

# **School of Distance Education, University of Kerala**

## **Project Guidelines for M.Sc Computer Science (2017-2019)**

The project work should compulsorily include the software development. Physical installations or configuring the LAN/WAN or theoretical projects or study of the systems, which doesn't involve s/w development, are strictly not allowed. Do not place emblem of Kerala University in your report.

### **OBJECTIVES**

The objectives of the project is to help the students develop the ability to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories. After the completion of this project work, the student should be able to:

- 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 un-normalized 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.
- Work effectively as an individual 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 tools 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.

## **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 listed at the end. 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.

## **Steps involved in the project work**

The complete project work should be done by the students only. The role of guide should be about guidance wherever any problem encounters during project.

The following are the major steps involved in the project, which may help you to determine the milestones and regulate the scheduling of the project: Select a topic and a suitable guide.

- Prepare the project proposal in consultation with the project guide.
- Submit the project proposal along with the necessary documents to the Coordinator as per the schedule.
- Receive the project approval letter from the co-ordinator
- Carry out the project-work.
- Appear for internal assessment as suggested by the coordinator.
- Prepare the project report.
- Submit the project report to the Coordinator concerned
- Appear for the viva-voce as per the intimation by the Controller of Examinations of Kerala University.

### **Project Approval :**

Project Approval/Non-approval letter should be collected from SDE as per project schedule .The date will be informed through website/sms/press release .

Resubmission of the project proposal in case of non-approval: In case of non-approval, the suggestions for reformulating the project will be communicated to you. The revised project synopsis along with a new proforma, should be re-submitted along with a copy of the earlier synopsis and non-approval project proposal proforma in the next slot. If the students want to change the project topic or software or the project guide, they may do so and can submit a fresh project proposal.

### **Project Proposal Formulation:**

The project proposal should be prepared in consultation with your guide. The project proposal should clearly state the project objectives and the environment of the proposed project to be undertaken. The project work should compulsorily include the software development. The project proposal should contain complete details in the following form: Proforma for Approval of Project Proposal duly filled and signed by the students and the Project Guide with date, Institution/Company profile (max of 2 pages), Performa of guide in the company/institution mentioning the experience in industry, Synopsis of the project proposal (8-10pages) covering the following aspects:

(i) Title of the Project.

(ii) Introduction and Objectives of the Project.

(iii) Project Category (RDBMS/OOPS/Networking/Multimedia/Artificial Intelligence/Expert Systems etc.).

- (iv) Tools/Platform, Hardware and Software Requirement specifications.
- (v) Problem Definition, Requirement Specifications (Detailed functional Requirements and Technical Specifications), Project Planning and Scheduling (Gantt chart and PERT chart).
- (vi) Scope of the solution.
- (vii) Analysis (Data Models like 0, 1 and 2 level DFDs, Complete ER Diagrams with cardinality, Class Diagrams etc. as per the project requirements).
- (viii) A complete Database and tables detail with Primary and Foreign keys, and proper constraints in the fields (as per project requirements)
- (ix) A complete structure which includes: Number of modules and their description to provide an estimation of the student's effort on the project. Along with process logic of each Module, data Structures as per the project requirements for all the modules, Process Logic of each module, implementation methodology, List of reports that are likely to be generated.
- (x) Overall network architecture (if required for your project)
- (xi) Implementation of security mechanisms at various levels
- (xii) Future scope and further enhancement of the project.
- (xiii) Bibliography

In case the students require any project trainee letter from the University for doing a project in any organization/software company, they can get a "Project Trainee letter" attested by the Director School of Distance Education.

Please ensure that at any given point of time, a guide should not provide guidance for more than 10 M.Sc Computer Science students of School of Distance Education, University of Kerala.

### **POINTS TO REMEMBER WHILE PREPARING THE PROJECT REPORT**

Project Report Formulation: The project report should contain the following:

- (i) Copy of the Approved Proforma and Project approval letter.
- (ii) Project documentation.
- (iii) A CD consisting of the executable file(s) of the complete project should be attached on the last page of the project report. The students needs to retain the identical copy of the CD that should be carried while appearing for the viva-voce along with the project report.
- (iv) The project documentation may be about 100 to 125 pages (excluding coding). The project documentation details should not be too generic in nature. Appropriate project report documentation should be done, like, how you have done the analysis, design, coding, use of testing techniques/strategies, etc., in respect of your project. To be more specific, whatever the theory in respect of these topics is available in the

reference books should be avoided as far as possible. The project documentation should be in respect of your project only. The project documentation should include the topics given below. Each and every component shown below carries certain weightage in the project report evaluation.

