

MAJOR PROJECT PREPARATION AND SUBMISSION GUIDELINES

BACHELOR OF TECHNOLOGY (COMPUTER SCIENCE AND ENGINEERING)

Department of Computer Science & Information Technology

Mahatma Gandhi Central University, Motihari, Bihar

Preamble: While utmost attention must be paid to the content of the major project, which is being submitted in partial fulfillment of the requirements of the respective degree, a standard format must be prescribed. The same format shall also be followed in the preparation of the final soft copies to be submitted to the Library in the future.

1. MAJOR PROJECT PREPARATION GUIDELINES

This major project shall be presented in several chapters, starting with an introduction and ending with a summary and conclusions. Each of the other chapters will have a precise title reflecting the contents of the chapter. A chapter can be subdivided into sections, subsections, and subsubsection to present the content discretely and with due emphasis. The major project preparation may follow the one of the formats based on their *A) Research Based Project Work* and *B) Industry-Oriented Project Work* which are given below:

A. The Research Based Major Project must be organized in the following order.

1. Cover page
2. Inside Title Page
3. Certificate signed by the Supervisor(s) (in the stipulated format)
4. Declaration signed by the Candidate (in the stipulated format)
5. Acknowledgments
6. List of research publication related to project in IEEE format (if any)
7. Abstract
8. Table of Contents
9. List of Figures
10. List of Tables
11. Abbreviations/Notation/Nomenclature (if any)
12. Text of the
 - Chapter-1
 - Chapter-2
 - ...
 - ...
13. References
14. Appendix (if any)
15. Code of programs used in major project experiment(s) (in standard format with proper descriptions)
16. Non-paper materials (if any)

1.1. Introduction

The title of **Chapter 1** shall be Introduction. It shall justify and highlight the problem posed, define the topic and explain the aim and scope of the work presented in the major project. It may also highlight the significant contributions from the investigation.

1.2. Related Work/Literature Survey

This shall normally form **Chapter 2** and shall present a critical appraisal of the previous work published in the literature about the topic of the investigation. The extent and emphasis of the chapter shall depend on the nature of the investigation.

1.3. The Proposed Model

The reporting on the investigation shall be presented in one or more chapters with

appropriate chapter titles.

- Due importance shall be given to experimental setups, procedures adopted, techniques developed, methodologies developed and adopted.
- While important derivations/formulae should normally be presented in the text of these chapters, extensive and long treatments, copious details, and tedious information, detailed results in tabular and graphical forms may be presented in Appendices. Representative data in tables and figures may, however, be included in appropriate chapters.
- Figures and tables should be presented immediately following their first mention in the text. Short tables and figures (say, less than half the writing area of the page) should be presented within the text, while large tables and figures may be presented on separate pages.
- Equations should form separate lines with appropriate paragraph separation above and below the equation line, with equation numbers flushed to the right.

1.4. Results and Analysis

This shall form the penultimate chapter of the project and shall include a thorough evaluation of the investigation carried out and bring out the contributions from the study. The discussion shall logically lead to inferences and conclusions as well as scope for possible further future work.

1.5. Summary and Conclusion

This will be the final chapter of the major project. A brief report of the work carried out shall form the first part of the Chapter. Conclusions derived from the logical analysis presented in the Results and Discussions Chapter shall be presented and enumerated, each point stated separately. Scope for future work should be stated lucidly in the last part of the chapter.

1.6. Appendix

Detailed information, lengthy derivations, raw experimental observations, etc. are to be presented in the separate appendices, which shall be numbered in Roman Capitals (e.g. "Appendix IV"). Since reference can be drawn to published/unpublished literature in the appendices these should precede the "Literature Cited" section.

1.7. References/Bibliography

This should follow the Appendices, if any, otherwise the Summary and Conclusions chapter. The candidates shall follow the style of citation and style of listing in one of the standard journals in the subject area consistently throughout his/her project, for example, IEEE in the Department of Electrical Engineering, Materials Transactions in Department of Metallurgical Engineering and Materials Science. However, the names of all the authors along with their initials and the full title of the article/monogram/book, etc. have to be given in addition to the journals/publishers, volume, number, pages(s), and year of publication.

