2023-24

Metric No. 1.3.2:

Syllabus of courses that include experiential learning through project work/field work/internship.

Depth of the Course- Functional Working Knowledge

Course Objectives:
1. To understand the application of theory into practice.
2. Design critical thinking by making judgments related to problems in Case Studies of Human Resource.
3. Develop critical thinking for solving Case Studies of Human Resource.
4. To analyze the broad fundamental components of HRM.

Note: The Case Study examination paper will be for 2 credits and the Internship and project report along with viva-voce will be for 4 credits.

Unit No.	Unit Title	Contents	Purpose & Skills to be developed
1	Case Study – Introduction	1.1 Case – Meaning – Objectives of Case Studies, 1.2 Characteristics & Importance of Case Studies, 1.3 Case Study analysis methodology (steps in Case Study Analysis) 1.4 Guidelines (Dos and Don'ts in Case Study Analysis).	• To make student know the gist of the Case Study and the way of attempt or solution. • Explain steps in solving case studies.
2	Areas of Case Study	2.1 Functions of HRM, 2.2 Challenges before HRM, 2.3 Role of HR Manager, 2.4 Job Analysis- Job Description, Job Specification, Job Evaluation, 2.5 Manpower Planning and Forecasting, 2.6 Recruitment and Selection,	• Analyze the broad fundamental components of HRM. • Develop critical thinking for solving Case Studies of Human Resource. • To develop the ability about getting acquainted with the theory and its application in real-life scenario of the HR Department.

		2.7 Training and Executive Development, 2.8 Employee Compensation, Performance Appraisal, 2.9 Career Planning, 2.10 Employee Morale, Job Satisfaction, 2.11 Workforce Diversity, 2.12 International HRM, E-HRM, 2.13 Human Resource Information System, 2.14 Work from Home, Change Management 2.15 Out-Sourcing, 2.16 Rights of an employee at the workplace., HR Policy, 2.17 Legal issues related to HR in the Organization, 2.18 Wage & Salary Administration, 2.19 The Workmen's Compensation Act, 1923, 2.20 The Payment of Gratuity Act, 1972, 2.21 Sexual Harassment of Women at Workplace, 2.22 Workers Participation in Management, 2.23 Organizational Development, 2.24 Employee Record Management, 2.25 Individual Behavior, Group Behavior, Personality, 2.26 Values and Attitude, 2.27 Group Dynamics, Conflict Management,	• To make students know about recent happening in important concepts of Human Resource. • Design critical thinking by making judgments related to problems in case studies of Human Resource. • To understand the challenges faced/confronted in recent times.

Evaluation:

Project Report Evaluation	External Evaluation
Students must undergo for internship and must do fieldwork, survey, analysis of data, prepare a hard binding project report. The project report must be submitted to the college along with a soft copy of the same.	The external evaluation will be done based on an examination paper comprising of Case studies to solve for a maximum of 50 marks.

Depth of the Course- Functional Working Knowledge
Course Objectives: To understand the application of theory into practice.

Note: 1. The case study examination paper will be for 2 credits and the Internship and project report along with viva voce will be for 4 credits.

Unit No.	Unit Title	Contents	Purpose & Skills to be developed
1	Case Study – Introduction	1.1 Case – Meaning – Objectives of Case Studies 1.2 Characteristics & Importance of Case Studies 1.3 Guidelines for Case Studies & Cases Discussion.	• To make student know the gist of the case study and way of attempt or solution
2	Areas of Case Study	2.1 Product Mix with PLC 2.2 Price Mix – Elements in Price Mix, Factor affecting Pricing, Pricing Methods. 2.3 Place Mix – Physical Distribution Management System, Types, Intermediaries, strategies, trends in SCM. 2.4 Promotion Mix – Elements, Advertising, Media Mix, AIDA, DAGMAR, IMC. 2.5 Extended Ps of Marketing Mix 2.6 New Product Development 2.7 Product Extension and Product Diversification. 2.8 Traditional Marketing and Modern Marketing 2.9 Rural Marketing	• To develop the ability about getting acquainted with the theory and its application in a real-life scenario. • To make students know about recent happening in marketing. • To understand the challenges faced/confronted in recent times

		2.10 Services Marketing 2.11 Organised&Unorganised Retail Marketing 2.12 E-Marketing and Digital Marketing 2.13 Green Marketing 2.14 Market Segmentation 2.15 Targeting 2.16 Positioning and Niche Market	

Innovative methods to be used	Expected Outcome
Lectures/Case studies/Discussion/videos/ Role Plays	Students shall understand the challenges faced by the people and organisations in the day to day work life. They shall understand the techniques and solutions to overcome those challenges.

Evaluation:

Project Report Evaluation	External Evaluation
Students must undergo for internship - Refer Internship manual For external evaluation, there will be a viva voce. Such viva-voce shall be conducted by a referee appointed by the University along with an internal referee.	Case study based The external evaluation will be done based on an examination paper comprising of Case studies to solve for a maximum of 50 marks 15*3 cases 5*1 short note
Having gone through all the topics, students have to be given cases to solve and are asked to submit a soft copy in PDF and PPT to college.	

Depth of the Course: Application-based Knowledge of core areas of finance.

Course Objectives:
  1. To Study &understand the core areas of finance.
2. To study the practical applications of finance.
  3. To prepare project reports based on the internship & understanding of core areas of finance.

Unit No.	Unit Title	Contents	Purpose & Skills to be developed
1	Fund Raising & Capital Budgeting	1.1 Fund Raising: Meaning, Importance, Process. (Theory) 1.2 Investment Decisions: Long term, Medium-term, Short Term, its importance (Theory) 1.3 Capital Budgeting: Meaning, Importance, Types (Practical cases)	• To understand the importance of fundraising. • To study & understand the practical applications of Capital Budgeting.
2	Working Capital Management	2.1Working Capital:- Meaning, Importance, Cases on Working capital.	• To understand the concept &importance of Working Capital Management. • To study & understand the practical applications of Working Capital.
3	Cost of Capital	3.1 Return of Capital Employed (ROCE): Meaning, Importance (Theory) 3.2 Return on Investment: Meaning, Importance. (Theory)	• To study & understand the basics of ROCE, ROI & Cost of Capital. • To study & understand the practical applications of Cost of Capital.

