University of Mumbai

**Revised Syllabus
and
Question Paper Pattern
of Courses
of
Bachelor of Management Studies
(BMS) Programme at
Third Year**
Semester V and VI

**Under Choice Based Credit, Grading and
Semester System**

(To be implemented from Academic Year- 2018-2019)
Board of Studies-in-Business Management, University of Mumbai

Bachelor of Management Studies (BMS) Programme
Under Choice Based Credit, Grading and Semester System

TYBMS

(To be implemented from Academic Year- 2018-2019)

No. of Courses	Semester V	Credits	No. of Courses	Semester VI	Credits
1	*Elective Courses (EC)*		*1*	*Elective Courses (EC)*	
1,2,3 & 4	*Any four courses from the following list of the courses	**12**	1,2,3 & 4	**Any four courses from the following list of the courses	**12**
2	*Core Course (CC)*		*2*	*Core Course (CC)*	
5	Logistics & Supply Chain Management	**04**	5	Operation Research	**04**
3	**Ability Enhancement Course (AEC)**		*3*	**Ability Enhancement Course (AEC)**	
6	Corporate Communication & Public Relations	**04**	6	Project Work	**04**
	Total Credits	**20**		**Total Credits**	**20**

✓ **Note:** *Project work is considered as a special course involving application of knowledge in solving/analysing/exploring a real life situation/ difficult problem. Project work would be of 04 credits. A project work may be undertaken in any area of Elective Courses/ study area selected*

List of group of Elective Courses(EC) for Semester V (Any Four)		** *List of group of Elective Courses(EC) for Semester VI (Any Four)*	
Group A: Finance Electives			
1	Investment Analysis & Portfolio Management	1	International Finance
2	Commodity & Derivatives Market	2	Innovative Financial Services
3	Wealth Management	3	Project Management
4	Financial Accounting	4	Strategic Financial Management
5	Risk Management	5	Financing Rural Development
6	Direct Taxes	6	Indirect Taxes
Group B:Marketing Electives			
1	Services Marketing	1	Brand Management
2	E-Commerce & Digital Marketing	2	Retail Management
3	Sales & Distribution Management	3	International Marketing
4	Customer Relationship Management	4	Media Planning & Management
5	Industrial Marketing	5	Sports Marketing
6	Strategic Marketing Management	6	Marketing of Non Profit Organisation
Group C: Human Resource Electives			
1	Finance for HR Professionals & Compensation Management	1	HRM in Global Perspective
2	Strategic Human Resource Management & HR Policies	2	Organisational Development
3	Performance Management & Career Planning	3	HRM in Service Sector Management
4	Industrial Relations	4	Workforce Diversity
5	Talent & Competency Management	5	Human Resource Accounting & Audit
6	Stress Management	6	Indian Ethos in Management
Note: Group selected in Semester III will continue in Semester V &Semester VI			

Introduction

Inclusion of project work in the course curriculum of the Bachelor of Management Studies programme is one of the ambitious aspects in the programme structure. The main objective of inclusion of project work is to inculcate the element of research analyse and scientific temperament challenging the potential of learner as regards to his/ her eager to enquire and ability to interpret particular aspect of the study. It is expected that the guiding teacher should undertake the counselling sessions and make the awareness among the learners about the methodology of formulation, preparation and evaluation pattern of the project work.

- There are two modes of preparation of project work

    1. Project work based on research methodology in the study area
    2. Project work based on internship in the study area

Guidelines for preparation of Project Work

1. General guidelines for preparation of project work based on Research Methodology

- The project topic may be undertaken in any area of Elective Courses.

- Each of the learner has to undertake a Project individually under the supervision of a teacher-guide.

- The learner shall decide the topic and title which should be specific, clear and with definite scope in consultation with the teacher-guide concerned.

- University/college shall allot a guiding teacher for guidance to the students based on her / his specialization.

- The project report shall be prepared as per the broad guidelines given below:

    - Font type: Times New Roman
    - Font size: 12-For content, 14-for Title
    - Line Space : 1.5-for content and 1-for in table work
    - Paper Size: A4
    - Margin : in Left-1.5, Up-Down-Right-1
    - The Project Report shall be bounded.
    - The project report should be 80 to 100 pages

Format

1st page (Main Page)

Title of the problem of the Project

A Project Submitted to

University of Mumbai for partial completion of the degree of

Bachelor of Management Studies

Under the Faculty of Commerce

By

Name of the Learner

Under the Guidance of

Name of the Guiding Teacher

Name and address of the College

Month and Year

2nd Page
This page to be repeated on 2nd page (i.e. inside after main page)

On separate page

Index

List of tables, if any, with page numbers.

