

RESEARCH PROJECT GUIDELINES

FOR

MASTER OF SCIENCE IN BIOCHEMISTRY (MSCBCH)

MBCP-001

(January 2025 onwards)



**SCHOOL OF SCIENCES
INDIRA GANDHI NATIONAL OPEN UNIVERSITY
MAIDAN GARHI, NEW DELHI – 110 068**

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MESSAGE FROM THE PROGRAMME CO-ORDINATORS

The Master programme in Biochemistry (MSCBCH) prepares the students to take up key positions as a clinical biochemist, quality analyst, researcher, project fellow and teacher in fields related to biochemistry and life sciences. We had therefore imparted the comprehensive knowledge covering the lab skills and core areas of biochemistry and its interdisciplinary fields with equal emphasis on the theory and practical courses. The MSCBCH students are encouraged to spend at least 4-6 months working on a project preferably in any area of biochemistry or its interdisciplinary areas such as clinical biochemistry, plant biochemistry, nutrition, microbiology, molecular cell biology, toxicology, bioinformatics, and drug analysis etc.

The theoretical background of various MSCBCH courses provides you the necessary foundation, principles, and practices to acquire theoretical knowledge of biochemistry courses with understanding the use of biochemical experimental tools and techniques. The practical hands on experience gained from the practical courses provides you the basic knowledge about the laboratory safety rules and application of key bioinstrumentation, analytical techniques along with bioinformatics and biostatistics softwares used in biochemical research.

The objectives of the MSCBCH Biochemistry project work are to develop essential lab skills, research aptitude, critical reasoning and writing skills along with performing the bench work. This familiarizes you about the basic concept of research, research methodology, and review of literature and importance of doing project work in biochemistry. During the development of the project, you should involve in all the stages from the design and writing the research proposal with consultation of project supervisor and to execute the experimental methodology, data analysis, conclusions and report writing and project submission. The primary emphasis of the project work is to understand and gain the knowledge of the principles of biochemistry and its related current research problems, so as to participate and manage research skills in future for higher studies.

Students should take this project work very sincerely and seriously. The project work should be genuine and original in nature and should not be copied from anywhere else. If found copied, the project report will be forwarded to the **Exam Discipline Committee of the University as an Unfair means** case for necessary action. To avoid this loss take your proposal preparation very seriously and consult for every point on which you have doubt, with your project supervisor/supervisor. In case of project resubmission please confirm the fees and other details with the Regional Centre / Study Centre / IGNOU website. Students should strictly follow and adhere to the MBCP-001 project guidelines

We wish you all the success.

MSCBCH Coordination Team

I SCHEDULE FOR THE MBCP-001 PROJECT

<i>Sl.No.</i>	<i>Activity</i>	<i>Time line</i>
1.	Submission of project proposal at the following address: Programme Coordinator, MSCBCH, Discipline of Biochemistry School of Sciences, IGNOU, New Delhi-110068 or send soft copy to the Email id– mscbch@ignou.ac.in	Twice a year as shown below: 1st January to 15th March and 1st July to 15th September
2.	Approval of Project Proposal Contact Concerned: Project Programme Team: Discipline of Biochemistry School of Sciences, IGNOU, New Delhi-110068	30 days after the project proposal is received.
3.	Submission of the Project Report (One copy) in bound form to Programme Coordinator, MSCBCH, Discipline of Biochemistry School of Sciences, IGNOU, New Delhi-110068	Twice a year as shown below: 1st April to 30th June (For Project Proposals that have been approved during the 1st January to 15th March slot) 1st October to 31st December (For Project Proposals that have been approved during 1st July to 15th September slot)
4.	Viva-Voce to be conducted by Project Programme Team (MSCBCH), Biochemistry Discipline, SOS. IGNOU, New Delhi-110068	In July (For project reports submitted during 1st April to 30th June slot) In January (For project reports submitted during 1st October to 31st December slot)



II. PROFORMA FOR THE APPROVAL OF MSCBCH PROJECT PROPOSAL

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

Project Proposal No:.....