		3.3 Cost of Capital: Meaning, Importance, Cases on Cost of Capital	
4	Project Report	Project-based on core areas of finance/ based on internship. (Refer to the suggested topics given below) Internship guidelines are attached separately	• To study & understand implications of selected core areas of finance under study. • To give insights based on data collection & data analysis to the students. • To inculcate research culture among students through conducting research in finance.

Teaching Methodology

Teaching Hours Theory + Tutorials /Project Practical –as applicable	Innovative methods to be used	Expected Outcome
Unit 1- 12 hours	Group Discussion, Assignments. Case Study.	To understand the fundamentals of fundraising.
Unit 2- 12 hours	Case Study, Group Discussion.	To understand the practical applications of capital budgeting.
Unit 3- 12 hours	Case Study, Group Discussion.	To understand the practical applications of Cost of Capital.
Unit 4 - 24hours	Project Report under the guidance of the Subject teacher.	To understand the research-based outcomes of core areas of finance based on internship.

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	3.2.3 Multiple Inheritance 3.2.4 Hybrid Inheritance 3.2.5 Hierarchical Inheritance 3.2.6 IS-A Relationship and HAS-A Relationship	
IV	**Unit 4: Exception Handling** 4.1 Python Exception 4.2 Common Exception 4.3 Exception handling in Python (try-except-else) 4.4 The except statement with no exception 4.5 Multiple Exception 4.6 The try-finally clause 4.7 Custom Exception and assert statement	**4**
V	**Unit 5: GUI Programming** 5.1 Introduction 5.2 Tkinter programming 5.4 Tkinter widgets 5.5 Frame 5.6 Button 5.7 Label 5.8 Entry	**10**
VI	**Unit 6: Python Libraries** 6.1 Statistical Analysis- NumPy, SciPy, Pandas, StatsModels 6.2 Data Visualization- Matplotlib, Seaborn, Plotly 6.3 Data Modelling and Machine Learning- Scikit-learn, XGBoost, Eli5 6.4 Deep Learning- TensorFlow, Pytorch, Keras 6.5 Natural Language Processing (NLP)- NLTK, SpaCy, Gensim	**4**

Reference Books:

1.Mark Lutz, Programming Python, O`Reilly, 4th Edition, 2010
2.Dive into Python, Mike
3. Learning Python, 4th Edition by Mark Lutz
4. Programming Python, 4th Edition by Mark Lutz
5.Python Programming:An introduction to computer,John Zelle,3rd Edition.

Total Credits: 04

For the evaluation/ conduction of project separate guidelines will be provided.

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T.Y.B.B.A.(C.A.) Sem-V
Subject Code: 506
Subject: Computer Laboratory Based on 503 and 504(2 credits each)

Total Credits: 04

For the conduction of practicals, practical assignments are given in the lab book.

Savitribai Phule Pune University

T.Y.B.B.A.(C.A.)Sem-V (CBCS 2019 Pattern)
Subject Code: CA-507
Subject: Internet of Things (IoT)

Savitribai Phule Pune University
T.Y.B.B.A.(C.A.) Semester-VI
Subject: Project
Course Code : DSE– 605
Total Credits: 04

For the evaluation / conduction of project separate guidelines will be provided.

Project Work Will Carry 100 Marks. For Regular Students, Project Work Is Compulsory. The Option Of
Case Studies Is Only For The Students Registered As An External Student. 'Students Are Expected To Prepare The Project Report Based On The Field Work And Survey And Studying The Current Trends Under The Guidance Of Their Guide Teacher'. They Will Have To Submit The Report On 31st March Every Year. Project Viva Voce Will Be Conducted At The End Of IV Semester But Before Theory Examination.

Guidelines Areas of Project Work Marks: 100

Students are required to Visit a Unit in Concerned Industry and submit their report on any of the following project topics.

1. Marginal Costing: Techniques Based on Annual Reports of Listed Companies. To Study the Application of Marginal Costing in Taking Managerial Decision.

2. Budgetary Control: Study of Procedure of Audit. A Study of Budgetary Control System Established therein and used for cost Control Purpose.

3. Statement of Cost of Production of the taxable goods(refer Rule 30 of the CGST Rules, 2017)

4. Environmental Audit.

5. Cost Audit: Audit Programme Understanding the Procedure of Cost Audit, Cost Accounting Record Rules of the Respective Industry and Preparation of Cost Audit Report.

6. Process Costing: process industry & Understanding the Use of Process Costing Method in the factory, Cost Analysis at Each Stage in Particular and Cost Analysis in General done inthe Sugar Factory.

7. Pricing Decisions: Visit to any Industry Understanding the different Methods and Techniques

used by the Concern in pricing different Products.

8. Cost Control and Cost Reduction: Visit to any Manufacturing Concern and Understanding the different Methods used fruitfully by the Priority in Cost Control and Cost Reduction. **ISOProcedure.**

9. Contract Costing: Visit to Any Construction / Contracting firm and Understanding Ascertainment of Contract Cost, Allocation and Apportionment of different Expenses and Apportionment of profit on Incomplete Contract.

Subject: Project work / Case Studies   **Course Code: 414**   **Total Credits: 04**

There will be a project work carrying 100 marks for internal students only. The students will have to select a subject from any area of the syllabi for Business- Administration. The students will have to work under the guidance of concerned subject teacher. The project will carry total 100 marks out of which sixty marks will be allotted for Project Report and 40 marks will be allotted for Project Viva Voce to be conducted by internal teacher and external teacher (examiner) appointed by the University. Note: The list of suggested areas for project work will be notified in due course. Case Studies: There will be a paper of case studies for external students. The paper will be set for 80 marks- to be converted to 100 marks. Total 20 cases will be selected from standard book for study. In the question paper 3 cases out of 20 (twenty) cases will be covered, each carrying twenty (20) marks. One unseen case also will be covered & it will carry twenty (20) marks. Note: The paper of case studies will be offered only by external students only.