- Table of Contents/Index with page numbering
- Introduction/Objectives
- System Analysis
  - 1) Identification of Need
  - 2) Preliminary Investigation
  - 3) Feasibility Study
  - 4) Project Planning Project Scheduling (PERT Chart and Gantt Chart both)
  - 5) Software requirement specifications (SRS)
  - 6) Software Engineering Paradigm applied
  - 7) Data models (like DFD), Control Flow diagrams, State Diagrams/Sequence diagrams, Entity Relationship Model, Class Diagrams/CRC Models/Collaboration Diagrams/Use-case Diagrams/Activity Diagrams depending upon your project requirements
- System Design
  - 1) Modularisation details
  - 2) Data integrity and constraints
  - 3) Database design, Procedural Design/Object Oriented Design
  - 4) User Interface Design
  - 5) Test Cases (Unit Test Cases and System Test Cases)
- Coding
  - 1) SQL commands for (i) database creation (along with constraints), (ii) data insertion in tables and (iii) access rights for different users.
  - 2) Project Coding
  - 3) Comments and Description of Coding segments
  - 4) Standardization of the coding
  - 5) Code Efficiency Error handling
  - 6) Parameters calling/passing
  - 7) Validation checks
- Testing
  - 1) Testing techniques and Testing strategies used
  - 2) Testing Plan used
  - 3) Test reports for Unit Test Cases and System Test Cases
  - 4) Debugging and Code improvement
- System Security measures (Implementation of security for the project developed)
  - 1) Database/data security
  - 2) Creation of User profiles and access rights
- Cost Estimation of the Project along with Cost Estimation Model
- Reports (sample layouts should be placed)
- Future scope and further enhancement of the Project

- Bibliography
- Appendices (if any)
- Glossary.
- Should attach a copy of the CD containing the executable file(s) of the complete project.

The project report should normally be printed with single line spacing on A4 paper (one side only). All the pages, tables and figures must be numbered. Tables and figures should contain titles. If any project report is received in the absence of the approved project proposal proforma (in original), project approval letter and CD will be summarily rejected. Through out the project report, the title of the project should be the same as per the approved synopsis. Signature of the Project Guide in the Certificate should match with the signature in the Project Proposal proforma also. One copy of the original project report in the bound form along with the CD (containing the executable file(s) of the project should be enclosed in the last page) is to be submitted at School of Distance Education as University copy. It should contain the original proforma and project approval letter. If it is not possible to produce the source code due to the internal regulations of the institution (separate certificate from the institution should be provided in the report stating the inconvenience), enough pseudo code and executable application should be attached. A photocopy of the project report is not acceptable for submission. Each student should possess his/her copy of project report. But the project should be comprehensive enough. Completely identical project synopsis and/or project reports are not allowed. Each student has to undergo all the phases/stages of the software project development life cycle. Violation of these project guidelines may lead to the rejection of the project at any stage.

Students should pay Rs 500 as project guidance fees to the University cash counter and the fee receipt should be submitted at ACADEMIC II Section of SDE. A copy of fee receipt should be submitted to coordinator along with Report submission. Student should be involved in each and every phase of Project Development. If it is found that student is not involved in any phase for example coding phase, it may lead to the rejection/disqualifying of the project at any stage.

Each and every component of the project work and the viva voce carries its own weightage, so the student needs to concentrate on all the sections given in the project report formulation. In this section, we have given a few general parameters as checkpoints for the assessment of any software development project. You can note these points and emphasise them during the project report preparation and examination. Basically, assessment will be based on the quality of your report, the technical merit of the project and the project execution. Technical merit attempts to assess the quality and depth of the intellectual effort, you have put into the project. Project execution is concerned with assessing how much work you have put in. Analysis in Project planning include cost estimation and project scheduling. The Cost and efforts estimation is to be done with the help of functional point analysis or other similar methods. The project scheduling is identified with:

- (i) PERT chart: Proper decomposition of stages, and
- (ii) Gantt chart: Time, line structure and validity of chart.

