

Bachelor of Computer Application in Data Science / Data Analytics

ASSESSMENT GUIDELINES (BOTH CIE AND SEE)

The weightage of Continuous Internal Evaluation (CIE) is 30% and for Semester End Exam (SEE) is 70%. The minimum passing marks for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 50% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements (passed) and earned the credits allotted to each course if the student secures not less than 50% in the sum total of the CIE and SEE taken together.

Continuous Internal Evaluation:

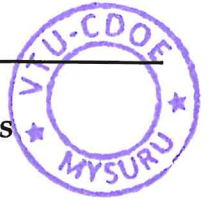
The CIE will be for 30 Marks. A candidate shall obtain not less than 50% of the maximum marks prescribed for the CIE. CIE Marks will be based on 30 objective type questions (MCQ's, Fill in the blanks, one word answer, etc.) from all the Modules. Equal weightage should be given to all the modules.

Semester End Examination:

The SEE question paper will be set for 70 marks & will have three sections

- **Section-A** consists of 20 objective type questions carrying 1 mark each. All questions are compulsory
- **Section-B** consists of 8 questions carrying 10 marks each. The students will have to answer 5 complete questions

PROGRAMME CO-ORDINATOR
COMPUTER APPLICATIONS
Visvesvaraya Technological University
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MYSURU-570 029



Bachelor of Computer Applications in Data Science / Data Analytics

PROJECT WORK GUIDELINES

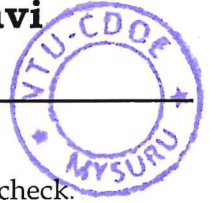
Project Work	Semester	VI	
Course Code	OBCA603 & OBCD603	CIE Marks	30
Teaching Hours/Week (L: P: SDA)	0:4:0	SEE Marks	70
Credits	12	Exam Hours	03

Objective

To expose the students to understand the working of the organization/company/ industry and take up an in-depth study of an issue/problem in the area of specialization.

General guidelines

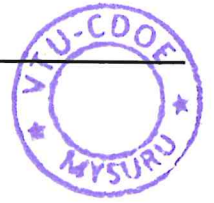
- Each candidate shall carry out the project work independently as per Scheme of Teaching and Evaluations under the guidance of one of the faculty members of the Department.
- If the project is of inter-disciplinary nature, a co-guide shall be allotted by the University from the other concerned department.
- The topic and title of the dissertation shall be chosen by the candidate in consultation with the guide and co-guide, if any, before the commencement of fourth semester.
- The subject and topic of the dissertation shall be from the major field of studies of the candidate. Modification of only the title but not the field of work may be permitted at the time of final submission of dissertation report during fourth semester.
- The Project Work and Dissertation preparation could be carried out by the students either in their work place/ institution/ any industry/ R&D labs/ business organizations.
- The candidate shall submit a soft copy of the dissertation work to the University.
- The soft copy shall contain the entire Dissertation on the project work in monolithic form as a PDF file (not separate chapters).
- The Guide, after satisfying himself/herself on the suitability of the dissertation and checking the report for completeness and shall upload the Dissertation along with the name, University Seat Number, address, mobile number of the candidate etc., as prescribed in the form available on online Dissertation evaluation portal.



- Once the Guide uploads the dissertation, the same shall be linked for plagiarism check.

The allowable plagiarism index shall be less than or equal to 25%. If the check indicates a plagiarism index greater than 25%, he/she shall, resubmit the dissertation to the Registrar (Evaluation)/Regional Centre/ Head Office, VTU along with the penal fees.

