | 12 | PPT , Project Charts | Educational Videos | Individual assignment report | Developing understanding on various forms of business organizations |
| 2 | 08 | Guest Lectures by subject Experts / Industry Expert , Internet Assignments , Case Study Discussion on Real Life success stories | Educational Videos, Videos on Real Life success stories | Case analysis and Discussions, Business Games | Conceptual Clarity and Awareness on Latest Changes |
| 3 | 14 | PPT and Internet Research | <u>https://www.india.gov.in/my-</u> government/schemes | Report Writing , Presentation | Understanding on various Government Policies and Promotion of Entrepreneurial spirit among learners |
| 4 | 14 | Demonstration Method of Online Banking and Mobile Banking , Guest Lectures from experts of respective areas | Educational Videos | Field Visit Internet Research Report | Hands on Training to understand online Baking Awareness on emerging trends and knowledge enhancement |

| Subject | Internal Evaluation | External Evaluation | Suggested Add on Course |
|------------|------------------------------------|-------------------------|-----------------------------------|
| Unit – I | MCQ / PPT / Written Test | As per University norms | |
| Unit – II | Chart Presentation / MCQ/ Written | As per University norms | Undertaking a small course |
| | Test | | under Pradhan Mantri |
| | | | Kaushal Vikas Yojana |
| | | | (PMKVY) |
| Unit – III | Written Test / Open Book | As per University norms | Certificate Course on Soft Skills |
| | Examination | | for Business |
| Unit – IV | PPT/ MCQ/Written Test/ Field Visit | As per University norms | |
| | and Report | | |

References :

List of Books Recommended :-

- 1. Financial Management I. M. Pandey.
- 2. Financial Management Theory & practical Prasanna Chandra
- 3. Financial Management S. C. Kuchhal
- 4. Public Sector in India Laxmi Nariyan
- 5. Indian Economy Rudder Datt
- 6. Indian Economy KPM Sundaram
- 7. Law & practice of banking S. R. Davar
- 8. The Business Model Book Adam J Bock , Gerard George
- 9. Business Model Innovation Alexander Osterwalder, Yves Pigneur
- 10. https://www.india.gov.in/my-government/schemes

F. Y. B. A Compulsory English (w. e. f. 2019-2020) (Choice Based Credit System) 70:30-Pattern (70-Semester-End Exam & 30-Internal Evaluation)

Prescribed Text: *Literary Gleam: An Anthology of Prose and Poetry* (Board of Editors-Orient BlackSwan)

Objectives:

- a) To expose students to the best examples of prose and poetry in English so that they realize the beauty and communicative power of English
- b) To instill human values and develop the character of students as responsible citizens of the world
- c) To develop the ability to appreciate ideas and think critically
- d) To enhance employability of the students by developing their linguistic competence and communicative skills
- e) To revise and reinforce structures already learnt in the previous stages of learning.

Semester-I

Prose:

- 1. Engine Trouble R. K. Narayan
- 2. On Saying 'Please' A. G. Gardiner
- 3. The Gift of the Magi O. Henry

Poetry:

- 1. A Red, Red Rose Robert Burns
- 2. Leave this Chanting and Singing Rabindranath Tagore
- 3. The Felling of a Banyan Tree Dilip Chitre

Grammar:

- 1. Articles
- 2. Prepositions
- 3. Verbs Regular and Irregular Verbs Auxiliary Verbs: Primary and Modal
- 4. Punctuation

Communication Skills:

1. Greeting and Taking Leave

- 2. Introducing Yourself
- 3. Introducing People to One Another
- 4. Making Requests and Asking for Directions
- 5. Making and Accepting Apology

Semester- II

Prose:

- 1. In Sahyadri Hills, A Lesson in Humility Sudha Murthy
- 2. The Model Millionaire Oscar Wilde
- 3. The Eyes are not Here Ruskin Bond

Poetry:

- 1. My Heart Leaps Up William Wordsworth
- 2. Ozymandias P. B. Shelley
- 3. Success is Counted Sweetest Emily Dickinson

Grammar:

- 1. Tenses
- 2. Subject–Verb Agreement
- 3. Vocabulary

Communication Skills

- 1. Inviting and Accepting/Declining Invitations
- 2. Making a Complaint
- 3. Congratulating, Expressing Sympathy and Offering Condolences
- 4. Making Suggestions, Offering Advice and Persuading
 - Each semester shall have 3 credits for teaching. Each credit is equal to 15 hours, so this course shall have 45 teaching hours. In addition to that there shall be three hours allotted to internal evaluation. Changes as per the university guidelines shall be communicated from time to time.
F. Y. B. A- Optional English (General Paper-1) (w. e. f. 2019-2020) (Choice Based Credit System) 70:30-Pattern (70-Semester-End Exam & 30-Internal Evaluation)

Prescribed Text: *Initiations: Minor Literary Forms & Basics of Phonology* (Board of Editors- Orient BlackSwan)

Objectives:

- a) To expose students to the basics of literature and language and develop an integrated view about language and literature in them
- b) To acquaint them with minor forms of literature in English and help them to appreciate the creative use of language in literature
- c) To introduce them to the basics of phonology of English so that they can pronounce better and speak English correctly.
- d) To prepare students to go for detailed study and understanding of literature and language
- e) To enhance the job potential of students by improving their language skills

Semester - I

Prose Pieces:

- 1. A Lesson My Father Taught Me A.P.J. Abdul Kalam
- 2. Toasted English R. K. Narayan

Short Stories:

- 1. The Romance of a Busy Broker O. Henry
- 2. The Open Window Saki

Poetry:

- Sonnet 29: 'When in disgrace with Fortune and men's eyes' William Shakespeare
- 2. The World is too much with Us William Wordsworth
- 3. The Listeners Walter de la Mare
- 4. No Men are Foreign James Kirkup

Language Studies:

Introduction to the Sounds of English: Part - I

(Discrepancy between English Spelling and Pronunciation, Phonetic Symbols and Transcription, The Concept of Phoneme and Minimal Pairs.)

Semester - II

Short Stories:

- 1. The Doll's House Katherine Mansfield
- **2.** The Thief Ruskin Bond

Poetry:

- 1. I remember; I remember Thomas Hood
- 2. Where the Mind is without Fear Rabindranath Tagore
- 3. The Mountain and the Squirrel R. W. Emerson
- 4. Up-Hill Christina Rossetti

One Act Plays:

- 1. The Monkey's Paw W.W. Jacobs
- 2. Swansong Anton Chekhov

Language Studies:

Introduction to the Sounds of English: Part - II

(The Concept of Syllable, Monosyllabic and polysyllabic Words, The Concept of Word Stress and Different Standards of Pronunciation i.e. British Received Pronunciation, General American English and General Indian English.) • Each semester shall have 3 credits for teaching. Each credit is equal to 15 hours, so this course shall have 45 teaching hours. In addition to that there shall be three hours allotted to internal evaluation. Changes as per the university guidelines shall be communicated from time to time.

Question paper Pattern (2019-20)

(Choice Based Credit System)

<u>F Y B A Compulsory English</u>: Text: LITERARY GLEAM: A SELECTION OF PROSE AND POETRY

(70-Semester-End Exam & 30-Internal Evaluation)

| <u>SEMES</u> | STER-I Hours: Three | Marks: 70 |
|-----------------|---|-----------|
| Q. 1) | A. Attempt any One from the following questions: | |
| | (Two questions on Prose piece -1) | |
| | B. Attempt any One from the following questions: | |
| | (Two questions on Prose piece -2) | Marks 14 |
| Q. 2 | A. Attempt any One from the following questions: | |
| | (Two questions on Prose piece -3) | |
| | B. Attempt any One from the following questions: | |
| | (Two questions on Poem - 1) | Marks 14 |
| Q. 3) | A. Attempt any One from the following questions: | |
| | (Two questions on Poem -2) | |
| | B. Attempt any One from the following questions: | |
| | (Two questions on Poem -3) | Marks 14 |
| Q.4) Ot | ojective Questions on Grammar and Punctuation as under: | |

| a. Use c | orrect articles in the blank space in the sentences given below | 7. (3 out of 5) |
|---------------------|---|--|
| b. Fill ir | the blanks with correct preposition given in the brackets. | (3 out of 5) |
| c. Look irregula | at the underlined verbs in the sentences below and specify wh r verb: | nether it is a regular verb or (3 out of 5) |
| d. Look or a moo | at the underlined auxiliaries in the sentences below and spec dal auxiliary: | cify whether it is a primary (3 out of 5) |
| e. Punct | uate and rewrite the following sentence correctly. | Marks 14 |
| Q.5) Pra | actical Questions on Communication Skills : 1, 2, 3, 4, 5. | Marks 14 |
| | | Total Marks: 70 |
| <u>SEMES</u> | <u>STER - II</u> | |
| Questio | n Paper Format | |
| Q. 1) | A. Attempt any One from the following questions: | |
| | (Two questions on Prose piece -1) | |
| | B. Attempt any One from the following questions: | |
| | (Two questions on Prose piece -2) | Marks 14 |
| Q. 2 | A. Attempt any One from the following questions: | |
| | (Two questions on Prose piece -3) | |
| | B. Attempt any One from the following questions: | |
| | (Two questions on Poem - 1) | Marks 14 |
| Q. 3) | A. Attempt any One from the following questions: | |
| | (Two questions on Poem -2) | |
| | B. Attempt any One from the following questions: | |
| | (Two questions on Poem -3) | Marks 14 |

Q.4) Objective Questions on Grammar and Vocabulary as under:

a. Fill in the blanks with correct tense form of the verb given in the brackets.

(6 out of 9)

b. Fill in the blanks using the appropriate form of the verb given in the brackets.

(4 out of 6)

c. Practical questions on vocabulary (e. g. Give synonyms/antonyms of the following words, Give a list of words related to computer/mobile/wild animals etc.)

| | (4 out of 6) | Marks 14 |
|--|--------------|-----------------|
| Q.5) Practical Questions on Communication Skills : 1, | , 2, 3, 4. | Marks 14 |
| | | Total Marks: 70 |
| Pattern for Internal Evaluation in both the semesters | <u>:</u> | |
| 1. Internal Mid-Semester Examination | - | - 20 |
| 2. Home Assignments/Tutorials/Oral/Lecture Notes/ | Project | - 10 |

TOTAL - 30 Marks

FYBA -Optional English (General Paper-1)

Text: INITIATIONS: MINOR LITERARY FORMS & BASICS OF PHONOLOGY

(70-Semester-End Exam & 30-Internal Evaluation)

Hours: Three SEMESTER-I

Marks: 70

Question Paper Format

A. Attempt any One from the following questions: **Q.1**)

| | (Two questions on Prose piece -1) | |
|---------------|---|-----------|
| | B. Attempt any One from the following questions: | |
| | (Two questions on Prose piece -2) | Marks 14 |
| Q. 2 | A. Attempt any One from the following questions: | |
| | (Two questions on Short Story -1) | |
| | B. Attempt any One from the following questions: | |
| | (Two questions on Short Story -2) | Marks 14 |
| Q. 3) | Attempt any 02 out of the 04 given questions: | |
| | (Questions on the Poems for the I st sem) | Marks -14 |
| Q. 4) | Explain with reference to context (Any 2 out of 4) | |
| | (Questions on Poems for the Ist sem) : | Marks 14 |
| Q.5) | A. Write short notes: (any 2 out of 4) : | Marks 10 |
| | B. Practical questions on phonology (any 4 out of 6) : | Marks 04 |

(Questions on topics from Introduction to the Sounds of English Part –I)

Total Marks: 70

SEMESTER - II

Hours: Three Marks: 70
Question Paper Format

Q.1 A. Attempt any One from the following questions:

(Two questions on Short Story -1 from II nd Sem)

| B. Attempt any One from the following questions: | |
|---|-----------|
| (Two questions on Short Story -2 from IInd Sem) | Marks 14 |
| Q.2 Attempt any 02 out of the 04 given questions: | |
| (Questions on the Poems for the II nd Sem) | Marks -14 |
| Q.3 Explain with reference to context (Any 2 out of 4) | |
| (Questions on Poetry for the II nd Sem) : | Marks 14 |
| Q.4 A. Attempt any One from the following questions: | |
| (Two questions on the First One Act Play) | |
| B. Attempt any One from the following questions: | |
| (Two questions on the Second One Act Play) | Marks 14 |
| Q.5) A. Write short notes: (any 2 out of 4) : | Marks 10 |
| B. Practical questions on phonology (any 4 out of 6) : | Marks 04 |
| (Questions on topics from Introduction to the Sounds of English P | Part –II) |

Total Marks: 70

Pattern for Internal Evaluation in both the semesters:1. Internal Mid-Semester Examination- 202. Home Assignments/Tutorials/Oral/Lecture Notes/Project/Seminar/G D- 10TOTAL - 30 Marks



Savitribai Phule Pune University

(Formerly University of Pune)

Three Year B.Sc. Degree Program in Microbiology

(Faculty of Science & Technology)

F. Y. B. Sc. (Microbiology)

2019 Pattern

Choice Based Credit System Syllabus To be implemented from Academic Year 2019-2020

Title of the Course: B. Sc. (Microbiology)

Preamble:

Microbiology is a broad discipline of biology which encompasses five groups of microorganisms i.e., bacteria, protozoa, algae, fungi, viruses. It studies their interaction with their environments as well as how these organisms are harnessed in human endeavour and their impact on society. The study has its extensions in various other conventional and advanced fields of biology by employing microbes as study models. Since inception of microbiology as a branch of science, it has remained an ever-expanding field of active research, broadly categorized as pure and applied science. Microorganisms were discovered over three fifty years ago and it is thought that a huge diversity yet remains to be explored.

Knowledge of different aspects of Microbiology has become crucial and indispensable to the society. Study of microbes has become an integral part of education and human progress. There is a continuous demand for microbiologists as work force – education, industry and research. Career opportunities for the graduate students are available in industry and research equally.

Introduction:

In the post globalization world higher education has to play a significant role in creation of skilled human resources for the well-being of humanity. The barriers among the academic fields seem to have dissolved. However, the disparities in the field of curriculum aspect, evaluation and mobility exist. With the changing scenario at local and global level, the syllabus restructuring should keep pace with developments in the education sector. Choice Based Credit System (CBCS) is being adopted and implemented to address the issues related to traditional system and it also aims to maintain the best of earlier curriculum. The student is at the centre of CBCS. The present curriculum focuses on students' needs, skill development, interdisciplinary approach to learning and enhancing employability.

Microbiology curricula are offered at two levels viz. undergraduate and postgraduate. The undergraduate curricula are prepared to impart basic knowledge of the respective subject from all possible angles. In addition, students are to be trained to apply this knowledge in day-to-day applications and to get a glimpse of research.

Objectives to be achieved:

- To enrich students' knowledge and train them in the pure microbial sciences
- To introduce the concepts of application and research in Microbiology
- To inculcate sense of scientific responsibilities and social and environment awareness
- To help students build-up a progressive and successful career

Course Structure:

- For First year: Student has to select 4 different subjects among the subjects offered by the College /Institute.
- For Second year: Student has to select 3 different subjects among 4 subjects chosen in first year.
- For Third year: Student has to select only 1 subject among the 3 subjects opted in second year.
- CGPA will be calculated based on core 132 credits only.
- Each theory credit is equivalent to 15 clock hours of teaching (12 hrs classroom+3 hrs of tutorials-active learning method) and each practical credit is equivalent to 30 clock hours of teaching in a semester.
- For the purpose of computation of workload, the following mechanism may be adopted as per UGC guidelines:
- Each theory Lecture time for FY, SY, TY is of 1 lecture = 50 min
- Each practical session time for FY is of 3-hour 15 min = 195 min
- Each practical session time for SY & TY is of 4-hour 20 min = 260 min

Eligibility for Admission:

First Year B.Sc.:

a. Higher Secondary School Certificate (10+2) or its equivalent Examination with English and Biology; and two of the science subjects such as Physics, Chemistry, Mathematics, Geography, Geology, etc.

OR

b. Three Years Diploma in Pharmacy Course of Board of Technical Education conducted by Government of Maharashtra or its equivalent.

OR

c. Higher Secondary School Certificate (10+2) Examination with English and vocational subject of + 2 level (MCVC) - Medical Lab. Technician (Subject Code = P1/P2/P3)

Admissions will be given as per the selection procedure / policies adopted by the respective college keeping in accordance with conditions laid down by the University of Pune.

Reservation and relaxation will be as per the Government rules.

Medium of Instruction: English

Savitribai Phule Pune University

Award of Credits:

• Each course having 4 credits shall be evaluated out of 100 marks and student should

secure at least 40 marks to earn full credits of that course.

- Each course having 2 credits shall be evaluated out of 50 marks and student should secure at least 20 marks to earn full credits of that course.
- GPA shall be calculated based on the marks obtained in the respective subject, provided that student should have obtained credits for that course.

Evaluation Pattern:

- Each course carrying 100 marks shall be evaluated with Continuous Assessment (CA) and University Evaluation (UE) mechanism.
- Continuous assessment shall be of 30 marks while University Evaluation shall be of 70 marks. To pass in a course, a student has to secure minimum 40 marks provided that he should secure minimum 28 marks in University Evaluation (UE).
- Each course carrying 50 marks shall be evaluated with Continuous Assessment (CA) and University Evaluation (UE) mechanism.
- Continuous assessment shall be of 15 marks while University Evaluation shall be of 35 marks.
- To pass in a course, a student has to secure minimum 20 marks provided that he/she should secure minimum14 marks in University Evaluation (UE).
- For Internal examination minimum two tests per paper of which one has to be a written test 10 marks
- Methods of assessment for Internal exams: Seminars, Viva-voce, Projects, Surveys, Field visits, Tutorials, Assignment, Group Discussion, etc (on approval of the head of the centre)

ATKT Rules:

- Minimum number of credits required to take admission to Second Year of B. Sc.: 22
- Minimum number of credits required to take admission to Third Year of B.Sc.: 44

- In addition to the compulsory credits of 132, the student has to earn additional 8 credits from following groups by taking/participating/conducting respective activities.
- 2. Courses in Group-I are compulsory.
- 3. The student can earn maximum 04 credits from an individual group from Group 2 to Group-9. These extra credits will not be considered for GPA calculation; however, these are mandatory for the completion and award of B. Sc. Degree.
- Group 1: Physical Education (at F. Y.B. Sc. Sem. I)-01 credit Physical Education (at F. Y.B. Sc. Sem. II)-01credit (Note: Group I is compulsory for all the students as stated above.)
- Group 2: Sport representation at Collegelevel-01 credit Sport representation at University/Statelevel-02 credits
- Group 3: National Social Service Scheme (participation in Camp): 01 credits
 N.C.C. (with participation in annual camp)-01credit
 N. C. C. (with B certificate/C certificate award)-02 credits
 N.S.S./N.C.C. Republicdayparadeparticipation-04 credits
- Group 4: Avishkar participation; Extension activity participation, Cultural activity participation–01 credit, Avishkar selection at University level-02 credits. Avishkar winner at state level-04credits
- Group 5: Research paper presentation at State/National level-01 credits. Research paper presentation at international level-02 credits
- **Group 6**: Participation in Summer school/programme; Short term course (not less than 1week duration) -03 credit.
- Group 7: Scientific Survey, Societal survey, -02 credits.
- **Group 8**: Field Visits; Study Tours; Industrial Visits; Participation in curricular/ co curricular competitions -01 Credit.
- Group 9: Online certificate Courses /MOOC Courses/ Career Advancement Course up to 04 credits (Minimum10 Hrs. / credit)

Completion of Degree Course:

• A student who earns 140 credits, shall be considered to have completed the requirements of the B. Sc. degree program and CGPA will be calculated for such student.

| Semester | Paper | Paper | Paper title | Credits | Lectures/Week | | | Eval | luatio | n |
|----------|--------|-------|--|---------|---------------|------|-----|------|--------|-------|
| | Code | | | | Th. | Tut. | Pr. | CA | UE | Total |
| | MB 111 | Ι | Introduction to Microbial World | 2 | 2 | | | 15 | 35 | 50 |
| I | MB 112 | II | Basic Techniques in Microbiology | 2 | 2 | | | 15 | 35 | 50 |
| | MB113 | III | Practical Course based on theory papers MB 111 and MB112 | 1.5 | | | 3 | 15 | 35 | 50 |
| | MB121 | I | Bacterial Cell and Biochemistry | 2 | 2 | | | 15 | 35 | 50 |
| II | MB122 | II | Microbial cultivation and growth | 2 | 2 | | | 15 | 35 | 50 |
| | MB123 | III | Practical Course based on theory papers MB121 and MB122 | 1.5 | | | 3 | 15 | 35 | 50 |

Titles of Papers and Scheme of Study Evaluation F. Y. B.Sc. Microbiology

S. Y. B. Sc. Microbiology

| Semester | Paper | Paper | Paper title | Credits | Lectures/Week | | Veek | Eva | luatio | n |
|----------|--------|-------|---|---------|---------------|-----|------|-----|--------|-------|
| | Code | | | | Th | Tut | Pr. | CA | UE | Total |
| | MB 231 | Ι | Medical Microbiology and Immunology | 2 | 2 | | | 15 | 35 | 50 |
| III | MB 232 | II | Bacterial Physiology and Fermentation | 2 | 2 | | | 15 | 35 | 50 |
| | MB 233 | III | Practical Course based on theory papers MB 231 and MB 232 | 2 | | | 4 | 15 | 35 | 50 |
| IV | MB 241 | Ι | Bacterial Genetics | 2 | 2 | | | 15 | 35 | 50 |
| | MB 242 | II | Air, Water and Soil Microbiology | 2 | 2 | | | 15 | 35 | 50 |
| | MB 243 | III | Practical Course based on theory papers MB241 and MB 242 | 2 | | | 4 | 15 | 35 | 50 |

T. Y. B. Sc. Microbiology Proposed Structure Semester V

| Semester | Theory/ Practical / Skill Enhancement | Paper | Paper Title | Marks | Lecture |
|----------|--|-----------|----------------------------|-------|-----------|
| | Discipline Specific | MB 351 TC | Medical Microbiology- I | 50 | |
| | Elective Course Theory | MB 352 TC | Immunology- I | 50 | |
| | 5 | MB 353 TC | Enzymology | 50 | 2 Credits |
| | | MB 354 TC | Genetics | 50 | /per TC |
| | | MB 355 TC | Fermentation technology- I | 50 | |
| | | MB 356 TC | Agricultural Microbiology | 50 | |
| | Discipline | MB 357 PC | Practical Course I | 50 | 2 Credita |
| Sem V | Course Practical | MB 358 PC | Practical Course II | 50 | 2 Creans |
| | | MB 359 PC | Practical Course III | 50 | /per r C |
| | Skill Enhancement | MB 3510 | Marine microbiology | 50 | 2 Credits |
| | course | MB 3511 | Dairy Microbiology | 50 | 2 Credits |
| | Discipline Specific | MB 361 TC | Medical Microbiology- II | 50 | |
| | Theory | MB 362 TC | Immunology- II | 50 | 2 Credits |
| | | MB 363 TC | Metabolism | 50 | /per TC |
| Som VI | | MB 364 TC | Molecular Biology II | 50 | /per re |
| Selli VI | | MB 365 TC | Fermentation technology II | 50 | |
| | | MB 366 TC | Food Microbiology | 50 | |
| | DisciplineSpecific | MB 367 PC | Practical Course I | 50 | 2 Credits |
| | Practical | MB 368 PC | Practical Course II | 50 | /per PC |
| | | MB 369 PC | Practical Course III | 50 | 'Per i C |
| | Skill Enhancement | MB 3610 | Waste management | 50 | 2 Credits |
| | COUISES | MB 3611 | Nanobiotechnology | 50 | 2 Credits |

| Semester | Old Co | urse (2013 Pattern) | New Course (2019 Pattern) | | | |
|----------|--------------------|-------------------------------------|---------------------------|---|--|--|
| | Course Number | Course title | Course Number | Course title | | |
| | Theory Paper I | Introduction to Microbiology | MB 111 | Introduction to Microbial World | | |
| I | Theory Paper II | Basic Techniques in Microbiology | | | | |
| | | Practical Course (Term I & II) | MB 113 | Practical Course based on theory paper I (MB 111) and Paper II (MB 112) | | |
| | Theory Paper I | Introduction to Microbiology | MB 121 | Bacterial Cell and Biochemistry | | |
| п | Theory Paper II | Basic Techniques in Microbiology | MB 122 | Microbial cultivation and growth | | |
| | | Practical Course (Term I & II) | MB 123 | Practical Course based on theory paper I (MB 121) and Paper II (MB 122) | | |

Equivalence of Previous Syllabus: F. Y. B. Sc. Microbiology

External Students

There shall be no external students.

University Terms

Dates for commencement and conclusion for the first and second terms will be declared by the University authorities. Terms can be kept by only duly admitted students. The term shall be granted only on minimum 80 percent attendance at theory and practical course and satisfactory performance during the term.

Current curriculum orientation

To accommodate more advanced topics in the syllabi, it is necessary to understand the basic science knowledge level of the students that have chosen the Microbiology discipline. Curricula of courses of state and central boards of higher secondary level were reviewed to avoid reiterations of previous syllabi.

At **first year of under-graduation**, students will be provided the basic information that includes – characteristics of microbial world. The microorganisms will be studied for morphological, structural characterization, isolations techniques from natural and extreme

environments and their prominent features. The methodology to develop keen observation i.e., different microscopy techniques, staining techniques and nutritional requirements will be taught in detail, including these aspects at laboratory level as well. Introduction to biochemical characterization of components of micro-organism e.g., proteins, lipids, nucleic acids and carbohydrates and instrumental techniques to estimate these components qualitatively and quantitatively from micro-organisms or other natural sources will be the focus for second theory paper. Relevant experimentation on these topics will be included in practical course. In practical course, students will be trained in preparing laboratory manuals, standard operating practices and logbooks.

At **second year under-graduation** includes paper on principles of taxonomy and classification of major groups of microorganisms. The said paper will also include the physiological studies on these groups of micro-organisms. Second paper will deal with Air and Water Microbiology; role of micro-organisms in environment in regard to pollution and biodegradation; water and sewage treatment. Practical for the second-year students will be designed to be flexible incorporating project themes on environment, agriculture and pollution aspects to acquire laboratory skills. Practical at this level will also include application of biostatistics principles, computers for data analysis, interpretation, introduction to scientific writing and report preparation. These aspects can be better while carrying out the mini projects.

At **third year under-graduation**, the six theory papers will deal with broad areas of microbiology. Five such areas are – Medical microbiology, Microbial physiology, Microbial (prokaryotic and eukaryotic) genetics, Immunology and Fermentation technology. The sixth course will be Applied Microbiology that will include – Dairy Microbiology, Food Microbiology, Fermentation Technology, Agriculture Biotechnology, Fungal Biotechnology, etc. The practicals at third year will be planed more intensively, with exposure to applied fields and hands-on training.

Qualification of Teachers:

With minimum undergraduate and postgraduate degree in Microbiology (B. Sc. and M. Sc. Microbiology) and qualified as per UGC regulations.