BUSINESS ADMINISTRATION – SUGGESTED TOPICS FOR PROJECT REPORT

CONTENTS:

1.CoverPage

2.CompanyCertificate

3.Guide Certificate

4.Acknowledgement

5.Declaration

6.Executive Summary

 TENTATIVE CHAPTER SCHEM E

 CHAPTER 1. INTRODUCTION TO STUDY

 CHAPTER 2. COMPANY PROFILE

CHAPTER 3. OBJECTIVES OF STUDY

CHAPTER 4. REVIEW OF LITERATURE

CHAPTER 5. RESEARCH METHODOLOGY

CHAPTER 6. DATA ANALYSIS AND INTERPRETATIONS OBSERVATIONS

Savitribai Phule Pune University

Department of Commerce

Program: M.Com Syllabus

Revised as per NEP

Academic Year 2023-24

Department of Commerce
SPPU

Weightage of Marks:

The weightage of marks between continuous Internal Assessment and End Semester Examination shall be 50 and 50 respectively.

The weightage of 50 marks for Internal Assessment Components shall consist of the following components.

1. One Class Tests: 20 marks
2. Two Written Assignments: 20 marks
3. Quiz/Presentation/Group Discussion/Test: 10 marks

Total: 50 marks

At the End of Each Semester, there will be a Term End Semester Exam consisting of 50 marks

Internship:

Every student shall undergo Internship training during the summer vacation of First year. This Internship shall be of 120 hrs. The objective of the Internship training is to give the students a hands-on experience of real-life business operations. At the end of the Semester, each student should submit an Internship Training Report explaining clearly what each student has learnt during the Internship period. The Internship Report and the Viva-Voce Examination will be evaluated by the internal Faculty Guide. The Weightage for the Internship Report shall be 75 marks and weightage for Viva-Voce Examination shall be 25 marks (Total 100 marks).

Final Project:

Every student shall carry out a project in the Third and Fourth Semester. Once the guides are allotted to the students, the students should contact the respective guides periodically and get necessary guidance and feedback on the project work. At the end of the project period, every student shall submit a structured project report as approved by the Faculty Guide within the period specified by the Department.

The Final Project Report and Viva-Voce examination will be evaluated by Internal & External Examiners.

Syllabus for M.Com Program

			Major												Total

Savitribai Phule Pune University
Department of Commerce
Syllabus for M.Com Programme

Level	Sem	Mandatory*			Credits	Mandatory*			Credit	Mandatory	Credits	Electives (Any One)	Credits	Total Credits
		Corporate Accounting and Financial Management(CA)	Banking and Finance(BF)	Digital Marketing and E-Commerce(DM)		Corporate Accounting and Financial Management(CA)	Banking and Finance(BF)	Digital Marketing and E-Commerce(DM)						
6	Sem I	DC(CA)1.1 Financial and Accounting Practices	DC(BF)1.1 Monetary and Fiscal Policy Analysis	DC(DM)1.1 Digital Business & E-Commerce	4	DC(CA)1.3 Cost Control and Management Accounting	DC(BF)1.3 Banking Operations and Financial System	DC(DM)1.3 Basics of Digital Marketing	2	DC1.5-Research Methodology	4	DC 1.6 Indian Economy Structure and Policies/Statistics for Business Research/ Selling and Negotiation Skills	4	20
		DC(CA)1.2 Financial Markets System	DC(BF)1.2 Financial Markets System	DC(DM)1.2 Fundamentals of Marketing	4	DC(CA)1.4 Strategic Financial Management	DC(BF)1.4 Digital Banking and Infromation Technology	DC(DM)1.4 Web Designing & Content Management Systems	2					
	Sem II	DC(CA)2.1 Financial Service	DC(BF)2.1 Financial Service	DC(DM)2.1 Social Media Marketing	4	DC(CA)2.3 International Financial Reporting Standards	DC(BF)2.3 Banking Management	DC(DM)2.3 Content Marketing	2	DC2.5-On Job Training/FP	4	DC2.6 Developmental Economics/Business Analytics/ MS Excel		20
		DC(CA)2.2 Financial Risk Management	DC(BF)2.2 Financial Risk Management	DC(DM)2.2 SEM &SEO	4	DC(CA)2.4 Security Analysis and Portfolio Management	DC(BF) 2.4 International Banking	DC(DM)2.4 Creative Media Marketing	2				4	
										Cumulative Credits for PG Diploma		**Total Credits**		**40**

* Students has to selected one Specialization under the Major-Mandatory Subjects

Exit option: PG Diploma

OR

Level	Sem	Mandatory*			Credits	Mandatory*			Credit	Mandatory	Credits	Electives (Any One)	Credits	Total Credits
		Corporate Accounting and Financial Management(CA)	Banking and Finance(BF)	Digital Marketing and E-Commerce(DM)		Corporate Accounting and Financial Management(CA)	Banking and Finance(BF)	Digital Marketing and E-Commerce(DM)						
6	Sem I	DC(CA)1.1 Financial and Accounting Practices	DC(BF)1.1 Monetary and Fiscal Policy Analysis	DC(DM)1.1 Digital Business & E-Commerce	4	DC(CA)1.3 Cost Control and Management Accounting	DC(BF)1.3 Banking Operations and Financial System	DC(DM)1.3 Basics of Digital Marketing	2	DC1.5-Research Methodology	4	DC 1.6 Indian Economy Structure and Policies/Statistics for Business Research/ Selling and Negotiation Skills	4	20
		DC(CA)1.2 Financial Markets System	DC(BF)1.2 Financial Markets System	DC(DM)1.2 Fundamentals of Marketing	4	DC(CA)1.4 Strategic Financial Management	DC(BF)1.4 Digital Banking and Infromation Technology	DC(DM)1.4 Web Designing & Content Management Systems	2					
	Sem II	DC(CA)2.1 Financial Service	DC(BF)2.1 Financial Service	DC(DM)2.1 Social Media Marketing	4	DC(CA)2.3 International Financial Reporting Standards	DC(BF)2.3 Banking Management	DC(DM)2.3 Content Marketing	2	DC2.5-On Job Training	2	DC2.6 Developmental Economics/Business Analytics/ MS Excel	4	20
		DC(CA)2.2 Financial Risk Management	DC(BF)2.2 Financial Risk Management	DC(DM)2.2 SEM &SEO	4	DC(CA)2.4 Security Analysis and Portfolio Management	DC(BF) 2.4 International Banking	DC(DM)2.4 Creative Media Marketing	2					
										DC2.5FP- Business Plans	2			
										Cumulative Credits for PG Diploma		**Total Credits**		**40**

* Students has to selected one Specialization under the Major- Mandatory Subjects