Citation from websites should include the names(s) of the author(s) (including the initials), the full title of the article, website reference, and when last accessed. Reference to personal communications, similarly, shall include the author, title of the communication (if any), and date of receipt.

- **Publications by the candidate**

Articles, technical notes, etc. on the topic of the project published by the candidate may be separately listed after the literature cited. This may also be included in the contents. The candidates may also include reprints of his/her^{XV} publications after the literature citation.

1.8. Acknowledgments

The acknowledgments by the candidate shall follow the citation of literature, signed by him/her, with the date.

B. The Industry Based Major Project must be organized in the following order.

- Cover page
- Inside Title Page
- Project completion certificate from the industry/organization.
- Certificate signed by the Supervisor(s) (in the stipulated format)
- Declaration signed by the Candidate (in the stipulated format)
- Acknowledgments
- List of research publication related to project in IEEE format (if any)
- Abstract
- Table of Contents
- List of Figures
- List of Tables
- Abbreviations/Notation/Nomenclature (if any)

Chapter 1. Project Description

- 1.1 Project Overview
- 1.2 The Purpose of the Project
- 1.3 The Scope of the Work
- 1.4 Product Scenarios
- 1.5 Stakeholders
- 1.6 Mandated Constraints
- 1.7 Naming Conventions and Definitions
- 1.8 Relevant Facts and Assumptions

Chapter 2. Requirements

- 2.1 Product Use Cases
- 2.2 Functional Requirements
- 2.3 Data Requirements
- 2.4 Performance Requirements
- 2.5 Maintainability and Supportability Requirements
- 2.6 Security Requirements
- 2.7 Usability and Humanity Requirements
- 2.8 Look and Feel Requirements
- 2.9 Operational and Environmental Requirements
- 2.10 Cultural and Political Requirements
- 2.11 Legal Requirements

Chapter 3. Design

- 3.1 System Design
- 3.2 Current Software Architecture
- 3.3 Proposed Software Architecture
- 3.4 Subsystem services
- 3.5 User Interface
- 3.6 Object Design

Chapter 4. Test Plans

Content here.....

Chapter 5. Project Issues

Content here...

Chapter 6. References/Bibliography

- Appendix (if any)
- Code of programs used in major project experiment(s) (in standard format with proper descriptions)
- Non-paper materials (if any)

2. MAJOR PROJECT FORMAT

2.1.Paper

- **Quality:** The project shall be printed on white bond paper, whiteness 95% or above, weight 75 gram or more per square meter.
- **Size:** The size of the paper shall be standard A 4; height 297 mm, width 210 mm.
- **Typesetting:** The standard font shall be Times New Roman of 12 pts with 1.5 line spacing
- **Page format:** The Printed Sheets shall have the following written area and margins:

Top Margin	15 mm	margins:
Head Height	3 mm	
Head Separation	12 mm	
Bottom Margin	22 mm	
Footer	3 mm	
Foot Separation	10 mm	
Text Height	245 mm	
Text Width	160 mm	

When the header is not used the top margin shall be 30 mm.

- **Left and Right Margins**

The candidates shall have the options of single or double -sided printing

- Single-sided/odd number page (in double-sided printing) Left Margin 30mm Right Margin 20 mm
- Double sided- even-numbered page Left Margin 20mm Right Margin 30mm
- **Pagination:** Page numbering in the text of the project shall be Hindu-Arabic numerals at the center of the footer. But when the candidate opts for header style the page number shall appear at the right and left top corner for the odd and even number pages, respectively. Page number “1” for the first page of the Introduction chapter shall not appear in print, only the second page will bear the number “2”. The subsequent chapters shall begin on a fresh page (fresh odd number page in case of double-sided printing). When header style is chosen the first page of each chapter will not have the header and the page number shall be printed at the center of the footer. Pagination for pages before the Introduction chapter shall be in lower case Roman numerals, e.g., “iv”.
- **Header:** When the header style is chosen, the header can have the Chapter number and Section number (e.g., Chapter 2, Section 3) on even-numbered page headers and the Chapter title or Section title on the odd-numbered page header.
- **Paragraph format:** Vertical space between paragraphs shall be about 2.5 line spacing. The first line of each paragraph should normally be indented by five characters or 12mm. A candidate may, however, choose not to indent if (s) he has provided sufficient paragraph separation.