Semester I MB 111: Introduction to Microbial World

| Credit | Торіс | No. of |
|--------|--|----------|
| | | Lectures |
| Credit | 1. Amazing world of Microbiology | (30) |
| Ι | a. Development of microbiology as a discipline -Discovery of | 4 |
| | microscope and Microorganisms (Anton von Leeuwenhoek and | |
| | Robert Hooke), Abiogenesis v/s biogenesis (Aristotle's notion | |
| | about spontaneous generation, Francesco Redi's experiment, | |
| | Louis Pasteur's & Tyndall's experiments) | |
| | b. Golden Era of Microbiology | |
| | i. Contributions of - Louis Pasteur (Fermentation, Rabies, | 4 |
| | Pasteurization and Cholera vaccine-fowl cholera | |
| | experiment) Robert Koch (Koch's Postulates, Germ theory | |
| | of disease, Tuberculosis and Cholera-isolation and staining | |
| | techniques of causative agent) Ferdinand Cohn (Endospore | |
| | discovery) | |
| | ii. Discovery of viruses (TMV and Bacteriophages), River's | 4 |
| | Postulates, Contribution of Joseph Lister (antiseptic surgery), | |
| | Paul Ehrlich (Chemotherapy), Elie Metchnikoff | |
| | (Phagocytosis), Edward Jenner (Vaccination) and Alexander | |
| | Fleming (Penicillin) in establishment of fields of medical | |
| | microbiology and immunology, Discovery of Streptomycin | |
| | by Waksman | |
| | iii. Contribution of Martinus W. Beijerinck (Enrichment | 2 |
| | culture technique, Rhizobium), Sergei N. Winogradsky | |
| | (Nitrogen fixation and Chemo-lithotrophy) in the | |
| | development of the field of soil microbiology | |
| | c. Modern Era of Microbiology | 2 |
| | Carl Woese classification based on 16S r RNA | |
| | Signification and Application of Human Microbiome, Nano- | |
| | biotechnology and Space Microbiology | |
| | d. Nobel laureates in Life Sciences of 21 st Century | 2 |
| | (Project Based Learning: Assignments should be given to student) | |

| Credit | 2. Types of Microorganism and their differentiating characters | |
|--------|--|---|
| Π | a. Prokaryotes, Eukaryotes, three domain and five domain system of | 2 |
| | classification | |
| | b. Bacteria (Eubacteria and Archaebacteria) | 1 |
| | c. Protozoa | 1 |
| | d. Fungi | 1 |
| | e. Algae | 1 |
| | f. Viruses, Viroids and Prions | 2 |
| | g. Actinomycetes | 1 |
| | 3. Beneficial and Harmful effects of microorganisms: | |
| | a. Medical Microbiology (Enlist diseases caused by various | 1 |
| | microorganisms, vaccines and antibiotics) | |
| | b. Environmental Microbiology (Eutrophication, red tide, Sewage | 2 |
| | treatment, bioremediation) | |
| | c. Food and Dairy Microbiology (Food spoilage, food borne | 1 |
| | diseases, Probiotics and fermented food) | |
| | d. Agriculture Microbiology (Plant diseases and Biofertilizers and | 1 |
| | Bio-control agents) | |
| | e. Industrial Microbiology (Production of antibiotics, enzymes, | 2 |
| | solvents and contaminants-bacteria and phages) | |
| | f. Immunology (Normal flora, Three lines of defence) | 2 |

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Semester I MB 112: Basic Techniques in Microbiology

| Credit | Торіс | No. of |
|--------|--|----------|
| | | Lectures |
| | | (36) |
| Ι | 1. Units of measurement – Introduction to Modern SI units | 1 |
| | 2. Microscopy | |
| | a. Bright field microscopy: | 3 |
| | • Electromagnetic spectrum of light | |
| l | • Structure, working of and ray diagram of a compound light | |
| | microscope; concepts of magnification, numerical aperture and | |
| | resolving power. | |
| | • Types, ray diagram and functions of - condensers (Abbe and | |
| | cardioid) eyepieces and objectives | |
| | • Concept of aberrations in lenses - spherical, chromatic, comma | |
| | and astigmatism | |
| | b. Principle, working and ray diagram of | |
| | Phase contrast microscope | 2 |
| | Fluorescence Microscopy | 1 |
| | • Electron Microscopy – TEM, SEM | 3 |
| | | |

| | 3. Staining Techniques: | |
|----|--|---|
| | a. Definition of Stain; Types of stains (Basic and Acidic), Properties | 2 |
| | and role of Fixatives, Mordants, Decolourisers and Accentuators | |
| | b. Monochrome staining and Negative (Relief) staining | 1 |
| | c. Differential staining - Gram staining and Acid-fast staining | 2 |
| | d. Special staining- Capsule, Cell wall, Spore, Flagella, Lipid | 3 |
| | granules, metachromatic granules | |
| II | 4. Sterilization and Disinfection | |
| | a. Sterilization | |
| | • Physical Agents - Heat, Radiation, Filtration | 3 |
| | • Checking of efficiency of sterilization (Dry and Moist) – | 4 |
| | Biological and Chemical Indicators | |
| | b. Disinfection: | |
| | • Chemical agents and their mode of action - Aldehydes, Halogens, | 4 |
| | Quaternary ammonium compounds, Phenol and phenolic | |
| | compounds, | |
| | • Heavy metals, Alcohol, Dyes, Detergents and Ethylene oxide. | 4 |
| | • Characteristics of an ideal disinfectant | 1 |
| | • Checking of efficiency of disinfectant - Phenol Coefficient | 2 |
| | (Rideal–Walker method) | |

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| Semester I Practical Course MB 113 (Implemented from 2019) | | | | |
|---|--|--------|--|--|
| Fynt | Based on theory paper I (MB 111) and Paper II (MB 112) Topics | No. of | | |
| No | Practic | | | |
| 1 | a Safaty measures and Good Laboratory Practices in microbiolog | 2 | | |
| 1 | a. Safety measures and Good Laboratory Fractices in incrobiolog | 2 | | |
| | h Introduction experision pressutions and use of common | | | |
| | b. Introduction, operation, precautions and use of common | | | |
| | Artechere Celevineter Levinen in flere head. Clinical | | | |
| | Autoclave, Colorimeter, Laminar air flow hood, Clinical | | | |
| | centrifuge. | | | |
| 2 | a. Construction (mechanical and optical), working and care of | 3 | | |
| | bright field microscope. | | | |
| | b. Permanent slide observation: Algae, Fungi and Protozoa | | | |
| | c. Wet mount slide preparation and its observation for: Bacteria, | | | |
| | Algae, Fungi and Protozoa. | | | |
| 3 | a. Introduction and use of common laboratory glass wares: Test | 2 | | |
| | tubes, culture tubes, suspension tubes, screw capped tubes, Petri | | | |
| | plates, pipettes (Mohr and serological) micropipettes, Pasteur | | | |
| | pipettes, Erlenmeyer flask, volumetric flask, glass spreader, | | | |
| | Durham's tube, Cragie's tube and inoculating needles (wire loop, | | | |
| | stab needles). | | | |
| | b. Learning basic techniques in Microbiology: Wrapping of | | | |
| | glassware, cotton plugging, cleaning and washing of glassware, | | | |
| | biological waste disposal. | | | |
| 4 | Basic staining techniques: | 3 | | |
| | a. Monochrome staining | | | |
| | b. Negative staining | | | |
| | c. Gram staining of bacteria | | | |
| 5 | Observation of motility in bacteria using: Hanging drop method and | 2 | | |
| | swarming growth method. | | | |
| 6. | Checking of efficacy of chemical disinfectant: Phenol Coefficient | 2 | | |
| | by Rideal–Walker method. | | | |
| | TOTAL | 14 | | |
| | | | | |

F. Y. B. Sc. Microbiology Practicals Syllabus

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Semester II MB 121: Bacterial Cell and Biochemistry

| Credits | Торіс | | | | | | |
|---------|---|---|--|--|--|--|--|
| | | | | | | | |
| Ι | 1. Bacterial Cytology | | | | | | |
| | Microbial cell size, shape and arrangements | | | | | | |
| | 2. Structure, chemical composition and functions of th | | | | | | |
| | following components in bacterial cell: | | | | | | |
| | a. Cell wall (Gram positive, Gram negative) | | | | | | |
| | b. Concept of Mycoplasma, Spheroplast, protoplast, L-form | | | | | | |
| | c. Cell membrane | 2 | | | | | |
| | d. Endospore (spore formation and stages of sporulation) | 1 | | | | | |
| | e. Capsule | 1 | | | | | |
| | f. Flagella | 2 | | | | | |
| | g. Fimbriae and Pili | 1 | | | | | |
| | h. Ribosomes | | | | | | |
| | i. Chromosomal & extra-chromosomal material | | | | | | |
| | j. Cell inclusions (Gas vesicles, carboxysomes, PHB granules, | | | | | | |
| | metachromatic granules, glycogen bodies, starch granules, | | | | | | |
| | magnetosomes, sulfur granules, chlorosomes) | | | | | | |
| II | 3. Chemical Basis of Microbiology | | | | | | |
| | a. Atom, Biomolecules, types of bonds (covalent, co-ordinate | 2 | | | | | |
| | bond, non-covalent) and linkages (ester, phospho-diester, | | | | | | |
| | peptide, glycosidic) | | | | | | |
| | b. Chemistry of Biomolecules: Structure, organization and | 1 | | | | | |
| | functions | | | | | | |
| | 4. Carbohydrates: Definition, classification | | | | | | |
| | a. Monosaccharides: Classification based on aldehyde and | 1 | | | | | |
| | ketone groups; structure of Ribose, Deoxyribose, Glucose, | | | | | | |
| | Galactose and Fructose. | | | | | | |
| | b. Disaccharides: Glyosidic bond, structure of lactose and | 1 | | | | | |
| | sucrose. | | | | | | |
| | c. Polysaccharides: Structure and types | | | | | | |
| | Examples-Starch, glycogen, Peptidoglycan, chitin | | | | | | |

| 5. Lipids: Definition, classification | 2 |
|--|---|
| a. Simple lipids – Triglycerides, Fats and oils, waxes. | |
| b. Compound lipids – Phospholipid, Glycolipids | |
| c. Derived lipids – Steroids, Cholesterol | |
| 6. Proteins: Definition, classification | |
| a. General structure of amino acids, peptide bond. | 1 |
| b. Types of amino acids based on R group | 1 |
| c. Structural levels of proteins: primary, secondary, tertiary and | 1 |
| quaternary | |
| d. Study of Hemoglobin, flagellin and cytoskeletal proteins | 1 |
| 7. Nucleic acids: Definition, classification | 2 |
| a. DNA – structure and composition | |
| b. RNA – Types (m-RNA, t-RNA, r-RNA), structure and | |
| functions. | |
| 8. Classification of Bacteria: | 2 |
| Introduction to Bergey's Manual of Determinative and Systemic | |
| Bacteriology | |
| 9. Classification of Viruses: ICTV nomenclature | 1 |
| | |

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Semester II MB 122: Microbial cultivation and growth

| Credit | Торіс | | | | | |
|--------|--|---|--|--|--|--|
| | | | | | | |
| Ι | 1. Cultivation of Microorganisms: | | | | | |
| | a. Nutritional requirements and nutritional classification. | | | | | |
| | b. Design and preparation of media: Common ingredients of media | | | | | |
| | and types of media. | | | | | |
| | c. Methods for cultivating photosynthetic, extremophilic and | | | | | |
| | chemo-lithotrophic bacteria, anaerobic bacteria, algae, fungi, | | | | | |
| | actinomycetes and viruses. | | | | | |
| | d. Concept of Enrichment, Pure Culture, Isolation of culture by | 3 | | | | |
| | streak plate, pour plate, spread plate. | | | | | |
| | e. Maintenance of bacterial and fungal cultures using different | 3 | | | | |
| | techniques. | | | | | |
| | f. Culture collection centres and their role. | 1 | | | | |
| | g. Requirements and guidelines of National Biodiversity Authority | 1 | | | | |
| | for culture collection centres. | | | | | |
| II | 2. Bacterial growth: | | | | | |
| | a. Kinetics of bacterial growth (Exponential growth model) | 3 | | | | |
| | b. Growth curve and Generation time | 2 | | | | |
| | c. Diauxic growth | | | | | |
| | d. Measurement of bacterial growth- Methods of enumeration: | | | | | |
| | e. Microscopic methods (Direct microscopic count, counting | | | | | |
| | cells using improved Neubauer, Petroff-Hausser's | | | | | |
| | chamber) | | | | | |
| | f. Plate counts (Total viable count) | 1 | | | | |

| g. | Turbidometric methods (including Nephelometry) | | | | | | |
|----|---|---|--|--|--|--|--|
| h. | Estimation of biomass (Dry mass, Packed cell volume) | 1 | | | | | |
| i. | Chemical methods (Cell carbon and nitrogen estimation) | | | | | | |
| j. | Factors affecting bacterial growth [pH, Temperature, Solute | 4 | | | | | |
| | Concentration (Salt and Sugar)] and Heavy metals. | | | | | | |
| | | 1 | | | | | |

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| | Semester II | | | | | |
|--|--|------------|--|--|--|--|
| | Practical Course MB 123 | | | | | |
| based on theory paper I (MB 121) and Paper II (MB 122) | | | | | | |
| Funt Touton N | | | | | | |
| Expt. | Topics | | | | | |
| NO. | | Practicals | | | | |
| 1 | i. Preparation of simple laboratory nutrient media (Nutrient | 1 | | | | |
| | agar/broth, MacConkey's agar). | 1 | | | | |
| | II. Checking sterilization efficiency of autoclave using a | 1 | | | | |
| | biological indicator (B. stearothermophilus) | 1 | | | | |
| | III. Preparation of Winogradsky's column and observation of | 1 | | | | |
| | microscope | | | | | |
| 2 | Special staining techniques: | 2 | | | | |
| <u> </u> | i Endosnore staining | 2 | | | | |
| | ii. Cansule staining | | | | | |
| 3 | Isolation of bactoria: | 1 | | | | |
| 5 | Streak plate technique (Colony and cultural characteristics) | 1 | | | | |
| | Sucar place teeninque (eolony and caltural characteristics) | | | | | |
| 4 | Enumeration of bacteria from fermented food / soil / water by: | 2 | | | | |
| - | i. Spread plate method | _ | | | | |
| | ii. Pour plate method | | | | | |
| 5 | Study of normal flora of skin: | 2 | | | | |
| _ | i. Cultivating and observing different morpho-forms of bacteria | | | | | |
| | from skin. | | | | | |
| | ii. Study of effect of washing on skin with soap and disinfectant | | | | | |
| | on it's microflora. | | | | | |
| | | | | | | |
| 6 | To study the effect of different parameters on growth of E. | 3 | | | | |
| | coli: | | | | | |
| | i. pH, temperature, sodium chloride concentration | | | | | |
| | ii. Study of oligodynamic action of heavy metal | | | | | |
| 7 | Preservation of cultures on: | 1 | | | | |
| | Slants, soil and on grain surfaces; revival of these cultures | | | | | |
| | and lyophilized cultures. | | | | | |
| | | 14 | | | | |
| | IUIAL | 14 | | | | |
| | | | | | | |

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Links: https://microbiologysociety.org/static/uploaded/23cbf9c5-f8c8-4f91b092a4ad819e6357.pdf



Savitribai Phule Pune University

(Formerly University of Pune)

Faculty of Science & Technology

F.Y.B.Sc. Computer Science (Electronics)

Choice Based Credit System Syllabus To be implemented from Academic Year 2019-2020

Title of the Course: F.Y. B. Sc. Electronics of B. Sc. (Computer Science)

Preamble of the Syllabus:

The systematic and planned curricula for first year and second year Electronics shall motivate and encourage the students for pursuing higher studies in Electronics and Computer and for becoming an entrepreneur.

Introduction:

At **first year of under-graduation:** The basic topics related to the fundamentals of electronics are covered. Since electronics is an inherent part of technological advancements, the practical course is intended to achieve the basic skills required for computer science students.

At **second year under-graduation**: The level of the theory and practical courses shall be one step ahead of the first year B.Sc. Courses based on content of first year shall be introduced. Concepts of Communication, embedded system, Internet of things will be introduced at this stage.

Objectives:

- To provide knowledge of technological and practical aspects of electronics.
- To familiarize with current and recent technological developments.
- To enrich knowledge through activities such as industrial visits, seminars, projects etc.
- To train students in skills related to computer industry and market.
- To create foundation for research and development in Electronics/ Computer Science.
- To develop analytical abilities towards real world problems
- To help students to build-up a progressive and successful career.

Titles of Papers and Scheme of Study

| SEM | Paper / | Paper | | | Lectures/ practical per week | Evaluation | | |
|-----|-----------------|-------|--|---------------|------------------------------------|------------|------|-------|
| | subject code | | Paper Title | Credits | | C.A. | U.E. | Total |
| I | ELC-111 | Ι | Semiconductor Devices and Basic Electronic Systems | 2 (36 L) | 3 | 15 | 35* | 50 |
| | ELC-112 | II | Principles of Digital Electronics | 2 (36 L) | 3 | 15 | 35* | 50 |
| | ELC-113 | III | Electronics Lab IA | 1.5 (48 L) | 4 | 15 | 35** | 50 |
| П | ELC-121 | Ι | Instrumentation System | 2 (36 L) | 3 | 15 | 35* | 50 |
| | ELC-122 | II | Basics of Computer Organisation | 2 (36 L) | 3 | 15 | 35* | 50 |
| | ELC-123 | III | Electronics Lab IB | 1.5 (48L) | 4 | 15 | 35** | 50 |

F. Y. B. Sc. Electronic Science of B. Sc. (Computer Science)

Detail Syllabus:

Objectives :

1. To study various types of semiconductor devices

2. To study elementary electronic circuits and systems

Term I

SEMESTER I

Paper I

ELC-111: Semiconductor Devices and Basic Electronic Systems (2 Credits, 36 lectures)

Unit 1. Semiconductor Diodes

Semiconductor, P and N type semiconductors, Formation of PN junction diode, it's working, Forward and Reverse bias characteristics, Zener diode: working principle, breakdown mechanism and characteristics, Working principle of Light emitting diode, photo diode, optocoupler, Solar cell working principle and characteristics

Unit 2. Bipolar Junction Transistor (BJT)

Bipolar Junction Transistor (BJT) symbol, types, construction, working principle, Transistor amplifier configurations - CB, CC (only concept), CE configuration: input and output characteristics, Definition of $\alpha,\,\beta$ and Υ , Concept of Biasing (numerical problems not expected), Potential Divider bias, Transistor as amplifier (Concept of Gain and Bandwidth expected), Transistor as a switch.

Unit 3. MOSFET

MOSFET types, Working principle, Characteristics, Application of MOSFET as a Switch.

Unit 4. POWER SUPPLY

Block Diagram of Regulated Power Supply, Rectifiers (half wave, full wave, Bridge), rectifier with capacitor-filter, Use of Zener Diode as a Voltage Regulator, IC 78XX and 79XX as regulator, Block Diagram and explanation of SMPS, Block diagram and explanation of UPS

Unit 5. OSCILLATORS

Barkhauson Criteria, Low frequency Wein-bridge oscillator, High frequency crystal oscillator, IC 555 as astable multivibrator used as square wave generator / clock

Unit 6. DATA CONVERTERS

Need of Digital to Analog converters, parameters, weighted resistive network, R-2R ladder network, need of Analog to Digital converters, parameters, Flash ADC, successive approximation ADC.

Text/reference books :

- 1. Electronic Devices and Circuits I T. L. Floyd- PHI Fifth Edition
- 2. Principles of Analog Electronics A.P.Malvino
- 3. Sedha R.S., A Text Book Of Applied Electronics, S.Chand& CompanyLtd

(6L)

(6L)

(7 L)

(5L)

(6L)

(6L)
SEMESTER I

PAPER II

ELC 112: Principles of Digital Electronics (2 Credits, 36 lectures)

Objectives:

1. To get familiar with concepts of digital electronics

- 2. To learn number systems and their representation
- 3. To understand basic logic gates, Boolean algebra and K-maps
- 4. To study arithmetic circuits, combinational circuits and sequential circuits

Unit 1: Number Systems and Digital codes

Introduction to Decimal, Binary and Hexadecimal number systems and their interconversions, binary addition and binary subtraction using 2's complement, Binary Coded Decimal number, Gray Codes, Gray to Binary and Binary to Gray conversion, Alphanumeric representation in ASCII codes.

Unit 2: Logic gates and Boolean Algebra

Logic gates (NOT, AND, OR, NAND, NOR, XOR gate) with their symbol, Boolean equation and truth table, Universal gates

Introduction of CMOS and TTL logic families, Parameters like voltage levels, propagation delay, noise margin, fan in, fan out, power dissipation (TTL NAND, inverter, CMOS gates etc. not expected)

Rules and laws of Boolean algebra, De Morgan's theorem, simplification of Logic equations using Boolean algebra rules, Min terms, Max terms, Boolean expression in SOP and POS form, conversion of SOP/POS expression to its standard SOP/POS form Introduction to Karnaugh Map, problems based on SOP (upto 4 variables), digital designing using K Map for: Gray to Binary and Binary to Gray conversion,

Unit 3: Combinational Circuits

(12 L)

(10 L)

(14)

Half adder and full adder, 4-Bit Universal adder/ Subtractor, applications of Ex-OR gates as parity checker and generator, study of Multiplexer (4:1) and Demultiplexer (1:4), Encoders - Decimal/BCD to binary, 3X4 matrix keyboard encoder, priority encoder, Decoder- BCD to seven segment decoder, IC 74138 and IC 7447, Digital comparator,

Reference Books:

- 1. Digital Fundamentals: Floyd T.M., Jain R.P., Pearson Education
- 2. Digital Electronics: Jain R.P., Tata McGraw Hill
- 3. Digital Principles and Applications: Malvino Leach, Tata McGraw-Hill
- 4. M.Morris Mano, "Digital Design "3^{ad}Edition, PHI, NewDelhi.
- Ronald J. Tocci. "Digital Systems-Principles and Applications" 6/e. PHI. New Delhi. 1999.(UNITS I to IV)
- 6. G.K.Kharate-Digital electronics-Oxford university press
- 7. S.Salivahana & S.Arivazhagan-Digital circuits and design

SEMESTER I

Paper III

ELC-113: ELECTRONICS LAB IA (1.5 Credits)

The practical course consists of **10 experiments** out of which two will be preparatory experiments. These will be evaluated in an oral examination for 15% marks at internal and external semester examination. **Each Practical batch will have maximum 15 students**.

Preparatory Experiments (Minimum 2/3)

1. Identification of Components (Passive and Active) /Tools

- Minimum 10 different types of components must be given
- Identification based on visual inspection / data sheets be carried out

2.Use of Digital Multimeters

- Measurement of AC/DC voltage and Current on different ranges
- Measurement of R &C
- Testing of Diodes & Transistors
- Measurement of β .
- Use of Multimeter in measurement of Resistance of LDR and Thermistor

3.Study of Signal Generator & CRO

- Understand how to use Signal Generator, CRO
- Study of front panel controls of both
- Measurement of amplitude and frequency of Sine/Square waveform
- Measurement of Phase with the help of RC circuit
- Demonstration of Lissajous figures
- Demonstrate the use of Component testing facility

Semester I List of Practical's (Minimum 08, 4 from each group) Group A

- 1. Study of breakdown characteristics and voltage regulation action of Zener diode, Use of 3 Pin Regulator IC 78XX & 79XX as a regulator.
- 2. Study of half wave, full wave and bridge rectifier circuit with and without capacitor filters.
- 3. Study of Opto-coupler using LED and Photodiode (Package may be used here), it's application as burglar alarm.
- 4. Study of Bipolar Junction Transistor as a Switch.
- 5. Study of Single stage RC coupled CE transistor Amplifier (Gain/ Bandwidth).
- 6. Study of output and transfer characteristics of MOSFET.
- 7. Study of SMPS.
- 8. Study of IC 555 as an Astable Multivibrator.
- 9. Study of 4-Bit R-2R Ladder Network type of DAC.
- 10. Study of 3-bit Flash ADC.

Group B

- 11. Study of Logic Gates (Verification of Truth tables)
- 12. Study of Binary to Gray & Gray to Binary Converter (K- Map based design).
- 13. Study of Half Adder and Full Adder using Logic Gates.
- 14. Use of Ex-OR as a 4-bit Parity Checker and Generator.
- 15. Study of Decimal to BCD/ (Binary) Converter.
- 16. Study of Multiplexer and Demultiplexer (4:1 & 1:4).
- 17. Study of 3X4 matrix Keyboard Encoder / Priority Encoder.
- 18. Study of BCD to Seven Segment Display using IC 7447.

SEMESTER II

PAPER I

ELC 121: Instrumentation Systems (2 Credits, 36 lectures)

Objectives :

1. To study Instrumentation System

2. To study various blocks of Instrumentation System

3. To study Smart Instrumentation System

Unit 1: Introduction to Instrumentation System

Block diagram of Instrumentation system, Definition of sensor, transducer and Actuators, Classification of sensors: Active and passive sensors. Specifications of sensors: Accuracy, range, linearity, sensitivity, resolution, reproducibility.

Unit 2: Sensors and Actuators

Temperature sensor (Thermistor, LM-35), optical sensor (LDR), Passive Infrared sensor (PIR), Tilt Sensor, ultrasonic sensor, Motion sensor, Image Sensor, Actuators: DC Motor, stepper motor

Unit 3: Smart Instrumentation System and Smart Sensors

Block diagram of Smart Instrumentation system, Concept of smart sensor, Film sensors, Nano sensor

Unit 4: OPAMP as signal Conditioner (12 L)

Concept, block diagram of Op amp, basic parameters (ideal and practical): input and output impedance, bandwidth, differential and common mode gain, CMRR, slew rate, IC741/LM324, Concept of virtual ground, Op amp as inverting and non inverting amplifier, Unity gain follower, Opamp as adder, substractor, Op amp as current to voltage and voltage to current convertor, Voltage to frequency converter, Op amp as comparator, Problems based on above Op Amp applications.

Reference Books:

- 1. Sensors and Transducers : D. Patranabis, PHI publication, 2nd Edition
- 2. Sensors and Transducers : Prof A.D.Shaligram
- 3. Op Amp and Linear Integrated Circuits: Ramakant Gaykwad

(6 L)

(12 L)

(6 L)

SEMESTER II

PAPER II

ELC 122 : Basics of Computer Organisation (2 Credits, 36 lectures)

Objectives:

- 1. To get familiar digital sequential circuits
- 2. To study Basic computer Organization
- 3. To study Memory architecture

Unit 1: Flip-flops

RS Flip Flop using NAND gate, clocked RS Flip Flop, D Latch, J K Flip Flop, T Flip Flop

Unit 2: Shift registers and Counters

Shift registers - SISO, SIPO, PISO, PIPO shift registers, Ring Counter using D Flip flop. Counters -Synchronous and Asynchronous type, 3-bit Up, Down and Up-Down counter, Concept of modulus Counters (Timing Diagram of all above are expected)

Unit 3: Basics of Computer System

Basic Computer Organization, Concept of Address Bus, Data Bus, Control Bus. CPU Block Diagram and Explanation of each block, Register based CPU organization, Concept of Stack & its organization, I/O organization: need of interface, block diagram of general I/O interface

Unit 4: Memory Organization

Memory Architecture, Memory hierarchy, Types of Memories, Data Read/ Write process, Vertical and Horizontal Memory Expansion, Role of Cache memory, Virtual Memory.

Reference Books:

- 1. Digital Fundamentals: Floyd T.M., Jain R.P., Pearson Education
- 2. Digital Electronics: Jain R.P., Tata McGraw Hill
- 3. Digital Logic and Computer Design : M. Morris Mano, Pearson Education
- 4. Computer Organization and Architecture, William Stallings, Pearson, 10th Edi.

(12 L)

(9 L)

(10 L)

(5 L)

SEMESTER II

Paper III

ELC-123: Electronics Lab IB

The practical course consists of **10 experiments** out of which one will be activity equivalent to 2 practical sessions.

Activity will carry 15% marks at internal and external semester examination. Activity can be any one of the following :

1.Hobby projects

- 2.Industrial visit / live work experience
- 3.PCB Making
- 4.Market Survey of Electronic Systems
- 5. Circuit Simulations and CAD tools

GROUP A (Minimum 4/8)

- 1. To study temperature sensor LM 35
- 2. Use of LDR to control light intensity
- 3. Study of PIR and tilt sensor.
- 4. Study of stepper motor.
- 5. Use of OPAMP as comparator and its use in DC motor driving.
- 6. Build and test Inverting and non inverting amplifier using OPAMP.
- 7. Build and test adder and subtractor circuits using OPAMP.
- 8. Build and test voltage to frequency converter

GROUP B (Minimum 4/8)

- 1. Study of RS, JK and D flip flops using NAND gates
- 2. Study of Four bit ALU
- 3. Study of asynchronous Up/Down Counter
- 4. Study of decade counter IC circuit configurations
- 5. Study of 4-bit SISO Shift register and it's use as Ring Counter
- 6. Study of read and write action of RAM (using IC 2112/4 or equivalent).
- 7. Study of Diode Matrix ROM
- 8. Study of Computer hardware system

Savitribai Phule Pune University, Pune

Bachelor of Business Administration (Computer Application)

BBA(CA)

(Under faculty of Commerce & Management)

(To be implemented from Academic year 2019-20)

1. Name of Programme: Bachelor of Business Administration (Computer Application)

2. Introduction:

The degree shall be titled as Bachelor of Business Administration (B.B.A.)(Computer Application) under the Faculty of Commerce and Management. First Year B.B.A.(CA) choice based credit system is implemented w.e.f. the academic year 2019-2020, Second Year B.B.A.(CA) II will be implement w.e.f. 2020-2021 and Third Year B.B.A.(CA) III w.e.f. 2021-2022

3. Programme Objectives:

- To produce skill oriented human resource.
- To import practical skills among students.
- To make industry ready resource.
- To bring the spirit of entrepreneurship.

4. Programme Structure:

- The Programme is of a Three Year (Six semesters) Full Time Degree Programme.
- The programme shall be based on credit system comprising 132 credits.

5. Eligibility for Admission

- A candidate is eligible for admission to the Degree in Bachelor of Business Administration – Computer Application after passing 12th Std. examination (H.S.C. 10 +2) from any stream with English as passing subject and has secured 40% marks at 12th std.
- Three Years Diploma after S.S.C. i.e. 10th Standard of Board of Technical Education conducted by Government of Maharashtra or its equivalent.
- Two Years Diploma in Pharmacy after H.S.C., of Board of Technical Education conducted by Government of Maharashtra or its equivalent.
- MCVC

6. Medium of Instruction: English

7. Award of Credits:

- Each course having 3 credits shall be evaluated out of 100 marks and student should secure at least 40 marks to earn full credits of that course.
- Each course with 2 credits for Sem-I &Sem-II, Sem-V &Sem-VI is divided in theory (50%) & practical (50%) and for Sem-III,IV there will be project work for students. For all practical and project there will be university evaluation. For Sem-I,II,V&VI (30%Internal & 70%Extrenal) is the pattern of evaluation.
- GPA shall be calculated based on the marks obtained in the respective subject provided that student should have obtained credits for that course.

8. Evaluation Pattern:

- Each course carrying 100 marks shall be evaluated with Continuous Assessment (CA) and University Evaluation (UE) mechanism. Continuous assessment shall be of 30 marks while University Evaluation shall be of 70 marks. To pass in the course, a student has to secure minimum 40 marks provided that he should secure minimum 28 marks in University Evaluation (UE).
- CA shall be based on internal tests (minimum 2 for 20 marks). In addition, for remaining 10 marks a teacher may assign various activities such as home assignments,

tutorials, seminars, presentations, group discussion etc, to the students and evaluate accordingly.

9. Method of Evaluation and Evaluation Criteria: - 1. Internal Assessment 30 marks for all theory related subjects 2. Practical and Project will be evaluated separately 3.SPPU - Examination will be 70 marks

- Instructions for teachers for internal evaluation for 30 Marks The purpose of internal evaluation is to assess the depth of knowledge, understanding and awareness. For this purpose a teacher is expected to use different evaluation methods in order to have rational and objective assessment of the learners and available resources.
- The class work will carry 30 marks in each course. Internal Evaluation includes continuous evaluation of a student by adopting variety of techniques such as Assignments, Presentation, Internal examination, Group Discussions, Projects etc.
- There shall be Four small projects /Tutorials for internal evaluation as compulsory part of assessment (Semester I, II, III and IV).

2. Project Examination

For course on Practical and Project work as per the regular practice there will be Written Report and viva presentation of 100 marks at SPPU level.

3. External Examination: - There will be written Examination of 70 marks and 3 hrs duration for every course at the end of each Semester.

Setting of Question Papers (Applicable to theory subjects)

- 1. A candidate shall have to answer the questions in all the subjects in English only.
- 2. Question papers shall be framed so as to ensure that no part of the syllabus is left out of study by a candidate.
- 3. question paper shall be balanced in respect of various topics outlined in the syllabus.
- 4. The question papers shall have a combination of long, short answer and MCQ type questions.

10. Restructuring of courses – Equivalence and Transitory Provision

The University will conduct examination of old course for next three academic years from the date of implementation of new course.

The candidate of old course will be given three chances to clear his subjects as per the old course and thereafter he will have to appear for the subjects under new course as per the equivalence given to old course.

11. Completion of Degree Programme:

A student who earns 132 credits, shall be considered to have completed the requirements of the B.B.A.(CA) degree program and CGPA will be calculated for such student.