Exit option: PG Diploma

Faculty of Commerce & Management
T Y B Com (Semester V)
(Choice Based Credit System)
Revised Syllabus (2021-22)

CORE COURSE – I **Subject: Auditing**	**Course Code: 354**
Total Credits: 04 (Theory 03 + Practical 01=04)	

	5	Fundamentals of Accounting and Auditing	The Institute of Company Secretaries of India	ICSI

Guidelines for completion of Practical's:

Sr. No	Title of Practical	Objective of the Practical	Outcomes	Methodology
1	A study of Audit Procedure of organisation	i) To study the meaning & Definition Audit ii) To study the nature, scope & objective of Audit iii) To study the Audit Procedure of Organisation.	Acquaint with knowledge and maturity to Understand concept of Auditing, Know the concept of Audit Process.	Report based on visit to Individual assessee and collection of documents know the audit process
2	A study of Procedure of Vouching in Auditing	i)To study the concept of voucher and its contain ii) To study the concept of vouching and precautions to be taken by Auditor while vouching iii) To conduct vouching of representative vouchers	ConceptualClarity and Practicalunderstanding of Vouching	Report based on visit to a Businessman or professionals and documents collected
3	A study of Audit Report	i)To study the concept of Audit report ii)To study the types and features of Audit Report iii) To study forms of Audit Report	Understand concept of Audit Report and its types Know the various forms of Audit Report	Report based on visit to a Businessman or professionals and documents collected
4	A Study of Tax Audit	i) To study the meaning of Tax Audit ii) To Study scope of Auditor's Role under Income Tax Act iii) To Study criteria for Compulsory Tax Audit	Acquaint Practical knowledge about Tax Audit as per I.T. Act 1961 (Form 3CA, 3CB & 3CD)	Practical example in Guest Lecture /seminar / workshop and Report

14	Study of Sympatric and Allopatric speciation with suitable example	01
15	Study of Isolation mechanism : Prezygotic & Postzygotic(Any one example from each)	01
16	Submission of Report on Visit to Paleobotany Laboratory/Museum/Fossil Garden	01

T.Y.B.Sc. Botany CBCS Pattern
Practical (Semester V Paper IX) 2020-2021
BO 369: Practical based on BO365 and BO366 (2 Credits)

Sr. No.	Title	No. of Practical
1.	Preparation and sterilization of MS Medium and Callus Induction using leaf primordia	01
2	Production of secondary metabolites in any suitable plant material	01
3	Artificial seed production by Sodium Alginate method encapsulation (somatic embryogenesis)	01
4	Demonstration to equipments used in genetic engineering like gene gun, PCR, gel doc, microcentrifuge, electrophoresis, micropipettes, incubator, shaker etc. (live/videos/photographs/visit to research labs)	01
5	Study of Transgenic plants- Arabidopsis thaliana as a model plant, Bt-Brinjal, Flr-svr Tomato, and other GM crops like soybean, maize, tobacco as a pharmaceuticals, banana as a edible vaccine etc. (live/videos/photographs/visit to research labs)	01
6	Preparation of plant based nano-particles	01
7	Demonstration to Fermentation of fruit juice and wine production from grapes/pomegranate/jamun/ apple/ber (live/videos/photographs/visit to research labs)	01
8	Problems on genetic engineering (set of problems will be given on restriction enzymes, vectors etc.)	01

9	Demonstration of Hybridization Techniques (Emasculation, Hand Pollination, Bagging and Tagging) in cotton and tomato.	01
9	Effect of chemical mutagens on seed germination and seedling growth.	01
10	Study of pollen viability and floral morphology of crops	01
11	To test seed moisture by hot air oven method	01
12	To study germination methods (Paper, Sand and Soil)	01
13	Physical purity analysis of seed sample	01
14	Visual examination of dry seeds for disease symptoms	01
15	To study any one common seed insect pest w.r.t to their life cycle, way of infestation/damage, symptoms and control measures.	01
16	Visit to a Plant Breeding Research Centre/ Seed Industry and report submission	01

Note: Submission of minimum 10 seed samples along with their botanical names, family, variety etc. to the department at the time of final practical examination

Skill Enhancement course

T.Y.B.Sc. Botany CBCS Pattern
(Semester VI, Paper X) 2020-2021
BO 3610: Nursery and Gardening Management- 2 Credits (30 Lectures)

Sr. No.	Topic Details	No. of Lectures
	Credit-I Nursery Managment	**15**
1	**Nursery:** definition, objectives and scope and building up of infrastructure for nursery, planning and seasonal activities - Planting - direct seeding and transplants.	**03**
2	**Seed:** Structure and types - Seed dormancy; causes and methods of breaking dormancy - Seed storage: Seed banks, factors affecting seed viability, genetic erosion –Seed production technology - seed testing and certification.	**03**
3.	**Vegetative propagation**: air-layering, cutting, selection of cutting, collecting season, treatment of cutting, rooting medium and planting of cuttings - Hardening of plants– greenhouse - mist chamber, shed root, shade house and glass house.	**09**

S.Y.B.Sc. Botany CBCS Pattern
Practical (Semester IV Paper III) 2020-2021
BO 243: Practical based on BO 241 & BO 242

Sr. No.	Title	No. of Practical
	Plant Anatomy and Embryology	
1	Study of epidermal tissue system – non-glandular and glandular trichomes, multilayered epidermis, typical stomata (Dicotyledonous and Monocotyledonous).	2
2	Study of mechanical tissues and their distribution in root, stem and leaves.	1
3	Study of normal secondary growth in dicot stem – *Annona* /*Moringa* (Double stained temporary preparation).	1
4	Study of anomalous secondary growth in *Bignonia* and *Dracaena* stem (Double stained temporary preparation).	1
5	Study of tetrasporangiate anther and types of ovules with the help of permanent slides	1
6	Study of dicot and monocot embryo.	1
	Plant Biotechnology	
7	Instruments/equipments used in plant tissue culture laboratory: Principle and working of Autoclave, oven, laminar air flow cabinet, micropipette, culture bottles/tubes with cotton plug	1
8	Preparation & sterilization of MS medium	1
9	Surface sterilization and Inoculation of nodal sector, leaf, anther and maize embryo	2
10	Laboratory cultivation of *Spirulina*	1
11	Demonstration practical on transgenic crops viz; Bt-Cotton, Golden rice	1
12	Demonstration of principle and working of agarose gel electrophoresis, centrifuge, spectrophotometer	1
13	Visit to plant tissue culture laboratory	1

