

# **SCHOOL OF DISTANCE EDUCATION**

## **UNIVERSITY OF KERALA**

### **III B.Sc Computer Science/BCA**

#### **MAJOR PROJECT & VIVA**

##### **General Instructions and guidelines for III B.Sc Computer Science/BCA for conducting MAJOR PROJECT Evaluation**

1. A panel of guides with bio-data and relevant copies of qualification and experience need to be submitted on or before June 23, 2015 to the Coordinator Computer Science, SDE for approval. The guide should be a post graduate with 55% marks for PG (M.Phil/PhD desirable) in respective discipline with minimum two years of work experience.
2. The consent letter from guide (format to be downloaded from SDE website) and the synopsis of the project countersigned by the guide need to be submitted to the Coordinator Computer Science, SDE for approval on or before 23.06.2015.
3. There can be maximum of four students per group. And maximum of 12 students under a guide.
4. The final reports in the specified format should be submitted to Coordinator Computer Science, SDE for evaluation. The format is uploaded in the website. The last date for submission of the project reports will be announced later.
5. All centres are requested to submit project details in a tabular form along with synopsis. Project title, names of candidates, front end, back end, platform, name of external guide, name of internal guide etc can be included in the table.
6. Please do not take or send DD as guide fee.

### **1. AIM:**

To expose student to industry-standard project practices, through a real-life project work under time and deliverable constraints, applying the knowledge acquired through various courses.

### **2. OBJECTIVES:**

To provide an opportunity to apply the knowledge gained through various courses in solving a real life problem

To provide an opportunity to practice different phases of software/system development life cycle

To introduce the student to a professional environment and/or style typical of a global IT industry

To provide an opportunity for structured team work and project management

To provide an opportunity for effective, real-life, technical documentation

To provide an opportunity to practice time, resource and person management.

### **3. PROJECT GUIDELINES**

Group Size – Maximum 4

No. of records – No. of group members+ 1 (Department copy)

Certificate should include the names of all members

The minimal phases for the project are: Project search, finalization and allocation, Investigation of system requirements, Data and Process Modelling, System Design, Program design, Program coding and unit testing, System integration, System implementation and acceptance testing.

**Selection of project work:** Project work could be of 3 types:

**a) Developing solution for a real-life problem:** In this case, a requirement for developing a computer based solution already Exists and the different stages of system development life cycle is to be implemented successfully. Examples are Accounting Software Package for a particular organization, Computerisation of administrative functions of an organization, Web Based Commerce, etc. The scope for creativity and Exploration in such projects is limited, but if done meticulously, valuable Experience in the industrial context can be gained.

**(b) Innovative Product development:** These are projects where a clear-cut requirement for developing a computer based solution may not be existing, but a possible utility for the same is conceived by the proposer. An Example is a Malayalam Language Editor with Spell Checker, Computer Music Software for Indian Music, Heat Engines Simulation Software for eLearning, Digital Water Marking Software,

**(c) Research level project:** These are projects which involve research and development and may not be as structured and clear cut as in the above case. Examples are Malayalam Character Recognition, Neural Net Based Speech Recogniser, Biometric Systems, Machine Translation System etc. These projects provide more challenging opportunities to students, but at EX level is a difficult choice. If any student identifies proper support in terms of guidance, technology and references from External organizations and also the supervisors are convinced of the ability of the student(s) to take up the project, it shall be permitted. The methodology and reporting of such projects could be markedly different from type (a) and is left to the proposer/external supervisor of the projects.

**3.3 Selection of Team:** To meet the stated objectives, it is imperative that Major Project is done through a team effort. Though it would be ideal to select the team members at random (drawing lots) and this should be strongly recommended, due to practical considerations, students may also be given the choice of forming themselves into teams with 3 to 4 members. A gender mix should also be strongly suggested. A team leader shall be elected through drawing lots. Teams shall maintain team meeting minutes and ensure that every team member has tasks assigned in writing. Team meeting minutes shall form a part of the Project Report. Even if students are doing projects as groups, each one must independently take up different modules of the work and must submit the reports also independently (though, in such cases, some common materials are permissible). Evaluation will also be done independently.

**3.4 Selection of Tools:** No restrictions shall be placed on the students in the choice of platforms/tools/languages to be utilized for their project work, though open source is strongly recommended, wherever possible. No value shall be placed on the use of tools in the evaluation of the project.

**3.5 Selection of Organisation & Guide:** No restrictions shall be placed on the students in the choice of organization where project work may be done, in terms of locality, type (public/private) etc. It is the duty of the Head of Institute/Principal of College to ensure that the Aim, Objectives and full project guidelines are communicated to the external organization. The guide should ideally be a post-graduate with minimum 2 years of work experience.

Students may also choose to do project in the college/institute (or partially in the college/institute and partially in an external organization), especially product-based work, but in such cases the supervisors must ensure that (i) industry practices are followed (ii) the students undertake a planned visit to an IT industry with international operations to make up for the loss of experience and (iii) the services of an external guide with industry experience is obtained.

**3.6 Project Management:** Head of Institute/Principal of College should publish a list of students, projects topics, internal guide and external organization (if any) and teams agreed. Changes in this list may be permitted for valid reasons and shall be considered favourably by Head of Institute/Principal of College any time before commencement of the project. Any request for change after commencement should be considered by a committee of 3 teachers and their recommendation shall be accepted by Head of Institute/Principal of College.

**Gantt-chart** of proposed activities and a draft statement of project deliverables (which may subsequently be altered if justified) should be prepared before the commencement of the project. The actual completion of each phase should be noted on the chart in the course of the project work. Students should submit a fortnightly report of progress which could be indication of percentage of completion marked on the original Gantt-chart, with any notes attached. Students should ideally keep a daily activity log sheet. Team meetings should be documented in the format given at the end. Changes in the submitted documents are possible, as project development is essentially an evolutionary process. The project guide must ensure that changes are necessary due to the knowledge gained in succeeding phases of the project. The date of completion of a phase should be brought forward if the changes made are deemed to be errors and not due to additional knowledge gained from a succeeding phase.

**3.7 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> BSc(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: BSC(CS) PROJECT 2009**

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>**

**<STUDENT'S NAME>**

**<COLLEGE NAME>**

### **PROJECT REPORT**

Submitted in partial fulfilment of the Requirements for the award of

Bsc (computer science) degree of University of kerala

**2015**

*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: "Certified that this \_\_\_\_\_ is  
report titled..... abonafile  
record of the project work done by \_\_\_\_\_ under our supervisionand  
Sri/Kum..... guidance,  
towards partial fulfillment of the requirements for the award of the Degree ofBSC (Computer  
Science) of the University of Kerala" with dated signatures of Internal;Guide, external guide  
and also Head of Institute/College.

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

organization is required: "Certified that his \_\_\_\_\_ is a bonafide record  
report titled..... of  
the project work done by \_\_\_\_\_ under any  
Sri/Kum \_\_\_\_\_ supervision andguidance, at the  
.....Department (Organization) towards partial

of..... fulfilment of the requirements for the award of the Degree of BSC (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**

### **4.1Core**

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

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

### **4.2Additional**

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

Joel Henry, *Software Project management*

**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)