12. Credit Allocation

CC-Core Course, EC-Elective Course, PR-Practical, PJ-Project,

AECC-Ability Enhancement Compulsory Courses, SEC-Skill Enhancement Courses.

| Sr. | Sem | CC – | EC | PR | PJ | AEC | SEC – | Lectures + Project +add on |
|-------|------|--------|-------|-----|------|--------|-------|----------------------------|
| No. | este | Credit | Credi | Cre | Cred | C- | Credi | courses= Total Credits |
| | r | | t | dit | it | credit | t | |
| 1 | Ι | 15 | | 4 | | | 2 | 15+4+2 =21 |
| 2 | II | 15 | | 4 | | | 2 | 15 +4 +2=21 |
| 3 | III | 9 | 6 | 6 | | 2 | | 9+6+6+2=23 |
| 4 | IV | 9 | 3 | 4 | 4 | | 2 | 9+3+4+4+2=22 |
| 5 | V | 9 | 3 | 4 | 4 | | 2 | 9+3+4+4+2=22 |
| 6 | VI | 10 | 3 | 4 | 4 | | 2 | 10+3+4+4+2=23 |
| Total | | 67 | 15 | 26 | 12 | 2 | 10 | 67+15+26+12+2+10=132 |

Total - 132 Credits for Three years Programme

13. Titles of Papers and Scheme of Study for B.B.A. (C.A.) Programme

CC-Core Course, EC-Elective Course, PR-Practical, PJ-Project,

AECC-Ability Enhancement Compulsory Courses, SEC-Skill Enhancement Courses.

| Subject | Subject Name | Course | Credi | its |
|---------|---------------------------------------|--------|-------|-----|
| Code | | | Th | Pr |
| CA-101 | Business Communication | CC | 3 | |
| CA-102 | Principles of Management | CC | 3 | |
| CA-103 | C Language | CC | 3 | |
| CA-104 | Database Management System | CC | 3 | |
| CA-105 | Statistics | CC | 3 | |
| CA-106 | Computer Laboratory Based on 103 &104 | PR | | 4 |
| | (2 credits each) | | | |
| 107 | Add-On (PPA) (30 Hours) | SEC | 2 | |

SEMESTER-I

| SEMESTER-1 | Π |
|------------|---|
|------------|---|

| Subject | Subject Name | Course | Cred | its |
|---------|--|--------|------|-----|
| Code | | | Th | Pr |
| CA-201 | Organization Behavior & Human Resource Management | CC | 3 | |
| CA-202 | Financial Accounting | CC | 3 | |
| CA-203 | Business Mathematics | CC | 3 | |
| CA-204 | Relational database | CC | 3 | |
| CA-205 | Web Technology HTML-JS-CSS | CC | 3 | |
| CA-206 | Computer Laboratory Based on 204 & 205(2 credits each) | PR | | 4 |
| 207 | Add-On (Advance C) (30 Hours) | SEC | 2 | · |

SEMESTER- III

| Subject | Subject Name | Course | Cre | dits |
|-------------|-----------------------------------|--------|-----|-------|
| Code | | | Th | Pr |
| CA-301 | Digital Marketing | CC | 3 | |
| CA-302 | Data Structure | CC | 3 | |
| CA-303 | Software Engineering | CC | 3 | |
| CA-304 | Angular JS | EC | 3 | |
| OR | 1 | 1 | | |
| CA-304 | РНР | EC | 3 | |
| CA-305 | Big data | EC | 3 | |
| OR | | 1 | 1 | |
| CA-305 | Block chain | EC | 3 | |
| CA-306 | Computer Laboratory Based on 302, | PR | | 2+2+2 |
| | 304 and 305 (2 credits each) | | | = 6 |
| 307 AECC | Environment Awareness | AECC | 2 | |

SEMESTER- IV

| Subject | Subject Name Cour | | Cred | lits |
|---------|--------------------------------------|-----|------|------|
| Code | | | Th | Pr |
| CA-401 | Networking | CC | 3 | |
| CA-402 | Object Oriented Concepts Through CPP | CC | 3 | |
| CA-403 | Operating System | CC | 3 | |
| CA-404 | NODE JS | EC | 3 | |
| OR | | 1 | | |
| CA-404 | Advance PHP | EC | 3 | |
| CA-405 | Project | EC | | 4 |
| CA-406 | Computer Laboratory Based on 402,404 | PR | | 4 |
| | (2 credits each) | | | |
| 4 | ADD-On (30 Hours) | SEC | 2 | I |

SEMESTER- V

| Subject | Subject Name | Course | Cre | dits |
|---------|----------------------------------|--------|-----|------|
| Code | | | Th | Pr |
| CA-501 | Cyber Security | CC | 3 | |
| CA-502 | OOSE | CC | 3 | |
| CA-503 | Core Java | CC | 3 | |
| CA-504 | Mongo DB | EC | 3 | |
| OR | 1 | 1 | | |
| CA-504 | Python | EC | 3 | |
| CA-505 | Project | PJ | | 4 |
| CA-506 | Computer Laboratory Based on 503 | PR | | 4 |
| | and 504(2 credits each) | | | |
| 5 | Add on Course-IOT(30 Hours) | | 2 | |

SEMESTER- VI

| Subject | Subject Name | Course | Cred | lits |
|---------|------------------------------------|--------|------|------|
| Code | | | Th | Pr |
| CA-601 | Recent Trends in Information | ССТ | 3+1 | |
| | Technology(Tutorial/Assignment) | | | |
| CA-602 | Software Testing | CC | 3 | |
| CA-603 | Advanced Java | CC | 3 | |
| CA-604 | Android Programming | EC | 3 | |
| OR | | | • | • |
| CA-604 | Dot Net framework | EC | 3 | |
| CA-605 | Project | PJ | | 4 |
| CA-606 | Computer Laboratory Based on | PR | | 4 |
| | 603 and 604(2 credits each) | | | |
| 6 | Add on Course-Soft Skills Training | | 2 | |

14. Acknowledgement: The focus of BBA CA Programme (CBCS-2019 Pattern) has always been raising the academic standards, excellence and holistic development of students. Hon. Prof.

Dr. Nitin Karmalkar, Vice Chancellor, Hon. Dr. N. S. Umarani, Pro-Vice Chancellor, Hon. Dr.Parag Kalkar, Dean, and Associate Dean, Dr. Yashodhan Mithare, Faculty of Commerce and Management have given insights in designing the BBA CA Programme.

Dr. Sanjay Kaptan ,Head ,Savkar Chair has shared his immense knowledge and expertise for designing the structure. Also, the Industry experts panel has added insights in course titles of the BBA CA Programme. Dr. Tanuja Devi co-ordinated the BBA CA Restructuring Committee Dr. Ranjit Patil , Shakila Sishawantan , Prashant Mule Shivendu Bhushan have contributed greatly. This synergy of contributors is very crucial in fine tuning of the BBA CA Programme in its present form.

Savitribai Phule Pune University, Pune

B.B.A. (Computer Application)

(Under faculty of Commerce & Management)

(To be implemented from Academic year 2019-20)

Business Communication Skills Course Code: -- 101 Credit 3

Depth of the syllabus - Reasonable knowledge of the communication **Program objectives**

1 To understand what is the role of communication in personal and business world

2. To understand system and communication and their utility

3. To develop proficiency in how to write business letters and other communications in required b

| Unit No. | Contents | Lectures |
|----------|--|----------|
| 1 | 1. Concept of Communication and Introduction to | 12 |
| | Communication | |
| | | |
| | 1.1 Role of Communication in social and economic system | |
| | 1.2 Meening and definition | |
| | 1.5 Meaning and deminion 1 (Principles of effective communication | |
| | 1.5 Barriers to communication and over comings | |
| 2 | Methods and types of Communication | 12 |
| _ | fittinous and types of communication | |
| | | |
| | 2.1 Written communication, | |
| | 2.2 Forms of written communication. | |
| | 2.3 Qualities , difficulties in written communication , | |
| | 2.4 Constraints in developing effective written communication | |
| | 2.5 Merits and Limitations of Written communication | |
| | 2.6 Listening written communication, | |
| | 2.8 Qualities difficulties in written communication | |
| | 2.9 Constraints in developing effective written communication | |
| | 1 8 | |
| 3. | Business Correspondence | 12 |
| | | |
| | 3.1 Concept, | |
| | 3.2 Need and functions of Business Correspondence, | |
| | 3.3 Types of Business letters, | |
| | 3.4 Layout Dratting of business, | |
| | 3.5 Sales Letter, 3.6 Orders sales circulars and husiness promotion letters | |
| | 3.7 written methods& types of communication | |
| 4. | Analysis of different Media of Communication | 12 |
| | · · · · · · · · · · · · · · · · · · · | |
| | 4.1 Fax communication, | |

| 4.2 Voice mail, | |
|--|--|
| 4.3 e-mails, | |
| 4.4 Tele conferencing, | |
| 4.5 Communication through social media | |
| | |

References

| Sr. No. | Title of the Book | Author/s | Publication |
|---------|---|---|------------------------------|
| 1 | Business Communication | Meenakshi Raman , Prakash Singh | Oxford |
| 2 | Business Communication | HomaiPradhan , N.S. Pradhan | Himalaya Publishing House |
| 3 | Business Communication | R.K. Madhukar | Vikas Publishing House |
| 4 | Business Communication and personality Development | BiswajitDas .ipswwtaSatpathy | Excel Books |
| 5 | Business Communication – Concepts , Cases and applications | P.D Chaturvedi , MukeshChaturvedi | Dorling Kindersley |
| 6 | Business Communication – Connecting at work | HorySankarMukerjee | Oxford |
| 7 | Business Communication Today | Courtland L. Bovee , John V. Thill , AbhaChatterjee | Pearson |
| 8 | Hand Book of internal Communication | Eileen Scholes | Infinity Books |

Principles of Management Course Code 102 Credit -3

Depth of the course- Reasonable working knowledge

Program Objectives

- To understand basic concept regarding org. Business Administration
- To examining how various management principles
- To develop managerial skills among the students

| Unit No. | Contents | Lectures |
|----------|---|----------|
| 1 | Nature of management | 12 |
| | Meaning, importance, functions, types | |
| | Management as an art ,science and social system | |
| | and organization | |
| 2 | Evolution of management thoughts | 12 |
| | Concept of managerial thoughts | |
| | Contribution of Taylor, Mayo and Fayol and Drucker and | |
| | Indian Management Ethos | |
| | | |
| 3. | Major managerial Functions | 12 |
| | Planning, need types, methods, advantages, merits Forecasting. need types, methods, advantages, merits Decision making types process and techniques Directions nature and principles and Motivation – nature, principles and theories Organizing – concept delegation of authorities decentralization concepts and importance | |
| 4. | Recent trends in Management | 12 |
| | Management of change, Mgt of crises, TQM, stress management (Principles, concepts merits) | |

References

| Sr. No. | Title of the Book | Author/s | Publication |
|---------|-----------------------------|------------------------|-----------------------|
| 1 | Management Concepts and | J.S. Chandan | Vikas Publishing |
| | Strategies | | House Pvt. Ltd. |
| 2 | Principles of Management | Harold Koontz , Heinz | McGraw hill |
| | | Weihrich , A. | companies |
| | | RamachandraArysri | |
| 3 | Management A Global and | Heinz Weihrich, Mark | McGraw hill |
| | Entrepreneurial Perspective | V. Cannice , Harold | companies |
| | | Koontz | |
| 4 | Management – 2008 Edition | Robert Kreitner, | Biztantra – |
| | | MamataMohapatra | Management For Flat |
| | | | World |
| 5 | Introduction to Management | John R. Schermerhorn | Wiley India Pvt. Ltd. |
| 6 | Principles of Management | P.C. Tripathi, P.N. | McGraw hill |
| | | reddy | companies |
| 7 | Management Text and Cases | R. SatyaRaju , A. | PHI learning Pvt. Ltd |
| | | Parthasarthy | |
| 7 | Management (Multi- | H. R. Appannaiah, G. | Himalaya Publishing |
| | Dimensional Approach) | Dinakar, H.A. Bhaskara | House |

Subject : C-Programming Course Code-103 Credit-3

| Unit No. | Topics | No. of Lectures |
|----------|---|-----------------|
| 1 | Introduction to C language | 3 |
| | 1.1 History | |
| | 1.2 Basic structure of C Programming | |
| | 1.3 Language fundamentals | |
| | 1.3.1 Character set, tokens | |
| | 1.3.2 Keywords and identifiers | |
| | 1.3.3 Variables and data types | |
| | 1.4 Operators | |
| | 1.4.1 Types of operators | |
| | 1.4.2 Precedence and associativity | |
| | 1.4.3 Expression | |
| | | |
| 2 | Managing I/O operations | 2 |
| | 2.1 Console based I/O and related built-in I/O functions | |
| | 2.1.1 printf(), scanf() | |
| | 2.1.2 getch(), getchar() | |
| | 2.2 Formatted input and formatted output | |
| 3 | Decision Making and looping | 9 |
| | 3.1 Introduction | |
| | 3.2 Decision making structure | |
| | 3.2.1 If statement | |
| | 3.2.2 If-else statement | |
| | 3.2.3 Nested if-else statement | |
| | 3.2.4 Conditional operator | |
| | 3.2.5 Switch statement | |
| | 3.3 Loop control structures | |
| | 3.3.1 while loop | |
| | 3.3.2 Do-while loop | |
| | 3.3.3 For loop | |
| | 3.3.4 Nested for loop | |
| | 3.4 Jump statements | |
| | 3.4.1 break | |
| | 3.4.2 continue | |
| | 3.4.5 goto 3.4.4 svit | |
| 4 | J.4.4 CAR Decomposition of and looping statements | 5 |
| 4 | Addition / Multiplication of integers | 3 |
| | $\begin{array}{c} \text{Addition / Multiplication of integers} \\ \text{Determining if a number is } \pm va / va / aven / add \\ \end{array}$ | |
| | Maximum of 2 numbers 3 numbers | |
| | Sum of first n numbers, given n numbers | |
| | Integer division Digit reversing Table generation for n ab | |
| | Factorial sine series cosine series nCr. Pascal Triangle | |
| | Prime number Factors of a number | |
| 1 | | |

| | Other problems such as Perfect number, GCD of 2 numbers | |
|-------------|---|--------|
| | etc (Write algorithms and draw flowcharts) | |
| 5 | Arrays and Strings | 12 |
| | 5.1 Introduction to one-dimensional Array | |
| | 5.1.1 Definition | |
| | 5.1.2 Declaration | |
| | 5.1.3 Initialization | |
| | 5.2 Accessing and displaying array elements | |
| | 5.3 Finding smallest and largest number from array | |
| | 5.4 Reversing array | |
| | 5.5 Finding odd/even/prime number from array | |
| | 5.4 Introduction to two-dimensional Array | |
| | 5.4.1 Definition | |
| | 5.4.2 Declaration | |
| | 5.4.3 Initialization | |
| | 5.5 Accessing and displaying array elements | |
| | 5.6 Matrices: Addition, Multiplication, Transpose, | |
| | Symmetry, upper/lower triangular | |
| | 5.7 Introductions to Strings | |
| | 5.7.1 Definition | |
| | 5.7.2 Declaration | |
| | 5.7.3 Initialization | |
| | 5.8 Standard library functions | |
| | 5.9 Implementations without standard library functions. | |
| | | |
| | | |
| 6 | Functions | 9 |
| 6 | Functions 6.1 Introduction | 9 |
| 6 | Functions 6.1 Introduction 6.1.1 Purpose of function | 9 |
| 6 | Functions 6.1 Introduction 6.1.1 Purpose of function 6.1.2 Function definition | 9 |
| 6 | Functions 6.1 Introduction 6.1.1 Purpose of function 6.1.2 Function definition 6.1.3 Function declaration | 9 |
| 6 | Functions 6.1 Introduction 6.1.1 Purpose of function 6.1.2 Function definition 6.1.2 Function declaration 6.1.4 Function call 6.1.4 Function call | 9 |
| 6 | Functions6.1 Introduction6.1.1 Purpose of function6.1.2 Function definition6.1.3 Function declaration6.1.4 Function call6.2 Types of functions | 9 |
| 6 | Functions6.1 Introduction6.1.1 Purpose of function6.1.2 Function definition6.1.3 Function declaration6.1.4 Function call6.2 Types of functions6.3 Call by value and call by reference | 9 |
| 6 | Functions 6.1 Introduction 6.1.1 Purpose of function 6.1.2 Function definition 6.1.3 Function declaration 6.1.4 Function call 6.2 Types of functions 6.3 Call by value and call by reference 6.4 Storage classes | 9 |
| 6 7 | Functions6.1 Introduction6.1.1 Purpose of function6.1.2 Function definition6.1.3 Function declaration6.1.4 Function call6.2 Types of functions6.3 Call by value and call by reference6.4 Storage classes7 Introduction to pointer7.1 Definition | 9 4 |
| 6 7 | Functions6.1 Introduction6.1.1 Purpose of function6.1.2 Function definition6.1.3 Function declaration6.1.4 Function call6.2 Types of functions6.3 Call by value and call by reference6.4 Storage classes7 Introduction to pointer7.1 Definition | 9 4 |
| 6 | Functions 6.1 Introduction 6.1.1 Purpose of function 6.1.2 Function definition 6.1.3 Function declaration 6.1.4 Function call 6.2 Types of functions 6.3 Call by value and call by reference 6.4 Storage classes 7 Introduction to pointer 7.1 Definition 7.2 Declaration | 9 4 |
| 6 | Functions 6.1 Introduction 6.1.1 Purpose of function 6.1.2 Function definition 6.1.3 Function declaration 6.1.4 Function call 6.2 Types of functions 6.3 Call by value and call by reference 6.4 Storage classes 7 Introduction to pointer 7.1 Definition 7.2 Declaration 7.3 Initialization | 9 4 |
| 6 | Functions 6.1 Introduction 6.1.1 Purpose of function 6.1.2 Function definition 6.1.3 Function declaration 6.1.4 Function call 6.2 Types of functions 6.3 Call by value and call by reference 6.4 Storage classes 7 Introduction to pointer 7.1 Definition 7.2 Declaration 7.3 Initialization 7.4 Indirection operator and address of operator | 9 4 |
| 6 7 | Functions 6.1 Introduction 6.1.1 Purpose of function 6.1.2 Function definition 6.1.3 Function declaration 6.1.4 Function call 6.2 Types of functions 6.3 Call by value and call by reference 6.4 Storage classes 7 Introduction to pointer 7.1 Definition 7.2 Declaration 7.3 Initialization 7.4 Indirection operator and address of operator 7.5 Pointer arithmetic 7.6 Duramic memory ellocation | 9 4 |
| 6 7 | Functions 6.1 Introduction 6.1.1 Purpose of function 6.1.2 Function definition 6.1.3 Function declaration 6.1.4 Function call 6.2 Types of functions 6.3 Call by value and call by reference 6.4 Storage classes 7 Introduction to pointer 7.1 Definition 7.2 Declaration 7.3 Initialization 7.4 Indirection operator and address of operator 7.5 Pointer arithmetic 7.6 Dynamic memory allocation | 9 4 |
| 6 7 8 | Functions6.1 Introduction6.1.1 Purpose of function6.1.2 Function definition6.1.3 Function declaration6.1.4 Function call6.2 Types of functions6.3 Call by value and call by reference6.4 Storage classes7 Introduction to pointer7.1 Definition7.2 Declaration7.3 Initialization7.4 Indirection operator and address of operator7.5 Pointer arithmetic7.6 Dynamic memory allocation7.7 Functions and pointers8 Structures | 9 4 4 |
| 6 7 8 | Functions 6.1 Introduction 6.1.1 Purpose of function 6.1.2 Function definition 6.1.3 Function declaration 6.1.4 Function call 6.2 Types of functions 6.3 Call by value and call by reference 6.4 Storage classes 7 Introduction to pointer 7.1 Definition 7.2 Declaration 7.3 Initialization 7.4 Indirection operator and address of operator 7.5 Pointer arithmetic 7.6 Dynamic memory allocation 7.7 Functions and pointers 8 Structures 8 1 Introduction to structure | 9 4 4 |
| 6 7 8 | Functions 6.1 Introduction 6.1.1 Purpose of function 6.1.2 Function definition 6.1.3 Function declaration 6.1.4 Function call 6.2 Types of functions 6.3 Call by value and call by reference 6.4 Storage classes 7 Introduction to pointer 7.1 Definition 7.2 Declaration 7.3 Initialization 7.4 Indirection operator and address of operator 7.5 Pointer arithmetic 7.6 Dynamic memory allocation 7.7 Functions and pointers 8 Structures 8.1 Introduction to structure 8 2 Definition | 9 4 4 |
| 6 7 8 | Functions 6.1 Introduction 6.1.1 Purpose of function 6.1.2 Function definition 6.1.3 Function declaration 6.1.4 Function call 6.2 Types of functions 6.3 Call by value and call by reference 6.4 Storage classes 7 Introduction to pointer 7.1 Definition 7.2 Declaration 7.3 Initialization 7.4 Indirection operator and address of operator 7.5 Pointer arithmetic 7.6 Dynamic memory allocation 7.7 Functions and pointers 8 Structures 8.1 Introduction to structure 8.2 Definition 8 3 Declaration | 9 4 4 |
| 6 7 8 | Functions6.1 Introduction6.1.1 Purpose of function6.1.2 Function definition6.1.3 Function declaration6.1.4 Function call6.2 Types of functions6.3 Call by value and call by reference6.4 Storage classes7 Introduction to pointer7.1 Definition7.2 Declaration7.3 Initialization7.4 Indirection operator and address of operator7.5 Pointer arithmetic7.6 Dynamic memory allocation7.7 Functions and pointers8 Structures8.1 Introduction to structure8.2 Definition8.3 Declaration8 4 Accessing members | 9 4 4 |
| 6 7 8 | Functions6.1 Introduction6.1.1 Purpose of function6.1.2 Function definition6.1.3 Function declaration6.1.4 Function call6.2 Types of functions6.3 Call by value and call by reference6.4 Storage classes7 Introduction to pointer7.1 Definition7.2 Declaration7.3 Initialization7.4 Indirection operator and address of operator7.5 Pointer arithmetic7.6 Dynamic memory allocation7.7 Functions and pointers8 Structures8.1 Introduction to structure8.2 Definition8.3 Declaration8.4 Accessing members8 5 structure operations | 9 4 4 |
| 6 7 8 | Functions 6.1 Introduction 6.1.1 Purpose of function 6.1.2 Function definition 6.1.3 Function declaration 6.1.4 Function call 6.2 Types of functions 6.3 Call by value and call by reference 6.4 Storage classes 7 Introduction to pointer 7.1 Definition 7.2 Declaration 7.3 Initialization 7.4 Indirection operator and address of operator 7.5 Pointer arithmetic 7.6 Dynamic memory allocation 7.7 Functions and pointers 8 Structures 8.1 Introduction to structure 8.2 Definition 8.3 Declaration 8.4 Accessing members 8.5 structure operations 8.6 nested structure | 9 4 4 |

Reference Book :-

- 1) Let us C YashwantKanetkar, BPB publication.
- 2) Ansi C-Balagurusamy
- 3) The complete Reference-HerbeltSchildt

Subject Name -: Database Management Systems Course Code: 104 Credit-3

| Sr. | Chapter | Name of Chapter and Contents | No. of |
|-----|---------|--|--------|
| No. | No. | | Lect. |
| 1 | 1 | File Structure and Organization | 6 |
| | | 1.1 Introduction | |
| | | 1.2 Logical and Physical Files | |
| | | 1.2.1 File | |
| | | 1.2.2 File Structure | |
| | | 1.2.3 Logical and Physical Files Definitions | |
| | | 1.3 Basic File Operations | |
| | | 1.3.1 Opening Files | |
| | | 1.3.2 Closing Files | |
| | | 1.3.3 Reading and Writing | |
| | | 1.3.4 Seeking | |
| | | 1.4 File Organization | |
| | | 1.4.1 Field and Record structure in file | |
| | | 1.4.2 Record Types | |
| | | 1.4.3 Types of file organization | |
| | | 1.4.3.1 Sequential | |
| | | 1.4.3.2 Indexed | |
| | | 1.4.3.3 Hashed | |
| | | 1.5 Indexing | |
| | | 1.5.1 What is an Index? | |
| | | 1.5.2 When to use Indexes? | |
| | | 1.5.3 Types of Index | |
| | | 1.5.3.1 Dense Index | |
| | | 1.5.3.2 Sparse Index | |
| | | | |
| | | | |
| | | | |
| L | | | |

| 2 | 2 | Database Management System | 14 |
|---|----------|--|----|
| 4 | <i>L</i> | 2.1 Introduction | 17 |
| | | 2.2 Basic Concept and Definitions | |
| | | 2.2.1 Date and Information | |
| | | 2.2.1 Data and information | |
| | | 2.2.2 Data VS information | |
| | | 2.2.5 Data Dictionary | |
| | | 2.2.4 Data item of Fleid | |
| | | 2.2.5 Record | |
| | | 2.3 Definition of DBMS | |
| | | 2.4 Applications of DBMS | |
| | | 2.5 File processing system Vs DBMS | |
| | | 2.6 Advantages and Disadvantages of DBMS | |
| | | 2.7 Users of DBMS | |
| | | 2.7.1 Database Designers | |
| | | 2.7.2 Application programmer | |
| | | 2.7.3 Sophisticated Users | |
| | | 2.7.4 End Users | |
| | | 2.8 Views of Data | |
| | | 2.9 Data Models | |
| | | 2.9.1 Object Based Logical Model | |
| | | a. Object Oriented Data Model | |
| | | b. Entity Relationship Data Model | |
| | | 2.9.2 Record Base Logical Model | |
| | | a. Relational Model | |
| | | b. Network Model | |
| | | c. Hierarchical Model | |
| | | 2.10 Entity Relationship Diagram(ERD) | |
| | | 2.11 Extended features of ERD | |
| | | 2.12 Overall System structure | |

| 3 | 3 | Relational Model | 8 | |
|---|---|---|----|--|
| | | 3.1 Introduction | | |
| | | 3.2 Terms | | |
| | | a. Relation | | |
| | | b. Tuple | | |
| | | c. Attribute | | |
| | | d. Cordinality | | |
| | | e. Degree of relationship set | | |
| | | f. Domain | | |
| | | 3.3 Keys | | |
| | | 3.3.1 Super Key | | |
| | | 3.3.2 Candidate Key | | |
| | | 3.3.3 Primary Key | | |
| | | 3.3.4 Foreign Key | | |
| | | 3.4 Relational Algebra Operations | | |
| | | a. Select | | |
| | | b. Project | | |
| | | c. Union | | |
| | | d. Difference | | |
| | | e. Intersection | | |
| | | f. Cartesian Product | | |
| | | g. Natural Join | | |
| 4 | 4 | SQL (Structured Query Language) | 12 | |
| | | 4.1 Introduction | | |
| | | 4.2 History Of SQL | | |
| | | 4.3 Basic Structure | | |
| | | 4.4 DDL Commands | | |
| | | 4.5 DML Commands | | |
| | | 4.6 Simple Queries | | |
| | | 4.7 Nested Queries | | |
| | | 4.8 Aggregate Functions | | |
| 5 | 5 | Relational Database Design | 8 | |
| | | 5.1 Introduction | | |
| | | 5.2 Anomalies of un normalized database | | |
| | | 5.3 Normalization | | |
| | | 5.4 Normal Form | | |
| | | 5.4.1 1 NF | | |
| | | 5.4.2 2 NF | | |
| | | 5.4.3 3 NF | | |
| | | 5.4.3.4 BCNF | | |

References:

1) Database System Concepts By Henry korth and A. Silberschatz

2) SQL, PL/SQL The Programming Language Oracle :- Ivan Bayross, BPB Publication.

3) Database Systems Concepts, Designs and Application by Shio Kumar Singh, Pearson

4) Introduction to SQL by Reck F. van der Lans by Pearson

5) Modern Database Management by Jeffery A Hoffer, V.Ramesh, Heikki Topi, Pearson

6) Database Management Systems by Debabrata Sahoo ,Tata MacgrawHill

Business Statistics Course code 105 Credit 3

Depth Reasonable working knowledge

Objective of the program

- 1. To understand role and importance of statistics in various business situations
- 2. To develop skills related with basic statistical technique
- 3. Develop right understanding regarding regression, correlation and data interpretation

| Unit No. | Contents | Lectures |
|----------|---|----------|
| 1 | Concept of statistics. Role of statistics. In informatics business science Tabulation, Data condensations and tabulation, Data Condensation and graphical Methods :Raw data , attributes and variables , classification , frequency distribution ,cumulative frequency distributions. Graphs - Histogram, Frequency polygon. Diagrams - Multiple bar , Pie ,Subdivided bar. | 12 |
| 2 | Measures of central tendency and dispersion Criteria for good measures of central tendency, Arithmetic mean, Median and Mode for grouped and ungrouped data, combined mean. | 12 |
| 3. | Measures of Dispersion : Concept of dispersion , Absolute and relative measure of dispersion, Range, Variance, Standard deviation, Coefficient of variation, Quartile Deviation , Coefficient of Quartile deviation. | 12 |
| 4 | Correlation and Regression(for ungrouped data) Concept of correlation, positive & negative correlation, Karl Pearson's Coefficient of correlation, meaning of regression, Two regression equations, Regression coefficients and properties. | 12 |

SPPU/BBA(CA)SYLLABUS STRUCTURE CBCS/2019PATTERN

References

| Sr. No. | Title of the Book | Author/s | Publication |
|---------|--|-----------------------------|-------------------------------|
| 1 | Business Statistics | GirishPhatak | Tech – Max |
| 2 | Statistics for Business | Dr. S. K. Khandelwal | International Book House |
| 3 | Fundamentals of Business Statistics | J.K. Sharma | Pearson |
| 4 | Business Statistics | G.C. Beri | The McGraw-Hill companies |
| 5 | Statistics Theory and Practice | R.S. N. Pillai Bagavathi | S. Chand |
| 6 | Statistics for Managerial decision Making | Dr. S. K. Khandelwal | International Book House |
| 7 | Business Statistics For Contemporary Decision Making | Ken Black | Wiley India Edition |
| 8 | Fundamentals of statistics | S.C. Gupta | Himalaya Publication House |

Savitribai Phule Pune University FY BBA- CA Semester II (CBCS) Pattern 2019 Organizational Behavior & Human Resource Management Course code 201 Credit 3

Depth of the course- Basic working knowledge

Program Objectives:

- i) To understand basic concept of HRM & OB
- ii) To make aware students about traditional & modern methods of procurement & development in organization.
- iii) To know the major trends in HRM & OB

| Unit | Unit Title | Contents | Purpose and Skills to be developed |
|------|---------------------------|---|---|
| No. | | | |
| 1 | Introduction to | Definition, concept, scope, Models of OB, | To understand the basic concept of OB & To develop |
| | Organizational | Major trends in OB:-Total Quality management, Cultural diversity, | knowledge about major trends & ability to handle cultural |
| | Behavior | Organizational change, Stress Management: Sources of Stress, Effects of | diversity Stress, change and to maintain work |
| | | Stress & Stress Management, Work life Balance and Quality of Work Life | life balance. |
| 2 | Introduction to | Introduction to HRM- Definition, Concepts, scope, importance | To understand the basic concept of HRM & developing |
| | HRM | Functions, Objectives & limitations, , Role of HR Manager, Areas in which | knowledge & ability of the student about HRM. |
| | | Human Resource Manager can be of assistance | |
| 3 | Procurement | HRP-Concept, Definition, Merits & Demerits, process, influencing factors of HRP Recruitment-Concept, Definition, sources of recruitment and their utility in identifying vacancies, methods, E-recruitment, Selection- Concepts, definition, process, Types of interviews and frequently asked interview questions from the candidate at each step and how to answer them, E- selection | To understand process & importance of HR procurement and to develop the skills among students regarding awareness of new trends of Recruitment Selection and interview preparation |
| 4 | Training & Development | Training & Development- Concept, definition, importance, Methods, E- Training, Recent trends in Training | To know the training & performance appraisal methods & To develop evaluation skill. |

Teaching Methodology

| Teaching Hours | Innovative methods to be used | Project | Expected Outcome |
|-------------------|--|-------------------------|---|
| 10 | Lecture ,Interactive teaching & Ice breaking session | Role play on HR Manager | To develop group cohesiveness. |
| 10 | Lab activity of Searching links about E-recruitment and E- selection. | Project report | Up gradation of knowledge of new trends in Recruitment and Selection. |
| 12 | Guest lecture | Assignment | Up gradation of skill. |
| 13 | Case Study, Video clips on Cultural Diversity and Stress management | Case study report | To develop decision making skill. |

Evaluation Method

| Internal Evaluation | | External Evaluation |
|---|---|--|
| One project Report: :One assignment: :One Case Study Solution Report : 5Internal Examination: : | 5 Marks 5 marks 5 marks 15 marks | 25% MCQ Short notes 35% Long answers 40% |
| 30 | | 70 |

Suggested references

| Sr. No. | Title of the Book | Author/s | Publication | Place |
|---------|---|------------------|--|-----------|
| 1 | Human Resources Management. | –L.M. Prasad | Sultan and Chand Publishing Company | New Delhi |
| 2 | Human Resources Management. | K. Ashwathappa – | Tata McGraw Hill | New Delhi |
| 3 | Personnel Management. | C. B. Mamoria | | |
| 4 | Organizational Behavior Text, Cases and Games | - K. Aswathappa, | Tata McGraw Hill | New Delhi |
| 5 | Organizational Behavior - | L.M. Prasad | Sultan and Chand Publishing Company | New Delhi |

Savitribai Phule Pune University FY BBA- CA Semester II (CBCS) Pattern 2019 Financial Accounting Course code 202 Credit 3