A paragraph should normally comprise more than one line. A single line of a paragraph shall not be left at the top or bottom of a page (that is, no windows or orphans should be left). The word at the right end of the first line of a page or paragraph should, as far as possible, not be hyphenated.

- **CHAPTER AND SECTION FORMAT**

1.1 Chapter: Each chapter shall begin on a fresh page (odd number page in case of double-sided printing) with an additional top margin of about 75mm. Chapter number (in Hindu-Arabic) and title shall be printed at the center of the line in 6mm font size (18pt) in

boldface using both upper and lower case (all capitals or small capitals shall not be used). A vertical gap of about 25mm shall be left between the Chapter number and Chapter title lines and between the chapter title line and the first paragraph.

1.2 Section and Sub-sections: A chapter can be divided into Sections, Sub-sections, and Sub-Section to present different concepts separately. Sections and sub-sections can be numbered using decimal points, e.g., 2.2 for the second section in Chapter 2 and 2.3.4 for the fourth Sub- section in the third Section of Chapter 2. Chapters, Sections, and Sub-sections shall be included in the contents with page numbers flushed to the right. Further subsections need not be numbered or included in the contents.

The Section and Sub-Section titles along with their numbers in 5 and 4mm (16 and 14 pt) fonts, respectively, in boldface shall be flushed to the left (not centered) with 15 mm space above and below these lines.

In further subdivisions character sizes of 3 and 3.5 with a bold face, small caps, all caps, and italics may be used for the titles flushed left or centered. These shall not feature in the contents.

1.3 Table/figure format: As far as possible tables and figures should be presented in portrait style. Small size tables and figures (less than half of the writing area of a page) should be incorporated within the text, while larger ones may be presented on separate pages. Table and figures shall be numbered chapter -wise. For example, the fourth figure in chapter 5 will bear the number Figure 5.4 or Fig 5.4

Table number and title will be placed above the table while the figure number and caption will be located below the figure. Reference for Table and Figures reproduced from elsewhere shall be cited in the last and separate line in the table and figure caption, e.g. (after McGregor [12]).

3. AUXILIARY FORMAT

- **Binding:** The evaluation copies of the major project may be spiral-bound or softbound. The final hardbound copies to be submitted after the viva-voce examination will be accepted during the submission of a major project with the following color specification:

B.Tech. Major Project	Nevi Blue
-----------------------	-----------

- **FRONT COVERS:** The front covers shall contain the following details:
 - The full title of the major project in 6 mm 22 point's size font is properly cantered and positioned at the top.
 - Full name of the candidate in 4.5 mm 15 point's size font properly cantered at the middle of the page.
 - A 40 mm Charkha replica of the University emblem followed by the name of the department, name of the University, and the year of submission, each in a separate line and properly cantered and located at the bottom of the page.
- **LETTERING:** All lettering shall be embossed or printed in gold
- **BOUND BACK:** The degree, the name of the candidate, and the year of submission shall also be embossed on the bound (side) in gold.
- **BLANK SHEETS:** In addition to the white sheets (binding requirement) two white sheets shall be put at the beginning and the end of the project.
- **TITLE SHEET:** This shall be the first printed page of the project and shall contain the submission statement: the major project submitted in partial fulfillment of the requirements of the Degree, B.Tech., the name and Roll No. of the candidate, name(s) of the Supervisor and Co-Supervisor (s) (if any), Department, Institute and year of submission.
- **DEDICATION SHEET:** If the candidate so desires(s) he may dedicate his/her project, which statement shall follow the title page. If included, this shall form page 1 of the auxiliary sheets but shall not have a page number.

- **APPROVAL SHEET:** In the absence of a dedication sheet this will form the first page and, in that case, shall not have a page number. Otherwise, this will bear the number two in Roman lower case “ii” at the center of the footer. The top line shall be:

- **Report Approval** for B.Tech.

The Approval Sheets are to be included only in the hardbound copies which are submitted after the successful major project viva -voce examination.