(for office use only)

Course Code:

Enrolment No.:

Study Centre:.....

Regional Centre:.....RC Code:.....

E-mail:.....

Mobile/Tel No.:.....

1. Name and Address of the Student:

.....

2. Title of the Project***:

.....

3. i) Name and Address of the Supervisor:

.....

.....

ii) Name and Address of the Co-supervisor (if applicable)

4. Working/Teaching experience of the Supervisor/Co-supervisor**:

.....

.....

(**Note: At any given point of time, a supervisor should not provide guidance for more than 5MSCBCH students of IGNOU. Submit the brief CV of supervisor along with his/her consent letter)

5. Is this your first submission?

☐

Yes

☐

No

Signature of the Student

Date:.....

Signature of the Supervisor

Date:.....

For Office Use Only

☐
☐

Name:.....

.....

Signature, Designation, Stamp of the
Project Proposal Evaluator

Date:.....

Ensure that you include the following while submitting the Project Proposal:

1. **Proforma for Approval of Project Proposal duly filled and signed by both the student and the Project Supervisor with date.**
2. **Bio-data of the project supervisor with her/his signature and date. Please also attach the certified copy of proof of identity of supervisor.**
3. **Synopsis of the project proposal (14-18pages).**
4. **A self-addressed envelope with duly affixed postage stamps (to send it by ordinary post only) on it.**

III GUIDELINES FOR PROJECT WORK

At the Masters level, a learner is expected to work on mini research project to gain exposure in different dimension of biochemistry fields. It help you to develop abilities like research aptitude, logical thinking, writing skills and formulation of research problems with practical experience of biochemistry tools and techniques that will qualify him/her to teach, carryout research, and perform as a professional biochemist/scientist. The dissertation project in Biochemistry, MBCP-001, seeks to partially fulfill this requirement. The Masters dissertation in an independent research project worth 8 credits of course work. The Project work constitutes a major component in most professional programmes. It needs to be carried out with due care, and should be executed with seriousness by the students. The project work is not only a partial fulfillment of the MSCBCH requirements, but also provides a platform to demonstrate your skills, subject knowledge, abilities and specialization. Students are eligible to submit the project proposals after entering into the 4th semester as per the schedule of the project.

The aim of the research project in M.Sc. Biochemistry is to engage students with hands-on research experience and enhance their analytical, technical, and problem-solving skills.

Learning Objectives

The general objective of the Research project work (MBCP-001) is to help the learner:

- to develop research skills;
- acquaint with research problems in the field of biochemistry.
- to gain empirical knowledge required for preparing a research proposal;
- enable to write down a dissertation report of good quality;
- to follow proper laboratory safety protocols and good research practices;
- Gain hands-on experience in biochemical techniques;
- to solve research problems through 'scientific method' of investigation;
- to develop writing, presentation, communication and analytical skills.
- understand the implications of biochemical research in healthcare, industry, and environmental science; and
- explore potential applications of findings in biotechnology, pharmaceuticals, and other related fields.

Approach

The students may undertake any topic studied in the 15 courses (core and elective) of the MSCBCH. The broad themes for project could include:

- a) Cell signaling
- b) Biomarkers
- c) Cell biology
- d) Structural biology
- e) Enzymology
- f) Cancer Biology
- g) Cellular structure and function
- h) Molecular analysis of cellular stress responses
- i) Metabolism
- j) Functional analysis of nucleic acid/protein interactions
- k) Microscopic studies of biological sample
- l) *In silico* and *in vitro* studies
- m) Determination of antioxidant and phytochemicals in plant sample
- n) Analysis of nutritional values in Food Products
- o) Preparation and bioactivity assessment of different organic solvents of plant extract
- p) Assay of Antimicrobial activity
- q) Molecular biology-based studies
- r) And in any allied research areas of biochemistry and life sciences.

