



Office of the Registrar

GIRIJANANDA CHOWDHURY UNIVERSITY, ASSAM

Main Campus: Hatkhowapara, Azara, Guwahati-781017

Constituent Campus: Kunderbari Rd, Dekargaon, Tezpur-784501

**Minutes of the Eighth Meeting of the Board of Management
Girijananda Chowdhury University, Assam**

Date: 18th November 2025 (Tuesday)

Time: 2:00 p.m.

Venue: Conference Room, Main Academic Building, Guwahati.

The following members were present in the meeting:

1. Shri. Jasodaranjan Das-President, SSA Society
2. Prof. Jayanta Deka – Chancellor(Special Invitee)
3. Prof. Kandarpa Das- Vice-Chancellor
4. Prof. Dipankar Saha- Registrar
5. Ms. Sujata Chowdhury- Member, SSA Society (Attended Online)
6. Ms. Kunki Chowdhury, Member, SSA Society
7. Dr. Biren Das, Registrar, Tezpur University
8. Prof. S. Robert Ravi-Dean, School of Engineering and Technology
9. Prof. Abdul Baquee Ahmed-Principal, School of Pharmaceutical Sciences, Tezpur
10. Prof. Bhanu P. Sahu, Dean, School of Pharmaceutical Sciences, Guwahati
11. Dr. Damiki Laloo-Head, Department of Pharmacognosy
12. Dr. Junumoni Das- Head HR and Personnel Division
13. Ms. Namrata Kataki-Assistant Professor

Leave of absence was granted to Mr. Biyoyananda Chowdhury-Secretary, SSA Society and Prof. Joydeep Baruah, Professor, KKHSOU, and who could not attend the meeting due to preoccupation.

Agenda

Sl. No.	Agenda No	Agenda Items
1	BOM.8/2025-11/01	Welcome Address and the Appraisal Report of the Vice Chancellor
2	BOM.8/2025-11/02	Confirmation of the Minutes of the seventh meeting of the Board of Management.



3	BOM.8/2025-11/03	Action taken report on the Resolutions of the seventh Board of Management meeting.
4	BOM.8/2025-11/04	Ratification of the minutes of the eleventh Academic Council meeting
5	BOM.8/2025-11/05	Approval of the Regulation and Course for 1-Year PG Programme (M.Sc. in Data Science) to be introduced under the Centre for Multidisciplinary Studies
6	BOM.8/2025-11/06	Proposal for Introducing Dual Degree B.Tech. - MBA Programme (4+1)
7	BOM.8/2025-11/07	Restructuring and Renaming of programmes and approval of new programmes
8	BOM.8/2025-11/08	Restructuring & Renaming of programmes in School of Allied Health Sciences
9	BOM.8/2025-11/09	Retirement/Superannuation age for teaching and non-teaching employees
10	BOM.8/2025-11/10	Approval of PhD Supervisor recommended by the Academic Council
11	BOM.8/2025-11/11	Approval of Formative Assessment SOP
12	BOM.8/2025-11/12	Any other matter

At the outset, Professor Kandarpa Das, Vice-Chancellor called the meeting to order and welcomed all the Members of the Board of Management.

BOM.8/2025-11/01: Welcome Address and the Appraisal Report of the Vice Chancellor

The Vice Chancellor welcomed all esteemed members of the Board of Management (BOM) to the 8th BOM meeting held on 18th November 2025 and presented a comprehensive appraisal of academic, research, administrative, and student development activities undertaken since the previous meeting. He informed the house about the appointment of nineteen new Assistant Professors across various departments, significantly strengthening the academic capacity of the university.

The Vice Chancellor highlighted the extension of AICTE approval for undergraduate, postgraduate, and working professional programs for the academic year 2025–26, and reported that the School of Pharmaceutical Sciences has been re-accredited with NBA status for its undergraduate programme for the academic years 2025–26 to 2027–28. Approval from the Pharmacy Council of India has also been extended up to the academic session 2025–26 for D. Pharm, B. Pharm, M. Pharm, and B. Pharm Practice. He further informed that the NBA team visited the GCU Guwahati campus from 24th to 26th October 2025. The Vice Chancellor apprised the Board that the Bar Council of India granted approval for the BA LLB programme on 16th July 2025.



A significant institutional development includes the launch of the School of Agriculture and Allied Sciences at Tezpur campus, where six faculty members have been appointed and seven students have been admitted to date. The Vice Chancellor also reviewed major events held in recent months such as the MOOC development workshop, the GCU Summer Internship Programme with participation of one hundred and fifty students, observance of the Bhupen Hazarika birth centenary, the monsoon session of PhD admissions, the university's Foundation Day celebration, and GCU MUN 2025.