- **ABSTRACT:** The approx. 500-word abstract shall highlight the important features of the major project and shall correspond to the electronic version to be submitted to the Library for inclusion on the website. The Abstract in the major project, however, shall have two more parts, namely, the layout of the major project giving a brief chapter- wise description of the work and the keywords.
- **TABLE OF CONTENTS:** The contents shall follow the Abstract and shall enlist the titles of the chapters, section and sub-section using decimal notation, as in the text, with corresponding page number against them, flushed to the right.
- **LIST OF FIGURES:** Two separate lists of Figure captions and Table titles along with their numbers and corresponding page numbers against them shall follow the Contents.
- **LIST OF TABLES**
- **ABBREVIATION NOTATION AND NOMENCLATURE:** A complete and comprehensive list of all abbreviations, notations, and nomenclature including Greek alphabets with subscripts and superscripts shall be provided after the list of tables and figures. (As far as possible, generally accepted symbols and notation should be used). Auxiliary page from dedication (if any) to abbreviations shall be numbered using Roman numerals in lower case, while the text starting from the Introduction shall be in Hindu-Arabic. (The first pages in both the cases shall not bear a page number).
- **DECLARATION:** A declaration of Academic honesty and integrity is required to be included along with every major project after the approval sheet. The format of this declaration is given in Specimen `C' attached.

B. PROJECT SUBMISSION GUIDELINES

To have the project examined, the number of project copies to be submitted to the Head of the Department should correspond to the number of examiners (including project supervisors) for a B.Tech. degree student. While submitting the major project, every student is required to provide the Head of Department signed checklist in the following format.

1. **Submission of Major Project for Evaluation:** Research Scholars shall submit **3 print copies** of the major projects as per the B.Tech. ordinance of the University to + Evaluation Branch-I.
2. **Submission of e-Project for Digital Archiving@Central Library**

The guidelines to adhere to while submitting the e- major project are stipulated below:

- a. A Research Scholar needs to submit a digital copy in a single PDF (Portable Document Format) file containing the complete major projects along with all signed certificates (Annexures I, II, and III).
- b. Digital copy of B.Tech. a major project, having viva-voce examination, and B.Tech. a major project must be uploaded in the Project Tracking System before the viva-voce examination. Receipt of the electronic copy of the major project at Central Library through Theses Tracking System is mandatory before Viva-Voce examination. The student, Centre Chairperson, and the University Librarian should be required to certify that the electronic copy has been submitted and received at Central Library.

Authentication Certificate: Scanned copy of duly filled 'B.Tech. major project Authentication Certificate' (Annexure-I) to be signed by the research scholar that the major project, contained in the CD/DVD (or in another relevant form) is complete in all respect and is same as submitted in print and has been checked for plagiarism using TURNITIN/URKUND.

4. **Metadata Form:** The 'major project, Metadata Form' (Annexure-XI) duly filled by the research scholar in MS-Word file or PDF file.

5. **Consent Form for Digital Archiving:** Scanned copy of 'Consent Form for Digital Archiving' (Annexure-III) duly signed by the research scholar.

6. **Other accompanying material/s, if any.** All other accompanying material/s like audio, video, computer program/ algorithm, etc., if any, which have been submitted along with the print major project, are to be provided on CD/DVD directly to Central Library.

7. The contents of the B.Tech. the major project is to be verified by the designated library staff following the guidelines described above.

8. After satisfactory verification, designated library staff will mark the receipt in Project Tracking System.

SPECIFICATIONS FOR B.TECH. MAJOR PROJECT, FORMAT

1.1 Preparation of Manuscript and Copies

1.1.1 The project needs to be prepared using standard text processing software and must be printed in black text (Colour for images, if required) using a laser printer or letter-quality printer in standard typeface (Times New Roman or Sans Serif font).

1.1.2 The project must be printed or photocopied on one side of the paper. All copying of project pages must be clear, sharp, and even, with uniform size and uniformly spaced characters, lines, and margins on every page of good quality white paper of 75 gsm or more.

1.1.3 The project should be free from typographical errors.

1.2 Size and Margins

1.2.1 A4 is the recommended project size.

1.2.2 The top, bottom, and right-side margins should be 25 mm, whereas the left side margin should be 35 mm for both textual and non-textual (e.g., figures, tables) pages.