Depth of the syllabus: Reasonable working knowledge

Program objectives

i) To develop right understanding regarding role and importance of monetary and financial transactions in business

ii) To cultivate right approach towards classifications of different transactions and their implications

lii) To develop proficiency preparation of basic financial as to how to write basis accounting statement - Trading and P&L

| Unit | UnitUnit TitleContents | | Purpose and Skills to be developed | | |
|--------------|---|---|---|--|--|
| No. | | | | | |
| 1 | Financial Accounting- | definition and Scope, objectives, Accounting concepts, principles and conventions | To understand role and importance of accounting in Business and how accounting concept can be implemented in business | | |
| | Computation ability in business ability to distinguis concepts and practices | | Computation ability in business ability to distinguished between various accounting concepts and practices | | |
| 2 | Accounting | Voucher system; Accounting Process, Journals, | To understand how to record different financial transactions and their financial | | |
| Transactions | | Ledger, Cash Book , subsidiary books ,Trial | implications | | |
| | and Final | Balance preparation of Final Accounts of Sole | Ability to write different accounting tractions and prepare basic financial tractions | | |
| | Accounts | Proprietorship(Trading and Profit & Loss | | | |
| | | Account and Balance Sheet | | | |
| 3. | Bank | Meaning, importance and preparation of Bank | To understand the kind of accounting relationship between customer and bank | | |
| | Reconciliation | Reconciliation Statement | Ability to write necessary set of entries in books of accounts and in cash book and | | |
| | Statements | | compare them with bank statement to understand their implications and effect | | |
| | | | | | |

| Computerized Accounting | Role of computers and Financial application, Accounting Software packages | Ability to understand growing importance of software and to know how to use software and to write books of accounts Ability to use software like tally for writing of accounts |
|----------------------------|--|--|
| | | |

Teaching Methodology

| Teaching | Innovative methods to be used | AV Applications | Project | Expected Outcome |
|----------|--|--|---|---|
| Hours | | | | |
| 10 | Appling accounting concepts in real life business Ability to distinguish between accounting tractions and real life business | Role of accounting in business | Importance of accounting of business and nonprofit organizations | To learn about importance of acc. In business |
| 15 | Using practical situations for writing Transactions And applying accounting concepts different situations | Writing ledger and cash book | Developing model of Journals and model books of accounts Preparing flow chart of accordance of different tractions | Ability to distinguish between different tractions and its nature |
| 11 | Interpretation of bank passbook and its statement Comparative analysis of bank pass book and statement and their interpretation | Lesson on How to write bank reconciliations. Statement from YouTube | Preparing BR. With imaginary data | Ability to prepare and interpret bank reconciliation statement |
| 12 | NIL | To Understand how various tractions are recorded while using software and what cautions are need to be taken while recording transactions. | Film on silent features of tally accounting As business software | Appling software basic financial statement and converting row financial data into well written financial data |

Evaluation Method

| Unit No | Internal Evaluation | External Evaluation | Suggested Add on Course |
|---------|---|---|-------------------------------------|
| I | MCQ on various aspects of accounting Presentations on accounting and its importance in business | 25%MCQ Short notes 35% Long answers 40% | Tally and computer based accounting |
| II | Practical problems on how to write different accounting tractions and maintaining books of accounts | | |
| III | Practical problems on Bank Reconciliation | | |
| IV | Demonstrations and hands on of experience regarding application of Tally and other accounting software | | |
| | 30 | 70 | |

References

| Sr. No. | Title of the Book | Author/s | Publication | Place |
|---------|----------------------------------|---------------------------------|---------------------------------|-----------|
| 1 | Advance Accounting Vou- I | S.N. Maheshwari & S.K. | Vikas Publication | New Delhi |
| | | Maheshwari | | |
| 2 | Advance Accounting Vou- I | M.C. Shukla , T.C. Grewal , S.C | S. Chand | New Delhi |
| | | Gupta | | |
| 3 | Accountancy (Vol- I) | S. Kr. Paul | Central Educational Enterprises | Kolkata |
| | | | (P). Ltd. | |
| 4 | Accounting (text and Cases) | Robert N. Anthony , David F. | McGraw Hill Companies | New Delhi |
| | | Hawkins, Kenneth A. Merchant | | |
| 5 | Advanced Accountancy(Volume – I) | R.L. Gupta, M. Radhaswamy | Sultan Chand & Sons | New Delhi |

Savitribai Phule Pune University FY BBA- CA Semester II (CBCS) Pattern 2019 Business Mathematics Course code 203 Credit 3

Course Depth: Fundamental Knowledge

Objectives:

i) To understand role and importance of Mathematics in various business situations and while developing softwares.

ii) To develop skills related with basic mathematical technique

| Unit No. | Торіс | No. of Lecture |
|----------|--|----------------|
| 1 | 1. Ratio, Proportion and Percentage: Ratio – Definition, Continued Ratio, Inverse Ration, Proportion, Continued Proportion, Direct Proportion, Inverse Proportion, Variation, Inverse Variation, Joint Variation, Percentage, computation of Percentage. | 8 |
| 2 | 2. Profit and Loss: - Terms and Formulae, Trade discount, Cash discount, Problems involving cost price, selling price, Trade discount and cash discount. Introduction to Commission and brokerage, Problems on commission and brokerage | 6 |

| 3 | 3.Interest and Annuity: - Simple interest, Compound interest, Equated monthly Installments (EMI) by interest of reducing balance and flat interest methods and problems. Ordinary annuity, sinker fund, annuity due, present value and future value of annuity. | 7 |
|---|--|--------|
| | Shares and Mutual Funds:- Concepts of Shares, face value, market value, dividend, brokerage, equity shares, preferential shares, bonus shares, examples and problems, Concept of Mutual Funds, Change in Net Asset Value (NAV), Systematic Investment Plan (SIP), Examples and Problems. | 7 |
| 4 | 4.Matrices and Determinant: -DefinitionofMatrices, Types of Matrices, Algebra of Matrices, Determinant, Adjoint of Matrix,Inverse of Matrix, System of Linear equations, Solution of System of LinearEquation by adjoint method (upto 3 variables only). | 10 |
| 5 | 5. Linear Programming Problem (LPP) Concept of LPP, Formulation of LPP and solution of LPP by graphical method. Transportation Problem (T.P.):- Concept of Transportation Problem, Initial Basic Feasible Solution, North-West Corner Method (NWCM), Least Cost Method (LCM), Vogal's Approximation Method (VAM). Image: Concept of Concept | 5 5 |
| | Total | 48 |

Reference Books:

- 1) Business Mathematics by Dr. AmarnathDikshit and Dr. Jinendrakumar Jain.
- 2) Business Mathematics by V. K. Kapoor Sultan, Chand and sons. Delhi.
- 3) Business Mathematics by Bari New Literature publishing company, Mumbai.
- 4) Operation Research by S. D. Sharma Sultan, Chand and sons.
- 5) Operation Research by J. K. Sharma Sultan, Chand and sons.

Savitribai Phule Pune University FY BBA- CA Semester II (CBCS) Pattern 2019 Relational Data Base Course code 204 Credit 3

Course Depth: Fundamental Knowledge

Objectives:

- i) Enables students to understand relational database concepts and transaction management concepts in database system.
- ii) Enables student to write PL/SQL programs that use: procedure, function, package, cursor and trigger.

| Unit No. | Unit Title | Contents | Purpose | Expected Outcome |
|----------|--------------|---|---|--|
| 1 | Introduction | Introduction to popular | To understand concept of RDBMS | Understanding of various RDBMS |
| 1. | To RDBMS | RDBMS product and their | & use in business | products() |
| | | features | | |
| | | Difference Between DBMS and RDBMS | To understand advantages of RDBMS over DBMS | Use of relational database |
| | | Relationship among application programs and RDBMS | To understand interface between application programs and data | To get knowledge of Front End and Backend |

| 2 | PL-SQL | Overview of PLSQL | To understand various data types, | Understanding of various |
|----|--------|-------------------------|------------------------------------|----------------------------------|
| ۷. | | Data Types ,PLSQL Block | operators, functions and control | programming aspects |
| | | | statements | |
| | | Exception Handling | To understand predefined and user | Learning of different exceptions |
| | | | defined exceptions | |
| | | Functions, Procedures | To understand concept of compact | Writing of compact code (Small |
| | | | program writing by making use of | program writing) |
| | | | functions and procedure | |
| | | Cursor | To understand types of cursors and | Understanding of exact data |
| | | | selective data retrieval | retrieval |
| | | Trigger Package | To understand concept of stored | Writing of triggers and |
| | | | procedure and compiled data | packages(S all application using all contents) |
|----|---------------------------|------------------------|--|---|
| 3. | Transaction Management | Transaction Concept | To understand effect of transaction process on database | Understanding use of transaction and effect on database |
| | | Transaction Properties | To understand properties like atomicity, consistency, isolation and durability | Application of properties (Case solving) |
| | | Transaction States | To understand various states such as active, partially committed, Failed, aborted, committed | Understanding of various states |
| | | Concurrent Execution | To understand concept of reduction in waiting time | |
| | | Serializability | To understand Conflict Serializability and View Serializability | |

| 4 | Concurrency Control & | Lock Based Protocol | To understand meaning Locks, Granting of Locks, Two Phase | To understand concept of shared and exclusive lock | | | |
|---|--------------------------|--------------------------------------|---|---|--|--|--|
| | System | Timestamp Based Protocol | To learn how to prevent deadlock situation | | | | |
| | | Deadlock Handling | Understand what deadlock is and how it can occur when giving mutually exclusive access to multiple resources | | | | |
| | | Failure Classification | To understand transaction failure and system crash | To learn concepts related to hardware failures | | | |
| | | Recovery & Atomicity | To understand log based recovery and checkpoint | Data recovery with different techniques | | | |
| | | Recovery with concurrent transaction | To understand concept of transaction rollback | Restoring of data which is changed by mistake | | | |

Suggested References:

| Sr. | Title of the Book | Author/s | Publication | Place |
|-----|--------------------------------------|----------------------|-----------------------|---------------|
| No. | | | | |
| 1 | Database Management System | Bipin Desai | Galgotia Publications | New Delhi |
| 2 | SQL/PLSQL the programming language | Ivan Bayross | BPB Publications | New Delhi |
| | of oracle | | | |
| 3 | An Introduction to Database Systems | C. J.Date, A.Kannan, | Pearson Publications | North America |
| | Eighth Edition | S.Swamynathan | | |
| 4 | Database System Concepts 5th Edition | Silberschatz, Korth, | McGraw-Hill | New York |
| | | Sudershan | | |

Savitribai Phule Pune University FY BBA- CA Semester II (CBCS) Pattern 2019 Web Technology (HTML-JSS-CSS) Course code 205 Credit 3

Course Depth: Fundamental Knowledge

Objectives:

i) To know & understand concepts of internet programming.

ii) To understand how to develop web based applications using JavaScript.

| Unit No | Торіс | No. of Lecture |
|---------|---|----------------|
| 1 | 1. Introduction | 5 |
| | 1.1 Clients- Servers and Communication1.2 Internet-Basic, Internet Protocols (HTTP, FTP, IP)1.3 World Wide Web(WWW)1.4 HTTP request message, HTTP response message | |
| 2 | 2. Web Design 2.1 Concepts of effective web design 2.2 Web design issues including Browser Bandwidth and Cache 2.3 Display resolution 2.4 Look and Feel of the Website 2.5 Page Layout and linking 2.6 User centric design 2.7 Sitemap 2.8 Planning and publishing website 2.9 Designing effective navigation | 9 |

| 3 | 3. HTML | 12 |
|---|---|----|
| | 3.1 Introduction to HTML | |
| | 3.2 Basic HTML Structure | |
| | 3.3 Common HTML Tags | |
| | 3.4 Physical and Logical HTML | |
| | 3.5 Types of Images, client side and server-side Image | |
| | mapping | |
| | 3.6 List, Table, Frames | |
| | 3.7 Embedding Audio, Video | |
| | 3.8 HTML form and form elements | |
| | 3.9 Introduction to HTML Front Page | |
| 4 | 4. Style sheets | 10 |
| | 4.1 Need for CSS | |
| | 4.2 Introduction to CSS | |
| | 4.3 Basic syntax and structure | |
| | 4.4 Using CSS- | |
| | 4.4.1 background images, colors and properties, | |
| | 4.4.2 manipulating texts, using fonts, borders and | |
| | boxes, margins, padding lists, positioning | |
| | using CSS | |
| | 4.5 Overview and features of CSS2 and CSS3 | |
| 5 | 5. JavaScript | 12 |
| | 5.1 Introduction to Java Script | |
| | 5.2 Identifier & operator, control structure, functions | |
| | 5.3 Document object model(DOM), | |
| | 5.4 DOM Objects (window, navigator, history, location) | |
| | 5.5 Predefined functions, math & string functions | |
| | 5.6 Array in Java scripts | |
| | 5.7 Event handling in Java script | |
| | Total | 48 |
| | | |

Reference Books:

- 1. Complete HTML- Thomas Powell
- 2. HTML and JavaScript Ivan Bayross
- 3. HTML & CSS: The Complete Reference, Fifth Edition
- 4. Mastering HTML, CSS & Javascript Web Publishing

Reference websites:

- 1. www.w3schools.com
- 2. www.tutorialspoint.com

SPPU/BBA(CA) SYLLABUS SEMESTER-II CBCS/2019 PATTERN

UNIVERSITY OF PUNE

Master of Commerce (M.Com.) Semester Pattern with Credit System Revised with effect from June 2013

Preamble for Choice Based Credit System

Since liberalization the socio-political-economic scenario is changing very fast. There is a significant transformation in term educational expectation and aspiration of the learner. The educational system also is witnessing many changes and challenges due to technological growth and changes in the Government policies. Education is no longer a concern of students but it has become a matter of social and economic importance. The changes at the global level has influence the educational system, structure and expectation of the users.

University education needs to take contingence of all these changes and restructure itself to stand in a competitive dynamic environment. Professional stream of learning like Commerce have to be properly upgraded to accommodate challenges of change, expectation of employers' and to offer global opportunities to the learners. From this point of view the course structure of post-graduate programme in Commerce needs to be structured. It has to be according to expectations of the learners, employers and the society. The learning inputs have to be more update, skilled based and with appropriate applications. The course programme should consider desire aptitude, attitude and acumen of the learner.

From this point of view University of Pune has introduced Choice Base Credit System of course structure. This system shall offer a flexible user friendly, opportunity to the learner, will broader the horizon of Commerce education and will give a fair chance to every single learner to exhibit his talent, acquired skills and enhance his personality. It will further enhance his opportunity of global mobility, to acquire different knowledge inputs from different global institutes.

1. Objectives :

- a. To equip and train Post Graduate students to accept the challenges of Business World by providing opportunities for study and analysis of advanced Commercial and business methods and processes.
- b. To develop independent logical thinking and facilitate personality development.
- c. To equip the students for seeking suitable careers in management and entrepreneurship.
- d. To study by students methods of Data collection and their interpretations.
- e. To develop among students Communication, Study and Analytical skills.

2. Duration :

The M.Com. Course will be of Two Years duration consisting of Two part. i.e. Part I and Part II. Each part is having Two Semesters. Thus the M.Com. Course is of Four Semesters. For each Semester there will be Four Papers of 100 marks each. The M.Com. Degree will be of 1600 marks in aggregate.

3. Duration and Structure of Programme:

The M.Com (Semester pattern with Credit System) degree Programme shall be of 2 years' duration divided into two parts, Part I and Part II, and 4 semesters.

4. Eligibility :

The student who has passed any Bachelors degree of this University or any other recognized University shall be held eligible to be admitted to M.Com. Course.

5. Course Structure:

The M.Com. degree course will be of two year duration consisting of four semesters and of minimum 64 credits as below:

| Sr. No. | Semester | Total Credits |
|---------|--------------|----------------------|
| 1 | Semester I | 16 |
| 2 | Semester II | 16 |
| 3 | Semester III | 16 |
| 4 | Semester IV | 16 |
| | Grand Total | 64 |

Four credits for project work at 4th Semester (This will include credits for fieldwork, data presentation and report writing)

In each Semester, there will be four papers of 100 marks each out of which 50 marks will be for Internal Assessment (attendance, home assignments, class tests, long term papers, classroom presentation and 50 marks for University Examination. Thus M.Com. degree examination, four Semesters shall be of 1600 marks and of minimum 64 credits altogether. The following shall be the course structure.

| Semester | Subject | Course | Title of the Paper | Hrs/ | Credit | Exam. | Max | imum Ma | arks |
|----------|--|--------|-----------------------|-------------|-------------|-------------|------------|---------|------|
| | Types | Code | | Week | ci cuit | Hours | | | |
| | Core | 101 | Management | 04 | 04 | 03 | 50 | 50 | 100 |
| | Compulsory | | Accounting | | | | | | |
| | 1 5 | 102 | Strategic | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | Management | | | | | | |
| | | | To choo | se any one | e Group of | the follow | ing | | |
| | | | Group A | Advanced | l Accounti | ng & Taxa | ation) | | |
| | Core | 103 | Advanced | 04 | 04 | 03 | 50 | 50 | 100 |
| | Elective/ | | Accounting | | | | | | |
| | Optional | 104 | Income Tax | 04 | 04 | 03 | 50 | 50 | 100 |
| | Subjects/ | | Group I | B (Comme | rcial Laws | s & Practio | ces) | | |
| | Special | 105 | Information system | 04 | 04 | 03 | 50 | 50 | 100 |
| | Subjects | | and E-Commerce | | | | | | |
| | | | Practices | | | | | | |
| | | 106 | Intellectual Property | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | Laws | | | | | | |
| | | | Group C (Adv | vanced Co | st Account | ting & Cos | st system) | | |
| | | 107 | Advanced Cost | 04 | 04 | 03 | 50 | 50 | 100 |
| Semester | | | Accounting | | | | | | |
| Ι | | 108 | Costing Technique | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | and Responsibility | | | | | | |
| | | | Accounting | | | | | | |
| | Group D (Co-operation & Rural Development) | | | | | | | | |
| | | 109 | Co-operative | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | Movement in India | | | | | | |
| | | 110 | Organization of Co- | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | operative Business | | | | | | |
| | | | Group E | (Business] | Practices & | & Environ | ment) | | |
| | | 111 | Organized Trades | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | and Markets | | | | | | |
| | | 112 | Business | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | Environment and | | | | | | |
| | | | Policy | | | | | | |
| | | | Grou | ıp F (Busi | ness Admi | nistration) | | | |
| | | 113 | Production and | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | Operation | | | | | | |
| | | | Management | | | | | | |
| | | 114 | Financial | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | Management | | | | | | |
| | | | Group (| G (Advanc | ed Bankir | ıg & Finar | ice) | | |
| | | 115 | Legal Framework of | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | Banking | | | | | | |
| | | 116 | Central Banking | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | Gro | oup H (Ad | vanced M | arketing) | | | |
| | | 117 | Marketing | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | Techniques | | | | | | |
| | | 118 | Consumer | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | Behaviour | | | | | | |

6. The Scheme of Papers: The following will be the Scheme of papers: The List of Courses Semester I

University of Pune, M.Com. [Semester II]

Semester II

| Semester | Subject | Course | Title of the Paper | Hrs/ | Credit | Exam. | Maxi | imum M | larks |
|----------|------------|--------|-----------------------------|------------------|------------|------------|-------|--------|-------|
| | Types | Code | | Week | | Hours | | | |
| | Core | 201 | Financial Analysis and | 04 | 04 | 03 | 50 | 50 | 100 |
| | Compulsory | | Control/ Principals of | | | | | | |
| Semester | | | Financial Accounting | | | | | | |
| 11 | | 202 | Industrial Economics/ | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | Economic | | | | | | |
| | | | Environment/Business | | | | | | |
| | | | Statistics/ Quantitative | | | | | | |
| | | | application | | | | | | |
| | | | To choose an | y one Gro | oup of the | following | | | |
| | | | Group A (Adva | nced Acc | ounting & | & Taxatio | n) | | |
| | Core | 203 | Specialized Areas in | 04 | 04 | 03 | 50 | 50 | 100 |
| | Elective/ | | Accounting | | | | | | |
| | Optional | 204 | Business Tax Assessment | 04 | 04 | 03 | 50 | 50 | 100 |
| | Subjects/ | | & Planning | | | | | | |
| | Special | | Group B (Co | mmercial | Laws & | Practices) | | | |
| | Subjects | 205 | E- Security & Cyber | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | Laws | | | | | | |
| | | 206 | Laws Regulating to | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | Copyrights & Design | | | | | | |
| | | | Group C (Advance | d Cost Ac | counting | & Cost sy | stem) | | |
| | | 207 | Application Cost | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | Accounting | | | | | | |
| | | 208 | Cost Control & Cost | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | System | | | | | | |
| | | | Group D (Co-op | eration 8 | k Rural D | evelopme | nt) | | |
| | | 209 | International Co- | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | operative Movement | | | | | | |
| | | 210 | Management of Co- | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | operative Business | | | | | | |
| | | | Group E (Busin | ness Pract | tices & Er | nvironmen | nt) | | |
| | | 211 | Modern Business | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | Practices | | | | | | |
| | | 212 | Business Environment | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | Analysis | | | | | | |
| | | | Group F (| Business . | Administ | ration) | n | 1 | |
| | | 213 | Business Ethics and | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | Professional Values | | | | | | |
| | | 214 | Elements of Knowledge | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | Management | | | | | | |
| | | | Group G (Ad | vanced B | anking & | Finance) | 1 | | |
| | | 215 | Banking Law & Practices | 04 | 04 | 03 | 50 | 50 | 100 |
| | | 216 | Monetary Policy | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | Group H | (Advanc | ed Marke | ting) | 1 | | |
| | | 217 | Customer Relationship | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | Management & Retailing | | | | | | |
| | | 218 | Services Marketing | 04 | 04 | 03 | 50 | 50 | 100 |

Semester III

| Semester | Subject | Course | Title of the Paper | Hrs/ | Credit | Exam. | Maxi | mum N | Iarks | |
|----------|------------|--|---------------------------|----------|------------|------------|--------|-------|--------------|--|
| | Types | Code | | Week | | Hours | | | | |
| | | 301 | Business Finance / | 04 | 04 | 03 | 50 | 50 | 100 | |
| | Core | | Financial System | | | | | | | |
| | Compulsory | 302 | Research | 04 | 04 | 03 | 50 | 50 | 100 | |
| | | | Methodology for | | | | | | | |
| | | | Business | | | | | | | |
| | | | To choose an | y one Gr | oup of the | e followin | g | | | |
| | | | Group A (Adva | nced Ac | counting | & Taxat | ion) | | | |
| | | 303 | Advanced Auditing | 04 | 04 | 03 | 50 | 50 | 100 | |
| | | 304 | Specialized Auditing | 04 | 04 | 03 | 50 | 50 | 100 | |
| | | | Group B (Cor | nmercial | l Laws & | 2 Practice | es) | | | |
| | | 305 | Laws Relating to | 04 | 04 | 03 | 50 | 50 | 100 | |
| | | | International Business | | | | | | | |
| | | 306 | WTO – Norms & | 04 | 04 | 03 | 50 | 50 | 100 | |
| | C | | Practices | | | | | | | |
| | Core | | Group C (Advance | d Cost A | ccounting | g & Cost | system |) | | |
| | Elective/ | 307 | Cost Audit | 04 | 04 | 03 | 50 | 50 | 100 | |
| | Subjects/ | 308 | Management Audit | 04 | 04 | 03 | 50 | 50 | 100 | |
| | | Group D (Co-operation & Rural Development) | | | | | | | | |
| Semester | Subjects | 309 | Co-operative Credit | 04 | 04 | 03 | 50 | 50 | 100 | |
| III | Bubjects | | System | | | | | | | |
| | | 310 | Co-operative Banking | 04 | 04 | 03 | 50 | 50 | 100 | |
| | | | System | | | | | | | |
| | | Group E (Business Practices & Environment) | | | | | | | | |
| | | 311 | Entrepreneurial | 04 | 04 | 03 | 50 | 50 | 100 | |
| | | | Behaviour | | | | | | | |
| | | 312 | Entrepreneurship | 04 | 04 | 03 | 50 | 50 | 100 | |
| | | | Group F () | Business | Adminis | tration) | | | | |
| | | 313 | Human Resource | 04 | 04 | 03 | 50 | 50 | 100 | |
| | | | Management | | | | | | | |
| | | 314 | Organizational | 04 | 04 | 03 | 50 | 50 | 100 | |
| | | | Behaviour | | | | | | | |
| | | | Group G (Ad | vanced I | Banking & | & Financ | e) | | | |
| | | 315 | Foreign Exchange | 04 | 04 | 03 | 50 | 50 | 100 | |
| | | 316 | International Finance | 04 | 04 | 03 | 50 | 50 | 100 | |
| | | | Group H | (Advan | ced Mark | (eting) | | | | |
| | | 317 | International | 04 | 04 | 03 | 50 | 50 | 100 | |
| | | | Marketing | | | | | | | |
| | | 318 | Marketing Research | 04 | 04 | 03 | 50 | 50 | 100 | |

Semester IV

| Semester | Subject | Course | Title of the Paper | Hrs/ | Credit | Exam. | Max | imum M | [arks |
|----------|-------------------------------|--------|--|------------|---------------|--------------------------|------------|--------|-------|
| | Туре | Code | | Week | | Hours | | | 1 |
| | Core Compulsory | 401 | Capital Market and Financial Services/ Portfolio Management | 04 | 04 | 03 | 50 | 50 | 100 |
| | | 402 | Industrial Economic Environment/ | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | Operations Research | | Caracter of t | l <i>f.</i> 11 | | | |
| | | | | e uny one | Group of a | ne jouowin a 8- Tovot | ig ion) | | |
| | | 403 | Recent Advances in | | 04 | | 50 | 50 | 100 |
| Semester | | +03 | Accounting, Taxation, Taxation and Auditing | 04 | 04 | 03 | 50 | 50 | 100 |
| IV | | 404 | Project Work/ Case Studies | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | Group B | (Commerc | cial Laws | & Practice | es) | | |
| | Core Elective/ Optional | 405 | Recent Advances in Commercial Laws and Practices | 04 | 04 | 03 | 50 | 50 | 100 |
| | Subjects/ Special | 406 | Project Work/Case Studies | 04 | 04 | 03 | 50 | 50 | 100 |
| | Subjects | | Group C (Adva | nced Cost | t Accounti | ng & Cost | system) | | |
| | | 407 | Recent Advances in | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | Cost Auditing and Cost System | | | | | | |
| | | 408 | Project Work/Case Studies | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | Group D (C | o-operatio | n & Rura | l Developn | nent) | | |
| | | 409 | Recent Advances in Co-operative and Rural Davalopment | 04 | 04 | 03 | 50 | 50 | 100 |
| | | 410 | Project Work/Case Studies | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | Group E (E | Business P | ractices & | Environm | ent) | | |
| | | 411 | Recent Advances in Business Practices and Environment | 04 | 04 | 03 | 50 | 50 | 100 |
| | | 412 | Project Work/Case Studies | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | Group | F (Busine | ess Admin | istration) | | | |
| | | 413 | Recent Advances in Business Administration | 04 | 04 | 03 | 50 | 50 | 100 |
| | | 414 | Project Work/Case Studies | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | Group G | (Advance | d Banking | & Financ | e) | | |
| | | 415 | Recent Advances in Banking and Finance | 04 | 04 | 03 | 50 | 50 | 100 |
| | | 416 | Project Work/Case Studies | 04 | 04 | 03 | 50 | 50 | 100 |
| | | | Grou | ıp H (Adv | anced Ma | rketing) | | | |
| | | 417 | Recent Advances in Marketing | 04 | 04 | 03 | 50 | 50 | 100 |
| | | 418 | Project Work/Case Studies | 04 | 04 | 03 | 50 | 50 | 100 |

7. Scheme of Examination:

The examination of regular students of M.Com. degree course of the University of Pune admitted in the academic session 2013-14 and after shall be based on:

- (a) Semester Examination
- (b) Continuous Assessment
- (c) Choice Based Credit System, and
- (d) Semester Grade Point Average and Cumulative Grade Point Average System

For each paper of 100 marks, there will be an Internal Assessment (1A) of 50 marks and the University Examination (UE) of 50 marks/ 3 hours duration at the end of each semester. A candidate who will secure at least 40% marks allotted to each paper will be given 4 credits. A candidate who does not pass the examination is any subject or subjects in one semester will be permitted to appear in such failed subject or subjects along with the papers of following semesters.

The Internal Assessment for each paper will be 50 marks which will be carried out by the department during the term. The Internal Assessment may be in the forms of written test, seminars, term papers, presentations, assignments, orals or any such others. The distribution of internal assessment marks shall be as follows:

| Midterm Test | 20 |
|--------------------------------|----|
| Presentation/Role Play | 10 |
| Case studies/ Group Discussion | 10 |
| Quiz / Home Assignment | 10 |
| Total | 50 |

There shall be four semester examinations: first semester examination at the middle of the first academic year and the second semester examination at the end of the first academic year. Similarly, the third and fourth semester examinations shall be held at the middle and the end of the second academic year, respectively.

A student cannot register for the third semester, if she/he fails to complete 50% credits of the total credits expected to be ordinarily completed within two semesters.

8. Research project work:

There will be a Research Project to be prepared by a student during the fourth semester. The objective of the project work is to introduce students to research methodology in the subject and prepare them for pursuing research in theoretical or experimental or computational areas of the subject. The project work is to be undertaken under guidance of a teacher allotted to a student by the department.

| Division of marks | Marks | | |
|---|----------|----------|--|
| A. Synopsis with working bibliography (Internal | 40 marks | | |
| Assessment) | | 50 marks | |
| Viva Voce (Internal Assessment) | 10 marks | | |
| B. A full project Report (Minimum 50-80 pages) | 40 marks | | |
| (Internal & External Assessment) | | 50 marks | |
| Viva Voce (Internal & External Assessment) | 10 marks | | |

As the Research Project is based on the self study done by the candidate and evaluated for 100 marks altogether, 04 credits will be awarded to a successful candidate in this subject. The project may be evaluated by two examiners one internal and one external, selected from the panel of PG examiners of the University. The Viva voce must be conducted by the teachers selected out of the panel of PG examiners maintained by the University.

The candidates have to submit the project 15 days before the commencement of the fourth semester university examination. The project report shall be type-written and submitted in duplicate. A candidate who fails to submit the project may resubmit the same in the subsequent semester examination for evaluation. The project work activities must be duly supported by documentary evidence to be endorsed by the Head or Guide.

9. Standard of passing:

A candidate shall be declared to have passed in the paper provided he/she has secured minimum GP of 4.5 in the UNIVERSITY EXAMINATION and GRADE POINT AVERAGE of 4.0 in aggregate of UNIVERSITY GRADE and INTERNAL ASSESSMENT taken together.

10. Classification of successful candidates:

Candidates who secured not less than 60% of aggregate marks (INTERNAL ASSESSMENT +UNIVERSITY EXAMINATION) in the whole examination shall be declared to have passed the examination in the first class. All other successful candidates shall be declared to have passed in second class. Candidates who obtain 70% of the marks in the aggregate (INTERNAL ASSESSMENT +UNIVERSITY EXAMINATION) shall be deemed to have passed the examination in first class with distinction.

A student who passess in all the courses will be declared to have passed the M.Com. degree with the following honours.

| CGPA in (4.00, 4.99) | - Pass Class |
|-----------------------|--------------------------------|
| CGPA in (5.00, 5.49) | - Second Class |
| CGPA in (5.50, 5.99) | - Higher Second Class |
| CGPA in (6.00, 7.99) | - First Class |
| CGPA in (8.00, 10,00) | - First Class with Distinction |

11. Scheme of Credits:

Sixty (60) hours of teaching will lead to three credits (which mean four hours per week teaching in one semester) and long term paper as well as presentation will carry one credit. Each semester shall have 16 credits.