7. Lewin, Benjamin (2011). Genes. X Jones and Bartlett.
8. Lincolin, Taiz and Eduardo, Zeiger (2010). Plant Physiology. 5th Edition. Sinauer Associates, Inc. Publishers. Sunder land, USA.
9. Opik, Helgi, Rolfe, Stephen A. and Willis, Arthur J. (2005). The Physiology of Flowering Plants. Cambridge University Press, UK.
10. Pal, J.K. and Ghaskadbi, Saroj (2009). Fundamentals of Molecular Biology. Oxford University Press. India.
11. Pandey, S.N. and Sinha, B.K. (2014). Plant Physiology. Vikas Publishing House Pvt. Ltd., India.
12. Salisbury, F.B. and Ross, C.B. (2005). Plant Physiology. 5th Edition. Wadsworth Publishing Co. Belmont California, USA.
13. Watson, James D., Baker, Tania; Bell, Stephen P.; Alexander Gann; Levine, Michael and Lodwick, Richard (2008). Molecular Biology of the Gene. 6th Edition, Pearson Education, Inc. and Dorling Kindersley Publishing, Inc. USA.
14. Weaver, R. (2011). Molecular Biology. 5th Edition, Publisher- McGrew Hill Science. USA.

BO 123: PRACTICALS BASED ON BO 121 & BO 122 (1.5 CREDITS)

1. Study of life cycle of *Nephrolepis*.   1 P
2. Study of life cycle of *Cycas*.   1 P
3. Study of Bentham and Hooker's system of classification outline up to series with example   1 P
4. Study of comparative account of Dicotyledonous and Monocotyledonous plants w.r.t to external morphological characters.   1 P
5. Study of utilization and economic importance of Angiosperms- food, fodder, fibers, horticulture and medicines.   1 P
6. One day visit to study diversity of vegetation.   2 P
7. To observe characteristic features of prokaryotic and eukaryotic plant cell.   1 P
8. Staining of suitable nuclear material by Basic Fuchsin   1 P
9. Study of mitosis- preparation of slides using onion root tips to observe divisional stages.   1 P
10. Study of meiosis- preparation of slides using *Tradescantia/ Rhoeo/* Maize / Onion flower buds to observe divisional stages.   2 P
11. Estimation of chlorophyll-a and chlorophyll-b by using suitable plant material. 1 P
12. Plasmolysis- endosmosis, exosmosis, incipient plasmolysis using *Rhoeo* leaf peeling and Demonstration of Osmosis- curling experiment.   1 P
13. Study of DPD by using suitable plant sample   1 P

Savitribai Phule Pune University

(Formerly University of Pune)

Three Year B.Sc. Degree Program in Computer Science

(Faculty of Science & Technology)

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

Choice Based Credit System Syllabus

To be implemented from Academic Year 2019-2020

Titles of Papers, Credit Allocation and Scheme of Evaluation

Semester I (Total credits=22)

Course type	Paper Code	Paper title	Credits		Evaluation		
			T	P	CA	UA	TOTAL
CC-I	CS-111	Problem Solving using Computer and 'C' Programming	2		15	35	50
	CS-112	Database Management Systems	2		15	35	50
	CS-113	Practical course based on CS101 and CS102		1.5	15	35	50
CC-II*		Mathematics – I, II and III					
CC-III*		Electronics – I,II and III					
CC-IV*		Statistics – I, II and III					

Semester II (Total credits=22)

Course type	Paper Code	Paper title	Credits		Evaluation		
			T	P	CA	UA	TOTAL
CC-V	CS-121	Advanced 'C' Programming	2		15	35	50
	CS-122	Relational Database Management Systems	2		15	35	50
	CS-123	Practical course based on CS201 and CS202		1.5	15	35	50
CC-VI*		Mathematics – I,II and III					
CC-VII*		Electronics – I, II and III					
CC-VIII*		Statistics – I,II and III					

Semester- I
Paper - III

Course Type: Core Credit	Course Code: CS103

Title : Practical course on Problem Solving using Computer and 'C' programming
and
Database Management Systems

Teaching Scheme	No. of Credits	Examination Scheme
3 Hrs / week	1.5	IE : 15 Marks
		UE: 35 Marks

Course Objectives
- To understand the program development life cycle.
- Solve simple computational problems using modular design and basic features of the 'C' language.
- Understand basic database management operations.
- Design E-R Model for given requirements and convert the same into database tables.

Course Outcomes:-
On completion of this course, students will be able to :
- Devise pseudocodes and flowchart for computational problems.
- Write, debug and execute simple programs in 'C'.
- Create database tables in postgreSQL.
- Write and execute simple, nested queries.

Guidelines :
Lab Book: The lab book is to be used as a hands-on resource, reference and record of assignment submission and completion by the student. The lab book contains the set of assignments which the student must complete as a part of this course.

Submission:
Problem Solving Assignments:
The problem solving assignments are to be submitted by the student in the form of a journal containing individual assignment sheets. Each assignment includes the Assignment Title, Problem statement, Date of submission, Assessment date, Assessment grade and instructors sign.

Programming Assignments:
Programs should be done individually by the student in the respective login. The codes should be uploaded on either the local server, Moodle, Github or any open source LMS. Print-outs of the programs and output may be taken but not mandatory for assessment.

DBMS Assignments:
For each problem/case study, the student must design the database model in the form of an E-R

Semester- II
Paper - III

Course Type: Core Credit		Course Code: CS203
Title : **Practical Course on Advanced 'C' Programming and Relational Dstabase Management Systems**		

Teaching Scheme	No. of Credits	Examination Scheme
3 Hours / week	1.5	IE : 15 Marks
		UE: 35 Marks

Course Objectives
- To solve real world computational problems.
- To perform operations on relational database management systems.

Course Outcomes:-
On completion of this course, students will be able to :
- Write, debug and execute programs using advanced features in 'C'.
- To use SQL & PL/SQL.
- To perform advanced database operations.

Guidelines :

Lab Book: The lab book is to be used as a hands-on resource, reference and record of assignment submission and completion by the student. The lab book contains the set of assignments which the student must complete as a part of this course.