Achievements of students were placed on record, including the participation of Ms. Jyotishma Medhi and Mr. Ayon Chila Oja in the World Youth Festival Assembly held in Nizhny Novgorod, Russia, the successful participation of the university Kabaddi team in the AIU East Zone Inter-University Tournament at Dr C. V. Raman University, Chhattisgarh, and the GCU Girls' Kabaddi Team winning the Runner-Up Trophy in SPIRIT 2025 at IIT Guwahati. The Vice Chancellor also acknowledged the international award and achievements of Mr. Suman Kumar and Ms. Mayuri Sarmah Mazinder, a PhD scholar from the Department of CSE.

The Vice Chancellor informed the Board about the INSA-funded research project titled "Exploration of Ancient Pottery Technology of Assam: A Historical Perspective," sanctioned with a total grant amount of six lakhs. He also spoke about international engagements, including the visit of Dr. Damiki Laloo and Dr. Bhrigu Kumar Das to Mari State University, and the participation of Prof. Girish Gogoi in the Vitaly Kostomarov Annual Forum in Russia. He further mentioned that a joint publication project with MARSU has commenced, and faculty from MARSU is expected to visit GCU between February and March 2026 as part of a scientific exchange programme. The Foreign Language Fiesta 2025 organized by the Department of English and Foreign Languages was noted, along with the successful development of twenty-three introductory videos for online learning platforms.

The members noted the deliberations with appreciation and further discussed a proposal to rename the Centre for Legal Studies as the Department of Legal Studies, the need to initiate an institutional e-journal, and the establishment of an Internship Cell to enhance student exposure and engagement. The Board expressed appreciation for the achievements of students and faculty, acknowledged the progress made in academic accreditations, research pursuits, and international collaborations, and encouraged the continuation of initiatives that enhance research productivity, global outreach, and student development.

Resolution: BOM.8/2025-11/01:

The Board of Management noted the deliberations and resolved the following:

- 1.1** Resolved that the Centre for Legal Studies be renamed as the Department of Legal Studies.
- 1.2** Resolved that an Internship Cell be created to strengthen experiential learning and student industry engagement.
- 1.3** Resolved that an institutional e-journal be launched to promote research culture and scholarly publication across departments.



Agenda BOM.8/2025-11/02: Confirmation of the Minutes of the seventh meeting of the Board of Management dated 28th May 2025.

The Minutes of the seventh Meeting of the Board of Management (Annex-I) were placed before the Board, for consideration. Professor Das mentioned that the draft minutes of the meeting were circulated to all the Members for their observation. Since no observation was received, he requested the Members once again for their observations, if any. Since, there was no observation, the Board recommended for accepting the Minutes of the seventh Meeting of the Board of Management.

Resolution: BOM.8/2025-11/02:

The Members resolved to approve the Minutes of the seventh Meeting of the Board of Management.

Agenda BOM.8/2025-11/03: Proposal for acceptance of the Action taken report on the Resolutions of the seventh meeting of the Board of Management dated 28th May 2025.

The Action Taken Report of the resolution of the seventh Meeting of the Board of Management was placed before the Board. The members discussed the report and noted the actions taken with appreciation.



Action Taken Report of seventh Board of Management meeting resolution			
Sl. No.	Agenda	Resolution	Action Taken
1	<u>Agenda: BOM.7/2025-05/01:</u> Welcome Address and the Appraisal Report of the Vice Chancellor	<u>Resolution: BOM.7/2025-05/01:</u> The Board of Management noted the deliberations and resolved the following: 1.1 To speed up and ensure timely processing of financial matters, with improved documentation and tracking mechanisms in place. 1.2 To assign Mr. Nayan Jyoti Baruah with full responsibility in the Finance Department of sending WhatsApp	 Improved documentation and tracking mechanisms are in place. An employee is specifically engaged for the said tasks in the Finance & Accounts Department Mr. Nayan Jyoti Baruah has been assigned vide notification GCU/Registrar/



		messages/notifications to the concerned stakeholders once a file has been processed, in order to improve communication and workflow efficiency.	2025/256 dated 5 th June 2025
2	<u>Agenda BOM.7/2025-05/02:</u> Confirmation of the Minutes of the sixth meeting of the Board of Management dated 7 th February 2025.	<u>Resolution: BOM.7/2025-05/02:</u> The Members resolved to approve the Minutes of the sixth Meeting of the Board of Management.	No Action required
3	<u>Agenda BOM.7/2025-05/03:</u> Proposal for acceptance of the Action taken report on the Resolutions of the sixth Board of Management meeting dated 7 th February 2025.	<u>Resolution: BOM.7/2025-05/03:</u> The Action Taken Report (ATR) of the sixth Board of Management meeting was reviewed and approved	No Action required
4	<u>Agenda BOM.7/2025-05/04:</u> Ratification of the minutes of the tenth Academic Council meeting held on 11 th April'25	<u>Resolution BOM.7/2025-05/04:</u> The Members of the Board resolved to approve the Minutes of the tenth Academic Council meeting held on 11th April'25 (placed at Annexure II).	No Action required
5	<u>Agenda BOM.7/2025-05/05:</u> Leave Rules	<u>Resolution: BOM.7/2025-05/05:</u> The Board of Management resolved to approve the Girijananda Chowdhury University Leave Rules. The Leave rule shall come into effect from 1 st June 2025.	Notified and Leaves Rules are in effect from 1 st June 2025