The project work may be undertaken in some university/ Research institutes/recognized study centres, Laboratories / Educational Institutions / pharma Companies where lab facilities are available with the approval of concerned project supervisor. The project should not be theory/literature-based exercise. It should be practical oriented.

IV PROJECT SYNOPSIS (PROPOSAL)

Proposal Formulation: Synopsis of the project should be prepared. The synopsis should clearly state the objectives and research methodology, sampling, instruments to be used, limitations if any, and future direction for further research.

a) **Identification of Topic:** The selection of topic is of crucial importance. It should be decided and based on your understanding of the study, experience in the field and interest. The topic should be discussed with the project supervisor. It should be in harmony with your areas of interest and the specialization of the supervisor. It is always better to identify a micro topic to remain focused and complete the project on the time and within the budget and resources. The topic should be clear, directional, focused and feasible.

b) **Development of Project Synopsis:** The synopsis should be around 500-700 words. The synopsis should consist of:

- i) a clear statement of the topic of the project;
- ii) a statement of objectives (what you intend to achieve through the project);
- iii) your hypothesis (if any) on which you build your study;
- iv) the methodology you intend to adopt to carry out your study—tools and techniques to be used, if any;
- v) population and sample size proposed, if the project involves any field work; and
- vi) implications of the project for food safety & quality Management.

The statements of the topic and of the hypotheses are closely related. You state your hypotheses based on your present knowledge about the topic. Your hypotheses maybe proved correct or changed later, based on the analysis of the data you collect. Your hypotheses also can be in the form of few research questions.

When you set objectives, it is better to limit them to four or five. A large number of objectives will be difficult to achieve, given the present scope of the project and the time available to us. The objectives should be achievable and measurable.

Methodology should include the ways through which you would collect your information, data, etc., and analyse them.

You need not worry much about the implications of your project at the initial stage. You need to state, however, in general terms the purpose of your project. Implications and conclusions will be stated more specifically and concretely towards the end of your actual Project Work.

In addition to the above steps your proposal may also include relevant literature/studies, and Time/Schedule, listing various activities you have to carry out in the project, time needed for each activity and resources you have to spend on them. This time schedule will help you to carry out your project work in a systematic way.

c) **Submission:** The Synopsis of the project should be sent to **The Programme Coordinator (MSCBCH), School of Sciences, Academic Complex, Block-D, Indira Gandhi National Open**

University, Maidan Garhi, New Delhi-110068. The school will give the Project Synopsis Number and shall inform the student and the concerned Regional Centre about its approval. The school shall also forward a copy of the approval to the Regional Centre for record and reference.

Eligibility for Project Supervisor: The following are eligible to be supervisor:

- i) Faculty at the IGNOU Headquarters, Maidan Garhi New Delhi-110068 (Discipline of Biochemistry, School of Sciences).
- ii) Following qualifications and experience was recommended for supervisor/co-supervisor:
Ph.D. in Biochemistry or in allied disciplines with minimum of 2 years of teaching/research/industrial experience.

Project Synopsis Submission and Approval

Students are advised to send their project synopsis and bio-data of the supervisor (in case of (ii) above, which must be duly signed by the supervisor) to the Programme Co-coordinator (MSCBCH), School of Sciences, IGNOU, Maidan Garhi, New Delhi – 110068. Synopsis proposals not accompanying complete and signed Bio-Data of supervisor will not be considered for approval.

In case the proposed supervisor CV is not considered, the student shall be advised so, and in such cases the student should change the supervisor and resubmit the proposal. Hence the student will submit project proposal a fresh with the signature of the new supervisor, as it will be considered as a new proposal. Similarly, if a student wants to change his/her supervisor for any reason, he/she would be required to submit the project proposal along with the signature of the new supervisor on a new project proposal proforma, as it would be considered as a new proposal.

In case of academic counsellors, it should be clearly mentioned as to which are the course he/she is counseling for, and since when, along with the name and code of the study centre, he/she is attached with. The project supervisor will be paid a token honorarium as IGNOU norms.