Submission:

Programming Assignments:

Programs should be done individually by the student in respective login. The codes should be uploaded on either the local server, Moodle, Github or any open source LMS. Print-outs of the programs and output may be taken but not mandatory for assessment.

RDBMS Assignments:

For each problem/case study, the student must design the database model in the form of an E-R diagram. Table design should be based on the same and must include proper constraints and integrity checks. The students have to create, populate the tables and then perform the activities specified in each of the assignments. A separate softcopy of the table creation statements and queries must be maintained for each assignment.

Assessment

Continuous assessment of laboratory work is to be done based on overall performance and lab assignments performance of student. Each lab assignment assessment will be assigned grade/marks based on parameters with appropriate weightage. Suggested parameters for overall

Savitribai Phule Pune University

(Formerly University of Pune)

Two Year Degree Program in Computer Science

(Faculty of Science & Technology)

Revised Syllabi for

M.Sc. (Computer Science) Part-I

(For Colleges Affiliated to Savitribai Phule Pune University)

Choice Based Credit System Syllabus

To be implemented from Academic Year 2019-2020

Course Structure:

Year/ Sem	Course Type	Course Code	Course Name	Credit	% of Assessment		
					IA	UE	Total
I Year Sem-I	Core Compulsory Theory Paper	CSUT111	Paradigm of Programming Language	4	30	70	100
		CSUT112	Design and Analysis of Algorithms	4	30	70	100
		CSUT113	Database Technologies	4	30	70	100
	Choice Based Optional Paper	CSDT114A	Cloud computing	2	15	35	50
		CSDP114A	Cloud Computing Practical	2	15	35	50
		OR					
		CSDT114B	Artificial Intelligence	2	15	35	50
		CSDP114B	Artificial Intelligence Practical	2	15	35	50
		OR					
		CSDT114C	Web Services	2	15	35	50
		CSDP114C	Web Services Practical	2	15	35	50
	Core Compulsory Practical Paper	CSUP115	PPL and Database Technologies Practical	4	30	70	100

Year/ Sem	Course Type	Course Code	Course Name	Credit	% of Assessment		
					IA	UE	Total
I Year Sem-II	Core Compulsory Theory Paper	CSUT121	Advanced Operating System	4	30	70	100
		CSUT122	Mobile Technologies	4	30	70	100
		CSUT123	Software Project Management	4	30	70	100
	Choice Based Optional Paper	CSDT124A	Project	2	15	35	50
		CSDP124A	Project related Assignments	2	15	35	50
		OR					
		CSDT124B	Human Computer Interaction	2	15	35	50
		CSDP124B	Human Computer Interaction Practical	2	15	35	50
		OR					
		CSDT124C	Soft Computing	2	15	35	50
		CSDP124C	Soft Computing Practical	2	15	35	50
	Core Compulsory Practical Paper	CSUP125	Practical on Advanced OS & Mobile Technologies	4	30	70	100

CSUP115: PPL and Database Technologies Practical

LIST OF SCALA PROGRAMS (PPL)

Control Structures
1. Write a program to calculate average of all numbers between n1 and n2(eg.100 to 300 Read values of n1 and n2 from user)
2. Write a program to calculate factorial of a number.
3. Write a program to read five random numbers and check that random numbers are perfect number or not.
4. Write a program to find second maximum number of four given numbers.
5. Write a program to calculate sum of prime numbers between 1 to 100
6. Write a program to read an integer from user and convert it to binary and octal using user defined functions.

Arrays
1. Write a program to find maximum and minimum of an array
2. Write a program to calculate transpose of a matrix.
3. Write a program to calculate determinant of a matrix,
4. Write a program to check if the matrix is upper triangular or not.
5. Write a program to sort the matrix using insertion sort.
6. Write a program for multiplication of two matrices(Validate number of rows and columns before multiplication and give appropriate message)

String
1. Write a program to count uppercase letters in a string and convert it to lowercase and display the new string.
2. Write a program to read a character from user and count the number of occurrences of that character.
3. Write a program to read two strings. Remove the occurrence of second string in first string.
4. Create array of strings and read a string from user. Display all the elements of array containing given string.

Classes and Objects
1. Define a class CurrentAccount (accNo, name, balance, minBalance). Define appropriate constructors and operations withdraw(), deposit(), viewBalance(). Create an object and perform operations.
2. Define a class Employee (id, name, salary). Define methods accept() and display(). Display details of employee having maximum salary.
3. Create abstract class Order (id, description). Derive two classes PurchaseOrder& SalesOrder with members Vendor and Customer. Create object of each PurchaseOrder and SalesOrder. Display the details of each account.
4. Create abstract class Shape with abstract functions volume() and display(). Extend two classes Cube and Cylinder from it. Calculate volume of each and display it.

Department of English

Savitribai Phule Pune University

M.A. ENGLISH

Revised Syllabus aligning with NEP 2020

W.E.F. July 2023

Programme Introduction

Literary studies is a discipline that has been at the core of humanities program and is based on a critical understanding of literary and cultural histories. The main objective of the Master of Arts (English) program is to provide a contextualized and grounded history of literary studies and its various facets and understand the many changes that literary studies has gone through both in terms of literary techniques and the literary imagination. Through a rigorous training in reading, writing and thinking practices, the two year post graduate programme in English is meant to acquaint and familiarize students with these major shifts in literary studies. Through a right combination of conventional and non-conventional courses, academic and professional modules, the programme aims at enabling students to face the academic and professional world with training and expertise. The strong theoretical and necessary practical components have been carefully balanced to provide the necessary platform for students. The programme is interdisciplinary in nature which hopes to be located firmly in literary studies and yet have the training and ability to go beyond disciplinary boundaries where necessary for meaningful collaborative endeavours.

Programme Outcomes:

PO- 1 To help students develop a deep and nuanced understanding literary history.
PO-2 The enable students develop advanced reading and writing skills which can help them in the professional fields.
PO-3 To enable students engage with the new and recent trends in literary and cultural studies through advanced theoretical training
PO-4 To equip students with interdisciplinary interfaces and methodologies that will place them in good stead with the world of academic research at par with international standards
PO -5 To equip students with necessary skills for the job market and provide a right balance of courses that would focus on employability skills of students.