6	<u>Agenda BOM.7/2025-05/06:</u> Approval of the GCU-PhD Research Fellowship Policy	<u>Agenda BOM.7/2025-05/06:</u> Resolved to approve the GCU-PhD Research Fellowship Policy, pending final approval by the Governing Body.	Placed at Governing Body meeting for approval.
7	<u>Agenda BOM.7/2025-05/07:</u> Approval of PhD Supervisor recommended by the Academic Council	<u>Resolution BOM.7/2025-05/07:</u> Resolved to approve the following faculty members as PhD supervisors: • Dr. Nayana Adhikari-School of Pharmaceutical Sciences, Guwahati • Dr. Rajat Subhra Dutta-School of Pharmaceutical Sciences, Tezpur • Dr. Basab Das – Department of Electronics and Communication Engineering • Dr. Ummey Rummana Barlaskar – Department of Economics • Dr. Nandita Chitrakar – Department of Education	Notified
8	<u>Agenda BOM.7/2025-05/08:</u> Any Other Matter 8.1: Artificial Intelligence (AI) Policy	<u>Resolution: BOM.7/2025-05/08.1</u> In principle, the Board resolved to adopt the draft AI Policy of the GCU. The Policy shall be finalised after due consultation with the stakeholders (both internal and external) and complying with the policies of the Regulatory Bodies.	Placed at Governing Body meeting for approval.

Resolution: BOM.7/2025-05/03:

The Action Taken Report (ATR) of the seventh Board of Management meeting was reviewed and approved.

Agenda BOM.8/2025-11/04: Ratification of the minutes of the eleventh Academic Council meeting held on 17th November 2025

The Minutes of the eleventh Academic Council meeting were placed before the Board, for consideration. Professor Das mentioned that the draft minutes of the meetings were circulated to all the Members for their observation. No observation was received, he requested the Members once



again for their observations, if any. Since, there was no observation, the Board recommended to ratify the Minutes of tenth Academic Council meeting held on 17th November 2025 (placed at Annexure II).

Resolution BOM.8/2025-11/04:

The Members of the Board resolved to approve the Minutes of the eleventh Academic Council meeting held on 17th November 2025. (placed at Annexure II).

Agenda BOM.8/2025-11/05: Approval of the Regulation and Course for 1 year PG Programme (M.Sc. in Data Science) to be introduced under the Centre for Multidisciplinary Studies

A proposal regarding the approval of the Regulation and Course structure for the 1-Year Postgraduate Programme (M.Sc. in Data Science) (placed at Annex-III) to be introduced under the Centre for Multidisciplinary Studies was placed before the Board of Management for deliberation and necessary approval. The programme is designed in alignment with contemporary academic and industry requirements, offering multiple academic frameworks based on UGC and NEP guidelines, and incorporating coursework, experiential learning, and research components.

Resolution BOM.8/2025-11/05:

Resolved to approve the Regulation and Course structure for the 1-Year PG Programme (M.Sc. in Data Science) (placed at Annex-III) to be introduced under the Centre for Multidisciplinary Studies, subject to the completion of all regulatory and administrative requirements.

Annex-III



GIRIJANANDA CHOWDHURY UNIVERSITY

Regulation and Courses

Master of Science (MSc) in Data Science



Experts Consulted:

1. Prof Joydeep Baruah, Professor and Director of Surya Kumar Bhuyan School of Social Sciences, Krishna Kanta Handiqui State Open University, Guwahati

(Email: joydeep.baruah@gmail.com)

2. Dr. Hem Chandra Das, Assistant Professor, Department of CST, Bodoland University, Assam

Internal Members of the Course Committee: (Notification dated 12/7/2025, Dean Academic Office)

1. Dr. Sampurna Bhuyan, Associate Professor, Department of Business Administration;
Department of Economics (Convener)
2. Dr. Moytri Sarmah, Associate Professor, Department of Mathematics(Member)
3. Ms Shrabani Medhi, Assistant Professor, Department of Computer Science and Engineering
(Member)
4. Mr. Adarsh Pradhan, Assistant Professor, Department of Computer Science and
Engineering(Member)

After incorporating expert's comment and suggestions received in BOS, School of Engg and Technology

MSc in Data Science

(1 Year Post Graduate Programme)

1. Aims & Objectives

The programme aims to produce learners who can meet the increasing demand for data science and data analytics professionals who are capable of analysing data and dissemination of lifelong understanding to solve real-world problems scientifically.

The objectives of this Programme–

- Apply quantitative techniques to the real-world socio-economic and business problems
- Analyse the data to recommend findings to be presented in a scientific way



- Employ cutting edge machine learning tools to use big data
- Use data mining software and algorithms to build machine intelligence
- Demonstrate knowledge of statistics, mathematics and econometrics concepts for further applicability in lifelong learning.