You may know that the software requirement specification (SRS) document is one of the important documents of your project. The indicators for SRS document is whether you have used some standardisation like IEEE standards or any other international standard, or whether your SRS has a proper structure based on sound software engineering concepts or it is given in a running text. Project analysis for DBMS/Application development projects should contain the ER diagram, Data Flow Diagram and Data Dictionary, so you should include these with the following requirements. However, for other categories of project you should prepare class diagrams, behaviour model and/or state transition diagram and details of various data structures used.

**The Entity Relationship diagram (ER Diagram)** should have proper symbol of attributes, entities, relationships, cardinality mentioned, and Relationship of ER diagram to SRS with strong association.

**Data Flow Diagram (DFD):** All Data flow should be levelled and should have proper input and output. Relationship of data flow to data dictionary Context Diagram, Level 1 and Level 2.

**Data Dictionary:** It should explain each entity and relationship in ER diagram and data flow in DFD.

### **Design :**

Project design should include the desired features and operations in detail, including user interface design, program structure, schema design and normalised tables and data integrity and constraints.

You should include them with the requirements given below:

**Program Structure:** It should have the proper modularisations of software and specification of each module.

**Schema Design and Normalised Tables:** Normalise the table to minimum 3NF. If any demand of Demoralisations clearly explain the reasons.

**Data Integrity and Constraints:** Explain the referential diagram. Define entity integrity, which should include keys, alternate keys and other keys, value constraints and ranges.

**Procedural Design:** Explain using Flowchart / Pseudo code / PDL.

**User Interface Design:** Coherence with dataflow and processor; Consistency of interface and naming convention. Validation checks should be kept wherever necessary.

**Architecture:** Program architecture and explanation on suitability of data structure used.

## **Coding**

Coding phase of software development includes different activities like refining the algorithms for individual components, transferring the algorithms into a programming language (coding) translating the logical data model into a physical one and compiling and checking the syntactical correctness of the algorithm with these activities. You should include the comments and description in code, use the standardisation in coding, use the methodology for error handling and security implementation. These parameters ensure software quality and reliability.

You should include them with the requirements given below:

**Comments and Description:** Should have comments with functional description which include the input, output, total function calls to/from other functions, function parameters, description of main variables, Data type, logic description, etc.

**Standardisation of Coding:** Use of naming convention of variable and functions, nested depth, naming constant, use of data structure and style.

**Error Handling:** Explain exceptions handling and conditional checking.

**Parameter passing and calling:** Check the technique used for this purpose, how it optimises the coding.

**Security Mecahnisms:** Maintain confidentiality, integrity and authorisation according to the requirement and needs of the system. Also maintain database level security, use of Views, use of revoke and grant, user and access rights and ensure steps taken against hacking of the system.

## **Testing**

Testing is a process of devising a set of inputs to a given piece of software that will cause the software to exercise some portion of its code. The developer of the software can then check if the results produced by the software are in accordance with his or her expectations. It includes, number of activities such as correcting syntactically and semantically erroneous system components, detecting as many errors as possible in the software system, and assuring that the system implementation fulfils system specification. It ensures the quality, efficiency and reliability of the software, which is measured by the testing methodology and techniques used for unit, integrated, system testing etc. The testing should not be too generic containing only definitions. You should give all the test case designs, reports and results of test cases for unit, integrated, system testing etc. How debugged your code is and what actions you have taken to improve the code, must, be explained. Good testing can be measured by criteria such as correctness, reliability, user friendliness, maintainability, efficiency and portability of software.

**System Security Measures :** The student should clearly emphasize the various levels of security measures implemented in the project.



**Report Generation** :The project report should include the various sample reports for ready reference.

### **Cost Estimation of the project**

The student needs to incorporate the estimated cost of the project using the suitable mechanism/model given in the Software Engineering. Screen Layouts/Screen Shots/Screen dumps Screen dumps for various screens/user interfaces should also be placed in a proper order in the project report for ready reference.

### **Organisation of the Project Report**

Report organisation improves the professional attitude of writing reports. You should emphasise on the proper binding of the project report, the cover page, page numbering, organisation of content, and proper printout of text and images. Students may be requested to show the demo of the project. Also, you may be told to write the portions of the code for a problem to demonstrate her/his coding capabilities. While appearing for the viva-voce, along with the project report the student should needs to carry the identical copy of the CD of the executable file(s) which s/he submitted at the time of project report.