List of Graphs, if any, with page numbers.

List of Appendix, if any, with page numbers.

Abbreviations used:

Structure to be followed to maintain the uniformity in formulation and presentation of Project Work

(Model Structure of the Project Work)

- **Chapter No. 1: Introduction**

  In this chapter Selection and relevance of the problem, historical background of the problem, brief profile of the study area, definition/s of related aspects, characteristics, different concepts pertaining to the problem etc can be incorporated by the learner.

- **Chapter No. 2: Research Methodology**

  This chapter will include Objectives, Hypothesis, Scope of the study, limitations of the study, significance of the study, Selection of the problem, Sample size, Data collection, Tabulation of data, Techniques and tools to be used, etc can be incorporated by the learner.

- **Chapter No. 3: Literature Review**

  This chapter will provide information about studies done on the respective issue. This would specify how the study undertaken is relevant and contribute for value addition in information/ knowledge/ application of study area which ultimately helps the learner to undertake further study on same issue.

- **Chapter No. 4: Data Analysis, Interpretation and Presentation**

  This chapter is the core part of the study. The analysis pertaining to collected data will be done by the learner. The application of selected tools or techniques will be used to arrive at findings. In this, table of information's, presentation of graphs etc. can be provided with interpretation by the learner.

- **Chapter No. 5: Conclusions and Suggestions**

  In this chapter of project work, findings of work will be covered and suggestion will be enlisted to validate the objectives and hypotheses.

  Note: If required more chapters of data analysis can be added.
- **Bibliography**

- **Appendix**

Certificate

This is to certify that Ms/Mr _____has worked and duly completed her/his Project Work for the degree of Bachelor of Management Studies under the Faculty of Commerce in the subject of _____ and her/his project is entitled, "_____*Title of the Project*_____" under my supervision.

I further certify that the entire work has been done by the learner under my guidance and that no part of it has been submitted previously for any Degree or Diploma of any University.

It is her/ his own work and facts reported by her/his personal findings and investigations.

Seal of the College

Name and Signature of

Guiding Teacher

Date of submission:

Declaration by learner

I the undersigned Miss / Mr. _____*Name of the learner*_____here by, declare that the work embodied in this project work titled "_____ _____*Title of the Project*_____", forms my own contribution to the research work carried out under the guidance of _____*Name of the guiding teacher*_____ is a result of my own research work and has not been previously submitted to any other University for any other Degree/ Diploma to this or any other University.

Wherever reference has been made to previous works of others, it has been clearly indicated as such and included in the bibliography.

I, here by further declare that all information of this document has been obtained and presented in accordance with academic rules and ethical conduct.

Name and Signature of the learner

Certified by

Name and signature of the Guiding Teacher

Acknowledgment

(Model structure of the acknowledgement)

To list who all have helped me is difficult because they are so numerous and the depth is so enormous.

I would like to acknowledge the following as being idealistic channels and fresh dimensions in the completion of this project.

I take this opportunity to thank the **University of Mumbai** for giving me chance to do this project.

I would like to thank my **Principal, _____** for providing the necessary facilities required for completion of this project.

I take this opportunity to thank our **Coordinator_____**, for her moral support and guidance.

I would also like to express my sincere gratitude towards my project guide _____ whose guidance and care made the project successful.

I would like to thank my **College Library**, for having provided various reference books and magazines related to my project.

Lastly, I would like to thank each and every person who directly or indirectly helped me in the completion of the project especially **my Parents and Peers** who supported me throughout my project.

2. Guidelines for Internship based project work

- Minimum 20 days/ 100 hours of Internship with an Organisation/ NGO/ Charitable Organisation/ Private firm.
- The theme of the internship should be based on any study area of the elective courses
- Experience Certificate is Mandatory
- A project report has to be brief in content and must include the following aspects:

  - **Executive Summary:**

    A bird's eye view of your entire presentation has to be precisely offered under this category.

  - **Introduction on the Company:**

    A Concise representation of company/ organization defining its scope, products/ services and its SWOT analysis.

  - **Statement and Objectives:**

    The mission and vision of the organization need to be stated enshrining its broad strategies.

  - **Your Role in the Organisation during the internship:**

    The key aspects handled, the department under which you were deployed and brief summary report duly acknowledged by the reporting head.

  - **Challenges:**

    The challenges confronted while churning out theoretical knowledge into practical world.