12. Structure of Transcript:

At the end of each semester, student will be given a transcript showing the performance and result in each course. The transcript shows, for each course the title of the course, credit values, grade in UNIVERSITY EXAMINATION , grade in INTERNAL ASSESSMENT , grade point index, result as pass or fail. Also, the semester grade point average (SGPA) and cumulative grade point average (CPGA) will be shown. Further the equivalent percentage of marks corresponding to SGPG or CGPA to equivalent percentage is given by:

| Marks | Grade | Grade Point |
|-----------|------------------|-------------|
| 100 to 75 | O: Outstanding | 06 |
| 74 to 65 | A : Very Good | 05 |
| 64 to 55 | B : Good | 04 |
| 54 to 50 | C : Average | 03 |
| 49 to 45 | D : Satisfactory | 02 |
| 44 to 40 | E : Pass | 01 |
| 39 to 0 | F: Fail | 00 |

| (C) GPA | Grade |
|---------------|-------|
| 05.00 - 6.00 | 0 |
| 04.50 - 04.99 | А |
| 03.50 - 04.49 | В |
| 02.50 - 03.49 | С |
| 01.50 - 02.49 | D |
| 00.50 - 01.49 | E |
| 00.00 - 00.49 | F |

13. Distribution of Periods:

There shall be 60 periods for each subject to cover the entire teaching of 4 credits. This will be distributed as follows:

| Particulars | Periods |
|--------------------------------|---------|
| Teaching session per programme | 48 |
| Assignment/ Test | 04 |
| Role play/ Group Discussion | 04 |
| Case studies and presentation | 04 |
| Total | 60 |

14. Standard of Passing.

A. Regular students: - A candidate is required to obtain 40% marks in each of course in both Mid Semesters and Semester end. It means passing separately at Mid-Semester and semester Examinations is compulsory.

15. Award of Class.

a. The class in respect of M.Com. Examination will be awarded on the basis of aggregate marks obtained by the candidates in all the sixteen papers at the Semester I, II, III, and IV together.

The Award of class shall be as under:-

- b. Improvement: A candidate having passed M.Com. Examination will be allowed to improve the performance. The same is termed as 'Class Improvement Scheme' under which improvement of performance shall be allowed only at the Semester end Examination.
- c. A candidate after passing M.Com. Examination will be allowed to appear in the additional Special Subject after keeping necessary terms in the concerned special subject only, for which a passing certificate will be issued.

16. Medium of Instruction :

The use of Marathi is allowed for writing answers in the examination except for following courses:

- a. Management Accounting
- b. Financial Analysis & Control
- c. Business Statistics,
- d. Advanced Accounting and Taxation
- e. Advanced Cost Accounting and Cost Systems.
- 17. A student (Regular / External) will be admitted to Revised M. Com. Course with effect from June 2013. For the students who have completed the terms for the First Year as per Old Course will be admitted to the Second Year as per Old Course M. Com. The examination as per Old Course will be held simultaneously for three years from April / May 2014.

18. Qualification of the Teachers :

The Teachers recognized to teach the subjects as per Old Course shall be deemed to be recognized in the corresponding equivalent subjects under Revised Course.

In case of: A) Business Statistics, B) Industrial Economics, C) Co-operation and Rural Development, D) Advanced Banking and Finance and E) Research Methodology and Project Work- Paper-IV of each Special Subject, the following qualifications be made applicable.

- **A. Business Statistics :** M.Com, M.Phil with Statistics or Research Methodology as one of the Papers at M.Com /B.Com /M. Phil examination with 5 years degree teaching experience or M.A./M.Sc. With Statistics having 5 years degree teaching experience.
- **B.** Industrial Economics: M.Com., M. Phil with Business Economics/Economics of Industries or Economics as one of the papers at B. Com/ M.Com Examination with 5 years degree teaching experience or M.A. Economics with 5 years degree teaching experience.
- **C. Co-operation and Rural Development:** M. Com, M. Phil. With 5 years degree teaching experience or M.A. Economics (with Co-operation Rural Economics)
- **D.** Advanced Banking and Finance: M. Com., M. Phil., with Banking as one of the papers at B.Com/M.Com examination 5 years degree teaching experience.
- **E. Research Methodology and Project Work:** M.Com. M.A (Eco.) M.Phil./Ph.D. with 5 years degree teaching experience.
- **F.** Similarly all the changes in qualification as per U.G.C norms and guidelines shall also be applicable as and when the changes come into force (If applicable)

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M.Com. Part I Semester II Compulsory Paper Subject Name -: Financial Analysis & Control. Course Code -: 201.

Objective -: The objective of the course is to enable students to acquire sound knowledge of concepts, methods and techniques of management accounting and to make the students develop competence with their usage in managerial decision making and control.

| UNIT | TOPIC | No. of Lectures in hours |
|------------|--|-----------------------------|
| I | LONG TERM INVESTMENT DECISIONS: | 10 |
| - | Capital budgeting - Meaning- Importance - Evaluation technique and methods | |
| | - Pay back, rate of Return. Discounted Pay Back Period-Discounted | |
| | Cash flow - Net present value - Internal Rate of Return, Modified Internal | |
| | Rate of Return- Profitability Index. Relationship between risk and returns. | |
| | | |
| II | COST OF CAPITAL: | 10 |
| | Meaning - Definition and assumptions - Explicit and implicit cost - | |
| | Measurement of specific cost - Cost of debt - Preference Shares - Equity | |
| | shares - Retained earnings - Weighted average cost of capital | |
| | | |
| III | MARGINAL COSTING: | 08 |
| | Meaning of Marginal Cost and Marginal Costing, advantages, limitations. | |
| | Fixed and Variable cost, Contribution, Break-even analysis, Profit volume ratio, | |
| | Limiting factor. | |
| | | |
| IV | SHORT RUN MANAGERIAL DECISION ANALYSIS: | 08 |
| | Introduction-Analytical Framework. Decision Situations:- Sales Volume | |
| | related Decisions-Sale or further process-Make or buy - Product | |
| | Line/divisions/departments - Short run use of scare resources - Operate or shut | |
| | down. | |
| X 7 | | 07 |
| V | BUDGET AND BUDTETORY CONT ROL: | U6 |
| | Meaning, Definition and scope of budget and budgetary control- Types of | |
| | budgets - Financial budget - Master budget, Flexible budget - Capital | |
| | budget. | |
| VI | STANDARD COSTING: | 06 |
| V I | Concept Advantages: Types of Standards-Variance analysis: Materials | vu |
| | Labour Overhead - Managerial uses of Variances | |
| | | |
| | TOTAL - | 48 |
| | | |

List of Books Recommended for Study:-

- 1. R. N. Anthony, G. A. Walsh: Management Accounting
- 2. M. Y. Khan. K. P. Jain: Management Accounting
- 3. I. M. Pandey: Management Accounting (Vikas)
- 4. J. Betty: Management Accounting
- 5. Dr. Kishor N. Jagtap: Management Accounting (Success)
- 6. Sr. K. Paul: Management Accounting
- 7. Dr. Jawaharlal: Management Accounting

List of Learning Activities and Allocation of Periods

| Sr. No. | Activities | Learning Hours |
|---------|------------------|----------------|
| 1 | Quizzes | 4 |
| 2 | Assignments | 4 |
| 3 | Class room tests | 4 |
| Total | | 12 hours |

M.Com. Part I Semester II Optional Paper Subject Name -: Industrial Economics Course Code -: 202 - A.

Objectives:

- 1) To study the basic concepts of Industrial Economics.
- 2) To study the significance and problems of Industrialization.
- 3) To study the impact of Industrialization on Indian Economy.

| Chapter | Doutionlong | Total |
|---------|--|-------|
| No. | I ai ticulai s | |
| 1. | Introduction | 8 |
| | 1.1 Meaning, Definition, Nature, Scope and Limitations of Industrial | |
| | Economics. | |
| | 1.2 Need and Significance of Industrial Economics. | |
| | 1.3 Relationship between Industrial Development and Economic | |
| | Development. | |
| 2. | Industrial Location. | 8 |
| | 2.1 Meaning of Industrial Location. | |
| | 2.2 Factors Influencing Industrial Location. | |
| | 2.3 Alfred Weber's Theory of Location. | |
| | 2.4 Sargent Florences Theory of Location. | |
| | 2.5 August Losch's Theory of Location. | |
| 3. | Industrial Productivity. | 8 |
| | 3.1 Meaning, Definition and Measurement of Industrial Productivity. | |
| | 3.2 Factors Influencing Industrial Productivity. | |
| | 3.3 Industrial Productivity. | |
| | 3.4 Measures adopted by the Indian Government to Improve Industrial | |
| | Productivity. | |
| 4. | Industrial Efficiency and Profitability. | 8 |
| | 4.1 Meaning, Definition and Measurement of Industrial Efficiency. | |
| | 4.2 Factors affecting Industrial Efficiency. | |
| | 4.3 Measures adopted by Indian Government, Industries and other | |
| | agencies to Improve Industrial Efficiency. | |
| | 4.4 Meaning, Definition and Measurement of Industrial Profitability. | |
| 5. | Industrial Profile and Problems. | 8 |
| | 5.1 Structure and Organisation of Large Industries in India. | |
| | 5.2 Private Sector Enterprises: Role, Functions and Problems. | |
| | 5.3 Public Sector Enterprises: Role, Functions and Problems. | |
| | 5.4 Disinvestment Policies. | |
| | 5.5 Micro, Small and Medium Enterprises (MSME) Role and | |
| | Problems. | |
| 6. | Industrial Imbalance. | 8 |
| | 6.1 Meaning of Industrial Imbalance. | |
| | 6.2 Causes and Effects of Industrial Imbalances. | |
| | 6.3 Measures adopted by the Indian Government to reduce Industrial | |
| | Imbalance | |
| | 6.4 Regional Industrial imbalance - Special focus on Maharashtra | |

Recommended Books

- 1. S.C. Kuchal Industrial Economy of India.
- 2. D.R. Gadgil Industrial Evolution in India, Oxford. 1948
- 3. K.V. Sivayya and V.B.M.Das Indian Industrial Economy, Chand and Co. Ltd. New Delhi 1999 Publishing House.
- 4. S.C. Kuchal Major Industries in India, Chaitanya Publishing House, Allahabad.
- 5. Bagchi and banerjee : change and choice in Indian industry, centre for studies in social science in culcatta.
- 6. A. Donald Hay Dereck, Mouris : Industrial Economics : Theory and Evidence, Oxford
- 7. K.N.Prasad : Indian Economy Since Independence.
- 8. Solman Fabucant : A premier on Productivity, Prentice Hall.
- i. <u>www.newagepublishers.com/samplechapter/000386.pdf</u>
- ii. <u>www.indecon.com/</u>
- iii. <u>Www.tudyingeconomics.ac.uk/industrial-economics</u>
- iv. http://en.wikipedia.org/wiki/Industrial_economics
- v. <u>http://encyclopedia2.thefreedictionary.com/Industrial+Economics</u>
- vi. http://studyingeconomics.ac.uk/industrial-economics/
- vii. www.aiu.edu/publications/student/.../industrial%20economics.html
- viii. www.investopedia.com/terms/i/industrial-organization.asp

Suggested format of Continuous assessment along with allocation of Periods

| Sr.No. | Assessment Chart | Periods Alloted |
|--------|-----------------------|-----------------|
| 1. | Tests | 3 |
| 2. | Quizzes | 3 |
| 3. | Presentation Seminars | 3 |
| 4. | Assignments | 3 |

M.Com. Part I Semester II

Optional Paper

Subject Name -: Business Statistics. Course Code -: 202 - B.

| 1. | Theory of Probability Distributions: Discrete and Continuous | 10 |
|------|---|----|
| | 1.1 Random Variables, discrete random variable, continuous random Variable | |
| | 1.2 Probability distribution and probability mass function (p. m .f.) of discrete | |
| | random variable, Probability density function(p.d.f.) of continuous random | |
| | variable | |
| | 1.3 Expected value, variance and standard deviation | |
| | 1.4 Numerical Problems on finding p.m.f/p.d.f, expected value and variance. | |
| 2. | Standard Probability Distributions | 14 |
| | 2.1 Binomial Distribution : p. m. f., mean and variance. | |
| | 2.2 Poisson Distribution : p. m. f., mean and variance | |
| | 2.3 Normal Distribution : p. m. f., mean, variance, properties | |
| | 2.4 Limiting relations between these distributions | |
| | 2.5 Numerical problems to calculate probabilities, mean and variance | |
| 3. | Estimation of Parameters of Distribution | 8 |
| | 3.1 Parameter and Statistic | |
| | 3.2 Unbiased estimator | |
| | 3.3 Confidence interval (around unbiased estimator) | |
| | 3.4 Examples and Problems | |
| 4. | Tests of Hypothesis | 16 |
| | 3.1 Hypothesis, null and alternative hypothesis, two types of errors, test | |
| | statistic, critical region acceptance region, level of significance, p-value | |
| | 3.2 Chi square test for goodness of fit | |
| | 3.3 Chi square test for independence of two attributes | |
| | 3.4 Small sample Test for the mean | |
| | a) One sample test | |
| | b) Two sample test | |
| | c) Pair t – test | |
| | 3.5 Large sample tests for population mean and population proportion | |
| | 3.1.1 Test for the mean a) one sample b) two samples | |
| | 3.1.2 Test for the proportion a) one sample b) two samples | |
| | 3.6 Numerical Problems | |
| | | |
| Reco | mmended Books : | |
| 1 | . Schaum's outline series of Probability By Seymour Lipschutz | |
| 2 | Probability and Statistics : R Walpole, S myers and K Ye | |
| 3 | . Fundamentals of Mathematical Statistics :S.C. Gupta and V.K. Kapoor | |
| 4 | Fundamentals of Applied Statistics : S.C. Gupta | |
| | | |

M.Com. Part I Semester II Advanced Accounting and Taxation Special Paper III Subject Title -: Specialized Areas in Accounting. Course Code -: 203

Objective -:

- 1. To develop competency of students to solve problems relating Special areas in accounting including accounting for Services Sector.
- 2. To understanding of Financial Reporting Practices.
- 3. To familiarize the student with procedure of accounting for Taxation.

| UNIT | ΤΟΡΙΟ | No. of Lectures |
|------|--|-----------------|
| I | ACCOUNTING FOR CONSTRUCTION CONTRACTS: | 08 |
| - | Introduction - Accounting Treatment - Percentage of Completion Method, | 00 |
| | Completed Contract Method. Provision for foreseeable losses-Principles to | |
| | be followed while taking credit for profit on incomplete contracts, | |
| | valuation & disclosure of Work-in-progress, escalation clause, preparation | |
| | of contract accounts.AS7 | |
| | | |
| II | ACCOUNTING FOR CORPORATE RESTRUTURING: | 08 |
| | Amalgamation - Absorption - External reconstruction, (Advanced | |
| | problems only) - Internal Reconstruction - reparation of Scheme of | |
| | Internal Reconstruction. | |
| III | FUND BASED ACCOUNTING: | 08 |
| | Introduction - Special Features of Accounting for Educational | |
| | Institutions, Accounting for Government Grants as per guidance notes | |
| 117 | issued by the ICAI. | 00 |
| IV | SERVICES SECTOR ACCOUNTING: | 08 |
| | A. Hotel accounting - Introduction - visitors ledger. | |
| | avponditure OPD & IPD Progistor | |
| | C Transport Undertaking - Introduction - preparation of final | |
| | Accounts - Accounting of Roadways Preparation of final accounts - | |
| | Log Book | |
| | | |
| V | CORPORATE FINANCIAL REPORTING: | 08 |
| | Issues and problems with reference to published financial statements of | |
| | Companies. Financial Reporting in respect of Mutual Funds, Non | |
| | Banking Financial Companies, Merchant Bankers, Stock Brokers | |
| | | |
| VI | ACCOUNTING FOR CORPORATE TAXATION: | 08 |
| | A. Accounting for Income Tax: Provision for Taxation - Advance Tax- | |
| | Completion of Assessment - Corporate Dividend Tax-Tax Deducted at | |
| | Source Deferred Tax as per AS.22. | |
| | B. Accounting treatment of Excise Duty and CENVAT: Accounting at | |
| | the time of payment of Excise Duty, Cenvat Credit availed and | |
| | utilized for input and Final Product and Capital Goods. | |
| | C. Accounting of State Level Value Added Tax. (VAT): VAT Credit in | |

| case of Inputs/Supplies, Capital Goods. Accounting for Liabilities adjusted from VAT credit receivable balance- Inputs and / or Capital | |
|---|----|
| Goods. D Accounting under Service Tax Basics of Service Tax-Accounting | |
| Groups and Accounting Heads-Accounting Entries at raising Invoice and | |
| receipt of payment Booking of expenses and making payment. | |
| (practical problems on journal entries on above transactions)) | |
| TOTAL - | 48 |

Notes:

- 1. Theory questions will carry 20% marks.
- 2. Practical problems will carry 80% marks.
- 3. Relevant Accounting standards to be studied under each topic

List of Books Recommended for Study :

- 1. Shukla and Grewal: Advanced Accounts. (S. Chand & Co. Ltd. New Delhi)
- 2. Jain and Narang: Advanced Accounts.(Kalyani Publishers, Ludhiana)
- 3. Sr. K. Paul: Accountancy, Volume-I and II.(New Central Book Agency, Kolkata)
- 4. R. K. Lele and Jawaharlal: Accounting Theory (Himalaya Publishers)
- 5. Dr. L. S. Porwal: Accounting Theory (Tata McGraw Hill).
- 6. Robert Anthony, D.F.Hawkins & K.A. Merchant: Accounting Text & Cases (Tata McGrawHill).
- 7. Dr. S. N. Maheshwari: Corporate Accounting (Viakas Publishing House Pvt. Ltd. New Delhi)
- 8. Dr. Ashok Sehgal & Dr . Deepak Sehgal: Advanced Accounting (Taxmann, New Delhi).
- 9. Guidance Notes issued by Institute of Chartered Accountants of India. on :
 - a. Accounting for State level Value Added Tax :
 - b. Accounting for Fringe Benefits Tax :
 - c. Accounting for Corporate Dividend Tax:
 - d. Accounting Treatment for Excise Duty:
- 10. Taxmann's Journal on Service Tax : Volume 10.Part 7. (2007): Accounting under Service Tax by Pravin Dhandharia
- 11. Relevant guidance notes issued by the ICAI.

List of Learning Activities and Allocation of Periods

| Sr. No. | Activities | Learning Hours |
|---------|------------------|----------------|
| 1 | Quizzes | 4 |
| 2 | Assignments | 4 |
| 3 | Class room tests | 4 |
| | Total | 12 hours |

M.Com. Part I Semester II Advanced Accounting and Taxation Special Paper IV Subject Title -: Business Tax Assessment & Planning Course Code -: 204

Objective -:

- 1. To provide understanding of Direct Taxes including Rules pertaining thereto and their application to different business situations.
- 2. To understand principles underlying the Service Tax.
- 3. To understand basic concepts of VAT, Excise Duty and Customs Duty.

| UNIT | TOPIC | No. of |
|------|--|----------|
| | | Lectures |
| | | in hours |
| Ι | ASSESSMENT OF VARIOUS ENTITIES: | 08 |
| | 1. Assessment of Companies | |
| | 2. Assessment of Co-operative Societies | |
| | 3. Assessment of Charitable Trusts | |
| | (Theory & Problems) | |
| II | MISCELLENEOUS: | 08 |
| | Income Tax authorities, Return of Income, Procedure for Assessment - Types | |
| | of assessment, Appeals and Revision, Deduction of Tax at Source - Advance | |
| | payment of Tax - Deduction and Collection of Tax At Source-Interest and | |
| | penalties, Offences and Prosecutions - Refund of Tax-Transfer Pricing (Domestic & | |
| | International Transactions) | |
| | (Theory & simple problems on TDS, Advance Tax & Interest Calculation) | |
| III | TAX PLANNING: | 08 |
| | Meaning of tax planning and management, tax evasion and tax avoidance-Nature | |
| | and scope of tax planning and management in the corporate sector- Justification | |
| | of corporate tax planning and management. Tax Planning considerations in relation | |
| | to Business.(Theory) | |
| IV | WEALTH TAX: | 06 |
| | Scheme of Wealth Tax - Incidence of Wealth Tax - Assets to be included in Net | |
| | Wealth - Exempted Assets - Valuation of Assets and Wealth Tax Liability - | |
| | Assessment and Penalties. (Theory & Problems) | |
| | | |
| V | BASICS OF INDIRECT TAXES: | 18 |
| | | |
| | A] SERVICE TAX: | |
| | Service Tax: Applicability and Services covered - Valuation of taxable | |
| | services for service tax- Payment of Service Tax - Registration - Furnishing of | |
| | Return - Maintenance of Record - Other obligations (Theory and Problems) | |
| | | |
| | DJ VAI: The Desig concert of WAT how WAT encurtes manife & demonite of WAT - heigh | |
| | The Basic concept of VAI-now VAI operates-merits & demerits of VAI-a brief | |
| | Overview of sale level VAT in india. (XAT) is not to be studied with reference to say particular State XAT (XAT) | |
| | (VAT is not to be studied with reference to any particular State VAT Law.) | |
| | (I neory Uniy) | |

| D] CUSTOMS DUTY: Introduction to Customs Duty – Valuation - Customs | |
|--|--|
| | |
| Procedures - Classification for Customs and Rate of Customs Duty. (Theory) | |

Notes:

- 1. Amendments made prior to commencement of Academic Year in the relevant act should be considered.
- 2. Theory questions will carry 50% marks.
- 3. Problems will carry 50% marks

Scheme of Marking for Semester II will be as under:-

- a. Income Tax- 70 Marks
- b. Wealth Tax-10 Marks
- c. Indirect Taxes -20 Marks i- Service Tax
 - ii- VAT
 - iii- Excise Duty
 - iv- Customs Duty

List of Books Recommended for Study:

- 1. Dr. Vinod Singhania: Direct Taxes, Law and Practice, Taxman Publication, New Delhi.
- 2. Dr. Bhagawati Prasad: Direct Taxes
- 3. Girish Ahuja and Ravi Gupta: Direct Taxes, Bharat Law House, New Delhi.
- 4. T. N. Manoharan: Hand Book of Income Tax Laws
- 5. B.B. Lal & N.Vashisht: Direct Taxes (Pearson)
- 6. S. S. Gupta: Service Tax (Taxman Publications, New Delhi)
- 7. R. Mohan Lavis: Service Tax (Bharat Publishers, New Delhi)
- 8. V.S. Datey: Indirect Taxes, Law and Practice (Taxman Publications, New Delhi)

List of Learning Activities and Allocation of Periods

| Sr. No. | Activities | Learning Hours |
|---------|------------------|----------------|
| 1 | Quizzes | 4 |
| 2 | Assignments | 4 |
| 3 | Class room tests | 4 |
| | Total | 12 hours |

M.Com. Part I Semester II Commercial Laws and Practices Special Paper III. Subject Title -: E-Security and Cyber Laws Course Code -: 205

Objective -:

- 1. To make the students aware of the cyber wrongs/crimes;
- 2. To impart knowledge of e-security and Internet Security amongst students
- 3. To make student familiar with various provisions of cyber Laws and I.T. Acts.
- 4. To get the students acquainted with the regulatory regime in computer field/e-business.

| Unit No. | Name of the Unit / Topic | Periods |
|----------|--|---------|
| | Introduction to Computer crimes. | |
| | Computer Crimes. Types of Computer crimes, Specific Threats, Attacks on Computer | |
| | Systems, Major types of Security Problems / Common threats, | |
| 1 | Computer Frauds and abuse techniques. Characteristics and types of computer frauds. | |
| 1. | Preventing Computer Frauds and Ethical Considerations. | 15 |
| | System Vulnerability and abuse – Internet Vulnerability. | |
| | Protecting Information systems from potential threats. | |
| | E-Commerce security issues. Risk Involved in E-Commerce. Protecting E-Commerce | |
| | System. | |
| | E-Security | |
| | Introduction to E-Security and Security Requirements. | |
| | Types of Intruders, attacking methods, Hackers and Crackers. Computer Viruses, | |
| | Spam, Denial of services. Security Policy, Secure E-Transactions. Types of | |
| 2. | Information Systems Controls- General Controls – Physical Controls, Access Controls, | 15 |
| | Biometric Controls, data Security Controls and Application Controls. | |
| | Security Tools and Methods- Password, Authentication, Access Control, Encryption, | |
| | Firewall, Antivirus Software, Digital Identity and digital Signature, Certificate | |
| | Certificates. Secure Socket Layer and Secure Electronic Transaction Protocols. | |
| | Cyber Laws Introduction to Cyber Laws—Meaning & scope of Cyber Laws, online | |
| | contracts, & requirements & legal aspects of e-contracts (offer and acceptance in e- | |
| 3. | form), Cyber Laws & legal issues (cyber jurisprudence, & sovereignty, net neutrality, | |
| | freedom of speech in cyber space, governance) | |
| | Information Technology Act – 2002 Part-I | |
| | Digital Signature-definition ,meaning, functions, procedure, E- Governance (Ss. 4 to 9 | 10 |
| |), E- Records (Ss 11 to 16), Controller of Certifying Authority (powers, functions | |
| | u/s 17 to 20), Digital Signature CertificatesLicense to issue Digital Signature | |
| | Certificates, (suspension, revocation etcSs.21 to 26), Duties of Certifying Authority (| |
| | Ss.30 to 34), Provisions relating to Digital Signature Certificates (Ss. 35 to 39), Duties | |
| | of subscriber(Ss. | |
| | Information Technology Act – 2002 Part-II | |
| | Penalties for Cyber Wrongs and Adjudication (Ss. 43 to 47), Cyber Regulation | |
| | Appellate Tribunal (Procedure and Powers(Ss.48 to 51, 57 to 64) Cyber | |
| 4. | Crimes/Offences & punishment (u/s 65 to 79), offences by companies(S.85) | 08 |
| | Amendments effected in IPC 1860, Indian Evidence Act, 1872, Bankers Books | |
| | Evidence Act, 1891, Reserve Bank of India Act, 1934 pursuant to Ss. 91 to 94 of ITA, | |
| | 2000. | |
| | Total | 48 |

[Note: Recent amendments in the Acts and relevant Landmark cases decided by courts are expected to be studied]

Books Recommended:

- 1. E-COMMERCE and ITS APPLICATIONS Dr. U. S. Pandey, Rahul Srivastava and Saurabh Shukla. S. Chand & Company, New Delhi
- 2. Management Information and Control Systems Dr. Sushila Madan, TAXMANN'S.
- 3. Electronic Commerce from Vision to Fulfillment _ Elias M. Awad, Pearson Education.
- 4. Text book on Intellectual property rights N.K. Acharya, Asia Law House.
- 5. Law of Information Technology (Cyber Law) D. P. Mittal, TAXMANN'S
- 6. Guide to Cyber Laws B y Rohnay D. Ryder[Wadhwa, Nagpur]
- 7. 6.. Cyber Laws Justice Yatindra Singh, Universal Law Publishing Co.
- 8. Law of Information Technology-D.P. Mittal
- 9. Cyber Laws—Krishnakumar
- 10. 9 Encyclopedia of Cyber Laws-Sujeet Kumar
- 11. Handbook of Cyber Laws---Vakul Sharma

M.Com. Part I Semester II Commercial Laws and Practices Special Paper IV. Subject Title -: Law Relating to Copyright and Designs. Course Code -: 206

Objective -:

- 1. To understand the nature and scope of Intellectual Property laws
- 2. To get acquainted with various provisions of Intellectual property laws
- 3. To make the student familiar to Intellectual Property laws and their relevance in the changing business environment.

| Unit No. | Name of the Topic | |
|-------------|---|----|
| 1.(a) | The Copyright Act, 1957:-Introduction and Evolution of the Law on Copy Right – Meaning, Scope anda)Characteristics of Copyright – Object of Copyright – Works in which CopyrightSubsists – Qualification for Copyright Subsistence – Author and Ownership ofCopyright and Rights of the Owner – International Copyright (Ss – 40-43) | |
| 1.(b) | Copyright (Procedure):- Term of Copyright (Sections 22 to 29, 37(2), 38(2) – Assignment/ License of Copyright (Sections 18 to 21, 30 To 32) – Registration of Copyright (Section 44 to 50-A along with rule 16 of chapter VI of Copyright Rules, 1958) | 06 |
| 1.(c) | Copyright (Infringement and Regulatory Authorities):- Infringement of Copyright - acts which Constitute Infringement, acts not Constituting Infringement etc. (Section 51 to 53 A) – Offence and Penalties, Copyright Societies (Functions and Rights) | 08 |
| 2 | The Designs Act-2000: - Industrial Designs: Introduction and Meaning – Registerability of a Design, who can file an Application for Registration of a Design (Section 3 to 10) – Copyright in Registered Designs (Sections 11 to 20) – Infringement (Piracy) of Copyright in Design (Sec. 22) – Defenses which may be set up by the Defendant. | 08 |
| 3 | The Geographical Indications of Goods (Registration and Protection), Act, 1999: - Geographical Indications: Introduction, Meaning and Content – Procedure for Registrations – Duration, Renewal, Restoration (Section 11 to 18) – Rights Conferred by Registration – Infringement and its Remedies (Section 20-24) – Penalties for Infringement (Section 37 to 54) – Authorities: Registrar, Appellate Board – Certificate of Validity – Powers of Central Government. | 08 |
| 4 | Protection of Plant Varieties and Farmers Rights Act-2001:- Introduction Objective and Scope of the PPVFR Act, 2001 - Definitions [Plant, Propagating Material, Seed, Germ Plasma, Plant Variety, New Plant Variety, Farmer Etc.] Procedure of Registration, Who may apply? - What can be registered? – What Cannot be Registered - Acceptances and Opposition of Application – Rights and Privileges of Breeders and Researchers – Compulsory License – Period of Validity of Registration – Surrender and Revocation of Certificate – Infringement of Rights and its Remedies - Offences and Penalties – Authorities for Administration | 08 |
| | Total Period | 48 |

[Note: Recent amendments in the Acts and relevant Landmark cases decided by courts are expected to be studied]

| Books | Recommended |
|-------|--|
| 1. | Intellectual Property Law – P. Narayan, Eastern Law House. |
| 2. | Text book on Intellectual Property Rights N.K. Acharya , Asia Law House, Hyderabad. |
| 3. | Law Relating to Intellectual Property – Dr. B.L. Waderha, Universal Law Publishing Co. |
| 4. | Intellectual Property Rights, (2011), - Dr. Sreenivasulu N. S., Regal Publications, New Delhi – 7. |
| 5. | Intellectual Property Law in India (2006) - Justice P. S. Narayana, Goigia Law Agency, |
| | Hyderabad. |
| 6. | Universal's "Intellectual Property Laws" (Bare Acts) Universal Law Publishing Co. Pvt. Ltd. |
| 7. | Law of Intellectual Property - Dr. S. R. Mynei - Asia Law House, Hyderabad (2011). |
| 8. | Intellectual Property Rights - Heritage, Science & Society Under International Treaties, A. |
| | Subbian Deep & Deep Publications Pvt. Ltd., New Delhi (2007) |
| | |
| | |
| | |

M.Com. Part I Semester II

Advanced Cost Accounting and Cost System Special Paper III. Subject Title -: Application of Cost Accounting. Course Code -: 207

Objectives:

- 1. To provide knowledge on advanced cost accounting practices.
- 2. Relevant Cost Accounting Standard are to be studied.

| Unit No. | Name of the Topic | Periods |
|----------|--|---------|
| 1. | Cost Book Keeping and Reconciliation between Cost and Cost financial | 12 |
| | Accounts – | |
| | Book - keeping, Cost Ledgers, interlocking and integral Accounts. | |
| | Reconciliation of Cost and Financial Accounts, Reasons, needs, Methods. | |
| 2. | Product Life Cycle Costing: | 12. |
| | Introduction, Product Life cycle, Phases and Characteristics of Product Life | |
| | Cycle, Stages of Product Life Cycle, Product Life Cycle Costing Features and | |
| | benefits of Product Life Cycle Costing. | |
| 3. | Value Chain Analysis | 12. |
| | Introduction - Definition - Role of Management Accountant - Value Chain | |
| | Analysis - approach for assessing competitive advantages - value chain | |
| | analysis v/s conventional management accounting. | |
| 4. | Productivity & Concept and Measurement | 12. |
| | i) Productivity | |
| | Meaning, Measurement of Material, Labour, Capital and Management | |
| | Productivity. Productivity V/s Efficiency. Capacity - Theoretical, Practical | |
| | and idle capacity, Capacity utilization and effect of same on cost. | |
| | ii) Concept and Measurement | |
| | Measures to improve productivity - Technical, Financial, Operational | |
| | Measures. Restructuring of activities - Business Process Re-engineering | |
| | elementary knowledge. Human aspect of productivity. | |
| | Total | 48 |

Note: 50% Marks for Theory and 50% Marks for practical problems. Areas of Practical Problems :

- 1. Reconciliation of Cost and Financial Profit
- 2. Measurement of Productivity.