- By keeping the business trend in the present scenario, university has given an option to the students to select the research problem either from business organization or they can carry out the project on freelance basis subject to the approval of department committee. It is the total responsibility of the internal guide to monitor the freelance project.
- In case, business problem selected from a Company, no two students of an institute shall work on the same problem in the same organization.
- The student shall seek the guidance of the internal guide on a continuous basis, and the guide shall give a certificate to the effect that the candidate has worked satisfactorily under his/her guidance.
- On completion of the project work, student shall prepare a report with the following format.
 - i. The Project report shall be prepared using word processor viz. MS Word with New Times Roman, 12 font size and shall be in the A4 size 1" margin on all the sides (1.5 inch on left side) and 1.5 line spacing. The Project report shall not exceed 100 pages.
 - ii. The report shall have a title sheet with the title of the project, guide details and month & year of admission.
 - iii. A certificate by the guide, Programme Coordinator and the Director indicating the bonafide performance of the project by the student to be enclosed.
 - iv. An undertaking by the student to the effect that the work is independently carried out by him/her.
 - v. The certificate from the organization if applicable (if its Freelance project, certificate is not required and internal guide can issue a certificate for successful completion).



Project Report Evaluation:

- Internal evaluation will be done by the internal guide.
- External valuation shall be done by faculty members of PG centers of VTU and VTU affiliated institutes with minimum of 10 years experience.
- **Viva-Voce / Presentation:** A viva-voce examination shall be conducted online where a student is expected to give a presentation of his/ her work.
- Minimum passing marks of the Project work is 50% in each of the components such as Internal Marks, report evaluation and viva-voce examination.

PROJECT STRUCTURE

Abstract

Acknowledgement

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GLOSSARY APPENDIX A APPENDIX B

Abstract

This should be one/two short paragraphs (400 words), 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.

NOTE: 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.

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 your project work.

Objectives:

Concise statement of the aims and objectives of the project. Define exactly what you are going to do 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 your project that answers questions on why you are doing this project. How your project could improve the system its significance and theoretical framework.

- **Scope:**

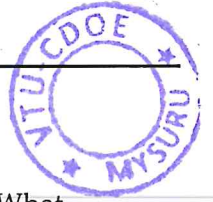
A brief overview of the methodology, assumptions and limitations.

You should answer the question: What are the main issues you are covering in your project?

What are the main functions of your project?

- **Applicability:**

You should explain the direct and indirect applications of your work. Briefly discuss how this project will serve the computer world and people.



Achievements:

Explain what knowledge you achieved after the completion of your work. What contributions has your 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

- You should demonstrate your awareness and understanding of Available Technologies related to the topic of your project.
- You should give the detail of all the related technologies that are necessary to complete your project.
- You should describe the technologies available in your chosen area and present a comparative study of all those Available Technologies.
- Explain why you selected the one technology for the completion of the objectives of your project.

Chapter 3: REQUIREMENTS AND ANALYSIS

3.1 Problem Definition:

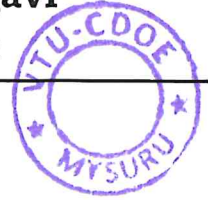
Formulate/define the problem on which you are working in the project.

Provide details of the overall problem and then divide the problem in to sub- problems.

Define each sub-problem clearly.

3.2 Proposed Solution:

Define briefly the methodology/technology you are proposing to solve the problem on which you are working in the project.



3.3 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, and 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. You should show the Gantt chart and Program Evaluation Review Technique (PERT).

3.4 Software and Hardware Tools used:

Define the details of all the software and hardware needed for the development and implementation of your 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 Tools used: 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.

3.5 Preliminary Product Description:

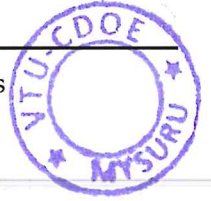
Identify the requirements and objectives of the new system. Define the functions and operation of the application/system you are developing as your project.

3.6 Conceptual Models:

You 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.

3.7 Software Requirements Specification:

- In this phase you 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.
- i. USER REQUIREMENTS
- ii. SYSTEM REQUIREMENTS

- FUNCTIONAL REQUIREMENTS
- NON-FUNCTIONAL REQUIREMENTS
- DOMAIN REQUIREMENTS

Chapter 4: SYSTEM DESIGN

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

Basic Modules:

You 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, you should integrate all the modules into one system. In this phase, you should briefly describe all the modules and the functionality of these modules.

Data Design:

Data design will consist of how you organise, managing and manipulate the data.

