1.3.2.-Number of courses that include experiential learning through project work during the year 2022-2023

Sr.no	Programme	Subject	No.of students
1.	T.Y.B.Sc	Biotechnology	15
2.	T.Y.B.Sc	Computer Science	12
3.	T.Y.B.Sc	Information technology	44
4.	M.Sc.II	Physics	12
5.	M.Sc.II	Chemistry	35
6.	M.Sc.II	Information technology	11
7.	M.Sc.	Computer Science	06
8.	M.Com.	Commerce	51

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T. Y Bsc Information technology

1.3.2

Project Dissertation Semester V and Project Implementation Semester VI

Chapter 1 to 4 should be submitted in Semester V in spiral binding. These chapter have also to be included in Semester VI report. Semester VI report has to be hard bound with golden embossing. Students will be evaluated based on the dissertation in semester V and dissertation and viva voce in Semester VI.

I. OBJECTIVES

- Describe the Systems Development Life Cycle (SDLC).
- Evaluate systems requirements.
- Complete a problem definition.
- Evaluate a problem definition.
- Determine how to collect information to determine requirements.
- Perform and evaluate feasibility studies like cost-benefit analysis, technical feasibility, time feasibility and Operational feasibility for the project.
- Work on data collection methods for fact finding.
- Construct and evaluate data flow diagrams.
- Construct and evaluate data dictionaries.
- Evaluate methods of process description to include structured English, decision tables and decision trees.
- Evaluate alternative tools for the analysis process.
- Create and evaluate such alternative graphical tools as systems flow charts and state transition diagrams.
- Decide the S/W requirement specifications and H/W requirement specifications.
- Plan the systems design phase of the SDLC.
- Distinguish between logical and physical design requirements.
- Design and evaluate system outputs.
- Design and evaluate systems inputs.
- Design and evaluate validity checks for input data.

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M Sc - II Information Technology

PSIT4P4: Project Implementation and Viva

M. Sc (Information Technology)		Semester – IV	
Course Name: Project Implementation and Viva		Course Code: PSIT4P4	
Periods per week (1 Period is 60 minutes)		4	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2	50
	Internal	--	-

The project dissertation and Viva Voce details are given in Appendix 1.

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Guide lines for maintenance of journals:

A student should maintain a journal with at least six practical experiments for each part of the practical course. Certified journals need to be submitted at the time of the practical examination.

Guidelines for Project Proposal in Semester - III

- Student should take a topic related to the specialization he or she is planning to take in Semester-IV.
- Should have studied the related topics in the elective he or she has chosen in semester-II and semester- III
- A student is expected to devote at least 2 to 3 months of study as part of topic selection and its documentation.
- The student should be comfortable to implement the proposal in the semester – IV.

Guidelines for Documentation of Project Proposal in Semester –III

Student is expected to make a project proposal documentation which should contain the following:

- **Title:** A suitable title giving the idea about what work is proposed.
- **Introduction:** An introduction to the topic of around 3-5 pages, giving proper back ground of the topic discussed.
- **Related works:** A detailed survey of the relevant works done by others in the domain. Student is expected to refer at least 5 research papers in addition to text books and web-links in the relevant topic. It may be around 7 to 10 pages.
- **Objective:** A detailed objective of the proposal is needed. It may be of 1 to 2 pages.
- **Methodology:** A proper and detailed procedure of how to solve the problem discussed. It shall contain the techniques, tools, software and data to be used. It shall be of around 3 to 5 pages.

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B. Sc. Computer Science

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Project Implementation Guidelines

1. A learner is expected to carry out two different projects: one in Semester V and another in Semester VI.
2. A learner can choose any topic which is covered in Semester I- semester VI or any other topic with the prior approval from head of the department/ project in charge.
3. The Project has to be performed individually.
4. A learner is expected to devote around three months of efforts in the project.
5. The project can be application oriented/web-based/database/research based.
6. It has to be an implemented work; just theoretical study will not be acceptable.
7. A learner can choose any programming language, computational techniques and tools which have been covered during BSc course or any other with the prior permission of head of the department/ project guide.
8. A project guide should be assigned to a learner. He/she will assign a schedule for the project and hand it over to a learner. The guide should oversee the project progress on a weekly basis by considering the workload of 3 lectures as assigned.
9. The quality of the project will be evaluated based on the novelty of the topic, scope of the work, relevance to the computer science, adoption of emerging techniques/technologies and its real-world application.
10. A learner has to maintain a project report with the following subsections

a) Title Page

b) Certificate

A certificate should contain the following information –

- The fact that the student has successfully completed the project as per the syllabus and that it forms a part of the requirements for completing the BSc degree in computer science of University of Mumbai.
- The name of the student and the project guide
- The academic year in which the project is done
- Date of submission,
- Signature of the project guide and the head of the department with date along with the department stamp,