### **Project Evaluation**

Right from the initial stage of defining the problem, the candidate has to submit the progress reports periodically and also present his progress in the form of seminars (Atleast two over one semester) in addition to the regular discussion with the guide. All the members of the project groups should present their project using PowerPoint slides which will neatly explain the different aspects, stages of the project work in detail.

Components of internal evaluation (by the panel of three members consisting of Coordinator (as chairman) and two other faculties) are as follows:

- Component1- Study Phase activities & Report/Literature survey: 20 marks
- Component2- Design : 20 Marks
- Component3- Methodology : 20 marks
- Component4- Findings/Implementation : 20 marks
- Component 5-Presentation & Defense : 20 marks

Components of external (final) evaluation are as follows:

- Component1-Report of the work : 20 marks
- Component2- Methodology and Content : 25 marks
- Component 3- Findings/Implementation : 20 marks
- Component 4- Presentation & Defense : 20 marks
- Component 5- Viva Voce : 15 marks

Unfair means: Students shall not use unfair means in connection with any of the project synopsis or the project report. No project may be resubmitted if it has already been submitted, wholly or substantially, for another courses or degree of the University, or of any other institution. If anything found so, it will be strictly punished and your registration (for the current semester) will be cancelled

## **SOFTWARE AND BROAD AREAS OF APPLICATION**

**FRONT END / GUI Tools** : Visual Basic, Power Builder, X-Windows (X/lib, X/motif, X/Intrinsic), Oracle Developer 2000, VC++, Jbuilder , NetBeans

**RDBMS/BACK END:** Oracle, Ingres, Sybase, Progress, SQL Plus, Versant, MY SQL, SQL Server, DB2, Point base

**LANGUAGES:** C, C++, Java, VC++, C#, eclipse

**SCRIPTING LANGUAGES** PERL, SHELL Scripts (Unix), Tcl/TK,

**RDBMS/BACK END** Oracle, Ingres, Sybase, Progress, SQL Plus, Versant, MY SQL, SQL Server, DB2

**.NET Platform** VB.Net, C#. Net, Visual C#. Net, ASP.Net

**MIDDLE WARE (COMPONENT) TECHNOLOGIES** COM/DCOM, Active-X, EJB, WINCE, MSMQ, BEA, MessageQ, MTS, CICS

**UNIX INTERNALS** Device Drivers, RPC, Threads, Socket programming

**ARCHITECTURAL CONCEPTS** CORBA, TUXEDO, MQ SERIES

**INTERNET TECHNOLOGIES** DHTML, Java script, VB Script, Perl & CGI script, Java, Active X, RMI, CORBA, SWING, JSP, ASP, XML, EJB, Java Beans, Servlets, Visual Age for JAVA, UML, VRML, WML, Vignette, EDA, Broadvision, Ariba, iPlanet, ATG, BigTalk, CSS, XSL, Oracle ASP server, AWT, J2EE, LDAP, ColdFusion, Haskell 98, PHP, NetBeans

**NETWORK/WIRELESS TECHNOLOGIES** Blue Tooth, 3G, ISDN, EDGE

**REALTIME OPERATING SYSTEM/ EMBEDDED SKILLS** QNX, LINUX, OSEK, DSP, VRTX, RTXC, Nucleus

**OPERATING SYSTEMS** WINDOWS 2000/ME, WINDOWS NT, WINDOWS XP, UNIX, LINUX, IRIX, SUN SOLARIS, HP/UX, PSOS, VxWorks, AS400, AIX, DOS

**APPLICATION AREAS** Financial / Insurance / Manufacturing / Multimedia / Computer Graphics / Instructional Design/ Database Management System/ Internet / Intranet / Computer Networking-Communication Software development/ ECommerce/ ERP/ MRP/ TCP-IP programming / Routing protocols programming/ Socket programming, Image Processing, Neural Networks, Artificial Intelligence, Cloud.

NOTE: (i) Projects should not be developed using the old packages like Dbase III plus, Foxpro, Visual Foxpro and MSAccess. Also, projects should not be developed using the combination of Visual Basic as the front end and MS-Access as the back end. The project work should compulsorily include the software development. Latest versions of the software are to be used. The project work should compulsorily include the software development. Physical installations or configuring the LAN/WAN or theoretical projects or study of the systems, which doesn't involve s/w development, are strictly not allowed. (ii) C/C++ languages should not be used for any Information Management System Project for example Hospital/Reservation/Library/School/College Management System etc. (iii) Students can also develop applications using tools/languages/software not listed above, if they are part of latest technologies. Use the latest versions of the software packages for the project development.