1.2.3 Content should not extend beyond the bottom margin except for completing a footnote, last line of chapter/subdivision, or figure/table caption.

1.2.4 A sub-head at the bottom of the page should have

C. Evaluation Guidelines for B.Tech. Major Project

1. The project review committee (PRC) shall be formed by the head of the department with the approval of the competent authority

2. Marks distribution of evaluating B.Tech. Major Project

Component of Assessment	Max Marks
External Expert(s) of PRC	40
Internal Expert(s) of PRC	30
*Supervisor(s)	30

***Note:** In case of multiple supervisors, out of 4 marks 60% weights of marks will be submitted by the supervisor, and the remaining 40% weights of marks shall be equally distributed among the co-supervisor(s) which is required to submit consolidated marks out of 40 marks with individuals' marks of supervisors.

3. The student should submit their project report along with plagiarism report duly forwarded by their respective supervisor(s), where plagiarism of major project should not

be more than 10%. In case of more than specified plagiarism, the submission permission may be granted by the PRC.

4. Failing to submit the major project report along with requisites, the student may be granted a one-time extension of up to six months only by the recommendation of PRC.

< Title of Project >

*A thesis/dissertation submitted to the Mahatma Gandhi Central University
in partial fulfilment of the requirements
for the award of the degree of*

BACHELOR OF TECHNOLOGY

IN

COMPUTER SCIENCE & ENGINEERING

BY

<STUDENT NAME>



DEPARTMENT OF COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

MAHATMA GANDHI CENTRAL UNIVERSITY, MOTIHARI

BIHAR-845401, INDIA

MONTH-YEAR

<Title of Project>

*A thesis/dissertation submitted to the Mahatma Gandhi Central University
in partial fulfilment of the requirements
for the award of the degree of*

**BACHELOR OF TECHNOLOGY
IN
COMPUTER SCIENCE & ENGINEERING**

BY

<STUDENT NAME>

Enrollment No. -----

Under the Supervision of
<NAME OF THE SUPERVISOR(S)>



**DEPARTMENT OF COMPUTER SCIENCE AND INFORMATION TECHNOLOGY,
MAHATMA GANDHI CENTRAL UNIVERSITY, MOTIHARI,
BIHAR-845401, INDIA**

MONTH-YEAR



कंप्यूटर विज्ञान और सूचना प्रौद्योगिकी विभाग
Department of Computer Science and Information
Technology
महात्मा गाँधी केन्द्रीय विश्वविद्यालय
MAHATMA GANDHI CENTRAL UNIVERSITY
बिहार/Bihar-845401

DECLARATION

This is to certify that the dissertation entitled “**Title**” is being submitted to the **Department of Computer Science and Information Technology, Mahatma Gandhi Central University, Motihari, Bihar-845401, India**, in partial fulfillment of the requirements for the award of the degree of **Batchelor of Technology in Computer Science & Engineering**, is a record of bonafide work carried out by me under the supervision of “**Name of the Supervisor**”.

The matter embodied in the dissertation has not been submitted in part or full to any University or Institution for the award of any other degree or diploma.

<Student Name>

Enrolment No. : -----

Department of Computer Science and
Information Technology,

Mahatma Gandhi Central University,
Motihari

Bihar-845401, India

Email id-



कंप्यूटर विज्ञान और सूचना प्रौद्योगिकी विभाग
Department of Computer Science and Information
Technology
महात्मा गाँधी केन्द्रीय विश्वविद्यालय
MAHATMA GANDHI CENTRAL UNIVERSITY
बिहार/Bihar-845401

CERTIFICATE

This is to certify that this dissertation entitled “**Title of the Project**” submitted by <**Student Name**>, to the Department of Computer Science & Information Technology, Mahatma Gandhi Central University, Motihari, Bihar-845401, India, for the award of the degree of **Bachelor of Technology in Computer Science & Engineering**, is a research work carried out by him under the supervision of <**Name of the supervisor**>.