At any given point of time a supervisor cannot supervisor more than six students.

Note: Students are advised to select supervisors who are actively working in the chosen area of the project proposal. Project Supervisors are also advised to guide students' projects in their core specialization area only.

The student can formulate a project problem 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. **Problem selected and the specifications should be very much genuine.**

Steps involved in the project work

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.
- Prepare the project proposal.

- Submit the project proposal along with the necessary documents to the Concerned Study Centre.
- Receipt of the project approval from the Study Centre concerned.
- Carry out the project-work.
- Prepare the project report.
- Submit the project report to the Study centre concerned.
- Appear for the viva-voce as per the intimation by the Study Centre.

Communication of the approval

Communication regarding the project proposal Approval / Non-approval will be informed to the students after 30 days from the receipt of the project proposal from the Study centre to the Programme Coordinator.

Resubmission of the project proposal in case of non-approval

In case of non-approval, the suggestions for reformulating the project proposal will be communicated to the student through proper channel. The revised project proposal along with a new proforma, should be re-submitted along with a copy of the earlier proposal and non-approval project proposal proforma in the next slot.

Resubmission of project in case of failed students If the student is unsuccessful in the project, s/he should 're-do' the whole cycle, right from the submission of the project proposal. Students are advised to select a **new topic** for the project and should prepare and submit the project proposal to the study centre concerned. In case of failed students, a pro-rata fee should be remitted as per IGNOU's website details.

Enquiries

Enquiries regarding the project proposal approvals and the project reports should be addressed to the **Concerned Study centre and Programme coordinator (MSCBCH).**

V POINTS TO REMEMBER WHILE PREPARING THE PROJECT PROPOSAL

1. Project Proposal Formulation

- The project proposal should clearly state the project objectives of the proposed project to be undertaken.
- Proforma for Approval of Project Proposal (see page no.5) duly filled and signed by the student with date.
- Project proposal (15-20 pages) covering the following aspects:
 - (i) Title of the Project
 - (ii) Introduction and Objectives of the Project.
 - (iii) Review of Literature
 - (iv) Methodology
 - (v) Data Analysis
 - (v) Significance of the study
 - (vii) Future scope and further enhancement of the project
 - (viii) List of References
- 2. Project proposal completed in all aspects with necessary enclosures should be sent to the Study centre concerned by registered insured post or by hand on or before the due date. While posting your proposal, on the top of the envelope you should mention “**MSCBCH Project Proposal (MBCP-001)**”.
- 3. A project proposal, once approved, **is valid for that slot**. In case, a student is unable to submit her/his project report as per the slot, s/he may be given another chance for submission of the project report in the subsequent slot. If s/he still does not submit the project report, a fresh proposal approval is needed.
- 4. All entries of the proforma of approval should be filled up with appropriate and complete information. Incomplete approval-proforma in any respect will be summarily rejected.
- 5. A **photocopy of the complete Project Proposal** (along with Project Proforma, Project Proposal) submitted to the Study centre, should be retained by the student for future reference.
- 6. The evaluated project proposal proforma along with the details of Approved/Disapproved will be collected after 30 days after the proposal is received at the Study centre. In case if it is disapproved, the suggestions for reformulating the project proposal will be communicated to the student. Revised project proposal proforma, Proposal, should be sent along with the original copy / photocopy of the non-approved proforma of the earlier project proposal, to the Study centre.
- 7. **The project is a part of your 4th semester curriculum. Students are eligible to submit the project proposals after entering the 3rd semester of MSCBCH as per the schedule.**
- 8. **Violation of the project guidelines will lead to the rejection of the project at any stage.**

VI POINTS TO REMEMBER WHILE PREPARING THE PROJECT REPORT

Carefully write and prepare your dissertation report. Perhaps the best way to understand how the dissertation should look would be to go through the dissertations that have already been accepted at your study centre library or other University libraries may have a collection of them. This is a good approach to see how an entire dissertation is structured and presented. Besides the components described in the section above, your report would also include some additional information, resources, and matter, which is a basic requirement for dissertation reports.