  - **Conclusion:**

    A brief overview of your experience and suggestions to bridge the gap between theory and practice.

- The project report based on internship shall be prepared as per the broad guidelines given below:
  - Font type: Times New Roman
  - Font size: 12-For content, 14-for Title
  - Line Space : 1.5-for content and 1-for in table work
  - Paper Size: A4
  - Margin : in Left-1.5, Up-Down-Right-1
  - The Project Report shall be bounded.
  - The project report should be of minimum 50 pages

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.

B.Com. (Financial Markets) Programme
Under Choice Based Credit, Grading and Semester System

T.Y.B.Com. (Financial Markets)

(To be implemented from Academic Year 2018-2019)

No. of Courses	Semester V	Credits	No. of Courses	Semester VI	Credits
1	*Elective Courses (EC)*		*1*	*Elective Courses (EC)*	
1,2,3 & 4	*Any four courses from the following list of the courses	**12**	1,2,3 & 4	**Any four courses from the following list of the courses	**12**
2	*Core Courses (CC)*		*2*	*Core Courses (CC)*	
5	Financial Derivatives	**04**	5	Risk Management	**04**
6	Business Ethics and Corporate Governance	**04**	6	Project Work	**04**
	Total Credits	**20**		**Total Credits**	**20**

✓ **Note:** *Project work is considered as a special course involving application of knowledge in solving/analyzing/exploring a real life situation/ difficult problem. Project work would be of 04 credits each. A project work may be undertaken in any area of Elective Courses/ Study Area*

List of Elective Courses for Semester V (Any Four)		**List of Elective Courses for Semester VI (Any Four)*	
01	Marketing in financial Services	01	Venture Capital and Private Equity
02	Technical analysis	02	Mutual Fund Management
03	Corporate Accounting	03	Organisational Behaviour
04	Equity Research	04	Strategic Corporate Finance
05	Direct Tax- Income Tax	05	Indirect Tax- GST
06	Business Valuation	06	Corporate Restructuring
Note: Course selected in Semester V will continue in Semester VI			

B.Com. (Banking and Insurance) Programme
Under Choice Based Credit, Grading and Semester System

T.Y.B.Com. (Banking and Insurance)

(To be implemented from Academic Year 2018-2019)

No. of Courses	Semester V	Credits	No. of Courses	Semester VI	Credits
1	*Elective Courses (EC)*		*1*	*Elective Courses (EC)*	
1,2,3 &4	*Any four courses from the following list of the courses	**12**	1,2,3 &4	**Any four courses from the following list of the courses	**12**
2	*Core Courses (CC)*		*2*	*Core Courses (CC)*	
5	International Banking and Finance	**04**	5	Central Banking	**04**
3	*Ability Enhancement Course(AEC)*		*3*	*Ability Enhancement Course (AEC)*	
6	Research Methodology	**04**	6	*Project Work* In Banking & Insurance	**04**
	Total Credits	**20**		**Total Credits**	**20**

✓ *Note: Project work is considered as a special course involving application of knowledge in solving/analyzing/exploring a real life situation/ difficult problem. Project work would be of 04 credits each. A project work may be undertaken in any area of Elective Courses/ Study Area*

	List of Elective Courses for Semester V (Any Four)		*List of Elective Courses for Semester VI (Any Four)*
01	Financial Reporting & Analysis(Corporate Banking & Insurance)	01	Security Analysis and Portfolio Management
02	Auditing - I	02	Auditing - II
03	Strategic Management	03	Human Resource Management
04	Financial Services Management	04	Turnaround Management
05	Business Ethics and Corporate Governance	05	International Business
06	Actuarial Analysis in Banking & Insurance	06	Marketing in Banking & Insurance
Note: Course selected in Semester V will continue in Semester VI			

B.Com. (Accounting and Finance) Programme
Under Choice Based Credit, Grading and Semester System

T.Y.B.Com. (Accounting and Finance)

(To be implemented from Academic Year 2018-2019)

No. of Courses	Semester V	Credits	No. of Courses	Semester VI	Credits
1	*Elective Courses (EC)*		*1*	*Elective Courses (EC)*	
1,2,3 &4	*Any four courses from the following list of the courses	**12**	1,2,3 &4	**Any four courses from the following list of the courses	**12**
2	*Core Courses (CC)*		*2*	*Core Courses (CC)*	
5	Financial Accounting - V	**04**	5	Financial Accounting - VII	**04**
6	Financial Accounting - VI	**04**	6	Project Work	**04**
	Total Credits	**20**		**Total Credits**	**20**