The Outcome of the Programme –

- Identify, formulate, and analyze complex data science problems using foundational principles of mathematics, statistics, and computing.
- Develop predictive and prescriptive models to solve real-world problems across domains.
- Conduct independent research in emerging areas of data science, contributing to academic and industry advancements.
- Collaborate effectively in multidisciplinary teams to solve data-centric problems
- Demonstrate project planning, execution, and management skills in data science initiatives.
- Explore entrepreneurial opportunities by leveraging data science for innovative product or service development.
- Engage in continuous learning to keep pace with evolving technologies, methodologies, and industry trends.
- Pursue certifications, workshops, and advanced studies to enhance professional growth.

2. Framework: There are three frameworks according to UGC 5years Integrated Post Graduate Programme (NEP) Guidelines. In this course following the UGC guidelines we have three frameworks as follows

Model Type	Course Particulars	Course Components	Coursework	Research	Total credits
1.	1-year PG	Coursework + Research	20	20	40
		OR			
2.	1-year PG	Coursework with Experiential Learning	40	-	40
3	1-year PG	Research	-	40	40



	Total credits	40			
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3. Admission Criteria /Eligibility

1. 4-year Undergraduate (NEP) /Master Degree in any discipline with Mathematics/Statistics/Quantitative Techniques as a course in either HS or Undergraduate level with basic computing skills.
2. 4-year Undergraduate (NEP) /Master Degree in any discipline (in this case the student has to undergo a non-credit bridge course on mathematics and statistics simultaneously with first semester).

4. Assessment Pattern: Continuous & Comprehensive Assessment

The assessment of the courses incorporates both **Formative** (40% weightage) and **Summative** (60% weightage) evaluation methods. Formative assessment is carried out continuously during the learning process to monitor student progress and provide timely feedback. Summative assessment is conducted at the end to evaluate overall student achievement. The final course evaluation is based on a combination of both these assessment types.

Formative Assessment – 40percent Continuous Evaluation will be assigned based on Presentation, Class participation, Case study, Quiz, Assignment, Class tests, Term Paper etc.

5. 1 The details of Courses for 1st semesters are as follows:

Semester I

Framework I : Coursework+ Research

Theory/ Practical	Sl. No	Course Type	Course Name	Hours per week			Credit
				L	T	P	
T	1.		Quantitative Analysis	3	1	0	4



T	2.		ProgrammingforData Science	3	0	2	4
T	3.		Data Management	3	0	2	4
P	4		Minor Project	0	0	16	8
Total							20



Framework II: Coursework with Experiential Learning

Theory/ Practical	Sl. No	Course Type	Course Name	Hours per week			Credit
				L	T	P	
T	1.		Quantitative Analysis	3	1	0	4
T	2.		Programming for Data Science	3	0	2	4
T	3.		Data Management	3	0	2	4
T	5		Business Analytics/ Advanced Econometrics with R/SPSS	3	0	2	4
T	6		AI tools and its application	3	0	2	4
Total							20

Semester II(Common for both Framework I and II)

Theory/ Practical	Sl.No	Course Type	Course Name	Hours per week			Credit
				L	T	P	
T	1.		Research Methods and Ethics	2	0	0	2
T	2.		Applied Machine Learning	3	0	2	4
T	3.		Statistics for Data Science	2	0	0	2
P	4		*Major Project	0	0	24	12
Total							20

5.2 The details for the third framework is as follows:**Research:**

The Research Course in Data Science provides a structured framework for students to engage in meaningful, in-depth research. Divided into four quarters, the course covers the entire research cycle—from identifying a research problem and designing methodology to data collection, analysis, and final presentation. Emphasizing critical thinking, academic writing, and ethical research practices, the course culminates in the submission of a well-documented dissertation and a formal presentation or demonstration of the work. Students work under the guidance of assigned mentors, with continuous assessments to ensure steady progress and academic rigor.

Quarter	Timeline	Key Focus	Weightage
Q1	1–3 Months	Research Problem Formulation & Research Design	20%
Q2	4–6 Months	Data Collection & Initial Results	25%
Q3	7–9 Months	Deep Analysis, Interpretation & Refinement	25%
Q4	10–12 Months	Final Dissertation & Final Review	30%
Total Weightage			100%

Course Objectives:

1. To enable students from diverse academic backgrounds to engage in structured, interdisciplinary research in data science.
2. To develop skills in research design, critical thinking, and methodological application.
3. To promote the formulation of meaningful research questions and problem-solving strategies.
4. To encourage academic writing, ethical research practices, and scholarly communication.
5. To produce a high-quality dissertation with potential for publication and/or real-world application.

Course Outcomes (COs):

- **CO1:** Identify and define a relevant interdisciplinary research problem in data science.
- **CO2:** Design an appropriate research methodology suited to the problem and discipline.
- **CO3:** Collect, analyze, and interpret data using appropriate statistical, computational, or qualitative techniques.
- **CO4:** Communicate findings through structured academic writing and visual/technical presentations.
- **CO5:** Demonstrate the ability to work independently under guidance and meet research milestones.
- **CO6:** Engage in scholarly dissemination through presentations and potential publications.