1. **Project Report Formulation:** The project report **should** contain the following:
 - (i) Original copy of the Approved Proforma and Project Proposal.
 - (ii) Certificate of Originality (Format given on Page 11).
 - (iii) Project documentation.
2. The **project documentation** may be about 100 to 125 pages. The project documentation details should not be too generic in nature. Appropriate project report documentation should be done. 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.

Front Matter (which includes):

- Title (on the first page along with your name and academic affiliation)
- Certificate of Authenticity/Original Work-
- Acknowledgements
- List of Contents
- List of Tables and Figures
- Abbreviations Used
- Abstract
- Chapter 1: Introduction
- Chapter 2: Review of Literature
- Chapter 3: Materials and Methods
- Chapter 4: Results
- Chapter 5: Discussions
- Chapter 6: Summary and Conclusions
- Chapter 7: Recommendations
- Chapter 8: Bibliography
- Appendices

3. MANUSCRIPT PREPARATION FOR PROJECT REPORT

The report should be typed/word processed and presented on A4 paper with one-and-a-half spacing between the lines. The references and appendices can be single-spaced. Each page in the main report should be numbered with page numbers at the foot of the page. You report may be double sided (type on both sides of the paper)- in which case watch the margins. There should be a margin of at least 1.5 inches (4cm) on the left-hand side of the page and top, right and bottom margins should be 1.25 inches (3cm). The right margin should be unjustified to aid readability.

The main text should be in a font size more or less like this: 12-point Times New Roman and/or 11-point Arial. Use bolding for emphasis within the text and for main section headings. Colour printing may be used for charts, pictures etc, but clarity is more important than colour or fancy graphics. Once the report is ready, review the dissertation report for style, spelling, and grammar before submitting it for evaluation. You are responsible for the accuracy of the finished work so after it has been completed you should use the spellchecker to catch any typographical and spelling errors. You should also proofread it. Try reading your masterpiece aloud. Does it make sense, is it clear, concise, accurate? Certainly, these tips would help you in preparing a good report. Finally, a word about manuscript binding.

Students should include this Disclaimer in their report and sign

“By submitting this project report, I declare that this work is entirely my own, except where clearly indicated by citations, and that I have not plagiarized any material from other sources. I understand that plagiarism is a serious academic offense and that submitting work that is not my own will result in disciplinary action, including potential failure of this project report.”

4. **Manuscript binding and distribution:** After the counselor/project supervisor has approved the final draft of the manuscript, the student will make arrangements, at their own expense, for preparing 2 bound copies of the dissertation. **Only one copy of the original project report in the bound form is to be submitted to the Study centre along with plagiarism report concerned through registered insured post or by hand by the date mentioned in the Schedule for the project.** One photocopy of the same Project Report must be retained by the student, which should be produced before the examiner at the time of viva-voce. **The soft copy of the Project Report to be uploaded on the link provided on IGNOU’s website by SED from time to time.**

5. If any project report is received in the absence of the approved project proposal proforma (in original), project proposal and certificate of originality, it will be summarily rejected and returned to the student for compliance.

6. Throughout the project report, the title of the project should be the same as per the approved Proposal.

7. A photocopy of the project report is **not acceptable** for submission. Kindly mention on the top of the envelope **MSCBCH PROJECT REPORT (MBCP-001).**

8. **Preferably, not more than one student is permitted to work on a project.**

9. Title of the project should be kept the same throughout the project.

VII ASSESSMENT FOR PROJECT EVALUATION

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. 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.

(i) 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.