- Schema Design: Define the structure and explanation of schemas used in your project.
- Data Integrity and Constraints: Define and explain all the validity checks and constraints you are providing to maintain data integrity.

Procedural Design:

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

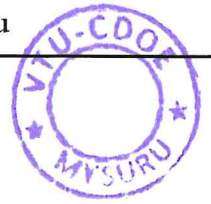
- **Logic Diagrams:**

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



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- **Data Structures:**

Create and define the data structure used in your 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 you intend to map those requirements in order to develop a "User Interface".
- Describe the EXTERNAL and INTERNAL components and the architecture of your 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 your project and explain how you intend avoiding those security problems. What are your 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 you wish to ensure the correct working of your software.

Chapter 5: IMPLEMENTATION AND TESTING

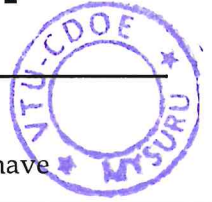
Implementation Approaches:

Define the plan of implementation, and the standards you 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.

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



- **Code Efficiency:** You should explain how your code is efficient and how you 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 your 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 you finish the testing you are bound to be faced with bugs, errors and you will need to modify your source code to improve the system. Define what modification you implemented in the system and how it improved your system.

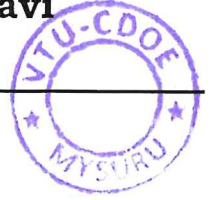
Chapter 6: RESULTS AND DISCUSSION

Test Reports:

Explain the test results and reports based on your test cases, which should show that your software 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 your product in such a way that any user reading the manual is able to understand the working and functionality of the document.



Chapter 7: CONCLUSION:

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

Limitations of the System:

Explain the limitations you encountered during the testing of your software that you were not able to modify. List the criticisms you accepted during the demonstrations of your software.

Future Scope of the Project:

It 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 you acknowledge the work of others that you have used or adapted in your own work, or that provides the essential background or context to your 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.

GLOSSARY

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

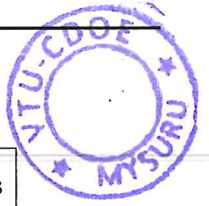
APPENDICES

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.



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Rubrics for Project Work

Sl. No.	Evaluation Type	Particulars	Marks
1	CIE	Internal Assessment by the Guide- Based on the Presentations by Students	30
2	SEE	Report Evaluation by the Guide & External Examiner. Average of the marks awarded by the two Examiners shall be the final evaluation marks for the Dissertation	35
3	SEE	Viva-Voce Examination to be conducted by the Guide and an External examiner from the Industry/ Institute (Joint Evaluation)	35
Total			100

Rubrics for Project Evaluation and Viva voce Examination

A. Internal Assessment by the Guide- Based on three Presentations by Students

Sl. No.	Aspects	Marks
1	Three Presentations	5
2	Introduction and Methodology	5
3	Industry and Company Profile	5
4	Theoretical background of study	5
5	Data analysis and interpretation	5
6	Summary of findings, suggestions and conclusion	5
Total		30

B. Report Evaluation by the Guide & External Examiner

Sl. No.	Aspects	Marks
1	Introduction & Relevance of the project	5
2	Conceptual background and literature review	5
3	Research design	5
4	Analysis and interpretation	10
5	Summary of findings, suggestions and conclusion	10
Total		35



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C. Viva-Voce Examination to be conducted by the Guide and an External examiner from the Industry/ Institute (Joint Evaluation)

Sl. No.	Aspects	Marks
1	Presentation and Communication Skills	5
2	Subject knowledge	5
3	Objectives of the study and Methodology	5
4	Analysis using statistical tools and statistical packages	10
5	Findings and appropriate suggestions	10
Total		35

Activity Chart to be followed during Project Work

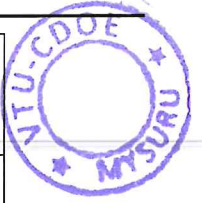
Activity	Remarks
Identifying the organization and Problem identification	Student individually identifies an organization or identifies problem for his/her study, according to his/her interest.
Problem statement & Research Design	His/ Her interests are discussed with project guides. Discussion with Internal Guide to decide on suitable design for the research
Synopsis Preparation	Preparation of Synopsis* & formulating the objectives
Presentation of Synopsis	The student will present the synopsis with the detailed execution plan to the Internal Guide and Programme Coordinator who will review and may: a. Approve b. Approve with modification or c. Reject for fresh synopsis