Detail Course Structure for the Research (Project/Dissertation)



Quarter	Timeline	Focus Area	Activities	Deliverables	Assessment Components
Q1	1–3 Months	Research Problem Formulation & Research Design	• Orientation on Research Methodology • Literature Review • Defining Research Problem & Research Questions • Selecting Research Design	• Problem Statement Document • Literature Review Summary • Research Proposal (with Objectives, Scope, Methodology)	• Mentor Evaluation (10%) • Proposal Presentation + Viva (10%) Total Weightage =20%
Q2	4–6 Months	Data Collection & Initial Analysis	• Tool/Framework Selection • Data Collection • Ethical Clearance (if needed) • Begin Preliminary Analysis	• Data Collection Report • Methodology Documentation • Initial Findings / Frameworks Applied • Prepare Draft Research Paper (Desirable)	• Mentor Eval (10%) • Review (10%) • Draft Paper Bonus (5%) Total Weightage =25%
Q3	7–9 Months	Deep Analysis, Interpretation & Refinement	• In-depth Data Analysis • Model Evaluation • Interpretation of Results and Hypothesis Testing • Refining Methodology/ Comparative Studies • Feedback Incorporation from Review	• Comprehensive Data Analysis Report • Visualizations, Tables, and Metrics • Draft Dissertation Chapters	• Mentor Evaluation (10%) • Review (5%) • Pre-Final Presentation (10%) Total Weightage =25%



Q4	10–12 Months	Final Dissertation & Presentation	• Final Report Writing • Formatting, Proofreading, Citation Check • Presentation/ Demo Preparation	• Final Dissertation (Printed + Soft Copy) • Executive Summary • Final Presentation/ Demo	• Mentor Final Evaluation (10%) • Dissertation Quality and Format (10%), • Final Viva + Presentation (10%) Total Weightage =30%
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Guidelines to be followed:

- Students should complete all the work related to the dissertation within the stipulated time-period.
- Students should select a complex and meaningful problem relevant to industry or research.
- Regular meetings and communication with the assigned mentor are mandatory, as per the guidance provided by the course mentor.
- Each student is required to maintain a logbook documenting their progress, which must be reviewed and signed by the mentor as per their instructions.
- Mentors may adjust timelines or activities based on individual project needs.
- Plagiarism, unethical practices, or misrepresentation should be strictly avoided.
- The dissertation must follow the University's academic and ethical standards.

Note:

This structure for the Research (Project/Dissertation) Course in Data Science serves as a general framework. However, each assigned mentor or authorized University member may modify the structure, timelines, or evaluation pattern to suit the nature of the research, student capability, or interdisciplinary demands.

CONTENTS OF THE COURSES

(With Course Objectives and Course Outcome, Reference Books)

Semester 1



Course 1: Quantitative Analysis

Course Objectives:

1. To achieve conceptual understanding of connection of complex numbers and trigonometry, matrices.
2. To gain proficiency in calculus computations and to calculate the higher order derivatives and apply them in proper situations.

Course Outcomes:

After successful completion of the course, the students will be able to

CO 1: demonstrate De Moivre's theorem in a number of applications and estimate the roots of complex numbers.

CO 2: describe the essential tool of matrices and linear algebra in a comprehensive manner.

CO 3: apply the concept of mean, median, mode etc. counting principles in data analysis.

Syllabus

Module 1: Complex variables

Polar representation of complex numbers, De Moivre's theorem and its applications. Roots of a complex number, Trigonometrical and exponential functions of complex arguments. Hyperbolic Functions.

Module 2: Exploring Data and Combinatorial techniques

Types of Data and Measurement Scales, Frequency Distributions, Measures of Central Tendency, Measures of Dispersion: Range, Mean Deviation, Standard Deviation, Variance. Counting Principle, Permutation and Combination.

Module 3: Linear Algebra

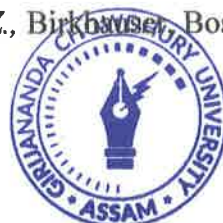
Matrices, Operations on matrices, determinant of a matrix, rank of a matrix. Vector Space, Basis and Dimension of vector space. Linear Transformation, Kernel and Image of Linear Transformation, Algebra of Linear Transformation. Eigenvectors and eigenvalues of a matrix.

Textbook(s):

1. Hoffman K., Kunze R.A., *Linear Algebra*, 2nd Edition, Prentice - Hall, Inc., Englewood Cliffs, New Jersey.
2. Miller I. & Miller M., John E.F., *Mathematical Statistics with Applications* (8th Edition), Pearson. Dorling Kindersley (India).2014.
3. Ross S.M. *Introduction to Probability Models* (11th Edition). Elsevier Inc., (2014).