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B.Sc. Biotechnology

Examination pattern for:

Theory:

- The question paper for the Term End Exam would be of **100 marks** consisting of 5 Questions (20M each), of which one question would be common for all units in the syllabus.
- The question paper would be set for 150 marks including internal options.
- There shall be no internal exam for any paper.

Practical:

- Would be conducted over a period of 3 days; 50M each paper.
- Each student to perform 2 major and 2 minor practical for Sem V and 2 major and project presentation for Sem VI ,
- Viva would be conducted during the practical during Sem V; Sem VI would have ONLY project presentation
- Journals would be uniform throughout all the centres; matter would be communicated to all the centres by the syllabus committee.
- Distribution of marks for the experiments carried out during the examination:

  Sem V (50M/ paper): Major: 20M; Minor: 10M; Viva: 10M; Journal 10M.
  Sem VI (50M/paper): Major (x2): 40M; Journal: 10M; Project 50M

  The report could be around 25-30 pages with appropriate referencing and formatting.
  Marks distribution for the project would be as follows:
  25M documentation, 15M presentation, 10 M viva and interactions;

- Students would undertake a project for 1-2 months during the last semester for 50 M. The project **should** include **either** of the following:

  1. One/ more major instrumentation OR
  2. One / more major technique/s required in the field of interest OR
  3. Bioinformatics OR
  4. Biostatistics

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B Sc - I T (Information Technology)

Chapter 7

References (20 bold, centered)

Content (12, LEFT)

[1] Title of the book, Author

[2] Full URL of online references

[3] ----------

*** NOTE ABOUT PROJECT VIVA VOCE:**

Student may be asked to write code for problem during VIVA to demonstrate his coding capabilities and he/she may be asked to write any segment of coding used in the in the project. The project can be done in group of at most four students. However, the length and depth of the project should be justified for the projects done in group. A big project can be modularised and different modules can be assigned as separate project to different students.

Marks Distribution:

Semester V: 50 Marks

Documentation: 50 marks

Semester VI: 150 Marks

Documentation: 50 Marks:

Implementation and Viva Voce: 100 Marks

The plagiarism should be maintained as per the UGC guidelines.

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M. Sc - II Physics

SCHEME OF THEORY, PRACTICALS AND PROJECT EXAMINATION (SEM- V & VI)

I.	**Theory: External Examination: 100 marks**			
	Each theory paper shall be of **THREE** hours duration.			
	Each paper shall consist of FIVE questions. All questions are compulsory and will have internal options. Choice in papers has to be 1.5 times.			
	Q – I :	From Unit – I		
	Q – II :	From Unit – II		
	Q – III :	From Unit - III		
	Q – IV :	From Unit - IV		
	Q – V :	Will consist of questions from all the FOUR Units with equal weightage of marks allotted to each Unit.		
II.	**Practicals and Project:** The External Practical Examination will be conducted as per the following scheme.			
Sr. No.	**Particulars of External Practical and Project Examination**			**Total Marks**
1	Laboratory Work	Experiment-1= 60 M	Experiment-2 = 60 M	120
2	Journal	10	10	20
3	Viva	10	10	20
			Sub Total =	**160**
III.	**Project**	Internal Examiner (20 M)	External Examiner (20 M)	**40**
			Grand Total	**200**

Passing Criteria:

1. A student should be considered as passed in the practical examination provided he/she fulfills the following passing criteria
   a. Minimum of 20 marks in each practical component - i.e. **USPHP07** and **USPHP08.**
   b. Minimum of 10 marks in Project Component
   c. And cumulatively scoring 80 marks (i.e. 40 % of 200 marks)