- ✓ ***Note:*** *Project work is considered as a special course involving application of knowledge in solving/analyzing/exploring a real life situation/ difficult problem. Project work would be of 04 credits each. A project work may be undertaken in any area of Elective Courses/ Study Area*

List of Elective Courses for Semester V (Any Four)		**List of Elective Courses for Semester VI (Any Four)*	
01	Cost Accounting - III	01	Cost Accounting - IV
02	Financial Management - II	02	Financial Management - III
03	Taxation - IV (Indirect Taxes - II)	03	Taxation - V (Indirect Taxes- III)
04	International Finance	04	Security Analysis and Portfolio Management
05	Financial Analysis and Business Valuation	05	Management Control Systems
06	Management -II (Management Applications)	06	Economics Paper – III (Indian Economy)
Note: Course selected in Semester V will continue in Semester VI			

UNIVERSITY OF MUMBAI

Syllabus for T.Y.B.Sc.

Programme: B.Sc.

Subject: Information Technology

(Choice Based Credit System)

(with effect from the academic year 2018 – 2019)

		Coordinate, Linear, Relative, Table, Absolute, Frame, List View, Grid View.
5	**Programming UI elements** AppBar, Fragments, UI Components	
6	**Programming menus, dialog, dialog fragments**	
7	**Programs on Intents, Events, Listeners and Adapters** The Android Intent Class, Using Events and Event Listeners	
8	**Programs on Services, notification and broadcast receivers**	
9	**Database Programming with SQLite**	
10	**Programming threads, handles and asynchronized programs**	
11	**Programming Media API and Telephone API**	
12	**Programming Security and permissions**	
13	**Programming Network Communications and Services (JSON)**	

APPENDIX – 1

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.

- Design and evaluate user interfaces for input.

- Design and evaluate file structures to include the use of indexes.

- Estimate storage requirements.

- Explain the various file update processes based on the standard file organizations.

- Decide various data structures.

- Construct and evaluate entity-relationship (ER) diagrams for RDBMS related projects.

- Perform normalization for the unnormalized tables for RDBMS related projects

- Decide the various processing systems to include distributed, client/server, online and others.

- Perform project cost estimates using various techniques.

- Schedule projects using both GANTT and PERT charts.

- Perform coding for the project.

- Documentation requirements and prepare and evaluate systems documentation.

- Perform various systems testing techniques/strategies to include the phases of testing.

- Systems implementation and its key problems.

- Generate various reports.

- Be able to prepare and evaluate a final report.

- Brief the maintenance procedures and the role of configuration management in operations.

- To decide the future scope and further enhancement of the system.

- Plan for several appendices to be placed in support with the project report documentation.

- Decide the various processing systems to include distributed, client/server, online and others.

- Perform project cost estimates using various techniques.

- Schedule projects using both GANTT and PERT charts.

- Perform coding for the project.

- Documentation requirements and prepare and evaluate systems documentation.

- Perform various systems testing techniques/strategies to include the phases of testing.

- Systems implementation and its key problems.

- Generate various reports.

- Be able to prepare and evaluate a final report.

- Brief the maintenance procedures and the role of configuration management in operations.

- To decide the future scope and further enhancement of the system.

- Plan for several appendices to be placed in support with the project report documentation.

- Work effectively as an individual or as a team member to produce correct, efficient, well-organized and documented programs in a reasonable time.

- Recognize problems that are amenable to computer solutions, and knowledge of the tool necessary for solving such problems.

- Develop of the ability to assess the implications of work performed.

- Get good exposure and command in one or more application areas and on the software

- Develop quality software using the software engineering principles

- Develop of the ability to communicate effectively.

II. Type of the Project

The majority of the students are expected to work on a real-life project preferably in some industry/ Research and Development Laboratories/Educational Institution/Software Company. Students are encouraged to work in the areas listedbelow . However, it is *not mandatory* for a

student to work on a real-life project. The student can formulate a project problem with the help of her/his Guide and submit the project proposal of the same. **Approval of the project proposal is mandatory**. If approved, the student can commence working on it, and complete it. Use the latest versions of the software packages for the development of the project.