References:

- 1. Ravi Kishor: Advanced cost Accounting and cost systems, Taxman Allied services Pvt Ltd, New Delhi.
- 2. N.K. Prasad: Principles and Practice of Cost Accounting, Syndicate Pvt Ltd, Calcutta.
- 3. Prof. Subhas: Practice in Advanced costing and Management, Nirali Prakashan, Pune.
- 4. Ravi Kishor: Students guide to Cost Accounting, Taxman's allied services, New Delhi.
- 5. M. N Arora: Cost Accounting Principles and Practices, Vikas Publishing House, New Delhi.
- 6. S. N Maheshwari, Cost Accounting Theory and Problems, Mittal shree Mahvir Book Dept, New Delhi.
- 7. Website: <u>www.myicwai.com</u>.
- 8. Advanced Cost Accounting and Cost Systems -: Ravi Kishor, P.V. Ratlam, M.L.Basu

List of Learning Activities and Allocation of Periods

| Sr. No. | Activities | Learning Hours |
|---------|-------------------|----------------|
| 1 | Industrial Visits | 04 |
| 2 | Assignments | 04 |
| 3 | Class room tests | 04 |
| | Total | 12 hours |

M.Com. Part I, Semester II

Advanced Cost Accounting and Cost System Special Paper IV. Subject Title -: Cost Control and Cost System. Course Code -: 208

Objectives:

- 1. To equip the students for designing and implementing cost control, cost reduction programme and different cost systems.
- 2. Relevant Cost Accounting Standards are to be studied.

| Unit No | Name of the topic | Periods |
|------------|--|---------|
| 110. | Marginal Costing Cost - Volume - Profit Analysis And Differential Costing - | |
| | Marginal Costing, Cost – Volume – Front Analysis And Differential Costing - Marginal Costing, Meaning – Concept of Variability of Cost Contribution P/V | |
| 1 | Ratio Break :- Even – Analysis Margin of Safety Cost- Volume Profit Analysis – | 12 |
| - | Procedure And Practical, Application. Differential Costing, Differential Costs, | |
| | Differential Cost Analysis, Features of Differential Costing, Practical Application. | |
| 2 | Pricing Decision: - Introduction - Pricing of Finished Product- Theory of Price - | |
| | Pricing Policy - Principles of Product of Pricing - New Product Pricing - Pareto | 10 |
| | Analysis. | |
| | Cost Control and Cost Reduction :- Introduction, Process of Cost Control and | |
| 3 | Cost Reduction, Cost Reduction Programme and its Implementation - Methods | |
| | and Techniques | |
| | Costing System Design and Installation :- Study of Production Process, | 20 |
| | Objective. Selection of Methods of Costing, Creating Cost Center And Cost Codes | 20 |
| | - Deciding Basis of Apportionment of Various Overheads, Deciding Methods of | |
| | Absorption. Fixing Responsibility And Designing Suitable MIS. Designing And | |
| | Installing Cost System In Computer Environment | |
| 4 | Value Analysis and Value Engineering :- Just-In-Time [JIT], Activity Based | 06 |
| 4 | Costing (ABC) | 00 |

Note: 50% Marks for Theory and 50% Marks for practical Problems.

Areas of Practical Problems:

- 1) Marginal Costing- Application oriented
- 2) Pricing Decisions

Level of knowledge will be advance and Practices

References:

- 1. Ravi Kishor: Advanced cost Accounting and cost systems, Taxman Allied services Pvt Ltd, New Delhi.
- 2. N.K. Prasad: Principles and Practice of Cost Accounting, Syndicate Pvt Ltd, Calcutta.
- 3. Prof. Subhas: Practice in Advanced costing and Management, Nirali Prakashan, Pune.
- 4. Ravi Kishor: Students guide to Cost Accounting, Taxman's allied services, New Delhi.
- 5. M. N Arora: Cost Accounting Principles and Practices, Vikas Publishing House, New Delhi.
- 6. S. N Maheshwari, Cost Accounting Theory and Problems, Mittal shree Mahvir Book Dept, New Delhi.
- 7. Website: <u>www.myicwai.com</u>.
- 8. Advanced Cost Accounting and Cost Systems -: Ravi Kishor, P.V. Ratlam, M.L.Basu

List of Learning Activities and Allocation of Periods

| Sr. No. | Activities | Learning Hours |
|---------|-------------------|----------------|
| 1 | Industrial Visits | 4 |
| 2 | Assignments | 4 |
| 3 | Class room tests | 4 |
| | Total | 12 hours |

M.Com. Part I Semester II Co-operation and Rural Development Special Paper III. Subject Title -: International Co-operative Movement. Course Code -: 209

Objectives:

- 1. To acquaint the students with the Co-operative Movement.
- 2. To develop the capability of students for knowing different types of Co-operatives.

| Unit No. | Name of the Topic | Periods |
|----------|---|---------|
| 1. | Introduction: | 12 |
| | Origin and Growth of Co-operative Movement in the World- | |
| | Cooperation in the post industrial revolution of Great Britain | |
| 2. | Co-operation in Social and Economic Systems: | 12 |
| | Co-operation in Capitalistic Systems- Co-operation in Socialistic | |
| | System-Cooperation in Mixed Economy- International Cooperation. | |
| | The International Cooperation Alliance (ICA) | |
| 3. | Co-operative Movement in the world: | 12 |
| | Co-operative Movement in the UK,USA,USSR. China, Japan and | |
| | Israel. | |
| 4. | Role of Co-operative Movement in Global Economy: | 12 |
| | Impacts, Problems and Suggestions. | |
| | TOTAL | 48 |

| | List of Books Recommended for Study |
|----|---|
| 1. | G.S. Kamat: New Dimensions of Co-operative Management |
| 2. | G.S. Kamat: Cases in Co-operative Management |
| 3. | K.K.Taimani: Co-operative Organisation and Management |
| 4. | I L O: Co-operative Management and Administration |
| 5. | B.C. Mehta: Consumer Co-operation in India |
| 6. | Prof L.P. Wakale and Dr. G.H.Barhate: Sahakari Vikas- Sheth Publishing Mumbai |

M.Com. Part I Semester II Co-operation and Rural Development Special Paper IV. Subject Title -: Management of Co-operative Business Course Code -: 210

Objectives:

- 1. To acquaint the students with the co-operative movement.
- 2. To develop the capability of students for knowing different types of Co-operatives.
- 3. To aware the role of state and central Govt. in development of co-operative sector.
- 4. To give basic knowledge about administration and management of Co-operatives.

| Unit No. | Name of the Topic | Periods |
|----------|---|---------|
| 1. | Co-operative Business Promotion: | 12 |
| | Problems of Economic and commercial viability-Services to members: | |
| | Role of Co-operative department- Criteria for appraising performance of Co- | |
| | operative Business: Organizational, Operational and financial-social | |
| | responsibilities of Co-operative business- Industrial relation in Cooperative | |
| | business. | |
| 2. | Business Policies and Practices (Managerial Evaluation) in following: | 12 |
| | 1. Sugar Co-operatives | |
| | 2. Dairy Co-operatives | |
| | 3. Credit Co-operatives | |
| | 4. State Co-operative Bank | |
| | 5. District Co-operative Bank | |
| | 6. Primary Agricultural Credit Societies | |
| 3. | Success stories of Co-operative Institutions: | 12 |
| | Anand Dairy Co-operatives Gujrat | |
| | Warana Co-operatives Organization, Warnanagar | |
| | Shamrao Viithal Co-operative Bank. | |
| | Gokul Sahakari Sangh, Kolhapur | |
| | | |
| 4. | Problems of Co-operatives: | 12 |
| | a) Sugar Industry | |
| | b) Agricultural and Non-agriculture Credit Co-operative. | |
| | c) Dairy Co-operative | |
| | d) Co-operative Banking | |
| | TOTAL | 48 |

List of Books Recommended for Study

- 1. G.S. Kamat: New Dimensions of Co-operative Management
- 2. G.S. Kamat: Cases in Co-operative Management
- 3. K.K.Taimani: Co-operative Organisation and Management
- 4. ILO: Co-operative Management and Administration
- 5. B.C. Mehta: Consumer Co-operation in India
- 6. Prof L.P. Wakale and Dr. G.H.Barhate: Sahakari Vikas- Sheth Publishing Mumbai
M.Com. Part I Semester II Business Practices and Environment Special Paper III. Subject Title -: Modern Business Practices Course Code -: 211

Objective: To improve knowledge and understanding of students about chambers of commerce and trade, Associations, Public enterprises, Public utilities and Agri. business.

| Unit No. | Name of the Topic | Periods |
|----------|---|---------|
| 1 | Organizations – Introduction, Importance, Objectives and functions of | 12 |
| | (1) Maharashtra Chamber of Commerce, Industries and Agricultural and their | |
| | local branches | |
| | (2) Maratha Chamber of Commerce, Industries & Agriculture | |
| | (3) Indian Merchants Chamber. | |
| | (4) Nagar Chamber of Commerce (Deccan) | |
| | (5) Federation of Indian Chamber of Commerce and Industries (FICCI) | |
| | (6) Confederation of Indian Industries (C1I) | |
| 2 | Public Enterprises and Public Utilities -: | 12 |
| | Objectives, functions and Organization of public Enterprises and Public Utilities | |
| | - Management practices of Public enterprises in India - Efficiency - Autonomy | |
| | and control of public Enterprises - Recent practices and policies in public | |
| | Enterprises and Public Utilities- Before LPG & after LPG | |
| 3 | Agricultural Business Practices -: | 12 |
| | Characteristics of Agricultural Business - Nature of Indian Agriculture - | |
| | Government policies related to agricultural business - Problems and | |
| | prospects of Agricultural Business - Agricultural Taxation policy. Agricultural | |
| | products and Farms Services -: Nature and disposal of Agricultural by e- | |
| | products - Farm waste - cost of recycling of farm waste. | |
| 4 | Scheme of support for Women Entrepreneur in Maharashtra | 12 |
| | Maharashtra Rural Credit Programme: | |
| | (1) Swarna Jayanti Gram Swarozgar Yojana (SJGSRY) | |
| | (2) Swayamsidha Programe | |
| | (3) Ramai Mahila Shakshamikaran | |
| | (4) Rashtriya Sam Vikas Yojana (RSVY) | |
| | (5) Krushi Saptak Yojana | |
| | (6) Tribal Development Project (TDP) | |
| | (7) Tejaswini Rural Women Empowerment Programme | |
| | (8) Rajarshee Shahu Maharaj Swayamrozgar Yojana. | |
| | Minority Women Empowerment Programme | |
| | Mahila swavalamban nidhi (MSN) | |
| | Problems of Small Scale Industries. | |

Recommended Books for study

1. Principles of Business Organization Acharya Govekar A.R , Sheth and Co

- 2. Principles of Practice of Marketing Mamoria, Joshi Kitab Mahal
- 3. Regulated Markets W. R. Natu
- 4. Marketing Co-Operative Way G.S. Kamat Maharastra state Co-op Union
- 5. Future Trading and Control Ram Desai
- 6. Bombay Money Market H.T.Y.B.A Parekh
- 7. Commodity Marketing and P.L. Gadgil Shubhada Sarswat, Distributive Trade Punc
- 8. Environment & Development : China & India

M.Com. Part I Semester II

Business Practices and Environment Special Paper IV Subject Title -: Business Environment Analysis.

Course Code -: 212

| Unit No. | Name of the Topic | Periods |
|----------|--|---------|
| 1 | Indian Industrial Environment - Growth of industries in public & private | 12 |
| | sectors in India, Co-operative sector in India - small and cottage industries. | |
| | mergers and acquisitions. Foreign investment - Foreign Technology and | |
| | MNCs | |
| | Global Environment - Natural Social, Cultural, Demographic and | |
| | Technological environment and its impact on World Trade. | |
| 2 | Financial Environment of Business - Indian Money Market - Growth of | 12 |
| | capital Market in India - Financial Institutions - Role of Public, | |
| | Private, and Co-operative Banks - Role of foreign banks and non Banking | |
| | Institutions. | |
| | Security Market :- Meaning, function, structure, constitution & | |
| | management of Security Market. | |
| 3 | Environmental Analysis- Meaning and importance - Techniques of | 12 |
| | Analysis, Verbal and Written Information, Search and scanning, Spying, | |
| | Forecasting, Limitations of these techniques, Competitions analysis - | |
| | Rivalry Amongst existing firms, threat of new entrants, treat of substitutes | |
| | – Bargaining power of suppliers and buyers. | |
| 4 | Selected Biography of Reliance Group of Industries | 12 |
| | Chordiya, Pravin Masale, | |
| | Big Bazar founder | |
| | Bhavarlal Jain | |

Recommended books for study

Global Economy and Business Francis Cheranilan Himalaya publishing house Environment Text & Cases (Edn 2001)

Business Environment Chllaaghan, ELlison Edward Arnold

Economic Environment SYBA K Misha, Puri Himalaya publishing house of Business Indian Business trough ages F1CCI Oxford University Press

Recommended Journals/Periodicals

1. Arth Vijnyan 2. The Economic Times 3. Economic and Political Weekly, ode: 203

M.Com. Part I Semester II Business Administration Special Paper III. Subject Title -: Business Ethics and Professional Values Course Code -: 213

| | No. of Lectures | Credit |
|---|--------------------|--------|
| | Liciures | T |
| Unit I Introduction Nature , concept and definition of term Business Ethics , Profession and Values, Indian Ethos, Ethics and Values – Work Ethos – Importance of Human Values. Guidelines of Socio Ethical System at General Level. Meaning of Social Ethics, Issues related to Socio Ethics Factors affecting Social Ethics. | 12 | 01 |
| Unit II –Indian Ethical Practices in A) Marketing and Advertising : B) Copy rights and Patents C) Employment D) Gender Discrimination E) Accounting Disclosures | 12 | 01 |
| Unit III Dilemmatic situations in Professional Ethics, Code of Ethics and conduct 1.Corprate Governance 2. Corporate Social Responsibility 3. Corporate Citizenship | 12 | 01 |
| Unit- IV Indian Approach to Business Ethics Gandhian Approach in Management and Trusteeship Gandhi's Doctrine of Satya and Ahinsa , Concept , importance and relevance of trusteeship Principle in Modern Business, Emergence of new values in Indian Industries after economic reforms of 1991. | 12 | 01 |
| Books Recommended Reference Books 1.Wg- Cdr – B.R.Chavala , Swastik Publishers . 2.Management by Values 3.S.K.Chakraborti , Oxford University Press 4.Foundations to Managerial Work – Contribution from Indian Thought – S. K.Chakarborti , Himalaya Publications 5.A Study in Business Ethics Rituparna Raj 6.Ethics in Management S.A. Sherlekar , Himalaya Publication 7 Business Ethics and Corporate Governance S K Bhatia | 48 | 04 |

M.Com. Part I Semester II Business Administration Special Paper IV. Subject Title -: Elements of Knowledge Management Course Code -: 214

| | | 110.01 | Cicu |
|----|---|----------|------|
| | | Lectures | 04 |
| 1. | Introduction to Knowledge Management Process | 12 | 01 |
| | Knowledge management :- an integrated approach Meaning knowledge management, Difference between data, information, knowledge and wisdom, Early forms of Knowledge Management and Evolution of Knowledge Management | | |
| 2. | Organizational Learning | 12 | 01 |
| | Individual learning, Team learning, Drives of organizational learning, Organizational learning frameworks, Knowledge acquisition, Information distribution, Information interpretation, Organizational memory, Unlearning, Organizational | | |
| _ | routines | | |
| | Organizing knowledge tools, Capturing knowledge tools | | |
| | Evaluating knowledge sharing knowledge, Storing and presenting knowledge, The nature of change,Personal response to change, welcome and resistance, Leadership and,Change management strategies, Gaining commitment for change, Reward and recognition. Cultural change management, Politics of change | | |
| 4. | Evaluating knowledge sharing knowledge, Storing and presenting knowledge, The nature of change,Personal response to change, welcome and resistance, Leadership and,Change management strategies, Gaining commitment for change, Reward and recognition. Cultural change management, Politics of change Knowledge Management Culture | 12 | 01 |
| 4. | Evaluating knowledge sharing knowledge, Storing and presenting knowledge, The nature of change,Personal response to change, welcome and resistance, Leadership and,Change management strategies, Gaining commitment for change, Reward and recognition. Cultural change management, Politics of change Knowledge Management Culture Understanding of organizational culture and climate Norms, artifacts and symbols, Value, beliefs, attitudes and assumption, Typologies of organizational culture, Measuring organizational cultural creating knowledge –sharing cultural stickiness. | 12 | 01 |

| | Books Recommended | · · · · | |
|--------|------------------------------|---------------------------------|-------------------|
| Sr.No. | Author | Title | Publisher |
| 01 | Elias Award and Hassan Gazai | Knowledge Management | Pearson |
| 02 | Arpita Gopal and Chandranii | E-world Emerging Education Pvt. | |
| | Singh | Ltd. | |
| 03 | Amrit Tiwan | Knowledge Management | Pearson Education |
| | | Toolkit | Pvt.Ltd. |
| 04 | Bukowitz W R Williams R.l. | Knowledge Management | London Pearson |
| | | Field Work | Education |
| 05 | Egaallo C F | Building the Knowledge | Willey Dream tech |
| | | Management Network | India Ltd |
| 06 | Pettigrew A, Whipp R | Change Management for | Infinity Books |
| | | Competitive Success | |

M.Com. Part I Semester II Advanced Banking & Finance Special Paper III Subject Title -: Banking Law & Practices Course Code -: 215

1. Introduction to Prevention of Money Laundering Act, 2002 -:

Provisions relating to: Preliminary (Section 1 and 2) Offence of money laundering (Section 3 and 4) Attachment, adjudication and confiscation (Section 5 and 11) Obligation of banking companies, financial institutions and intermediaries (Section 12 and 15) Summons, searches and seizures (Section 16 and 24) The RBI guidelines, Money Laundering Act Post 2002

2. Banker customer relationship -:

Definition of a banker and a customer Banker customer relationship as debtor-creditor, agent-principal and trustee-beneficiary Features of the relationship Banker's duty of secrecy of customers' accounts: Credit Information Bureau of India limited Right of set off, Garnishee order, Law of limitation, Termination of relationship, Role of Banking Ombudsman Customer's service: Goiporia Committee Norms, Damodaran Committee Recommendations

3. Asset - Liability Management -:

Definition of assets and liabilities, Asset liability mismatches on the grounds of locations, maturity, return and currency Risks while managing the assets and liabilities: Liquidity risk, Interest rate risk, Pre-mature withdrawal and pre-payment risk, Price Risk, Foreign exchange and sector based risk, Strategies to manage these risks, RBI guidelines for asset and liability management. Management of loan portfolio with special reference to Non Performing Assets (NPAs): Definition of NPA, Income Recognition and Asset Classification Norms (IRAC Norms) Strategic approach in reduction of nonperforming assets Management of investment Portfolio-Regulatory aspects, Overview of Basel I and II

4. Hi-tech banking and Mergers and Acquisition in banking sector -:

Role and uses of Technology up gradation- Impact of Technology on Banks-Protecting the confidentiality and secrecy of data, Meaning of Merger and Acquisition: Recent cases of mergers and acquisition in Banking sector of India - Consolidation of Banks.

List of Books and Journals

- 1. Tannan's 'Banking', Law and Practice in India Banking
- 2. P.N. Varshney, Banking: Law and Practice
- 3. Justin Paul and Padmalatha Suresh: Management of Banking and Financial Services
- 4. All relevant and recent Bare Acts, Indian Institute of Bankers: Laws and Practices relating to banking
- 5. All journals published by Indian Institute of Banking and Finance
- 6. Indian Banking Associations Bulletin
- 7. RBI Bulletin

8. Indian Institute of Banking and Finance, Principles and Practices of Banking, Macmillan Publisher India Ltd.

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M.Com. Part I Semester II Advanced Banking & Finance Special Paper IV Subject Title -: Monetary Policy Course Code -: 216

1. Money supply measures -:

Money supply measures of the Reserve Bank of India Concept of High powered money Recommendations of the Working Group on 'Money Supply : Analytics and methodology of compilation (Chairman : Dr. Y.V.Reddy), 1998

2. Monetary management

Objectives of monetary policy: Price stability, Generation of employment, Exchange Rate Stability, Balanced growth etc., conflict between objectives.

3. A) Instruments of monetary policy -:

-Mechanism and effectiveness of following instruments.

- i) Quantitative Instruments: Variations in Bank Rate, Open Market Operations and Variable Reserve Ratio
- ii) Qualitative Instruments: Margin Requirements, Credit Rationing, Moral Suasion, Direct Action, Publicity
- B) A review of monetary policy of the Reserve Bank of India in the last five Years - Recent policy changes announced by the R.B.I.
- 4. Development and promotional role of the Reserve Bank of India in Financial Inclusion and its implications. 10
 - 1. R.B.I. and rural credit: priority sector advance, regional rural banks, development of Farm sector and non-farm sector.
 - 2. R.B.I. and industrial finance: establishment of institutional, lending policy for Commercial banks, coordination between term lending institutions, bridge loans, Rehabilitation of sick industrial units.
 - 3. R.B.I. and export credit: pre-shipment credit, post-shipment credit, measures to Promote Exports.

TOTAL 48

Recommended books/ Journals

- 1. Reserve Bank of India functions and working (latest edn.) R.B.I.
- 2. Monetary Economics for India, Dr. Narendra Jadhav
- 3. Central Banking for emerging market economies, A. Vasudevan
- 4. Monetary and Financial Sector Reforms in India: A central banker's perspective, Dr. Y.V. Reddy
- 5. Indian Economy: Essays on money and finance, Dr. C.Rangarajan.
- 6. Reserve Bank of India Bulletin
- 7. Annual Report on Trend and Progress of Banking in India

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M.Com. Part I Semester II Advanced Marketing Special Paper III Subject Title -: Customer Relationship Management & Retailing Course Code -: 217

Objectives : To impart knowledge regarding customer relationship management, & retailing techniques, process and tools and develop an understanding of the CRM & retailing functions techniques and strategies

| Unit No. | Name of Topic | Periods | | | |
|---|---|---------|--|--|--|
| 1 | CRM An Introduction: Evolution of Relationship as a Marketing tool, | 08 | | | |
| | Emergence of CRM Practice/ Factors responsible for the growth of CRM . | | | | |
| | CRM Cycle, Importance of CRM | | | | |
| 2. | Emerging CRM | 08 | | | |
| | Customer Retention Management, Reasons for Customer Switching and | | | | |
| | Strategies for Retention | | | | |
| | Customer Recall Management, Customer Recall Strategies | | | | |
| | CRM a Cost benefit analysis. CRM Benefit, CRM Cost and CRM Value | | | | |
| 3 | CRM and I.T | 08 | | | |
| | eCRM an I.T Tool, e CRM in Business, Features of e- CRM Technologies | | | | |
| | of E CRM Important CRM Softwares—Oracle, Clarify, People Soft and My | | | | |
| | Sap CRM. Applications of e CRM | | | | |
| 4. | Latest Development in CRM : | 08 | | | |
| | Changing Roles of CRM , Customer Experience Management, Customer | | | | |
| | Profitability, Customer Classification based on Profitability, Customer | | | | |
| | Profitability as a strategic Management Tool, Customer Profitability and | | | | |
| | company Value, Customer Experience Management and Customer | | | | |
| | Profitability Management, Customer Lifetime Value | | | | |
| 5 | CRM Implementation Issues | 08 | | | |
| | Challenges of CRM Implementation, Essentials of CRM Principle, | | | | |
| | Customer Satisfaction, Importance of Customer Satisfaction, Customer | | | | |
| | Expectation, Customer Perception | | | | |
| 6 | People factor in CRM— | 08 | | | |
| | Customer Centric Organisational Structure | | | | |
| | Employee Organisation Relationship | | | | |
| | Employee Customer Orientation | | | | |
| | Total | 48 | | | |
| | Books Recommended | | | | |
| 1. Strate | gic Marketing Management - David Aaker | | | | |
| 2. Custo | 2. Customer Relationship Management – Jaddish Seth, Parvaityar, Shainesh | | | | |
| 3. Hand | book of Relationship Marketing – Jagdish Sheth, Atual Parvatiyar | | | | |
| 4. Leading Through Relationship Marketing – Richard Batterley | | | | | |
| 5. Relati | 5. Relationship Marketing – S. Shajahan | | | | |
| 6. Custo | mer Relationship Management – Jagdish Seth., Atul Parvatiyar, G. Shainesh | | | | |
| 7. Retail | 7. Retail Management – Gibson Vedamani | | | | |
| 8. Chan | 8. Channel Management & Retail Marketing – Meenal Dhotre | | | | |
| 9. Retail | 9. Retail Marketing Management – David Gilbert | | | | |
| 10. Retailing Management – Swapna Pradhan | | | | | |
| 11. Retail Management – Ron Hasty & James Rear don | | | | | |

12. Retail Marketing Management – Swapna Pradhan

M.Com. Part I Semester II Advanced Marketing Special Paper IV. Subject Title -: Services Marketing Course Code -: 218

Objective :

To impart knowledge regarding services marketing, process and tolls and develop understanding of the services marketing functions techniques and strategies

| Unit No. | Name of Topic | Periods |
|----------|---|---------|
| 1 | Introduction: Definition and character of Services. Origin of Services | 08 |
| | Marketing. Types of Services./ Classification of Services. Difference | |
| | between goods and services . Reasons for growth of Service Sector | |
| 2 | Understanding Customer Needs related to services, , The Purchase | 08 |
| | Process for Services, The Service Offering, How Customers Evaluate | |
| | Service Performances | |
| | Understanding Customer Behaviour at Different Points in the Service | |
| | Experience ,Customer Expectations in Services | |
| | Customer Perceptions in Services | |
| 3 | Product Mix and Services Marketing, Price Mix and Services | 08 |
| | Marketing . Physical Distribution/ Place Mix and Services Marketing. | |
| 4 | Physical Evidence and Services Marketing, People and Services | 08 |
| | Marketing, Process and Services Marketing. | |
| | Use of Marketing by service firms, Problems and Strategies in Services | |
| | Marketing, The Financial and Economic Impact of Service | |
| 5 | Organising for Service Leadership | 08 |
| | Service Leadership, Inter functional Conflict, | |
| | Ensuring that Service Encounters are Customer-Oriented | |
| | Listening to Customers through Research | |
| 6 | CRM and Services | 08 |
| | CRM practices in Indian Service Businesses: | |
| | Banking and Finance: recent customer service initiatives in the Banking | |
| | Industry, Customer involvement in Banking, Customer centric | |
| | communication in banks. | |
| | Hospitality Industry: Customer Centric initiatives by Hotels, Customer | |
| | Issues in hospitality industry, | |
| | Aviation Industry: | |
| | Customer Service initiatives by aviation sector | |
| | Total | 48 |

Books Recommended

- 1. Services Marketing Zeithaml & Bitner
- 2. Services Marketing: Integrating Customer Focus Across the Firm Valarie A. Zeithaml
- 3. Services Marketing Christopher Lovelock
- 4. Service Marketing Rampal & Gupta
- 5. Essence of Services Marketing Ardian Payne
- 6. Services Marketing S.M.Jha
- 7. Services Marketing Helen Woodruffe

University of Pune

M. Sc. (Microbiology) Revised Syllabus For Credit and Semester Based Post Graduate Course in Microbiology

w.e.f July 2013



Preamble:

Overall picture of student trends (before undergraduate studies) in selecting courses is very typical; most of the science students aim at professional courses, particularly leading to studies in Engineering. Comparatively less number of students opts for degrees in Biosciences. For several years now, the first preference of students desiring to enter the field of Life Sciences has been Microbiology, and for last 2 to 3 years it has shifted partly to Biotechnology courses. Both these disciplines viz. Microbiology and Biotechnology deal with overlapping interests. Microbial sciences focus more on study of the microbial world (this limitation needs to be corrected!) while Biotechnology focuses more on application of mammalian systems. The main theme of teaching these courses, however, remains the same i.e. application of basic principles of Life Science to develop into technology. Modern biology combines the principles of chemistry and biological sciences (molecular and cellular biology, genetics, and immunology) with technological disciplines (engineering, computer science) to produce goods and services and for environmental management. Tools of molecular biology play an important role in preparation of an engineered clone, a recombinant or a genetically manipulated organism (GMO). The Board of Studies in Microbiology has identified the following thrust areas and prospective plans for syllabi reforms at postgraduate level:

- **Microbial Technology** includes application of bacteria, fungi, protozoa and viruses in traditional (food, dairy, wine, antibiotics, fermentation, etc.) and biotechnological industries.
- **Human health** includes pathogenic micro-organisms (bacterial, viral, protozoan and fungal), therapeutics and pharmaceutical approach towards diseases, diagnostics, vaccine developments, epidemiological characterization of diseases, gene therapy, etc.
- Agriculture includes biofertilizers and biocontrol, ecology and geomicrobiology.
- **Environment** includes cleaner processes that produce less waste and use less energy and water in such industrial sectors as chemicals, pulp and paper, textiles and dyes, food, energy, and metals and minerals, harnessing microbial utilities avoiding the use of caustic chemicals, bioremediation and bioprospecting
- **Microbial diversity** includes collecting information of diversity, exploration and utilization of diversity to identify and harvest biomolecules for human health improvisation, micro-organisms from extreme environments, Archeabacteria, etc.
- **Research in life-sciences** includes research tools like immunology and molecular biology, developmental biology, evolution, stem cell research, etc. To enrich students' knowledge and train them in the above mentioned areas; we feel certain topics in the present syllabus need to be supplemented and strengthened by inclusion of few additional topics. Areas that need to be introduced in syllabi have been identified as:
- Eukaryotic cellular organization
- Eukaryotic gene expression e.g. yeast genetics
- Determinants of microbial pathogenecity
- Immunopathology, immunopharmacology and cancer biology
- Protein stability, conformation and folding
- Over-expression of recombinant proteins
- Biocontrol
- Bioinformatics
- Molecular tools for characterization, identification of bacteria
- Possible utilization of microbial population from extreme environments

In addition, we feel that the students should be well acquainted with research methodology which includes different skill developments in scientific writing, data handling and processing, development of research ideas and planning / designing of research projects. The skill sets thus evolved will help the students in academic and applied research.

Introduction:

The syllabi till today had been sufficient to cater for the needs of students for building up their careers in industry and research. However, with the changing scenario at local and global level, we feel that the syllabus orientation should be altered to keep pace with developments in the education sector. The need of the hour is proper syllabi that emphasize on teaching of technological as well as the administrative aspects of modern biology. Theory supplemented with extensive laboratory expertise will help these students, to avail these opportunities. Both these aspects i.e. theory and more of practical needs to stressed, such that a post-graduate student can start work directly in applied fields (industry or institutions), without any additional training.