### **Documentation:**

The following are the major guidelines: The final outer dimensions of the report shall be 21 cm X 30 cm. The colour of the flap cover shall be light green. Only hard binding should be done, with title of the thesis and the words "<BRIEF TITLE> MSc(CS) Project Report 200..." displayed on the spine in 20point, Bold, Times New Roman, as in example below. In case the title is too long, a shorter version of it may be used (Like "Image Pro" instead of "Image Pro – An Interactive Image Processing package"). It is highly recommended that Latex be used for documentation.

- The text of the report should be set in 12 pt, Times New Roman, Single Spaced.
- Headings should be set as follows: CHAPTER HEADINGS 20 pt, Times New Roman, Bold, All Caps, Centered.

#### **WEB BASED BILLING SOFTWARE: MSC(CS) PROJECT 2019**

1. SECTION HEADINGS 12 pt, Times New Roman, Bold, All Caps, Left Adjusted. 1.1

Section Sub-headings 12 pt, Times New Roman, Bold, Left Adjusted.

Titles of Figures, Tables etc are done in 12 point, times New Roman, Italics, Centered.

**<PROJECT TITLE>**

**<STUDENTS NAME>**

**<COLLEGE NAME>**

**PROJECT REPORT**

Submitted in partial fulfilment of the Requirements for the award of

M.Sc (Computer Science) degree of University of Kerala

**2016**

*Some general guidelines on documentation stylistics are:*

- Double quotes and single quotes (“”, “”) should be used only when essential. In most cases words put in quotes are better highlighted by setting them in italics. Eg: This process is known as “morphing”. This process is known as *morphing*.

- Page numbers shall be set at right hand top corner, paragraph indent shall be set as 3.
- Only single space need be left above a section or sub-section heading and no space may be left after them.
- Certificate should be in the format:

This is to certify that the project report entitled \_\_\_\_\_ **submitted to School of Distance Education , University of Kerala** in partial fulfilment of the requirement for the award of the degree of **MASTER OF COMPUTER SSIENCE ( M. Sc CS) ,** is an authentic and original work carried out by Mr. / Ms. \_\_\_\_\_ with enrolment no. \_\_\_\_\_ and Register Number \_\_\_\_\_ under our guidance. The matter embodied in this project is genuine work done by the student and has not been submitted whether to this University or to any other University / Institute for the fulfilment of the requirements of any course of study.

with dated signatures of internal Guide, external guide, and also coordinator of Distance Education Course.

If the project is done in an external organization, another certificates on the letterhead of the organization is required:

“Certified that this report titled.....is a bonafide record of the the project work done by Sri/Kum ..... under my supervision and guidance, at the .....Department of.....(Organization) towards partial fulfilment of the requirements for the award of the Degree of M.Sc (Computer Science) of the University of Kerala”.

- References shall be IEEE format (see any IEEE magazine or transaction). Take care in use of italics and punctuation. While doing the project, keep note of all books you refer, in the correct format, and include them in alphabetical order in your reference list. Eg: A book is cited as: Kartalopoulos, S V Understanding Neural Networks and Fuzzy Logic, BPB Publishers, 1996, pp. 21-27. (pp.21-27 indicates that pages 21-27 have been referred. If the whole book is being referred, this may be omitted. If a single page is referred, say 7, it may be cited as p.7 Report writing is NOT a hasty activity done after finishing the project. Students must try to develop the report along with the work, so as to give it flesh and blood. Drafts should be read, modified, spell checked and grammar checked at least thrice during the course of the project and before a final printout is taken, the same may be got approved from the internal guide. The students should send two interim reports to internal guides. This will also help the students in their report writing.

*The Gantt chart, fortnightly progress reports, and team meeting minutes mentioned in section 3.5 should appear as appendix to the project report. Regarding the body of the report, as an indicative Example, the following is given (though students should not attempt to fit every kind of project report into this format):*

- Organizational overview (of the client organization, where applicable)
- Description of the present system
- Limitations of the present system
- The Proposed system- Its advantages and features

- Context diagram of the proposed system.
- Top level DFD of the proposed system with at least one additional level of Expansion
- Structure Chart of the System
- System flowchart
- Menu Tree
- Program List
- Files or tables (for DBMS projects) list. Class names to be entered for each file in OO systems.
  - List of fields or attributes (for DBMS projects) in each file or table.
- Program – File table that shows the files/tables used by each program and the files are read, written to, updated, queried or reports were produced from them.
  - Reports List with column headings and summary information for each report.
  - System Coding and variable/file/table naming conventions
  - System controls and standards
  - Screen layouts for each data entry screen.
  - Report formats for each report.