III. SOFTWARE AND BROAD AREAS OF APPLICATION

FRONT END / GUI Tools	.Net Technologies,Java
DBMS/BACK END	Oracle, SQL Plus, MY SQL, SQL Server,
LANGUAGES	C, C++, Java, VC++, C#, R,Python
SCRIPTING LANGUAGES	PHP,JSP, SHELL Scripts (Unix), TcL/TK,
.NET Platform	F#,C#. Net, Visual C#. Net, ASP.Net
MIDDLE WARE (COMPONENT) TECHNOLOGIES	COM/DCOM, Active-X, EJB
UNIX INTERNALS	Device Drivers, RPC, Threads, Socket programming
NETWORK/WIRELESS TECHNOLOGIES	-
REALTIME OPERATING SYSTEM/ EMBEDDED SKILLS	LINUX, Raspberry Pi, Arduino, 8051
APPLICATION AREAS	Financial / Insurance / Manufacturing / Multimedia / Computer Graphics / Instructional Design/ Database Management System/ Internet / Intranet / Computer Networking-Communication Software development/ E-Commerce/ ERP/ MRP/ TCP-IP programming / Routing protocols programming/ Socket programming.

IV.Introduction

The project report should be documented with scientific approach to the solution of the problem that the students have sought to address. The project report should be prepared in order to solve the problem in a methodical and professional manner, making due references to appropriate techniques, technologies and professional standards. The student should start the documentation process from the first phase of software development so that one can easily identify the issues to be focused upon in the ultimate project report. The student should also include the details from

the project diary, in which they will record the progress of their project throughout the course. The project report should contain enough details to enable examiners to evaluate the work. The important points should be highlighted in the body of the report, with details often referred to appendices.

1.1 PROJECT REPORT:

Title Page

Original Copy of the Approved Proforma of the Project Proposal

Certificate of Authenticated work

Role and Responsibility Form

Abstract

Acknowledgement

Table of Contents

Table of Figures

CHAPTER 1: INTRODUCTION

1.1 Background

1.2 Objectives

1.3 Purpose, Scope, and Applicability

1.3.1 Purpose

1.3.2 Scope

1.3.3 Applicability

1.4 Achievements

1.5 Organisation of Report

CHAPTER 2: SURVEY OF TECHNOLOGIES

CHAPTER 3: REQUIREMENTS AND ANALYSIS

3.1 Problem Definition

3.2 Requirements Specification

3.3 Planning and Scheduling

3.4 Software and Hardware Requirements

3.5 Preliminary Product Description

3.6 Conceptual Models

CHAPTER 4: SYSTEM DESIGN

4.1 Basic Modules

4.2 Data Design

4.2.1 Schema Design

4.2.2 Data Integrity and Constraints

4.3 Procedural Design

4.3.1 Logic Diagrams

4.3.2 Data Structures

4.3.3 Algorithms Design

4.4 User interface design

4.5 Security Issues

4.6 Test Cases Design

The documentation should use tools like star UML, Visuo for windows, Rational Rose for design as part of Software Project Management Practical Course. The documentation should be spiral bound for semester V and the entire documentation should be hard bound during semester VI.

CHAPTER 5: IMPLEMENTATION AND TESTING

5.1 Implementation Approaches

5.2 Coding Details and Code Efficiency

5.2.1 Code Efficiency

5.3 Testing Approach

5.3.1 Unit Testing

5.3.2 Integrated Testing

5.3.3 Beta Testing

5.4 Modifications and Improvements

5.5 Test Cases

CHAPTER 6: RESULTS AND DISCUSSION

6.1 Test Reports

6.2 User Documentation

CHAPTER 7: CONCLUSIONS

7.1 Conclusion

7.1.1 Significance of the System

7.2 Limitations of the System

7.3 Future Scope of the Project

REFERENCES

GLOSSARY

APPENDIX A

APPENDIX B

V. EXPLANATION OF CONTENTS

Title Page

Sample format of Title page is given in Appendix 1 of this block. Students should follow the given format.

Original Copy of the Approved Proforma of the Project Proposal

Sample Proforma of Project Proposal is given in Appendix 2 of this block. Students should follow the given format.

Certificate of Authenticated work

Sample format of Certificate of Authenticated work is given in Appendix 3 of this block. Students should follow the given format.

Role and Responsibility Form

Sample format for Role and Responsibility Form is given in Appendix 4 of this block.

Students should follow the given format.

Abstract

This should be one/two short paragraphs (100-150 words total), summarising the project work. It is important that this is not just a re-statement of the original project outline. A suggested flow is background, project aims and main achievements. From the abstract, a reader should be able to ascertain if the project is of interest to them and, it should present results of which they may wish to know more details.

Acknowledgements

This should express student's gratitude to those who have helped in the preparation of project.