Approval Status	The approval status is submitted to Programme Coordinator who will officially give concurrence for the execution of the Project
Understanding Structure, Culture and functions of the organization / Identifying of business problem from the Industry through the literature study	Student should understand products / services and the problems of the organization
Preparation of Research design and Research instrument for data collection	Discussion with the guide for finalization of research design and instrument in his/her domain and present the same to the guide. (First Presentation)



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Data collection	Date collected to be edited, coded, tabulated and presented to the guide for suggestions for analysis. (Second Presentation)
Analysis and finalization of report	Students must use appropriate and latest statistical tools and techniques for analyzing the data. (Third Presentation)
Submission of Report	Final Report should be submitted to the University before one week of the commencement of theory examination.

***Synopsis of 3-4 pages to be submitted to the Programme Coordinator through the Guide**

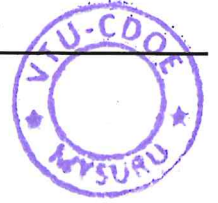
Page 1	Title, Contact Address of student- with details of Internal and External Guide (if applicable)
Pages 2-4	Short introduction with objectives and summary (300 words), Review of Articles / Literature about the topic with source of information.

Formats for Project Report

- Format of Cover Page
- Format of certificate by Company/Institution or from both
- Format of Declaration Page
- Format of Contents
- Format of List of Tables and Charts
- Format of Bibliography



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(Title of the Project Work)

Submitted by

(Student Name)

(USN)

Submitted to

VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELGAVI

In partial fulfillment of the requirements for the award of the degree of
BACHELOR OF COMPUTER APPLICATION IN [DATA SCIENCE / DATA
ANALYTICS]

Under the guidance of

INTERNAL GUIDE

(Name & Designation)

EXTERNAL GUIDE

(Name & Designation)

(Institute Logo)

Department of Computer Applications

VTU's Centre for Distance and Online Education

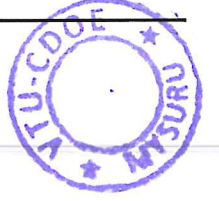
Mysuru

(Month & Year of submission)



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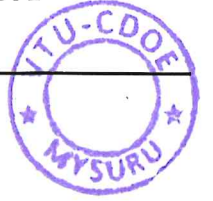
CERTIFICATE

This is to certify that (Name of the Student) bearing USN (xxxx), is a bonafide student of Bachelor of computer Application in [Data Science / Data Analytics] course of the Institute (Batch), affiliated to Visvesvaraya Technological University, Belgavi. Project Report on "(Title of Report)" is prepared by him/her under the guidance of (Name of the Guide), in partial fulfilment of the requirements for the award of the degree of Bachelor of computer Application in [Data Science / Data Analytics] of Visvesvaraya Technological University, Belagavi, Karnataka.

Signature of Internal Guide

Signature of PC

Signature of Director



DECLARATION

I, (Student Name), hereby declare that the Project report entitled "(Title)" with reference to (Organization with place) prepared by me under the guidance of (Guide Name), faculty of Computer Application Department, (Institute name) and external assistance by (External Guide Name, Designation and Organization). I also declare that this Project work is towards the partial fulfilment of the university Regulations for the award of degree of Bachelor of computer Application in [Data Science / Data Analytics] by Visvesvaraya Technological University, Belagavi. I have undergone a summer project for a period of Twelve weeks. I further declare that this Project is based on the original study undertaken by me and has not been submitted for the award of any degree/diploma from any other University / Institution.

Place:

Signature of the Student

Date:

**PROGRAMME CO-ORDINATOR
COMPUTER APPLICATIONS**
Visvesvaraya Technological University
Centre for Distance and Online Education
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