Program documentation is suggested on the following lines:

- Program id
- Program level run chart
- Program function Explanation
- Data entry screen (reproduced from system documentation).
- Report layout (reproduced from system documentations)
- Program level pseudo code or flowchart.
- Decision tables, decision trees, with English Explanation where necessary.
- Program listing
- Test data
- Test results.

### **3.8 Methodology:**

Wherever applicable, object oriented approach should be used for software development. The project report should generally contain details of the following steps (*though students should not attempt to fit every kind of project into this format*):

#### (a) Analysis

- Study of existing systems and its drawbacks (general)
- Understanding the functionalities of the system (detailed)
- Preparation of requirement
- Conduct of Feasibility study
- Identification of relevant Objects
- Abstraction of each object (attributed and methods)
- Relationship between objects

#### (b) Design

- Design of each subsystems
- Design of each classes
- Design of communications between objects

- Design of Algorithms for problem solving
- User interface Design
- Any other steps if necessary

(c) Coding and Impletion

(d) Testing

(e) Security, Backup and Recovery Mechanisms

(f) On line help and User Manuals

(g) Upgradability Possibilities

**3.9 Project IPR & Utilisation:** The intellectual property rights in all project work done by the students shall vest with the University of Kerala, except in cases where some external organizations seek undertaking from students to concede IPR in all work done in their organization or under their guidance. Where possible, students should attempt to obtain at least a joint IPR for the University. In cases where project works are of public utility, students shall be asked to publish their work including source code and documentation, in so far as their rights are clear.

## 4. REFERENCES

### 4.1 Core

S A Kelkar, *Software Project Management*, Prentice Hall of India

W Alan Randolph, Barry Z. Posner, *Effective project planning and management*, PHI

### 4.2 Additional

Greg Mandanis, *Software Project Management Kit for Dummies*, IDG Books

Joel Henry, *Software Project management*

Frederic P B, Mythical Man-month, *Essays on Software Engineering*, Addison Wesley

David Lamport, *Latex: A document Preparation System*, 2/e, Pearson Education

### **The format of the report is as follows:**

Wrapper

Copy of the wrapper

Declaration by the candidate

Certificate

Certificate from the organization

Acknowledgement

Synopsis

Table of contents

Chapters

Bibliography (in the alphabetical order of authors)

**Following are the chapters to be included in the final report of the project:**

1. INTRODUCTION
2. SYSTEM STUDY ANALYSIS
  - a. EXISTING SYSTEM
  - b. PROPOSED SYSTEM
  - c. FEASIBILITY ANALYSIS
3. REQUIREMENT ANALYSIS & SPECIFICATION
  - a. FUNCTIONAL & NON- FUNCTIONAL REQUIREMENTS
  - b. USECASE DIAGRAMS
4. SOFTWARE DESIGN
  - a. INPUT DESIGN
  - b. OUTPUT DESIGN
  - c. DATA FLOW DIAGRAMS
  - d. SOFTWARE DESIGN
    - i. ARCHITECTURAL DESIGN
    - ii. USER INTERFACE DESIGN
    - iii. PROCEDURAL DESIGN
    - iv. DATABASE DESIGN
5. SYSTEM IMPLEMENTATION
  - a. MODULE DESCRIPTION
  - b. IMPLEMENTATION DETAILS
6. SYSTEM TESTING
  - a. TEST CASES
  - b. UNIT , INTEGRATION , USER ACCEPTANCE, OUTPUT, VALIDATION
7. CONCLUSION & FUTURE ENHANCEMENT
8. BIBLIOGRAPHY & REFERENCES
9. USER MANUAL  
(Screen shots)

WISH YOU ALL SUCCESS IN YOUR FUTURE ENDEAVORS

Proforma for the approval of M.Sc CS Project proposal

Project Proposal No:  
*(for office use only)*

Name of Student	Register Number

Title of the Project:

Name and Address of the guide:

Educational Qualification of the guide:      Ph.D   M.Tech M.Sc MCA  
*(put a tick mark)*

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------

Net Qualified :   
*(yes/No)*

Working/Teaching Experience of the Guide :  
*(in years)*

Signature of Student

Signature of Guide

*(For office use only)*

Approved

Not approved

Remarks:

--

Signature of Coordinator:



<b>IV Semester Msc Computer science(2017-2019)</b>			
Guide Allocation for Main Project			
<b>sno</b>	<b>Enrollment Number</b>	<b>Name</b>	<b>Guide</b>
1	811171098	MINI V S	Krishna.S.S
2	811171006	SADIA SALIM	
3	811171131	ANJANA R V	
4	811171085	VICKNESWARAN.G	
5	811171017	ASHAMOL.S	
6	811171013	RESHMA.S.R	
7	811171070	APARNA A	
8	811171111	VIPIN DAS V V	
9	811171110	GREESHMA P V	
10	811171016	AKSHAYA B BINU	
11	811171082	ARYA A	
12	811171035	EBIXON EXPEDIT	
13	811171029	APARNA R K	
14	811171003	RAGHI R NAIR	
15	811171069	LALJI M	Liji I H
16	811171034	RESHMA.S.S	
17	811171036	RAHUL.V	
18	811171041	ARUNPRIYA S G	
19	811171107	SRUTHY SIVAN	
20	811171050	MUKESH S	
21	811171056	AISWARYA D Y	
22	811171044	AKHIL G	
23	811171127	Gayathri K. M.	
24	811171014	RESHMA R	
25	811171113	KINGSLY V GEORGE	
26	811171002	SIBI V	
27	811171135	VEENA LEKSHMY M V	
28	811171129	Vishnu KH	
29	811171028	ATHIRA V A	Anila Thankappan
30	811171027	ANAMIKA J N	

31	811171121	KRISTEENA	
32	811171039	SAIRA H	
33	811171099	HARIKRISHNA S P	
34	811171096	DEVI PRIYA M U	
35	811171010	SHIFA A H	
36	811171105	AKHILA MONY.V	
37	811171059	LIJIRAJ M	
38	811171108	RESHMA NUJUM	
39	811171024	ANUSREE M R	Anil Kumar N V
40	811171023	ATHIRA K L	
41	811171104	JAYALEKSHMI J R	
42	811171004	LEKSHMY L S	
43	811171005	LEKHA NAIR.M.S	
44	811171128	Greeshma John	
45	811171042	Amritha.C.Nair	
46	811171076	ASWATHY FRANCIS S	
47	811171040	RADHIKA RAJU	
48	811171117	SAJEEV KUMAR S	
49	811171075	APARNA VIJAYAN V S	Ashitha S
50	811171124	REVATHY S	
51	811171053	ESTHER DANIEL	
52	811171122	SEENA RANI J	
53	811171038	AKSHAY M R	
54	811171037	KEERTHI S	
55	811171057	AMAL DEV H S	
56	811171055	NITHIN SUNIL	
57	811171046	SREELEKSHMY G T	
58	811171047	HRIDYA KRISHNAN P R	
59	811171049	BIJILA S	Arun N
60	811171077	HELEN S A	
61	811171052	SALINI ASHOKAN	
62	811171101	MEERA.M.R	
63	811171084	PRAJITHA VIJAYAN	

64	811171054	ATHIRA S KUMAR		
65	811171079	ATHULYA SURESH		
66	811171062	Santhosh S		
67	811171119	NITHIN M S		
68	811171090	NISHA.M.R		
69	811171066	AISWARYA U		Abdhul Nizar M A
70	811171063	ANNIE D COSTA		
71	811171081	JAYALEKSHMI J L		
72	811171109	Poorna N		
73	811171116	Soumya G		
74	811171126	Sreejitj V		
75	811171067	Remya Sasi		

**Important days for IV Semester M.Sc Computer Science Main Project**

**(2017-2019 Batch)**

**School of Distance Education**

**University of Kerala**

17.06.2019	Submission of Project Proposal
29.06.2019	Distribution of Project Approval letter
29.07.2019	I Internal Presentation
30.08.2019	II Internal Presentation
15.09.2019	Final Internal Review
30.09.2019	Submission of Project Report

**Co-ordinator (M.Sc CS)**