Table of Contents: The table of contents gives the readers a view of the detailed structure of the report. The students would need to provide section and subsection headings with associated pages. The formatting details of these sections and subsections are given below.

Table of Figures: List of all Figures, Tables, Graphs, Charts etc. along with their page numbers in a table of figures.

Chapter 1: Introduction

The introduction has several parts as given below:

Background: A description of the background and context of the project and its relation to work already done in the area. Summarise existing work in the area concerned with the project work.

Objectives: Concise statement of the aims and objectives of the project. Define exactly what is going to be done in the project; the objectives should be about 30 /40 words.

Purpose, Scope and Applicability: The description of Purpose, Scope, and Applicability are given below:

• Purpose: Description of the topic of the project that answers questions on why this project is being done. How the project could improve the system its significance and theoretical framework.

• Scope: A brief overview of the methodology, assumptions and limitations. The students should answer the question: What are the main issues being covered in the project? What are the main functions of the project?

• Applicability: The student should explain the direct and indirect applications of their work. Briefly discuss how this project will serve the computer world and people.

Achievements: Explain what knowledge the student achieved after the completion of the work. What contributions has the project made to the chosen area? Goals achieved - describes the

degree to which the findings support the original objectives laid out by the project. The goals may be partially or fully achieved, or exceeded.

Organisation of Report: Summarising the remaining chapters of the project report, in effect, giving the reader an overview of what is to come in the project report.

Chapter 2: Survey of Technologies

In this chapter Survey of Technologies should demonstrate the students awareness and understanding of Available Technologies related to the topic of the project. The student should give the detail of all the related technologies that are necessary to complete the project. The should describe the technologies available in the chosen area and present a comparative study of all those Available Technologies. Explain why the student selected the one technology for the completion of the objectives of the project.

Chapter 3: Requirements and Analysis

Problem Definition: Define the problem on which the students are working in the project.
Provide details of the overall problem and then divide the problem in to sub-problems. Define each sub-problem clearly.
Requirements Specification: In this phase the student should define the requirements of the system, independent of how these requirements will be accomplished. The Requirements Specification describes the things in the system and the actions that can be done on these things. Identify the operation and problems of the existing system.
Planning and Scheduling: Planning and scheduling is a complicated part of software development. Planning, for our purposes, can be thought of as determining all the small tasks that must be carried out in order to accomplish the goal. Planning also takes into account, rules, known as constraints, which, control when certain tasks can or cannot happen. Scheduling can be thought of as determining whether adequate resources are available to carry out the plan. The student should show the Gantt chart and Program Evaluation Review Technique (PERT).

Software and Hardware Requirements: Define the details of all the software and hardware needed for the development and implementation of the project.

• Hardware Requirement: In this section, the equipment, graphics card, numeric co-processor, mouse, disk capacity, RAM capacity etc. necessary to run the software must be noted.

• Software Requirements: In this section, the operating system, the compiler, testing tools, linker, and the libraries etc. necessary to compile, link and install the software must be listed.

Preliminary Product Description: Identify the requirements and objectives of the new system. Define the functions and operation of the application/system the students are developing as project.

Conceptual Models: The student should understand the problem domain and produce a model of the system, which describes operations that can be performed on the system, and the allowable sequences of those operations. Conceptual Models could consist of complete Data Flow Diagrams, ER diagrams, Object-oriented diagrams, System Flowcharts etc.

Chapter 4: System Design

Describes desired features and operations in detail, including screen layouts, business rules, process diagrams, pseudocode and other documentation.

Basic Modules: The students should follow the divide and conquer theory, so divide the overall problem into more manageable parts and develop each part or module separately. When all modules are ready, the student should integrate all the modules into one system. In this phase, the student should briefly describe all the modules and the functionality of these modules.

Data Design: Data design will consist of how data is organised, managed and manipulated.

• Schema Design: Define the structure and explanation of schemas used in the project.

• Data Integrity and Constraints: Define and explain all the validity checks and constraints provided to maintain data integrity.

Procedural Design: Procedural design is a systematic way for developing algorithms or procedurals.

• Logic Diagrams: Define the systematical flow of procedure that improves its comprehension and helps the programmer during implementation. e.g., Control Flow Chart, Process Diagrams etc.

• Data Structures: Create and define the data structure used in procedures.

• Algorithms Design: With proper explanations of input data, output data, logic of processes, design and explain the working of algorithms.

User Interface Design: Define user, task, environment analysis and how to map those requirements in order to develop a "User Interface". Describe the external and internal components and the architecture of user interface. Show some rough pictorial views of the user interface and its components.