Thus, the university / college itself will be developing the trained and skilled man-power. We even find a lack of trained teachers who can share their experiences on different aspects in microbiology. And we plan to restructure the syllabus in this viewpoint. The restructured syllabus will combine the principles of chemistry and biological sciences (molecular and cell biology, genetics, immunology and analytical tools) with technological disciplines to produce goods and services and for environmental management.

Microbiology curricula are operated at two levels viz. undergraduate and postgraduate. The undergraduate curricula are prepared to impart basic knowledge of the respective subject from all possible angles. In addition, students are to be trained to apply this knowledge particularly in day-to-day applications of Microbiology and to get a glimpse of research.

Objectives to be achieved:

- To enrich students' knowledge and train them in the pure microbial sciences
- To introduce the concepts of application and research in Microbiology
- To inculcate sense of scientific responsibilities and social and environment awareness
- To help students build-up a progressive and successful career

Eligibility

B. Sc. with Principle subject Microbiology. The concerned centers may conduct their own entrance examination, for admission.

Duration of Course – Two years.

External students – There shall be no external students.

Course Structure -

There shall be four semesters, at each semester there will be 3 theory courses and 2 practical courses. In each theory course there shall be 3 core / compulsory credits (TC) and students will take 2 noncore / optional credits (TN). Each practical course shall have 5 core / compulsory credits (PC).

| Credit Distribution per semester | | | | |
|----------------------------------|-----------|---------------------|-------------------|--|
| Core (compulsory) 75% | | Non-core (optional) | Total credits per | |
| Theory | Practical | 25% | semester (100%) | |
| 09 | 10 | 6 (2 per course) | 25 | |

Workload:

There shall be 15 contact hours per credit (1 hour / credit / week), out of which classroom teaching hours will be 12 and 3 contact hours for preparation of in-semester continuous assessment.

Semester I

| Semester I | | | |
|-----------------------|-------------|--|--|
| Paper Title | Credit Code | Credit title | |
| MB 501: Microbial | 1.01 TC | Concept of speciation and species evolution | |
| Diversity & Taxonomy | 1.02 TC | Microbial diversity | |
| | 1.03 TC | Taxonomy of Bacteria and Introduction to Bergey's | |
| | | Manuals | |
| | 1.04 TN | Taxonomy of Fungi | |
| | 1.05 TN | Exploration of unculturable bacteria | |
| | 1.06 TN | Theories of Evolution | |
| | 1.07 TN | Gene Sequencing | |
| MB 502: Quantitative | 1.08 TC | Descriptive Statistics | |
| Biology | 1.09 TC | Testing of Hypothesis - I | |
| | 1.10 TC | Testing of Hypothesis - II | |
| | 1.11 TN | Introductory Biostatistics | |
| | 1.12 TN | Probability and Probability Distributions | |
| | 1.13 TN | Designing of Experiments | |
| | 1.14 TN | Modeling in Biology | |
| MB 503: Cell | 1.15 TC | Biochemistry of Proteins and Nucleic acid | |
| Organization and | 1.16 TC | Ultrastructure and Organization of Eukaryotic Cell | |
| Biochemistry | 1.17 TC | Development and Differentiation | |
| | 1.18 TN | Communication And Coordination among | |
| | | microorganisms | |
| | 1.19 TN | Bioorganic Chemistry | |
| | 1.20 TN | Carbohydrate and lipid biochemistry | |
| | 1.21 TN | Biochemical role of Micronutrients | |
| | 1.22 TN | Hormones and their function | |
| MB 511: Practical | 1.23 PC | Isolation and identification of Eubacteria | |
| Course 1: | 1.24 PC | Isolation and identification of Fungi | |
| Microbial Diversity & | 1.25 PC | Isolation and identification of Cyanobacteria | |
| Systematics | 1.26 PC | Molecular Taxonomy | |
| | 1.27 PC | Research Methodology - I | |
| MB 512: Practical | 1.28 PC | Biochemistry-I | |
| Course 2: | 1.29 PC | Biochemistry- II | |
| Cell Biology & | 1.30 PC | Cell Biology-I | |
| Biochemistry | 1.31 PC | Cell Biology-II | |
| | 1.32 PC | Biostatistics | |

Semester II

| Semester II | | | | |
|--|-------------|--|--|--|
| Paper Title | Credit Code | Credit title | | |
| MB 601: | 2.01 TC | Biomolecular Separation and Detection | | |
| Instrumentation & | 2.02 TC | Spectroscopies of Biomolecules | | |
| Molecular Biophysics | 2.03 TC | Biophysical Techniques | | |
| | 2.04 TN | Protein Structure and Folding | | |
| | 2.05 TN | Tools of Bioinformatics | | |
| | 2.06 TN | Synthesis and Characterization of Bio- | | |
| | | Nanoparticles | | |
| MB 602: Virology | 2.07 TC | Structure and Replication of viruses | | |
| | 2.08 TC | Cultivation and Detection methods for viruses | | |
| | 2.09 TC | Nomenclature & Classification systems of viruses | | |
| | 2.10 TN | Bacteriophages | | |
| | 2.11 TN | Viral Therapeutics | | |
| | 2.12 TN | Animal Viral Diseases | | |
| | 2.13 TN | Plant Viral Diseases | | |
| MB 603: Microbial | 2.14 TC | Enzyme Kinetics | | |
| Metabolism | 2.15 TC | Bioenergetics | | |
| | 2.16 TC | Aerobic and anaerobic respiration | | |
| | 2.17 TN | Membrane Transport | | |
| | 2.18 TN | Nitrogen metabolism | | |
| | 2.19 TN | Photosynthesis | | |
| | 2.20 TN | Biosynthesis of carbohydrates in plants and | | |
| | | bacteria | | |
| | 2.21 TN | Lipid biosynthesis | | |
| MB 611: Practical | 2.22 PC | Biophysical Instrumentation – I | | |
| Course 1: | 2.23 PC | Biophysical Instrumentation - II | | |
| Biophysics & | 2.24 PC | Virology (Plant Viruses) | | |
| Virology | 2.25 PC | Virology (Animal & Bacterial Viruses) | | |
| | 2.26 PC | Research Methodology – II | | |
| MB 612: Practical | 2.27 PC | Purification & Assay of Enzymes | | |
| Course 2: | 2.28 PC | Isolation and characterization of anaerobic bacteria | | |
| Enzymology & | 2.29 PC | Microbial metabolism-I | | |
| Microbial Metabolism 2.30 PC Microbial Metabolism-II | | Microbial Metabolism-II | | |
| | 2.31 PC | Extraction, detection and characterization of | | |
| | | aflatoxins | | |

General Instructions

The post-graduate degree will be awarded to students who obtain a total 100 credits (25 average credits per semester). Except practical credits wherever applicable, students may be allowed to obtain less courses per semester on a condition that they complete the degree in a maximum of four years. This facility will be available subject to the availability of concerned courses in a given semester and with a maximum variation of 25 % credits (in case of fresh credits) per semester.

One credit will be equivalent to 15 clock hours of teacher-student contact per semester.

Among the total number of credits required to be completed for Post-Graduate degree course (100 credits) students have to opt for minimum 75% credits from parent department and remaining 25% can be opted from either parent department or other department/centers/faculty. In addition to that, students have to obtain compulsory credits over and above.

| Assessment shall consist of | a) | In-semester continuous assessment |
|-----------------------------------|---|-----------------------------------|
| | | and |
| | b) | End-semester assessment |
| both shall have an equal weighter | $a = \frac{1}{2} \int \frac{1}{2} \frac{1}{2$ | anch |

both shall have an equal weightage of 50% each.

The teacher concerned shall announce the units for which each in-semester assessment will take place. However, the end-semester assessment shall cover the entire syllabus prescribed for the course.

An in-semester assessment of 50% marks should be continuous and at least two tests should be conducted for courses of 4 credits and a teacher must select a variety of procedures for examinations such as:

- **1.** Written test and/or mid term test (not more than one or two for each course)
- **2.** Term paper
- **3.** Journal/Lecture/Library notes
- **4.** Seminar presentation
- 5. Short Quizzes
- 6. Assignments
- 7. Extension work
- 8. An open book test (with the concern teacher deciding what books are to be allowed for this purpose)
- 9. Mini research project by individual student or group of students

The concerned teacher in consultation with the Head of the PG Department shall decide the nature of questions for the unit test.

Semester end examination for remaining 50% marks will be conducted by University of Pune.

The student has to obtain 40% marks in the combined examination of In-semester assessment and Semester-End assessment with a minimum passing of 30% in both these separately.

To pass the degree course, a student shall have to get minimum aggregate 40% marks (E and above grade point scale) in each course.

If a student misses an internal assessment examination he/she will have a second chance with the permission of the Principal in consultation with the concerned teacher. Such a second chance shall not be the right of the student.

Internal marks will not change. A student cannot repeat Internal assessment. In case he/she wants to repeat internal assessment he/she can do so only by registering for the said course during the $5^{\text{th}} / 6^{\text{th}}$ semester and onwards up to 8^{th} semester.

Students who have failed semester-end exam may reappear for semester-end examination only twice in subsequent period. The students will be finally declared as failed if he/she does not pass in all credits within a total period of four years. After that, such students will have to seek fresh admission rules prevailing at that time.

A student cannot register for the third semester, if she/he fails to complete 50% credits of the total credits expected to be ordinarily completed within two semesters.

There shall be Revaluation of answer scripts of semester examination but not of internal assessment papers as per the Ordinance no. 134 A and B.

While marks will be given for all examinations, they will be converted into grades. The semester end grade sheets will have only grades and final grade sheets and transcripts shall have grade points average and total percentage of marks (up to two decimal points). The final grade sheet will also indicate the PG center to which candidate belongs.

Each assessment/test will be evaluated in terms of grades. The grades for separate assignments and the final (semester-end) examination will be added together and then converted into a grade and later a grade point average. Result will be declared for each semester and the final examination will give total grades and grade point average.

| Marks | Grade | Grade Points |
|-----------|-----------------|--------------|
| 100 to 75 | O: Outstanding | 06 |
| 74 to 65 | A: Very Good | 05 |
| 64 to 55 | B: Good | 04 |
| 54 to 50 | C: Average | 03 |
| 49 to 45 | D: Satisfactory | 02 |
| 44 to 40 | E: Pass | 01 |
| 39 to 0 | F: Fail | 00 |

Marks/Grade/Grade points

Final Grade Points:

| Grade Points | Grade |
|--------------|-------|
| 05.00-06.00 | 0 |
| 04.50-04.99 | А |
| 03.50-04.49 | В |
| 02.50-03.49 | С |
| 01.50-02.49 | D |
| 00.50-01.49 | Е |
| 00.00-00.49 | F |

The formula for GPA will be based on weighted Average. The final GPA will not be printed unless a student passes courses equivalent to minimum 100 credits.

Semester Grade Point Average (SPGA) =

 $SPGA = \frac{\sum_{i=1}^{p} CiGi}{\sum_{i=1}^{p} Ci}$ $SPGA = \frac{\Sigma Grade \text{ points Earned X Credits for each course}}{Total credits}$

Cumulative Grade Points Average (CGPA) =

 $CPGA = \frac{\sum_{i=1}^{p} CiGi}{\sum_{i=1}^{p} Ci}$

 Σ Total Points Earned X Credits for each course

CPGA = -

Total credits

'B' grade is equivalent to atleast 55% of marks as per circular No. UGC-1298/[4619]UNI-4 dated December 11, 1999.

If the GPA is higher than the indicated upper limits in the three decimal digits, then the student be awarded higher final grade (e.g. a student getting GPA of 4,492 may awarded 'A').

There will be final compilation and moderation at GPA (final) level done at the Department. While declaring the result, the existing relevant ordinances are applicable. There is also a provision for verification and revaluation in case of verification, the existing rules will be applicable. The revaluation result will be adopted if there is a change of at least 10% marks and in the grade of the course.

For grade improvement a student must reappear for semester end examination for a minimum 30 credits. These courses will be from parent department. Grade improvement programme will be implemented at the end of the academic year. A student can opt for the grade improvement programme only after the declaration of final semester examination (i.e. at the end of the next academic year after passing the M.Sc. examination and within two years of completion of M.Sc. only once).

Grade proposed norms:

O: Outstanding: Excellent analysis of the topic, (75% and above)

Accurate knowledge of the primary material, wide range of reading, logical development of ideas, originality in approaching the subject, Neat and systematic organization of content elegant and lucid styl;

A: Very Good: Excellent analysis of the topic (65 to 74%)

Accurate knowledge of the primary material, acquaintance with seminal publications, logical development of ideas, Neat and systematic organization of content, effective and clear expression;

B: Good: Good analysis and development of topic (55 to 64%) Basic knowledge of the primary material, logical development of ideas, Neat and systematic organization of content, effective and clear expression;

C: Average: Some important points covered (50 to 54%) Basic knowledge of the primary material, logical development of ideas, Neat and systematic organization of content, good language or expression;

D: Satisfactory: Some points discussed (45 to 49%) Basic knowledge of the primary material, some organization, acceptable language or expression;

E: Pass: Any two of the above (40 to 44%)

F: Fail: None of the above (0 to 39%)

Members, Sub-committee for M. Sc. Microbiology Syllabus Members, Board of Studies in Microbiology May, 2013.

M.Sc. Microbiology Syllabus (To be implemented from) Credit and Semester System

Semester I

MB 501 - Microbial Diversity and Taxonomy

| Credit | Credit Title and Contents | References | |
|---------|---|---|--|
| No. | | | |
| 1.01 TC | Concept of speciation and species evolution | | |
| | Differences in concept of 'species' in eukaryotes and prokaryotes. Definition of species in prokaryotes. Types of 'species' Evolution of species and concepts of speciation (in sexual and asexual organisms) Types of evolution (neutral, co-evolution); Types and levels of selection; r and k selection; molecular clocks; phylogeny and molecular distances | Jacquelyn G. Black (2013) Microbiology: Principles and Explorations, 6th Edition, John Wiley & Sons, Inc., Microbial Diversity: Form and Function in Prokaryotes, Published Online: 30 NOV 2007. DOI: 10.1002/9780470750490.ch1 Copyright © 2005 by Blackwell Science Ltd Carl R. Woese. The archaeal concept and the world it lives in: a retrospective. Photosynthesis Research 80: 361 – 372, 2004. Kluver Academic Publishers. Ridley Mark (2004). Evolution. Blackwell Science Ltd. | |
| 1.02 TC | Microbia | l diversity | |
| | The expanse of microbial diversity Estimates of total number of species Species Divergence and the measurement of microbial diversity. Measures and indices of diversity. | Species Divergence and the measurement of microbial diversity. Catherine Lozupone and Rob Knight. FEMS Microbiol. Rev. 32 (2008) 557 – 578 Methods of studying soil microbial diversity. Jennifer Kirk <i>et al</i>, (2004). Journal of Microbiological Methods 58, 169 – 188. Keller M. and Zengler K. (2004) Tapping in to Microbial Diversity. Nature Reviews 2, 141-150. Pace N. (1997) A Molecular View of Microbial Diversity and the Biosphere, Science, 276, 734-740. Woese C. (1987), Bacterial Evolution. Microbiological Reviews, 221-271. | |

| 1.03 TC | Taxonomy of Bacteria and Introduction to Bergey's Manuals | | | |
|---------|--|--|--|--|
| | Introduction to Bacterial Taxonomy Science of classification The 5-Kingdom classification system The 3-Domain classification system Bergey's Manuals and the classification of prokaryotes. Determinative Bacteriology (Phenetic Approach) Systematic Bacteriology (Phylogenetic Approach Polyphasic Approach | Breed and Buchanan. Bergey's Manual of Determinative Bacteriology. 8th Edition, 1974. Breed and Buchanan. Bergey's Manual of Determinative Bacteriology. 9th Edition, 1982. Breed and Buchanan. Bergey's Manual of Systematic Bacteriology. 2nd Edition, (Volumes. 1 – 5) (2001 – 2003). Sykes, G. and F. A. Skinner (Eds). Actinomycetales: Characteristics and Practical Importance. Society for Applied Bacteriology Symposium Series No. 2, Academic Press. 1973. Jacquelyn G. Black (2013) Microbiology: Principles and Explorations, 6th Edition, John Wiley & Sons, Inc., | | |
| 1.04 TN | Taxonom | y of Fungi | | |
| | The 6 Classes of Fungi. The differentiating characters among different Classes of fungi. The importance of morphological characters in fungal differentiation and classification. | Barnett, H. L. and Hunter, B. B. 1960. Illustrated Genera of Imperfect Fungi. Burgess Publishing Co., Minnesota. Lodder J. (1974). The Yeasts: A Taxonomic Study, North Holland Publishing Co. Amsterdam. | | |
| 1.05 TN | Exploration of Un | -culturable bacteria | | |
| | Concept of 'unculturable' bacterial diversity. Strategies for culture of 'unculturable' bacteria. Culture independent molecular methods for identifying unculturable bacteria. Methods of extracting total bacterial DNA from a habitat and metagenome analysis. | Michael S. Rappe and Stephen J. Giovannoni (2003). The Uncultured Microbial Majority. Annual Review of Microbiology, 57: 369 – 94. Rakesh Sharma, Ravi Ranjan, Raj Kishor Kapardar and Amit Grover (2005). 'Unculturavble' bacterial diversity: An untapped resource. Current Science, 89 (1). Sonia R. Vartoukian, Richard M. Palmer and William G. Wade (2010). Strategies for culture of 'unculturable' bacteria. Minireview, FEMS Microbiol Lett 309, 1 – 7. James D. Oliver (2005). The Viable but Nonculturable State in Bacteria (2005). The Journal of Microbiology, 43, Special Issue, 93 – 100. | | |

| 1.06 TN | Theories of Evolution | | |
|---------|---|--|--|
| | History and development of evolutionary theories. Neo-Darwinism and its importance in prokaryote evolution. Spontaneous mutation controversy, evolution of rates of mutation. Types and levels of selection Neutral evolution and molecular clocks, phylogeny and molecular distances Co-evolution. Molecular evolution Speciation in sexual and asexual organisms, origin and stability of diversity, diversity of secondary metabolites. | Anders Gorm Pedersen, Molecular Evolution: Lecture Notes, February 2005. Lindell Bromham and David Penny (2003). The Modern Molecular Clock. www.nature.com/reviews/genetics. MARCH 2003 VOLUME 4, Page. 216. Nature Publishing Group. Lively Curtis, M. (1996). Host-parasite coevolution and sex. Bioscience 46, 2, 107. Leo C. Vining (1992). Roles of secondary metabolites from microbes.Edited by Derek J. Chadwick, Julie. Whelm Copyright. | |
| 1.07 TN | Gene se | quencing | |
| | Objectives of gene sequencing Challenges in gene sequencing Vectors used in gene sequencing procedures like Maxam Gilbert's method, Sangers method, Pyrosequencing, Ion torrent Isolation of DNA Amplification of DNA by PCR Gel electrophoresis Automated Sequencer BLAST analysis DNA-DNA Hybridization methods Strategies for whole genome sequencing Whole Genome Shotgun Sequencing Applications of gene sequencing (identification of organisms | Sandy Primrose, Richard Twyman, Bob Old (2001), Principles of Gene Manipulation 6th Edition, Blackwell Science Ltd. Sambrook, J., Fritsch, E. F. And Maniatis, T. (1989) Molecular Cloning: A laboratory Manual, 2nd ed. Cold Spring harbour NY: Cold Spring Harbour Laboratory Press Ausbel F. M. And Brent R. (1994) Current Protocols in Molecular Biology, John Wiley & Sons Inc, New York URL: <u>National Center for Biotechnology Information</u> www.ncbi.nlm.nih.gov/ <u>Ribosomal Database Project</u> - Release 10 rdp.cme.msu.edu/ rdp.cme.msu.edu/ rdp.cme.msu.edu/seqmatch/ <u>Building phylogenetic trees</u> www.itu.dk/~sestoft/bsa/dinaws/phylogeny.html <u>Reading a Phylogenetic Tree - Nature</u> www.nature.com//reading-a-phylogenetic-tree-the-meaning-of- 419. PHYLIP - Wikipedia, the free encyclopedia | |

| en.wikipedia.org/wiki/PHYLIP <u>MEGA</u> :: <u>Molecular Evolutionary Genetics Analy</u> www. mega software.net/ | <u>sis</u> |
|---|------------|
|---|------------|

MB 502 - Quantitative Biology

| Credit | Credit Title and Contents | References | |
|----------|--|---|--|
| No. | | | |
| 1.08 TC | Descriptive Statistics | | |
| | (No descriptive questions to be asked in examination; only appropriate problems should be asked in the examination.) Measures of central tendency – Mean (arithmetic, geometric, harmonic), median, Percentile and mode; Measures of dispersion – Mean deviation Standard deviation and Variance; Measures of skewness; Measures of kurtosis; | Gupta S.P. Statistical methods, Sultanchand & Sons Publisher, New Delhi Irfan Ali Khan and Atiya Khanum, Fundamentals of Biostatistics. 3rd Ed. Ukaaz, Publications, Hyderabad Bernard Rosner Fundamentals of Biostatistics,5th Ed. Duxbury Thomson | |
| 1.00 000 | Regression and correlation | | |
| 1.09 TC | Testing of Hypothesis - I | | |
| | The concepts of null hypothesis, alternate hypothesis, significance level, type I and type II errors, p-value, one tailed and two tailed tests Distribution of sample means, standard error and confidence interval, Degrees of freedom Equality of two population means, proportions: t-tests and z-test | Irfan Ali Khan and Atiya Khanum, Fundamentals of Biostatistics. 3rd Ed. Ukaaz, Publications, Hydrabad Gupta S.P. Statistical methods, Sultan Chand & Sons Publisher, New Delhi Norman T.J.Bailey Statistical methods in biology, 3rd Ed. Cambridge University Press | |
| 1 10 TC | Testing of F | Ivnothesis - II | |
| | (No descriptive questions to be asked in examination; only appropriate problems should be asked in the examination.) χ^2 (chi square) test - test for goodness of fit, independence and homogeneity; Non-parametric tests (Run test, Sign test, Wilcoxon's signed rank test, Mann-Whitney test). | Irfan Ali Khan and Atiya Khanum, Fundamentals of Biostatistics. 3rd Ed. Ukaaz, Publications, Hydrabad Gupta S.P. Statistical methods, Sultan Chand & Sons Publisher, New Delhi Norman T.J.Bailey Statistical methods in biology, 3rd Ed. Cambridge University Press | |

| 1.11 TN | Introductory Biostatistics | | |
|---------|---|-------------------------------------|--|
| | Importance of statistics in Biology,Samples and Population, | 1. Pres | Goon, Gupta and Dasgupta Fundamentals of statistics, World ss, Kolkata. |
| | Types of data, Random sampling methods and sampling errors, Scales and Variables, Accuracy and precision, Collection and organization of data, tabulation, graphical representation (Histogram, frequency polygon and ogive curves, survival curves), diagrammatic representation (Simple bar diagram, percentage bar diagram, multiple bar diagram, sub-divided bar diagram and pie diagram). Kaplan Meier survival curve | 1. (2.] 3.] 4.] | Gupta S.P. Statistical methods, Sultanchand & Sons Publisher, New Delhi. Irfan Ali Khan and Atiya Khanum, Fundamentals of Biostatistics. 3 rd Ed. Ukaaz, Publications, Hyderabad. Lindgren B.W. Statistical Theory, Macmillan Publishing Co. Inc. Wayne Daniel (2007) Biostatistics A foundation for Analysis in the health sciences, Edition 7, Wiley- India edition. |
| 1.12 TN | Probability and Pro | babil | lity Distributions |
| | (No descriptive questions to be asked in examination; only appropriate problems should be asked in the examination.) Concept of experiment, event (mutually exclusive & non exclusive events, dependent & independent events); Laws of probability (addition and multiplication); Probability distribution - Normal (x-scale and z-scale), Binomial and Poisson distributions. | 1.] 2. (] 3.] | Irfan Ali Khan and Atiya Khanum, Fundamentals of Biostatistics. 3 rd Ed. Ukaaz, Publications, Hydrabad Gupta S.P. Statistical methods, Sultan Chand & Sons Publisher, New Delhi Norman T.J.Bailey Statistical methods in biology, 3 rd Ed. Cambridge University Press |
| 1.13 TN | Designing of | f Exp | periments |
| | Comparison of sample of 3 or more samples – F-test, ANOVA Survey design, Factorial design (Plackett Burman, DOE etc.) Designing Epidemiological studies: | 1.] 2.] 3. (| Irfan Ali Khan and Atiya Khanum, Fundamentals of Biostatistics. 3 rd Ed. Ukaaz, Publications, Hyderabad Norman T. J. Bailey Statistical methods in biology, 3 rd Ed. Cambridge University Press Gupta S.P. Statistical methods, Sultan Chand & Sons |
| | Basic measurements in epidemiology (Rates, ratios, proportions) for Mortality, Morbidity, Incidence and Prevalence, Risk estimations. Randomization, Bias removal (Blinding – single & double) Study designs for: Case control, cohort, concurrent, cross- sectional, retrospective/prospective, clinical/field trials, controlled and uncontrolled trials | 4.] 5.] 6. <u>?</u> 7. 4 | Publisher, New Delhi Montgomery D.C. Design and analysis of experiments, John Wiley & Sons Bernard Rosner Fundamentals of Biostatistics,5 th Ed. Duxbury Thomson Learning USA Stephen Newman, Biostatistical methods in Epidemiology. Wiley Interscience Publication, USA Aviva Petrie and Carolene Sabin, 2005, Medical Statistics at a glance, 2 nd Edition, Blackwell |

| 1.14 TN | Modeling in Biology | | | |
|---------|--|----|---|--|
| | Concept, need, modeling the system of interest, Deterministic Vs | 1. | Haefner James W. (1996) Modeling Biological Systems : | |
| | Stochastic model | | Principles and Applications, Kluwer Academic Publications | |
| | (Discuss following models with respect to variables, | 2. | David Brown & Peter Rothery. Models in biology: | |
| | mathematical expression, solution of the expression, etc.) | | mathematics, statistics, and computing John Wiley & Sons, | |
| | Population models: Exponential, logistic and chemostat models. | | USA | |
| | Models based on Hardy-Weinberg equation. | | | |
| | Epidemiological models : Susceptible Infected Recovery (SIR) | | | |
| | model and compartmental models | | | |

MB 503 – Cell Organization and Biochemistry

| 1.16 TC | Ultrastructure and Organization of Eukaryotic Cell | | |
|---------|---|-------|---|
| | Structural organization of: Cytoskeleton, Endoplasmic | 1. | Alberts Bruce (1985) Molecular Biology of Cell. Garland Pub |
| | Reticulum, Golgi apparatus, | 2. | Metzler David E. (2001) Biochemistry: The chemical |
| | Protein trafficking among various cellular compartments; | | Reactions of Living Cells, Volume 1&2, Academic Press |
| | Events in cell cycle, Regulation of cell cycle, apoptosis. | | California. |
| | Localization of macromolecules using electron microscopy, | 3. | Harvey Lodish, Arnold Berk, S. Lawrence Zipursky, Paul |
| | Immunoelectron microscopy, and Confocal microscopy | | Matsudaira, David Baltimore, and James Darnell (2000) |
| | | | Molecular Cell Biology, 4 th edition, W. H. Freeman & co., |
| | | | New York. |
| 1.17 TC | Development | and | Differentiation |
| | Introduction to Developmental Biology, | a. | Gibert Scott F. (2003). Developmental Biology. 7th Ed. |
| | Conserved nature of development, | | Sinauer Associates Inc. Mass. USA. |
| | Concepts of commitment, determination and differentiation, | 2. | Muller W.A. (1997) Developmental Biology, Springler |
| | Morphogen gradients in developmental regulation, | | Verlag, New York, Inc. |
| | Hox code, MPF, gastrulation and cellular movements involved | 3. | Wolpert Lewis (1998) Principles of Development. Oxford |
| | in it, Organizer and its importance giving examples of | | University Press Oxford |
| | invertebrates (Drosophilla) and vertebrate (Xenopus) model | | |
| | systems, pattern formation in body axis, antero-posterior and | | |
| 1 10 TN | dorso-ventral polarity | lingt | ion omong mignoongonigng |
| 1.10 11 | Life evels of Dystiostellium dissoidum | | Homilton W Allon (1987) <i>Biofilms: Microbial Interactions</i> |
| | Molecular mechanism of quorum sensing in slime moulds | 1. | and Metabolic activities in Ecology of Microbial |
| | Life cycle of myyobacteria. Molecular mechanism of quorum | | Communities (Eds. M. Eletcher, T. P. G. Gray and I. G. |
| | sensing in myxobacteria | | Lones) Cambridge University Press, Cambridge |
| | Ouorum sensing in Gram positive and Gram negative bacteria | 2 | Petersm I. F. (1969) Isolation, cultivation and maintenance of |
| | Biofilms their organization signals involved in their formation | 2. | Myrobacteria Methods in Microbiology (Eds Norris I R |
| | and dispersal applications of study on biofilms in pathogenic | | and W Ribbons) Vol 3B Academic Press London 185-210 |
| | and non-nathogenic environments | 3 | Toole 'O' George H B Kaplan R Kolter (2000) <i>Biofilm</i> |
| | and non pathogome environments | 5. | formation as microbial development Annual Review of |
| | | | Microbiology Vol 54 49-79 |
| | | 4. | Melissa B. Miller and Bonnie L. Bassler (2001) <i>Ouorum</i> |
| | | | sensing in bacteria. Annu. Rev. Microbiol. Vol. 55, 165–99. |
| | | 5. | Christopher M. Waters and Bonnie L. Bassler (2005) <i>Quorum</i> |
| | | | sensing:cell-to-cell communication in bacteria. Annu. Rev. |
| | | | Cell Dev. Biol. Vol. 21, 319–46. |

| 1.19 TN | Bioorganic Chemistry | | | |
|----------|--|---|--|---|
| | a. b. c. d. e. f. | Chemical reactivity: Concept and factors affecting reactivity (Inductive effect, Resonance / Mesomeric effect, Conjugation and Hyper-conjugation, Tautomerism, etc.) Bonding other than covalent – H-bonds, Van der Wall's interaction, charge transfer complexes, ionic bonding, Ion- dipole, Host-guest interactions Reactions of organic molecules: A brief overview of important reactions in organic chemistry e.g. Substitution, Addition, Elimination, Rearrangement, Oxidation, Reduction, etc. Bioorganic mechanism of enzyme catalyzed reactions: Acid – base, covalent catalysis and metal ion catalysis with examples of respective enzymes Stereochemistry: Three dimensional shape of molecules, conformation and configuration, structure and biological activity Concept of pH of weak acids and weak bases, Henderson- Hasselbalch equation, concept of buffer, strength of buffer, | 1. 2. 3. 4. | Clayden, Greeves, Warren and Wothers, Organic Chemistry, Oxford Press Jerry March, Advanced Organic Chemistry, John Wiley Voet Donald and Voet Judith G. (1995) Biochemistry, 2nd Ed John Wiley and sons, New York. Conn Eric, Stumpf Paul K., Bruuening George, Doi Roy H., (1987) Outlines of Biochemistry 5th Ed , John Wiley and Sons, New Delhi. |
| 1 20 TN | | Carbohydrate a | nd l | inid biochemistry |
| 1.20 111 | a. | Carbohydrate Chemistry: | | ipiù biochemisti y |
| | b. | Mono, di, oligosaccharides and polysaccharides, with examples, asymmetric centre in sugars, D-series, L-series, dextro, leavo-rotatory, reducing and non-reducing sugars, sugar anomers, sugar epimers, sugar derivatives such as sugar alcohols, amino sugars, sugar acids, deoxy sugars, Methods of estimation of carbohydrates Lipid Chemistry: Classification of lipids according to chemical structure, fatty acids, saturated, unsaturated, branched, nomenclature system, structure and function of triglycerides, phospholipids, sphingolipids, terpenes, prostaglandins, waxes, and steroids, methods of estimation and characterization of lipids | 1. 2. 3. 4. | Nelson D. L. and Cox M. M. (2002) <i>Lehninger's Principles of Biochemistry</i> , Mac Millan Worth Pub. Co. New Delhi Segel Irvin H. (1997). <i>Biochemical Calculations</i> . 2nd Ed. John Wiley and Sons, New York. Campbell M. K. (1999) Biochemistry. 3 rd edition Harcourt Brace College Publishers Garrett, R. H. and Grisham, C. M. (2004) <i>Biochemistry</i> . 3rd Ed. Brooks/Cole, Publishing Company, California. |

| 1.21 TN | Biochemical role | of Micronutrients |
|---------|--|--|
| | a. Structure, function, and biochemical mechanism of | Nelson D. L. and Cox M. M. (2002) Lehninger's Principles of |
| | following micronutrients in metabolism | Biochemistry, Mac Millan Worth Pub. Co. New Delhi |
| | b. Water soluble vitamins and their coenzyme forms (Niacin, | |
| | Riboflavin, Pantothenic acid, Thiamine, Pyridoxal, Vitamin | |
| | B ₁₂ , Folic acid, Glutathione) | |
| | c. Fat soluble vitamins (A, D, E, and K) | |
| | d. Minerals as vitamins (Iron, Manganese, Magnesium, Cobalt, | |
| | Molybdenum, Copper, Zinc, Nickel) | |
| 1.22 TN | Hormones and | l their function |
| | The chemical structure and functions of each hormone in | 1. Nelson D. L. and Cox M. M. (2002) Lehninger's Principles of |
| | connection with the gland responsible for its production: | Biochemistry, Mac Millan Worth Pub. Co. New Delhi |
| | The thyroid | 2. Physiological chemistry – Harper, 17ed, Lange medical |
| | a. The parathyroid | |
| | b. The pancreas | |
| | c. The adrenals | |
| | d. The pituitary glands | |
| | e. Sex hormones | |