Reference Books:

1. Andreescu T. and Andrica D., *Complex Numbers from A to Z*, Birkhauser, Boston, USA.



2. Mood, A.M., Graybill, F.A. Boes, D.C., *Introduction to the theory of Statistics* (3rd Edition). McGraw-Hill Education Pvt. Ltd. Indian Edition (2017).

Course 2: Programming for Data Science

Prerequisites: Basic computer literacy recommended

Course Objectives:

- 1) To build a foundational understanding of Python programming for data science applications.
- 2) To develop logical thinking and problem-solving skills using Python's control structures and functions.
- 3) To gain proficiency in working with Python's built-in data structures and handling structured/unstructured text files.
- 4) To prepare learners from diverse disciplines to automate and script basic data-related workflows using Python.

Course Outcomes:

CO1: **Explain** core Python programming constructs including variables, data types, and expressions.

CO2: **Apply** conditional statements, loops, and user-defined functions to solve computational problems.

CO3: **Analyze** and manipulate data using strings, lists, dictionaries, and file operations.

CO4: **Develop** modular Python scripts to automate tasks such as data input/output and file parsing.

Syllabus

Module 1: Python Programming Basics

Introduction to Python and its role in Data Science, Installing Python, IDEs, and using Jupyter Notebook, Syntax, indentation, comments, Variables and basic data types: int, float, str, bool, Operators: arithmetic, logical, comparison, Type casting and input/output, Introduction to functions and built-in methods

Module 2: Control Structures and User-defined Functions



Conditional statements: if, elif, else, Loops: for, while, Loop control: break, continue, pass, Defining and calling functions, Function parameters, return values, Variable scope, recursion basics, Exception handling: try, except, finally

Module 3: Data Structures, Strings, and File Handling

Lists, Tuples, Sets, Dictionaries: creation, operations, and methods, List comprehensions and nested structures, String manipulation and formatting, Working with text files: read, write, append, Handling CSV and JSON files, Introduction to using OS and pathlib modules

Module 4: Data Handling and Manipulation

Introduction to NumPy for numerical operations, DataFrames and Series in Pandas, Importing and exporting data (CSV, Excel, JSON), Data Cleaning & Pre-processing

Textbooks and References:

1. Downey, A. B. (2015). Think Python: How to think like a computer scientist (2nd ed.). O'Reilly Media.
2. Severance, C. R. (2016). Python for everybody: Exploring data using Python 3. CreateSpace Independent Publishing.
3. Zelle, J. M. (2017). Python programming: An introduction to computer science (3rd ed.). Franklin, Beedle & Associates Inc.
4. McKinney, W. (2022). Python for data analysis: Data wrangling with pandas, NumPy, and Jupyter (3rd ed.). O'Reilly Media.
5. Lutz, M. (2013). Learning Python (5th ed.). O'Reilly Media.
6. Slatkin, B. (2015). Effective Python: 59 specific ways to write better Python. Addison-Wesley Professional.
7. Sweigart, A. (2020). Automate the boring stuff with Python: Practical programming for total beginners (2nd ed.). No Starch Press.
8. Liang, Y. D. (2023). Introduction to programming using Python (2nd ed.). Pearson.
9. Shaw, Z. A. (2017). Learn Python 3 the hard way: A very simple introduction to the terrifyingly beautiful world of computers and code. Addison-Wesley Professional.
10. Guttag, J. V. (2016). Introduction to computation and programming using Python: With application to understanding data (2nd ed.). MIT Press.

Course 3 Data Management

Prerequisites: Basic computer literacy recommended

Course Objectives:



- 1) To understand principles of data modeling, databases, and data storage.
- 2) To develop the ability to work with structured, semi-structured, and unstructured data.
- 3) To introduce tools and technologies for effective data management in real-world contexts.
- 4) To foster interdisciplinary thinking through domain-specific data use cases.

Course Outcomes:

CO1: **Explain** the principles of data modeling, normalization, and database systems.
CO2: **Apply** SQL and NoSQL techniques to retrieve and manipulate data.
CO3: **Evaluate** the suitability of different data management systems for varied data types and use cases.

CO4: **Develop** basic database solutions and workflows for real-world, interdisciplinary datasets.

Syllabus

Module 1: Introduction to Data Management & Relational Databases

Data Management: Roles and Challenges, Types of Data: Structured, Semi-structured, Unstructured, Database Systems: RDBMS vs NoSQL, Relational Data Model and Entity-Relationship (ER) Diagrams, Keys, Constraints, and Normalization (1NF to 3NF)

Module 2: Structured Query Language (SQL)

SQL Basics: SELECT, INSERT, UPDATE, DELETE, Filtering, Sorting, Aggregate Functions, JOIN operations (INNER, LEFT, RIGHT, FULL), Subqueries and Views, Transactions and Integrity Constraints

Module 3: NoSQL and Modern Data Management

Introduction to NoSQL: Key-Value, Document, Column, Graph Databases, NoSQL vs SQL, MongoDB Basics: Documents, Collections, CRUD operations, CAP Theorem, Scalability, and Consistency, JSON and Semi-structured Data