(ii) Project Evaluation

The project work evaluation will involve preparation of project report and the viva voce. The marks are to be awarded by the examiners. The Project Report is evaluated for 70 marks and the viva-voce is for 30 marks of the total 100 marks. Viva-voce is compulsory and forms part of evaluation. A student in order to be declared successful in the project (MBCP-001) must secure **50% marks in each component.**

Viva Voce

While appearing for the viva-voce, the student should need to carry the project report which s/he submitted. Passing in both the components is compulsory. If a student submitted the project report as per the schedule and fails to attend viva, her/his Project will remain incomplete and should contact the Programme coordinator or Study centre concerned. Student will be duly intimated about the Viva-voce by the concerned Programme coordinator or Study centre. They also contact concerned Study centre for the same. Viva-Voce will be conducted face-to-face or virtually through Google Meet/Zoom. **Viva through telephone, e-mail is not permitted.**

Unfair means Students shall not use unfair means in connection with any of the project Proposal or the project report. The University will take the unfair means cases of the project proposal and project reports seriously and would be referred to Examination Discipline Committee of IGNOU for necessary action.

Project Work

The project work involves preparation of project report after the approval of synopsis. The criteria for project report evaluation include:

- (1) Aim, objectives and methodology (25% weight),
- (2) Literature Review, Findings and Evaluation (50% weight), and
- (3) Communication of Ideas and Presentation (25% weight).

The distribution of marks shall be as follows:

- (a) Project report: out of 70, and (b) Viva-voce: out of 30

The empanelment of examiners will be done by the school in consultation with the Regional Centres.

VIII. CERTIFICATE OF ORIGINALITY

This is to certify that the project report entitled _____ submitted to **Indira Gandhi National Open University** in partial fulfilment of the requirement for the award of the degree of **MASTER OF SCIENCE (BIOCHEMISTRY)** is an authentic and original work carried out by Mr./Ms.

with enrolment no _____ under my guidance.

The matter embodied in this project is genuine work done by me 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.

.....

Signature of the Student:

Date:.....

Name and Address
of the student

.....
.....
.....
.....

Enrolment No.....

.....

Signature of the Supervisor

Date:.....

Name, Designation
and Address of the
Supervisor:

.....
.....
.....
.....

IX REMUNERATION BILL FOR THE MSCBCH PROJECT SUPERVISOR



INDIRA GANDHI NATIONAL OPEN UNIVERSITY
MAIDAN GARHI, NEW DELHI – 110068

REMUNERATION BILL FOR THE MSCBCH PROJECT SUPERVISOR

1. Course Code : **MBCP-001**
2. Name of the Supervisor : _____
3. Residential Address : _____

4. Designation : _____
5. Office Address : _____

This is to certify that I have Supervised the following student/(s) for their project work:

S.No.	Enrolment Number of the student	PRNo. (to be filled by the Regional Centre)	Name of the student	Title of the Project	Amount claimed (to be filled by the office)

.....

Signature of the Supervisor

Date:.....

NOTE: Project supervisor cannot supervisor more than five students at any given point of time. This form duly signed by the supervisor placed in a separate envelope, should be submitted along with the project report. Remuneration Bill not accompanied with the project report will not be considered for payment. The concerned authority will fill the amount.

FOR USE IN THE EXAMINATION BRANCH

Regional Director/Registrar (SED)

Verified by Dealing Asstt.

FOR USE IN FINANCE BRANCH

Passed for payment of Rupees

Debit Head : Examination

: Contingent

: T.A.

Dated

:

Section Officer/A.R.(Accounts)

Dealing Asstt.

Paid by Cheque No. _____

Dated _____

Assistant Registrar

X SAMPLE COVER PAGE OF THE PROJECT REPORT

INDIRA GANDHI NATIONAL OPEN UNIVERSITY

Programme Code:

Course Code:

TITLE OF THE PROJECT

by

Student's Full Name:

Enrolment No:

**Submitted to the School of Sciences, IGNOU
in partial fulfillment of the requirement for the award of the degree
Master of Science in Biochemistry (MSCBCH)**

Year of Submission:



**Indira Gandhi National Open University
Maidan Garhi New Delhi – 110068**