MB 511: Practical Course 1: Microbial Diversity & Systematics

| 1.23 PC | Isolation and identification of Eubacteria | | | | |
|---------|---|----------------------|---|--|--|
| | Isolation of the following types of bacteria from natural samples. Identification of the bacteria to at least the Genus level using the Bergey's Manuals: Mesophilic bacteria Actinomycetes Thermophiles The identification key must be designed for each isolated and identified bacterium. Students are expected to isolate at least one Genus from each group. | 1. 2. 3. 4. | Breed and Buchanan. Bergey's Manual of Determinative Bacteriology. 8 th Edition, 1974. Breed and Buchanan. Bergey's Manual of Determinative Bacteriology. 9 th Edition, 1982. Breed and Buchanan. Bergey's Manual of Systematic Bacteriology. 2 nd Edition, (Volumes. 1 – 5) (2001 – 2003). Sykes, G. and F. A. Skinner (Eds). Actinomycetales: Characteristics and Practical Importance. Society for Applied Bacteriology Symposium Series No. 2, Academic Press. 1973. | | |
| | | | | | |

| 1.24 PC | Isolation and identification of Fungi | | | | |
|---------|---|--|--|--|--|
| | Isolation of the following types of fungi from natural samples. Identification of the fungi. Molds (Saprophytic) Yeasts The identification key must be designed for each isolated and identified fungus. Students are expected to isolate at least one Genus from Mold and Yeast each. | Barnett, H. L. and Hunter, B. B. 1960. Illustrated Genera of Imperfect Fungi. Burgess Publishing Co., Minnesota. Lodder J. (1974). The Yeasts: A Taxonomic Study, North Holland Publishing Co. Amsterdam. | | | |
| 1.25 PC | Isolation and identific | cation of Cyanobacteria | | | |
| | Isolation and identification of any one type of cyanobacterium from a natural sample. The identification key must be designed for each isolated and identified cyanobacterium. Students are expected to isolate at least one Genus of cyanobacteria. | Bergey's Manual of Systematic Bacteriology (2nd Edition) Volume One: The Archaea and the Deeply Branching and Phototrophic Bacteria. Boone, David R.; Castenholz, Richard W. (Eds.). Originally published by Williams & Wilkins, 1984 | | | |
| 1.26 PC | Molecular | r Taxonomy | | | |
| | Isolation, purification and checking purity of isolated chromosomal DNA of bacteria Demonstration of the following steps, if not possible to perform in your lab: Cycle sequencing PCR Purification of PCR product Sequencing using automated machine Sequence matching by BLAST analysis. Drawing phylogenetic tree using related sequences (Using standard software like Phylip, Mega etc) | Sandy Primrose, Richard Twyman, Bob Old (2001), Principles of Gene Manipulation 6th Edition, Blackwell Science Ltd. Sambrook, J., Fritsch, E. F. And Maniatis, T. (1989) Molecular Cloning: A laboratory Manual, 2nd ed. Cold Spring harbour NY: Cold Spring Harbour Laboratory Press Ausbel F. M. And Brent R. (1994) Current Protocols in Molecular Biology, John Wiley & Sons Inc, New York URL: <u>National Center for Biotechnology Information</u> www.ncbi.nlm.nih.gov/ <u>Ribosomal Database</u> Project - Release 10 rdp.cme.msu.edu/ rdp.cme.msu.edu/ seqmatch/ <u>Building phylogenetic trees</u> www.itu.dk/~sestoft/bsa/dinaws/phylogeny.html <u>Reading a Phylogenetic Tree - Nature</u> www.nature.com//reading-a-phylogenetic-tree-the-meaning-of- | | | |

| | | 419. |
|---------|---|--|
| | | PHYLIP - Wikipedia, the free encyclopedia |
| | | en.wikipedia.org/wiki/PHYLIP |
| | | MEGA :: Molecular Evolutionary Genetics Analysis |
| | | www. mega software.net/ |
| 1.27 PC | Research Me | ethodology - I |
| | Scientific communication The objective of this practical will be preparing a research paper based on sample data from the practical experiments conducted. The data generated through the experiments of the student should be used for this exercise. All the following aspects can be included in the final report and presentation: Literature review (and choosing a suitable topic) Experiment planning Experiment planning Experimentation, with the use of contemporary methods and standard protocols Representation of and calculations for data obtained Interpretation of data with the use of statistical tools (if required) Writing progress reports / synopsis / abstract of the work done (as applicable). Writing a pedagogical (academic) article on a scientific theme (Review). Oral presentation: Critically commenting on a manuscript (Research Paper / Article). Preparation of Visual Aids: Photomicrography, taking photographs of experimental results and using them in the reports Scanning pictures Making Power Point slide shows | Alley, M. 1996. The craft of scientific writing, 3rd edition. Prentice Hall, NJ. [and accompanying web site: http://filebox.vt.edu/eng/mech/writing/] Day, R. 1998. How to write and publish a scientific paper, 5th edition. Orynx Press. Day, R. 1995. Scientific English: A guide for scientists and other professionals, 2nd edition. Orynx Press. |

MB 512: Practical Course II: Cell Biology and Biochemistry

| 1.28 PC | Biochemistry-I | |
|----------------|---|-----------|
| | Good laboratory practices: Laboratory safety, hazard from chemicals, handling of chemicals, disposal of chemicals and cultures, recording of scientific experiments. Standardization of laboratory procedures, calibration and validation instruments, preparing / designing SOP for the same, maintenance of instruments Buffer: Determination of pKa of a monoprotic weak organic acid; Preparation of buffers using KH₂PO₄ and K₂HPO₄, acetic acid and sodium acetate, K₂HPO₄ and H₃PO₄ | |
| 1.29 PC | Biocher | nistry-II |
| | Chromatography: Separation of sugar and amino acids by paper and thin layer chromatography Colorimetry and spectrophotometry: Estimation of sugar and | |
| | total carbohydrate, estimation of protein by Lowry, Bradford and UV Spectrophotometry | |
| 1.30 PC | Cell bi | ology -I |
| | Studying the stages mitosis in growing tip of onion root cells Demonstration of mounting of embryos (frog and fruit fly) at various developmental stages on permanent slides | |
| 1.31 PC | Cell Bi | ology-II |
| | Isolation and characterization of bacterial pigment Isolation and estimation of chromosomal DNA of bacteria | |
| 1.32 PC | Biostatistics | |
| | Computer applications: Using data sheets, and sorting data with different parameters | |
| | 2. Plotting graphs – bar charts, line graphs, pie charts, adding error bars | |
| | 3. Statistical analysis of data – Students t test, ANOVA, Chi square test, F test using computer softwares (e.g. Microsoft Excel) | |

Semester II

MB 601 - Instrumentation and Molecular Biophysics

| Credit | Credit Title and Contents | References | | | |
|---------|---|--|--|--|--|
| No. | | | | | |
| 2.01 TC | Biomolecular Separation and Detection | | | | |
| | Chromatography- Partition Coefficient, Selectivity, Resolution, Column Efficiency, Van Deemter equation, Interpretation of chromatograms Principle, components of instrument, operation and application of : Gel filtration chromatography, Ion-exchange Chromatography, Affinity chromatography, Gas chromatography, High Performance Liquid Chromatography, Electrophoresis - AGE , NATIVE PAGE, SDS-PAGE , Isoelectric focusing. Ultra centrifugation, Differential centrifugation, Isopycnic and Rate zonal centrifugation. | Clive Dennison (2002) A guide to protein isolation, Kluwer Academic Publishers Pattabhi, V. and Gautham, N. (2002) Biophysics. Kluwer Academic Publishers, New York and Narosa Publishing House, Delhi. David J Holme, Hazel Peck (1998) Analytical Biochemistry, 3rd ed ., Prentice Hall, Pearson Education Limited, Harlow England. Rodney F. Boyer (2000) Modern Experimental Biochemistr 3d edition ., Benjamin Cummings. Nölting, B. (2006) Methods in modern biophysics. Secon Edition Springer Cormony. | | | |
| 2.02 TC | C Spectroscopies of Biomolecules | | | | |
| | Electromagnetic spectrum, Atomic orbitals, Molecular orbitals, Electronic, Rotational and Vibrational transitions in spectroscopy, Interpretation of spectra. UV/Visible spectroscopy- Instrumentation, Molar Absorptivities, Beer and Lamberts Law, Bathochromic and hypsochromic shifts. Fluorescence spectroscopy- Instrumentation, Quantum Yield, Quenching, FRET, Binding and Folding studies, Infrared spectroscopy- Principle , Instrumentation, Absorption bands, FTIR and its advantages, Circular Dichroism (CD) – Instrumentation, Circular polarization, Delta absorbance, Cotton Effect. Mass spectroscopy- Principles of operation , Ionization, Ion fragmentation, Mass Analyzers, GC-MS, MALDI-TOF | Wilson Keith and Walker John (2005) Principles and Techniques of Biochemistry and Molecular Biology, 6th Ed. Cambridge University Press, New York. Pattabhi, V. and Gautham, N. (2002) Biophysics. Kluwer Academic Publishers, New York and Narosa Publishing House, Delhi. Rolf Ekman, Jerzy Silberring, Ann Westman-Brinkmalm, Agnieszka Kraj (2009) Mass spectrometry : instrumentation, interpretation, and applications, John Wiley & Sons, Inc.,Canada. Irwin H. Segel (1976) Biochemical Calculations: How to Sol Mathematical Problems in General Biochemistry, 2nd Editio John Wiley & Sons. Nölting, B. (2006) Methods in modern biophysics. Secon Edition. Springer, Germany. | | | |

| 2.03 TC | Biophysica | l Techniques |
|---------|--|--|
| | X-ray crystallography: Purification of proteins, Crystallization of proteins, Instrumentation, acquisition of the diffraction pattern, basic principles of x-ray diffraction, Crystal Structures (Bravais Lattices), Crystal planes and Miller Indices, Fourier Transform and Inverse Fourier, Direct Lattice and Reciprocal lattice, Ewald sphere, Electron density Maps, Phase determination, Phase Refinement, Validation. NMR spectroscopy: Basic Principles of NMR, Chemical shift, Intensity, Line width, Relaxation parameters, Spin coupling, Nuclear Overhauser Effect Spectroscopy, Correlation Spectroscopy, Approach to structure determination by 2D-NMR | Pattabhi, V. and Gautham, N. (2002) <i>Biophysics</i>. Kluwer Academic Publishers, New York and Narosa Publishing House, Delhi. Cavanagh John <i>et.al.</i> (1995) <i>Proteins NMR Spectroscopy:</i> <i>Principles and Practice</i>, Academic Press. Keeler, J. (2002) <i>Understanding NMR Spectroscopy</i>. John Wiley & Sons, England. Drenth, J. (2007) <i>Principles of protein X-ray crystallography</i>. 3rd Ed. Springer, Germany. Nölting, B. (2006) <i>Methods in modern biophysics</i>. Secon Edition. Springer,Germany. Cotterill, R. M. J. (2002) <i>Biophysics: An Introduction</i>. Joh Wiley & Sons, England. |
| 2.04 TN | Protein Struct | ure and Folding |
| | Physical and chemical properties of amino acids, non-covalent interactions, Conformational properties of proteins, Polypeptide chain geometry, Resonance forms of the peptide group, <i>cis/trans</i> isomers of peptide group, Ramachandran plot, Secondary, Super-secondary, Motif & Domain, Tertiary and Quaternary structures of proteins, (Myoglobin & hemoglobin) | David J Holme, Hazel Peck (1998) Analytical Biochemistry, 3rd Ed., Prentice Hall, Pearson Education Limited, Harlow England. Berg, J. M., Tymoczko, J. L. and Stryer, L. (2006) <i>Biochemistry</i>. 6th Edition. Freeman, New York. Garrett, R. H. and Grisham, C. M. (2004) <i>Biochemistry</i>. 3rd Ed. Brooks/ Cole, Publishing Company, California Cotterill, R. M. J. (2002) <i>Biophysics: An Introduction</i>. Jol Wiley & Sons, England. |
| 2.05 TN | Tools of Bi | oinformatics |
| | General Introduction of Biological Databases, Introduction to Sequences, Sequence alignment, Local and global alignment, pair wise sequence alignment, Multiple sequence Alignment, Dynamic Programming, Homology Modelling, 3-D protein Model. Examples of related tools (FASTA, BLAST, BLAT), databases (GENBANK, PDB, OMIM) and software (RASMOL, Ligand Explorer). | Mount, D. W. (2001) <i>Bioinformatics: sequence and genome analysis.</i> Cold Spring Harbor Laboratory Press, New York. David M Webster (2000) <i>Protein Structure Prediction-Methods and Protocols</i>, Methods In Molecular Biology Vol 143 Humana Press. Narayanan, P. (2000) Essentials of Biophysics. New Age International Publication, New Delhi. |

| 2.06 TN | Synthesis and Characterization of Bio-Nanoparticles | | | | |
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| | Biogenic nanoparticles – Synthesis and applications. | • | Christof M. Niemeyer and Chad A. Mirkin (200 | | |
| | Magnetotactic bacteria for natural synthesis of magnetic | | Nanobiotechnology, John Wiley & Sons. | | |
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| | | • | Mahendra Rai and Nelson Duran (2011) Metal nanoparticles | | |
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| | Microscope), AFM (Atomic Force Microscopy), Dynamic Light | | | | |
| | Scattering (DLS), Scanning Probe Microscopy (SPM), EDAX | | | | |
| | analysis, Zeta analysis. | | | | |

MB 602 – Virology

| Credit | Credit Title and Contents | References |
|---------|--|--|
| No. | | |
| 2.07 TC | Structure and Re | plication of viruses |
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| | • Capsid symmetries – Icosohedral, Polyhedral and Helical | 2. Dimmock N. J., Easton A. J. and K. N. Leppard, (2007), |
| | • Structural components of virus – | Introduction to Modern Virology, 6 th Ed. Blackwell |
| | Protein - Envelope proteins, Matrix proteins and | Publishing. |
| | Lipoproteins | 3. Edward K. Wagner, Martinez J. Hewlett, (2004), Basic |
| | Genome – dsDNA, ssDNA, dsRNA, ssRNA (positive sense, | Virology, Blackwell Publishing |
| | negative sense and ambisense), linear, circular, segmented Virus related structures – Viroids and Prions | 4. Flint S. J., V. R. Racaniello, L. W. Enquist, V. R. Rancaniello, |
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| | • Mechanism of virus adsorption and entry into host cell | American Society Microbiology. |
| | Genome replication | 5. Haaheim L. R., J. R. Pattison and R. J. Whitley, (2002), A |
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| | | A. Lamb, Malcolm A. Martin, Bernard Roizman, Stephen E. |
| | • Assembly, exit and maturation of progeny virions | Straus, (2007), Field's Virology, 5th Ed. Lippincott Williams |

| 2.08 TC | Cultivation and Detect | 7. 8. | & Wilkins Luria S. E. et.al. (1978) <i>General virology</i> , 3rd Ed, New York. John Wiley and Sons. Straus J. H. and Straus E.S. (1998) <i>Evolution of RNA Viruses</i> Ann. Rev. Microbiol. 42: 657 – 83 methods for viruses |
|---------|---|----------------------------------|--|
| | Cultivation of viruses: In ovo: using embryonated chicken eggs In vivo: using experimental animals Ex vivo / In vitro: using various cell cultures - primary and secondary cell lines, suspension cell cultures and monolayer cell culture In plants and plant cell cultures Diagnostic and detection methods for viruses: Sampling techniques and Processing of samples – Enrichment and concentration Direct methods of detection – Light microscopy (inclusion bodies), Electron microscopy and Fluorescence microscopy Immuodiagnosis, Hemagglutination and Hemagglutination-inhibition tests, Complement fixation, Neutralization, Western blot, Radioactive Immuno Precipitation Assay (RIPA), Flow Cytometry and Immunohistochemistry Nucleic acid based diagnosis: Nucleic acid hybridization, Polymerase Chain Reaction (PCR), Microarray and Nucleotide sequencing, LINE probe assay Infectivity assay for animal and bacterial viruses - Plaque method, Pock counting, End point methods, LD50, ID50, EID50, TCID50 Infectivity assays of plant viruses | 1. 2. 3. 4. 5. 6. | Flint S. J., V. R. Racaniello, L. W. Enquist, V. R. Rancaniello, A. M. Skalka, (2003), <i>Principles of Virology: Molecular Biology, Pathogenesis, and Control of Animal Viruses</i>, American Society Microbiology. Knipe David M., Peter M. Howley, Diane E. Griffin, Robert A. Lamb, Malcolm A. Martin, Bernard Roizman, Stephen E. Straus, (2007), <i>Field's Virology</i>, 5th Ed. Lippincott Williams & Wilkins Mahy B. WJ. And Kangro H.O., (1996), Virology Methods Manual, Academic Press. Shors T. (2011), Understanding Viruses, 2nd Ed., Jones & Bartlett Publishers LLC, Canada. Stephenson J. R. and Warnes A., (1998), Diagnostic Virology Protocols: Methods in Molecular Medicine, Humana Press. Wiedbrauk D. L. and Farkas D.H., (1995) Molecular Methods For Virus Detectin, Academic Press. |

| 2.09 TC | Nomenclature & Classification systems of viruses | | | |
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| | • Type of transmission vector (e.g., Fungi, Insects, Animal | | | |
| | – murine, primate) | | | |
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| 2.10 TN | Bacteri | oph | | |
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| 2.13 TN | Plant Vir | ral Diseases |
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| | • Through vectors - insects, nematodes and fungi | Hepatocellular Carcinomas. Ann. Rev. Microbiol.45:475-508 |
| | • Without vectors - contact, seed and pollens | 9. Stephens B. and Compons R. W. (1998) Assembly of animal |
| | Prevention of cron losses due to virus infection | viruses at the cellularmembrane Ann. Rev. Microbiol.42:489- |
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| | • virus nee planting material | |
| | • vector control | |
| | Disease forecasting | |

MB 603 – Microbial Metabolism

| Credit | Credit Title and Contents | | References | |
|----------|---|--|---|--|
| No. | | | | |
| 2.14 TC | Enzyme Kinetics | | | |
| 2.14 1 C | Purifications of enzyme, purification chart, kinetics of single substrate enzyme catalyzed reaction. Kinetics of reversible inhibitions enzyme catalyzed reactions, King Altman approach to derive – two substrate enzyme catalyzed reactions, types of two substrate enzyme catalyzed reactions, concept of allosterism, positive and negative co-operativity, models of allosteric enzymes (Monod, Wyamann and Changuax model, Koshland, Nemethy and Filmer model), kinetics of allosteric enzyme, Hill plot, examples of allosteric enzymes and their significance in allosteric regulation | 1. 2. 3. | Nelson D. L. and Cox M. M. (2005) <i>Lehninger's Principles of</i> <i>Biochemistry</i> , Fourth edition, W. H. Freeman & Co. New York. Palmer Trevor (2001) <i>Enzymes: Biochemistry, Biotechnology</i> <i>and Clinical chemistry</i> , Horwood Pub. Co. Chinchester, England. Segel Irvin H. (1997) <i>Biochemical Calculations</i> 2nd Ed., John Wiley and Sons, New York | |
| 2.15 TC | Bioen | erge | tics | |
| | Laws of thermodynamics, entropy, enthalpy, free energy, free energy and equilibrium constant, Gibbs free energy equation, determination of free energy of hydrolytic and biological oxidation reduction reactions, under standard and non-standard conditions, high energy compounds, coupled reactions, determination of feasibility of reactions, Atkinson's energy charge, phosphorylation potential and its significance | 1. 2. 3. | Nelson D. L. and Cox M. M. (2005) <i>Lehninger's Principles of Biochemistry</i> , Fourth edition, W. H. Freeman & Co. New York. Segel Irvin H. (1997) <i>Biochemical Calculations</i> 2nd Ed., John Wiley and Sons, New York Garrett, R. H. and Grisham, C. M. (2004) <i>Biochemistry</i> . 3rd Ed. Brooks/Cole, Publishing Company, California. | |
| 2.16 TC | Aerobic and ana | erol | bic respiration | |
| | Structure of mitochondria, components and organization of mitochondrial electron transport chain, structure and function of ATPase, generation and maintenance of proton motive force, oxidative phosphorylation, inhibitors and un-couplers of electron transport chain and oxidative phosphorylation. Concept of anaerobic respiration, components of electron transfer system and energy generation of bacteria where nitrate, sulfate and carbonate acts as terminal electron acceptors | 1. 2. 3. | Moat Albert G. and Foster John W. (1988) Microbial Physiology 2nd Ed. John Wileyand Sons New York. Nelson D. L. and Cox M. M. (2005) Lehninger's Principles of Biochemistry, Fourth edition, W. H. Freeman & Co. New York. Michael T. Madigan, John M. Martinko, David A. Stahl, David P. Clark (2012) Brock Biology of Microorganisms, Thirteenth edition, Benjamin Cummings, San Francisco. | |

| 2.17 TN | Membrane Transport | | |
|---------|---|--|--|
| | The composition and architecture of membranes, Membrane dynamics, Solute transport across membranes: Passive diffusion, facilitated transport, primary and secondary active transport using P , V and F type ATPases, Ionophores, Ion mediated transport, transport of ions across membranes (ion pumps), ligand and voltage gated ion channels, liposomes and model membranes | Nelson D. L. and Cox M. M. (2005) Lehninger's Principles Biochemistry, Fourth edition, W. H. Freeman & Co. Ne York. Garrett, R. H. and Grisham, C. M. (2004) Biochemistry. 3 Ed. Brooks/Cole, Publishing Company, California. Berg Jeremy, Tymoczko John, Stryer Lubert (200 Biochemistry 4th Ed, W. H. Freeman, New York. | |
| 2.18 TN | Nitrogen | ı metabolism | |
| | Biochemistry of biological nitrogen fixation, properties of nitrogenase and its regulation, ammonia assimilation with respect to glutamine synthetase, glutamate dehydrogenase, glutamate synthetase, their properties and regulation, Biosynthesis of five families of amino acids and histidine, Biosynthesis of purine and pyrimidine bases | f 1. White David (2000) Physiology and Biochemistry Prokaryotes. 2nd Ed. Oxford University Press, New Yor 2. Mandelstam Joel and McQuillen Kenneth (197 Biochemistry of Bacterial Growth, Blackwell Scientif Publication London. 3. Nelson D. L. and Cox M. M. (2005) Lehninger Principles of Biochemistry, Fourth edition, W. J Freeman & Co. New York. 4. Moat Albert G. and Foster John W. (1988) Microbi Physiology 2nd Ed. John Wiley and Sons New York. 5. | |
| 2.19 TN | N Photosynthesis | | |
| | Structure of chloroplast, energy consideration in photosynthesis, light and dark reaction, electron carriers in photosynthesis, Organization of photosystem I and II, cyclic and non-cyclic flow of electrons, Z scheme, Hill reaction, photolysis of water, C ₃ , C ₄ CAM plants, Photorespiration, Regulation of photosynthesis, Bacterial photosynthesis: scope, electron carriers, Photosynthetic reaction center, cyclic flow of electrons, bacterial photophosphorylation in various groups of phototrophic bacteria, electron donors other than water in anoxygenic photosynthetic bacteria | Nelson D. L. and Cox M. M. (2005) Lehninger's Principles Biochemistry, Fourth edition, W. H. Freeman & Co. Ne York Hall D. D. and Rao K. K. (1996) Photosynthesis 5th Ed Cambridge University Press Michael T. Madigan, John M. Martinko, David A. Stal David P. Clark (2012) Brock Biology of Microorganism Thirteenth edition, Benjamin Cummings, San Francisco. | |

| 2.20 TN | Biosynthesis of carbohydr | rate | s in plants and bacteria |
|---------|---|------|--|
| | Calvin cycle and its regulation, Transport of solute across | 1. | Cox M. M., Nelson D. L., (2008) Lehninger Principles of |
| | chloroplast membrane, Synthesis of starch and sucrose, | | Biochemistry, Fifth edition, W. H. Frreman and Company |
| | Photorespiration, C ₄ and CAM pathways, synthesis of cellulose | | New York |
| | and peptidoglycan, integration of carbohydrate metabolism in | 2. | Berg Jeremy, Tymoczko John, Stryer Lubert (2001) |
| | plant cell. | | Biochemistry 4th Ed, W. H. Freeman, New York. |
| | | 3. | Garrett, R. H. and Grisham, C. M. (2004) Biochemistry. 3rd |
| | | | Ed. Brooks/Cole, Publishing Company, California |
| | | | |
| 2.21 TN | Lipid biosynthesis | | |
| | Synthesis of storage lipids: Fatty acids and triacylglycerols, | 1. | Cox M. M., Nelson D. L., (2008) Lehninger Principles of |
| | Synthesis of membrane lipids: Glycerophospholipids, | | Biochemistry, Fifth edition, W. H. Frreman and Company |
| | sphingolipids, sterols, Lipids as signal molecules such as | | New York |
| | phosphatidyl inositol, eicosanoids, Vitamins, A, D, K, and E, | 2. | Berg Jeremy, Tymoczko John, Stryer Lubert (2001) |
| | Dolichols. | | Biochemistry 4th Ed, W. H. Freeman, New York. |
| | | 3. | Garrett, R. H. and Grisham, C. M. (2004) Biochemistry. 3rd |
| | | | Ed. Brooks/Cole, Publishing Company, California |

MB 611: Practical Course 1: Biophysics & Virology

| 2.22 PC | | Biophysical In | nstrumentation - I |
|---------|----------------------------------|---|--------------------|
| | 1. | Calibration of analytical instruments - Colorimeter and | |
| | | Spectrophotometer by estimation of biomolecules and | |
| | | statistical analysis of data generated. | |
| | 2. | Determination of molar extinction coefficient of biological | |
| | | molecule. | |
| | 3. | To determine the ion-exchange capacity and nature of given | |
| | | resin using anion exchange chromatography. | |
| 2.23 PC | Biophysical Instrumentation - II | | strumentation - II |
| | 1. | Biological synthesis of nanoparticles (actinomycetes /fungi | |
| | | /yeast) and their characterization by UV-Vis spectroscopy. | |
| | 2. | Interpretation of Ramchandran Plot and study of | |
| | | conformations of protein molecule using Molecular Graphics | |
| | | Visualization Tool. | |

| 2.24 PC | Virology (Plant Viruses) | | |
|---------|--------------------------|---|----------------------|
| | 1. | Preparation of plantlets from seeds of indicator plant, leaf | |
| | | infection and infectivity assay for plant mosaic viruses | |
| | 2. | Study of plant virus diseases: Collecting data and samples | |
| | | (preparation of herbaria) | |
| | 3. | Chloroplast agglutination test | |
| 2.25 PC | | Virology (Animal & | & Bacterial Viruses) |
| | 1. | Egg inoculation technique for virus cultivation by various | |
| | | routes - embryo, yolk sac, allantoic fluid, amniotic cavity, | |
| | | chorioallontoic membrane. | |
| | 2. | Animal virus titration by Hemagglutination test | |
| | 3. | Confocal Microscopy demonstration / Analysis of confocal | |
| | | images | |
| | 4. | Qualitative and quantitative detection of bacteriophage | |
| | 5. | One step growth curve of bacteriophage | |
| 2.26 PC | | Research Me | thodology - II |
| | Di | ssertation Techniques | |
| | 1 | Literature review (and choosing a suitable topic) | |
| | 2. | Experiment planning | |
| | 3. | Experimentation, with the use of contemporary methods and | |
| | | standard protocols | |
| | 4 | . Representation of and calculations for data obtained | |
| | 5. | . Interpretation of data with the use of statistical tools (if | |
| | | required) | |
| | 6 | . Writing monthly progress reports / synopsis / interim reports | |
| | 7. | Writing a Masters' thesis | |
| | 8 | Presenting the thesis in an 'Open Defense' | |

MB 612: Practical Course 2: Enzymology & Microbial Metabolism

| 2.27 PC | Purification & Assay of Enzymes | |
|---------|---|---------------|
| | 1. Purification of enzyme from natural sources like animal, | |
| | plant, bacterial/fungal by ammonium sulfate precipitation, | |
| | organic solvent precipitation, gel filtration, etc. | |
| | 2. Establishment of enzyme purification chart | |
| | 3. Determination of Km and Vm values of any hydrolytic | |
| | enzyme | |
| | 4. Protein electrophoresis by PAGE and SDS PAGE | |
| 2.28 PC | C Isolation and Characterization of Anaerobic Bacteria | |
| | 1. Different methods of isolation and cultivation of anaerobic | |
| | bacteria | |
| | 2. Isolation and purification of sulfate reducing bacteria | |
| | 3. Isolation and purification of anaerobic respiratory clostridia | |
| 2.29 PC | Microbial Metabolism-I | |
| | 1. Isolation and characterization of (as nitrogen fixers) | |
| | Azospirillum and detection of IAA by Azospirillum | |
| | 2. Detection of siderophore production by Azospirillum and | |
| | Pseudomonas | |
| 2.30 PC | Microbial M | Ietabolism-II |
| | 1. Isolation and characterization of phosphate solublizing | |
| | bacteria | |
| | 2. Isolation and characterization of chitin, cellulose and | |
| | pesticide degrading bacteria | |
| 2.31 PC | Extraction, detection and characterization of aflatoxins | |
| | 1. Isolation of Aflatoxin producing organism | |
| | 2. Detection of Aflatoxin in food / culture | |

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