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indole.
2. 2-naphthol → 1-phenyl azo-2-naphthol → 1-amino-2-naphthol.
3. Cyclohexanone → cyclohexanone oxime → Caprolactum.
4. Hydroquinone → hydroquinone diacetate → 2,5-dihydroxyacetophenone.
5. 4-nitrotoluene → 4-nitrobenzoic acid → 4-aminobenzoic acid.
6. *o*-nitroaniline → *o*-phenylene diamine → Benzimidazole.
7. Benzophenone → benzophenone oxime → benzanilide.
8. *o*-chlorobenzoic acid → N-phenyl anthranilic acid → acridone.
9. Benzoin → benzil → benzilic acid.
10. Phthalic acid → phthalimide → anthranilic acid.
11. Resorcinol → 4-methyl-7-hydroxy coumarin → 4-methyl-7-acetoxy coumarin.
12. Anthracene → anthraquinone → anthrone.

(Minimum 8 experiments)

Note:

1. Students are expected to know (i) the planning of synthesis, effect of reaction parameters including stoichiometry, and **safety aspects including MSDS** (ii) the possible mechanism, expected spectral data (IR and NMR) of the starting material and final product.
2. Students are expected to purify the product by recryllization, measure its mass or volume, check the purity by TLC, determine physical constant and calculate percentage yield.

Course code: PSCHO4P2

Session-I: Combined spectral identification: Interpretation of spectral data of organic compounds (UV, IR, PMR, CMR and Mass spectra).
A student will be given UV, IR, PMR, CMR, and Mass spectra of a compound from which preliminary information should be reported within first half an hour of the examination without referring to any book/reference material. The complete structure of the compound may then be elucidated by referring to any standard text-book/reference material etc **(Minimum 8 spectral analysis).**

Session-II: Project evaluation

References for Practicals

1. Comprehensive Practical Organic Chemistry: Preparation and Quantitative Analysis- V.
K. Ahluwalia and Renu Aggarwal, Universities Press India Ltd., 2000
2. Advanced Practical Organic Chemistry – N. K. Vishnoi, Third Addition. Vikas Publishing House PVT Ltd
3. Systematic Laboratory Experiments in Organic Synthesis- A. Sethi, New Age International Publications
4. Systematic Identification of Organic compounds, 6th edition, R. L. Shriner, R. C. Fuson and D.Y. Curtin Wiley, New York.
5. Vogel's Textbook of Quantitative Analysis, revised, J. Bassett, R. C. Denney, G. H. Jeffery and J. Mendham, ELBS
6. Experiments and Techniques in Organic Chemistry, D. Pavia, C. Johnson and M. Miller, Prentice Hall

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M.Sc.-II-Information Technology.

PSIT3P1: Project Documentation and Viva

M. Sc (Information Technology)		Semester – III	
Course Name: Project Documentation and Viva		Course Code: PSIT3P1	
Periods per week (1 Period is 60 minutes)		4	
Credits		2	
		Hours	Marks
Evaluation System	Practical Examination	2	50
	Internal	--	--

The learners are expected to develop a project beyond the undergraduate level. Normal web sites, web applications, mobile apps are not expected. Preferably, the project should be from the elective chosen by the learner at the post graduate level. In semester three. The learner is supposed to prepare the synopsis and documentation. The same project has to be implemented in Semester IV.

More details about the project is given is Appendix 1.

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Evaluation pattern of the project work

The Project Report shall be evaluated in two stages viz.	
• **Evaluation of Project Report (Bound Copy)**	**60 Marks**
▪ Introduction and other areas covered	20 Marks
▪ Research Methodology, Presentation, Analysis and interpretation of data	30 Marks
▪ Conclusion & Recommendations	10 Marks
• **Conduct of Viva-voce**	**40 Marks**
▪ In the course of Viva-voce, the questions may be asked such as importance / relevance of the study, objective of the study, methodology of the study/ mode of Enquiry (question responses)	10 Marks
▪ Ability to explain the analysis, findings, concluding observations, recommendation, limitations of the Study	20 Marks
▪ Overall Impression (including Communication Skill)	10 Marks

Note:

- ***The guiding teacher along with the external evaluator appointed by the University College for the evaluation of project shall conduct the viva-voce examination as per the evaluation pattern***

Passing Standard

- Minimum of Grade E in the project component
- In case of failing in the project work, the same project can be revised for ATKT examination.
- Absence of student for viva voce: If any student fails to appear for the viva voce on the date and time fixed by the department such student shall appear for the viva voce on the date and time fixed by the Department, such student shall appear for the viva voce only along with students of the next batch.

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