Module 4: Data Storage, Integration & Ethics

Data Warehousing Concepts and Architecture, Data Lakes vs Warehouses, ETL (Extract, Transform, Load) Pipelines Basics, Introduction to Cloud Data Storage (AWS S3, Google BigQuery - overview only), Data Governance, Quality, Privacy & Ethical Use of Data

Module 5: Secondary Database Management



Concept of Primary vs Secondary Databases, Importance of Secondary Data in Research and Analytics, major Indian and global secondary databases (NSSO, NFHS, LASI, IHDS, World Bank, UN Data, WHO), Structure and organization of secondary databases: file formats (CSV, JSON, Excel, APIs), metadata, codebooks, and data dictionaries, Methods of accessing and querying secondary databases

Textbooks and References:

1. Silberschatz, A., Korth, H. F., & Sudarshan, S. (2020). *Database system concepts* (7th ed.). McGraw-Hill Education.
2. Coronel, C., & Morris, S. (2018). *Database systems: Design, implementation, & management* (13th ed.). Cengage Learning.
3. Elmasri, R., & Navathe, S. B. (2016). *Fundamentals of database systems* (7th ed.). Pearson.
4. Harrison, G. (2019). *Next generation databases: NoSQL, NewSQL, and Big Data*. Apress.
5. Redmond, E., & Wilson, J. R. (2018). *Seven databases in seven weeks: A guide to modern databases and the NoSQL movement* (2nd ed.). Pragmatic Bookshelf.
6. Gupta, S. C. (2018). *Fundamentals of statistics*. Himalaya Publishing House.
7. Date, C. J. (2019). *Database design and relational theory: Normal forms and all that jazz* (2nd ed.). O'Reilly Media.
8. Sadalage, P. J., & Fowler, M. (2013). *NoSQL distilled: A brief guide to the emerging world of polyglot persistence*. Addison-Wesley.
9. Connolly, T., & Begg, C. (2015). *Database systems: A practical approach to design, implementation, and management* (6th ed.). Pearson.
10. Hellerstein, J. M., & Stonebraker, M. (2021). *Readings in database systems* (5th ed.). MIT Press. (Also known as "The Red Book")
11. Inmon, W. H. (2016). *Building the data warehouse* (4th ed.). Wiley.
12. Desai, S., & Vanneman, R. (2015). *India Human Development Survey-II (IHDS-II), 2011–12: User guide*. University of Maryland & National Council of Applied Economic Research.

Course 4: Minor Project

The Minor Project serves as the student's first step toward solving a real-world data problem using the fundamental tools and techniques learned during the course. It emphasizes identifying a straightforward problem, collecting and analyzing relevant data, and clearly presenting the findings.

Course Objectives:



1. To enable students to identify and define relevant problems in data science, setting clear project objectives.
2. To familiarize students with the process of data collection, cleaning, and basic exploration.
3. To develop foundational skills in applying statistical or machine learning methods for data analysis.
4. To cultivate effective communication of methodologies and findings through written and oral presentations.

Course Outcome:

CO1: Identify and articulate a relevant problem in data science, framing appropriate objectives for the project.

CO2: Apply suitable data collection, cleaning, and visualization techniques to explore and summarize datasets.

CO3: Analyze data using foundational statistical or machine learning methods to obtain meaningful patterns or insights.

CO4: Communicate project methodology and findings clearly through written reports and oral presentations.

Course components expected to be submitted:

- **Project Proposal** – A short document describing the problem you're solving, why it's important, and your goals.
- **Dataset** – The data you collected (can be from online sources or real-world datasets).
- **Data Preprocessing Report** – How you cleaned the data (removed errors, missing values, etc.).
- **Exploratory Data Analysis (EDA)** – Charts, graphs, and basic analysis that help you understand the data.
- **Basic Model or Analysis** – A simple machine learning or statistical method used to find patterns or answers.
- **Final Report** – A clear write-up of everything you did, from problem to solution.
- **Presentation & Viva** – A short presentation to explain your project, followed by Q&A with faculty.



Guidelines to be followed:

- Students should complete the project within the stipulated duration.
- Encouraged to be done individually or in small teams (max 2-3), as advised by course mentor.
- Use tools and techniques covered in class (e.g., Python, pandas, matplotlib, scikit-learn).
- Regularly update your mentor and show progress in reviews.
- Maintain a project logbook or file with weekly updates, as advised by course mentor.
- Use proper references and avoid copying others' work.