Security Issues: Discuss Real-time considerations and Security issues related to the project and explain how the student intends avoiding those security problems. What are the security policy plans and architecture?

Test Cases Design: Define test cases, which will provide easy detection of errors and mistakes with in a minimum period of time and with the least effort. Explain the different conditions in which the students wish to ensure the correct working of theproject.

Chapter 5: Implementation and Testing

Implementation Approaches: Define the plan of implementation, and the standards the students have used in the implementation.

Coding Details and Code Efficiency: Students not need include full source code, instead, include only the important codes (algorithms, applets code, forms code etc). The program code should contain comments needed for explaining the work a piece of code does. Comments may be needed to explain why it does it, or, why it does a particular way.

The student can explain the function of the code with a shot of the output screen of that program code.

• Code Efficiency: The student should explain how the code is efficient and how the students have handled code optimisation.

Testing Approach: Testing should be according to the scheme presented in the system design chapter and should follow some suitable model – e.g., category partition, state machine-based. Both functional testing and user-acceptance testing are appropriate. Explain the approach of testing.

• Unit Testing: Unit testing deals with testing a unit or module as a whole. This would test the interaction of many functions but, do confine the test within one module.

• Integrated Testing: Brings all the modules together into a special testing environment, then checks for errors, bugs and interoperability. It deals with tests for the entire application. Application limits and features are tested here.

Modifications and Improvements: Once the students finish the testing they are bound to be faced with bugs, errors and they will need to modify your source code to improve the system. Define what modification are implemented in the system and how it improved the system.

Chapter 6: Results and Discussion

Test Reports: Explain the test results and reports based on the test cases, which should show that theproject is capable of facing any problematic situation and that it works fine in different conditions. Take the different sample inputs and show the outputs.

User Documentation: Define the working of the software; explain its different functions, components with screen shots. The user document should provide all the details of the product in such a way that any user reading the manual, is able to understand the working and functionality of the document.

Chapter 7: Conclusions

Conclusion: The conclusions can be summarised in a fairly short chapter (2 or 3 pages). This chapter brings together many of the points that would have made in the other chapters.

Limitations of the System: Explain the limitations encountered during the testing of the project that the students were not able to modify. List the criticisms accepted during the demonstrations of the project.

Future Scope of the Project describes two things: firstly, new areas of investigation prompted by developments in this project, and secondly, parts of the current work that was not completed due to time constraints and/or problems encountered.

REFERENCES

It is very important that the students acknowledge the work of others that they have used or adapted in their own work, or that provides the essential background or context to the project. The use of references is the standard way to do this. Please follow the given standard for the references for books, journals, and online material. The citation is mandatory in both the reports. E.g:

Linhares, A., & Brum, P. (2007). Understanding our understanding of strategic scenarios: What role do chunks play? *Cognitive Science*, *31*(6), 989-1007. https://doi.org/doi:10.1080/03640210701703725

Lipson, Charles (2011). Cite right : A quick guide to citation styles; MLA, APA, Chicago, the sciences, professions, and more (2nd ed.). Chicago [u.a.]: University of Chicago Press. p. 187. ISBN 9780226484648.

Elaine Ritchie, J Knite. (2001). *Artificial Intelligence, Chapter 2 ,p.p 23 - 44.* Tata McGrawHill.

GLOSSARY

If you the students any acronyms, abbreviations, symbols, or uncommon terms in the project report then their meaning should be explained where they first occur. If they go on to use any of them extensively then it is helpful to list them in this section and define the meaning.

APPENDICES

These may be provided to include further details of results, mathematical derivations, certain illustrative parts of the program code (e.g., class interfaces), user documentation etc.

In particular, if there are technical details of the work done that might be useful to others who wish to build on this work, but that are not sufficiently important to the project as a whole to

justify being discussed in the main body of the project, then they should be included as appendices.

VI. SUMMARY

Project development usually involves an engineering approach to the design and development of a software system that fulfils a practical need. Projects also often form an important focus for discussion at interviews with future employers as they provide a detailed example of what the students are capable of achieving. In this course the students can choose your project topic from the lists given in Unit 4: Category-wise Problem Definition.

VII. FURTHER READINGS

1. Modern Systems Analysis and Design; Jeffrey A. Hoffer, Joey F. George, Joseph,S. Valacich; Pearson Education; Third Edition; 2002.