Head of the Department

<**Name of Hod**>

Department of Computer Science and
Information Technology,
Mahatma Gandhi Central University,
Motihari, Bihar-845401, India

Supervisor

<**Name of the supervisor**>

Department of Computer Science and
Information Technology,
Mahatma Gandhi Central University,
Motihari, Bihar-845401, India

Acknowledgement

This B.Tech. project is the result of a challenging journey, upon which many people have contributed and given their support.-----

-

-

<Student Name>

Enrolment No. : -----

Department of Computer Science and
Information Technology,

Mahatma Gandhi Central University,
Motihari

Bihar-845401, India

Email id-

Abstract

Radio channels are scarce resources and to be utilized judiciously. The channel allocation problem is an important research problem in the area of mobile computing discipline. Though efforts are being made for the maximum utilization of the channels, studies indicate that still proper and full channel utilization is often not done because of many associated constraints. Recently, the concept of cognitive radio has emerged which suggests that opportunistic channel utilization is possible if the mobile services are classified into two classes; primary services and secondary services. Primary services are licensed one and are given utmost preference whereas secondary services use the channels opportunistically. The usage of the channels are based on the cognition of the radio channels.

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Abbreviations

BSC	Base Station Controller
BTS	Base Transceiver Station
CAC	Call Admission Control
CD	Code Division
CR	Cognitive Radio
DCA	Dynamic Channel Allocation
DHCP	Dynamic Host Configuration Protocol
FCA	Fixed Channel Allocation
FCC	Federal Communication Commission
FD	Frequency Division
FDMA	Frequency Division Multiple Access
FTCA	Fault Tolerant channel Allocation
FTP	Forced Termination Probability
GA	Genetic Algorithm
GALC	Genetic Algorithm for Locking Channel
GASC	Genetic Algorithm for Switching Channel
GSM	Global System for Mobile Communication
HCA	Hybrid Channel Allocation
HLR	Home Location Registry
IF	Intermediate Frequency
ITU	International Telecommunications Convention
MH	Mobile Hosts
MS	Mobile Stations
MSS	Mobile Service Station
MTSO	Mobile Telephone Switching Office
NBS	Nash Bargaining Solution
NSS	Network Switching Subsystem
OSI	Open System Interconnection
PHC	Primary Handoff Call
PNC	Primary New Call

List of Symbols

$APHCR_q$	<i>Arrived Primary Handoff Call Request</i>
$APNCR_q$	<i>Arrived Primary New Call Request</i>
$ASHSR_q$	<i>Arrived Secondary Handoff Service Request</i>
$ASNSR_q$	<i>Arrived Secondary New Service Request</i>
$BPNCR_q$	<i>Blocked Primary New Call Request</i>
$BSNSR_q$	<i>Blocked Secondary New Service Request</i>
CR	<i>Churning Rate</i>
CRT	<i>Criteria</i>
$Cell_i$	<i>i^{th} Cell</i>
C_{drop}	<i>Interrupted call prior to its normal completion</i>

CERTIFICATE OF APPROVAL

This is to certified that the thesis entitled

submitted by_____

Enrollment No. _____to Mahatma Gandhi Central University Motihari, Bihar for the award of the degree of Master of Technology in (Computer Science and Engineering) has been accepted by the Internal assessment committee and that the student has successfully defended the thesis in the Viva-voce examination held today.

(Supervisors)

(External Examiner)

(Head of Department)

Annexure-XI

STATEMENT OF THESIS PREPARATION

1. Thesis Title:

.....
.....

2. Degree for which the thesis is submitted:

.....

3. The thesis Guide was referred for preparing the thesis.

4. Specifications regarding the thesis format have been closely followed.

5. The contents of the thesis have been organized based on the guidelines.

6. The thesis has been prepared without resorting to plagiarism

7. All sources used have been cited appropriately.

8. The thesis has not been submitted elsewhere for a degree.

9. A copy of Research Article submission/Publication Certificate(s)/Proof of Journal/Conference (National/International) based on dissertation work done during the session is mandatory to submit i.e. forwarded by supervisor(s).

<Student Name>

Enrolment No. : -----

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Information Technology,

Mahatma Gandhi Central University,
Motihari

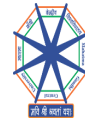
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Email id-

(Back Cover)

Name of the
Student

TITLE OF THE THESIS IN CAPITAL LETTER



B.Tech.
(CSE)

20....



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