11. Said, Edward W. *Orientalism*. Penguin Books, 1995.
12. Spivak, Gayatri Chakravorty. *A Critique of Postcolonial Reason: Toward a History of the Vanishing Present*. Harvard University Press, 2003.
13. Spivak, Gayatri Chakravorty. "Three Women's Texts and a Critique of Imperialism." *Critical Inquiry*, vol. 12, no. 1, pp. 243–261, 1985.

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ENG 581 OJT/FP (04 credits)

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CORE COURSE
SEMESTER IV
EC-4003
RESEARCH PROJECT
(This course will have *FOUR* credits)
(Only for Internal Students)

PREAMBLE:

Students who complete their post-graduation in Economics are mentally equipped to pursue research in the same discipline. It is generally accepted that research is nothing but extension and application of knowledge in a certain specialized field. Therefore regular students who do their post-graduation, as internal students will be given an opportunity to get exposed to a few elements of social research and also they are expected to complete a small research project under the expert guidance and supervision, Elementary knowledge of research methodology shall consolidate and deepen their understanding of various branches of Economics. Preparing a small dissertation is intended to train them in scientific thinking and art of systematic presentation. It is essentially a job-oriented exercise to enable them to take up the exciting field of social and economic research.

Part I: Internal IV Semester students shall submit a dissertation of minimum 8000 words & maximum 10,000 words in three copies to the Head of the Department on or before 30thApril. The dissertation shall be prepared under the guidance of an internal postgraduate recognized teacher.

Part II: An internal supervisor shall assess each dissertation for out of 50 marks, based on the methodology, analysis, contents and quality of the dissertation.

Part III: A viva voce examination of each candidate shall be held where he/she will have to make a presentation of the dissertation and defend the research. A panel of two referees shall be formed out of whom one shall be an internal examiner.

The viva voce shall carry 50 marks. Internal & external examiners shall give out of 25 marks each. The copies of dissertation and the record of the viva voce examination shall be maintained by the centre for two more academic years for inspection. The Marks obtained for project work shall be included in the statement of marks of all the regular internal students.

 Scale of Remuneration will be as per the University Guidelines.
 External examiner will be appointed by the University.

Savitribai Phule Pune University

(Formerly University of Pune)

Three Year B.Sc. Degree Program in Physics

(Faculty of Science & Technology)

T.Y.B.Sc. (Physics)

Choice Based Credit System

To be implemented from Academic Year 2021-2022

10) Structure of the Course:

Semester	Course Type	Course Code	Course Name	Credit
V	Discipline Specific Elective Course	PHY-351	Mathematical Methods in Physics-II	2
		PHY-352	Electrodynamics	2
		PHY-353	Classical Mechanics	2
		PHY-354	Atomic and Molecular Physics	2
		PHY-355	Computational Physics	2
		PHY-356: Elective-I (Select any One)		2
		PHY-356(**A**)	Astronomy and Astrophysics-I	
		PHY-356(**B**)	Elements of Materials Science	
		PHY-356(**C**)	Biophysics	
		PHY-356(**D**)	Renewable Energy Sources-I	
		PHY-356(**E**)	Applied Optics	
		PHY-356(**F**)	C# programming	
		PHY-357	Physics Laboratory-3A	2
		PHY-358	Physics Laboratory-3B	2
		PHY-359	Project-I	2
	Skill Enhancement Course	**PHY-3510: Skill Enhancement Course-I (Select any One)**		2
		PHY-3510(**G**)	Python Programming	
		PHY-3510(**H**)	Energy studies	
		PHY-3510(**I**)	Introduction to Arduino	
		PHY-3510(**J**)	Sensors and Transducer	
		PHY- 3511: Skill Enhancement Course-II (Select any One)		2
		PHY-3511(**K**)	Physics Workshop Skill	
		PHY-3511(**L**)	Biomedical Instrumentation	
		PHY-3511(**M**)	Non-destructive Testing Techniques	
		PHY- 3511(**N**)	Electro Acoustics and Entertainment Electronics	
VI	Discipline Specific Elective Course	PHY-361	Solid State Physics	2
		PHY-362	Quantum Mechanics	2
		PHY-363	Thermodynamics and Statistical Physics	2
		PHY-364	Nuclear Physics	2
		PHY-365	(**A**) Electronics-II **OR** (**B**) Advanced Electronics	2
		PHY-366: Elective-II (Select any One)		2

PHY-359: Physics Project-I

Lectures: 36   **(Credits-02)**

Guidelines:

1) The student does work equivalent to about 10 laboratory experiments throughout the semester in the third year.
2) One bears in mind that the project work is a practical course and it is intended to develop a set of skills pertaining to the laboratory work apart from the cognition of students. Therefore, the guides should not permit projects that involve no contribution on part of student.
3) The Project must have a clear and strong link with the principles of basic physics and/or their applications.
4) The theme chosen should be such that it promotes better understanding of physics concepts and brings out the creativity in the students.
5) The evaluation of the project work must give due credit to the amount of the project work actually done by a student, skills shown by the student, understanding of the physics concepts involved and the Final presentation at the time of viva voce.
6) A single project batch will include 5 (five) number of students per teacher.
7) Practical examination will be conducted Semester wise.
8) The student can perform an experimental/theoretical and computational Project in Physics or interdisciplinary areas under the supervision of one or more guides.
9) The student can learn the basics of the topic chosen for project, to learn how to do literature survey and set up the basic experimental/theoretical and computational techniques needed for the project.
10) The Department encourage to students for projects both in experimental and theoretical areas of
11) Physics in collaboration with other institutes and industry.

The Project work shall consist of the following Criterions.
   a) Introduction to foundations of Project Work.
   b) Introduction of Project Research Methodology.
   c) Study of Data Collection Methods.
   d) Project Problem Writing and Presentation Skills.
   e) It is expected that Students must finalize the Title of Project, Objective, Significance, Materials required, Method and Application etc.

Evaluation weightage:

- Semester End University Examination : 35 Marks
- Internal Examination: 15 Marks

Savitribai Phule Pune University
(Formerly University of Pune)

Three Year B. Sc. Degree Program in Zoology
(Faculty of Science & Technology)

T. Y. B. Sc. Zoology

Choice Based Credit System Syllabus

To be implemented from
Academic Year 2021 - 2022

Course Title: Project
Course Code: ZO 3611
Credits: 02

ZO 3611 - Project

Students have to complete the research project in the stipulated time and present the dissertation at the time of the examination in a proper format. Students should be encouraged to take up laboratory work, hands-on practical investigation and design experimental setup. Field work to be carried out under proper supervision and permissions from the concerned authorities.