2. ISO/IEC 12207: Software Life Cycle Process
   (http://www.software.org/quagmire/descriptions/iso-iec12207.asp).

3. IEEE 1063: Software User Documentation (http://ieeexplore.ieee.org).

4. ISO/IEC: 18019: Guidelines for the Design and Preparation of User Documentation for Application Software.

5. http://www.sce.carleton.ca/squall.

6. http://en.tldp.org/HOWTO/Software-Release-Practice-HOWTO/documentation.html.

7. http://www.sei.cmu.edu/cmm/

PROFORMA FOR THE APPROVAL PROJECT PROPOSAL

(Note:All entries of the proforma of approval should be filled up with appropriate and complete information. Incomplete proforma of approval in any respect will be summarily rejected.)

PNR **No.:** …………………   Rollno**:** _____

1. Name of the Student

_____

2. Title of the Project

_____

3. Name of the Guide

_____

4. Teaching experience of the Guide _____

5. Is this your first submission?   Yes ☐   No ☐

Signature of the Student   Signature of the Guide

Date: …………………   Date: …………………….

Signature of the Coordinator

Date: …………………

(All the text in the report should be in times new roman)

TITLE OF THE PROJECT
(NOT EXCEEDING 2 LINES, 24 BOLD,
ALL CAPS)

A Project Report (12 Bold)
Submitted in partial fulfillment of the
Requirements for the award of the Degree of (size-12)

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)(14 BOLD, CAPS)

By(12 Bold)

Name of The Student (size-15, title case)
Seat Number (size-15)

Under the esteemed guidance of (13 bold)
Mr./Mrs. Name of The Guide (15 bold, title case)
Designation (14 Bold, title case)

COLLEGE LOGO

DEPARTMENT OF INFORMATION TECHNOLOGY(12 BOLD, CAPS)
COLLEGE NAME (14 BOLD, CAPS)
(Affiliated to University of Mumbai) (12, Title case, bold, italic)
CITY, PIN CODE(12 bold, CAPS)
MAHARASHTRA (12 bold, CAPS)
YEAR (12 bold)

<div align="center">

COLLEGE NAME (14 BOLD, CAPS)
(Affiliated to University of Mumbai) (13, bold, italic)
CITY-MAHARASHTRA-PINCODE(13 bold, CAPS)

</div>

DEPARTMENT OF INFORMATION TECHNOLOGY (14 BOLD, CAPS)

<div align="center">

College Logo

CERTIFICATE (14 BOLD, CAPS, underlined, centered)

</div>

This is to certify that the project entitled, **"Title of The Project "**, is bonafied work of **NAME OF THE STUDENT** bearing Seat.No: (**NUMBER**) submitted in partial fulfillment of the requirements for the award of degree of BACHELOR OF SCIENCE in INFORMATION TECHNOLOGY from University of Mumbai. (12, times new roman, justified)

Internal Guide (12 bold)   **Coordinator**

<div align="center">

(Don't write names of lecturers or HOD)

</div>

<div align="center">

External Examiner

</div>

Date: **College Seal**

COMPANY CERTIFICATE (if applicable)

Abstract (20bold, caps, centered)

Content (12, justified)

Note: Entire document should be with <u>1.5</u> <u>line spacing and all paragraphs should start with 1 tab space.</u>

ACKNOWLEDGEMENT
(20, BOLD, ALL CAPS, CENTERED)

The acknowledgement should be in times new roman,   12 font with 1.5 line spacing, justified.

(Declaration page format)

DECLARATION (20 bold, centered, allcaps)

Content (12, justified)

I here by declare that the project entitled, "**Title of the Project**" done at **place where the project is done**, has not been in any case duplicated to submit to any other university for the award of any degree. To the best of my knowledge other than me, no one has submitted to any other university.

The project is done in partial fulfillment of the requirements for the award of degree of **BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)** tobe submitted as final semester project as part of our curriculum.

Name and Signature of the Student

TABLE OF CONTENTS (20bold, caps, centered)

Should be generated automatically using word processing software.

Chapter 5

Results and Discussions(20 bold, centered)

Note: Place Screen Shots and write the functionality of each screen at the bottom

Chapter 6

Conclusion and Future Work (20 bold, centered)

The conclusions can be summarized in a fairly short chapter around 300 words. Also include limitations of your system and future scope (12, justified)

Chapter 7

References (20 bold, centered)

Content (12, LEFT)

[1] Title of the book, Author

[2] Full URL of online references

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

* <u>NOTE ABOUT PROJECT VIVA VOCE:</u>

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.