Possible key aspects of the project work -
1. Planning the project
2. Selecting a suitable title
3. Significance of the work
4. Hypothesis, Objectives
5. Reviewing the available literature
6. Methodology to be used
7. Outcomes of the Project work
8. Conclusion and Discussion
9. Future plans

Students should be made aware of plagiarism and research ethics.

Course Title: Zoology Practical Paper - I
Course Code: ZO 367
Credits: 02

ZO 367 - Zoology Practical Paper - I

Section I: Practicals in Medical & Forensic Zoology

1. To carry out routine analysis of given urine sample for -   2 (E)

    i.   Physical Properties: Volume, Colour, pH, Turbidity, Specific gravity.

    ii. Chemical Properties: Sugars, Protein, Bile salts & bile pigments, Ketone bodies, Blood. (C)

2. Determination of serum urea.   E

3. Determination of serum uric acid.   E

4. Determination of serum Calcium. (C)   E

5. To examine human hair for cortex and medulla. (C)   E

6. To examine hair morphology and determine the species to which the hair belongs.   E

7. To prepare slides of scale pattern of human hair. (C)   E

8. To Visit a Forensic Laboratory and submission of the report.   E

9. To Identify and differentiate various types of Finger prints. (C)   E

Savitribai Phule Pune University

(Formerly University of Pune)

Two Year Post graduate Degree Program in Zoology

(Faculty of Science & Technology)

Revised Syllabus as per National Education Policy - 2020 for

M. Sc. (Zoology) Part - I

(For Colleges Affiliated to Savitribai Phule Pune University)

Syllabus to be implemented from the Academic Year

2023 - 2024

PROF. DR. R. D. CHAUDHARI
CHAIRMAN,
BOARD OF STUDIES IN ZOOLOGY,
AND ALL B. O. S. MEMBERS
Savitribai Phule Pune University,
Pune – 411 007

Year	Level	Semester II		
		Course	**Subject**	**Credits**
1	**6.0**	**Major Core**	ZOO 551 MJ : Molecular Biology	02
			ZOO 552 MJ : Comparative Endocrinology	02
			ZOO 553 MJ : Comparative Animal Physiology	02
			ZOO 554 MJ : Biochemical Techniques	02
			ZOO 555 MJ : Integrated Pest Management	02
			ZOO 556 MJP : Laboratory Exercises in Biochemical & Molecular Techniques	02
			ZOO 557 MJP : Laboratory Exercises in Animal Physiology and Endocrinology	02
		Major Elective	ZOO 558 MJ : Medical Parasitology	02
			ZOO 559 MJP : Laboratory Exercises in Medical Parasitology	02
			ZOO 560 MJ : Economic Zoology	02
			ZOO 561MJP : Laboratory Exercises in Economic Zoology	02
			ZOO 562 MJP : Laboratory Exercises in Bio- Medical Techniques	02
		On Job Training OR Field Project	ZOO 563 OJT / FP : On Job Training OR Field Project	04
		NOTE : 1. Major Core = (ZOO 551 MJ to ZOO 555 MJ = 10 C + ZOO 556 MJP to ZOO 557 MJP = 4C) (Major Core of 10 + 4 = 14 Credits is Compulsory).		14
		2. Major Elective = Students can choose any two courses from (ZOO 558 MJ to ZOO 562 MJ) equivalent to 2 + 2 = 4 Credits.		4
		3. On Job Training OR Field Project (ZOO 563 OJT / FP) is compulsory for all students.		4
		Total		22

11.	To measure the ultrasound blood flow in order to identify arteries and veins.	**1P**
12.	Heart sound measurement using PCG. (**Compulsory**)	**1P**
13.	Study of Parasites in the blood. (**Compulsory**)	**1P**

ZOO 563 JT / FP : On Job Training OR Field Project							
Teaching Scheme					**Marking Scheme**		
Year	**Semester**	**Course Type**	**Credits**	**Practical per week**	**Continuous Internal Assessment**	**End Semester Examination**	**Total**
1	**II**	**On Job Training / Field Project**	**04**	**2**	**30**	**70**	**100**

Course Outcomes :

After successfully completing this course, students will able to:

CO1 : Develop problem-solving skills.

CO2 : Demonstrate knowledge of research processes.

CO3 : Develop hands-on experience in a specific field of zoology.

CO4 : Perform literature review using print and online databases.

CO5 : Select and define appropriate research problem and parameters to prepare a project report.

CO6 : Identify, explain, compare, and prepare the key elements of a research proposal.

CO7 : Compare and contrast quantitative and qualitative research paradigms.

CO8 : Use sampling methods, measurement scales and instruments, and appropriate uses of each.

CO9 : Develop awareness about biodiversity conservation.

Detailed Syllabus :

Sr. No.	Topics	Practical Assigned (P)
1.	**On Job Training OR Field Project :**	

Savitribai Phule Pune University

(Formerly University of Pune)

Two Year Degree Program in Zoology

(Faculty of Science & Technology)

Revised Syllabi for

M.Sc. (Zoology) Part-II

(for Colleges Affiliated to Savitribai Phule Pune University)

Choice Based Credit System Syllabus

To be implemented from Academic Year 2020-2021

M.Sc. Zoology, Part II, Semester – IV

Sr. No.	Core Compulsory Theory Paper (CCTP)	Choice Based Optional Paper (CBOP)	Theory/ practical	Credit	Core Compulsory Practical Paper (CCPP)	Credit
1	ZOUT 241 Special Paper-Any One- Animal Physiology-II/ Entomology-II/ Genetics-II	-			-	4
2	ZOUT 242 Mammalian Reproductive Physiology and Aquaculture				-	4
3	-	ZODT 243 Theory	Histology and Histochemistry/ Pest Control	2	-	4
		ZODP 243 Practical	Zoology Practical Paper-4 (Practicals corresponding to ZOUT 241and ZODT 243)	2		
4	-	ZODT 244 Theory	Pollution Biology/ Apiculture	2		4
		ZODP 244 Practical	Zoology Practical Paper-5 (Practicals corresponding to ZOUT 242 and ZODT 244)	2	-	
5	-	-			ZOUP 245 (Project)	4
	Total Credit of Semester 4					20