Minor Project Course Assessment:

CO	Description	Assessment Activity	Weightage
CO1	Identify a relevant data science problem and define objectives	Project Proposal & Problem Definition Review	10%
CO2	Data collection, cleaning, and visualization	Data Pre processing Report + EDA Submission	25%
CO3	Apply statistical or ML methods for basic analysis	Model/Analysis Implementation Report + Code Review	30%
CO4	Communicate findings through written and oral formats	Final Report + Presentation + Viva	35%
		Total	100%

Course 5.1: Business Analytics

Prerequisite: 10+2 level Concepts of Economics/Management/ Commerce

Course Objectives:

1. Develop foundational understanding of analytics in commerce and marketing contexts
2. Equip learners with analytical tools and techniques for decision-making
3. Enable financial insight through data-driven portfolio analysis

Course Outcomes

By the end of this course, learners will be able to:



1. CO1: Apply retail and e-commerce analytics to optimize customer engagement and demand forecasting
2. CO2: Evaluate marketing performance using key metrics and dashboards
3. CO3: Design and assess financial portfolios using risk and diversification principles
4. CO4: Integrate analytics across commerce, marketing, and finance for holistic business insights.

Syllabus:

Module 1: Analytics for Commerce

Introduction to retailing and e-Commerce; Introduction to retail analytics; Demand estimation; Customer segmentation; Customer lifetime value; e-Commerce analytics value chain; Methods and techniques for e-Commerce analytics; Analysing behavioral data

Module 2: Marketing Analytics

Introduction: Analytics for Planning & Forecasting, The Sales Funnel & Descriptive Marketing Metrics, Descriptive vs. Predictive Metrics, Return on Ad Spend (ROAS) And Return on Investment (ROI), Customer Profit, KPIs, Reports and Dashboards

Customer Lifetime Value and Why it Matters, Calculating Customer Lifetime Value.

Module 3: Financial Analytics

Introduction to Financial Analytics, Portfolio Theory: Introduction, Portfolio Theory: Risk of a Security, Portfolio Theory: Diversification.

Suggested Books :

1. Cox, E. (2011). *Retail analytics: The secret weapon*. Wiley.
2. Hair, J. F., Harrison, D. E., & others. (2024). *Essentials of marketing analytics* (1st ed.). Cengage Learning.
3. Kuruganti, S., & Basu, H. (2015). *Business analytics: Applications to consumer marketing*. McGraw-Hill Education.
4. Bodie, Z., Kane, A., & Marcus, A. J. (2014). *Investments* (10th ed.). McGraw-Hill Education.

Course 5.2: Advanced Econometrics with R/SPSS



Prerequisite: Basic Econometrics Concepts of Under Graduate Level

Course Objectives:

1. Build a strong foundation in advanced econometric estimation techniques
2. Equip learners with tools to model complex economic relationships
3. Enable proficiency in time series and panel data analysis for forecasting and policy evaluation

Course Outcome:

By the end of this course, learners will be able to:

1. CO1: Apply GLS and MLE methods to estimate and test econometric models with non-standard error structures
2. CO2: Estimate and interpret non-linear and binary outcome models using iterative techniques
3. CO3: Formulate and solve simultaneous equation models for structural analysis and forecasting
4. CO4: Analyze time series and panel data using modern econometric techniques

Syllabus:

Module 1: Generalised Least Squares and Maximum Likelihood Estimation: Introduction to GLS; Non-spherical Disturbance and GLS Feasible GLS and its Properties Seemingly Unrelated Regression Estimation; Maximum Likelihood Method–Likelihood Ratio, Wald and Scope Test.

Module 2 Non-Linear Estimation:

Non-Linear Least Squares and Iteration process–Models with Binary Dependents Variables– Logit and Probit Models.

Module 3 Simultaneous Equation Models:

Formalization of Identification Problem–Order and Rank Conditions of Identification– Recursive Models–Methods of Estimation: IV, 2SLS, 3SLS and FIML–Simulation and Forecasting.



Module 4 TimeSeriesModelling Panel Data:

Univariate TimeSeries Modelling, -Autocorrelation Functionand Correlogram–
BasicFeaturesof AR,MA,ARMA and ARIMA models–Trend versus Difference
Stationary-Co-integration, Error Correction Mechanism and ARDL Granger Causality
and VAR, **Introduction to Panel data, Analysis and Interpretation of Panel Data**

Suggested Books:

1. Gujarati, D. N., & Porter, D. C. (2009). *Basic econometrics* (5th ed.). McGraw-Hill Education. Amemiya, T. (1985). *Advanced econometrics*. Harvard University Press.
2. Pesaran, M. H. (2015). *Time series and panel data econometrics*. Oxford University Press.
3. Arellano, M. (2003). *Panel data econometrics*. Oxford University Press.

Course 6: AI Tools and its Application

Prerequisite: Basic statistics & Computer Literacy

Course Objectives:

1. Introduce core data science workflows with the help of AI tools.
2. Provide hands-on experience with tools for data preprocessing, visualization, and predictive modeling.
3. Foster the ability to apply data science techniques in various domain-specific contexts.
4. Build awareness of responsible AI and data use practices.

Course Outcome:

By the end of this course, learners will be able to:

CO1: Identify and explain the role of AI tools in various stages of the data science lifecycle (data collection, cleaning, analysis, visualization, prediction).

CO2: Apply AI-powered tools (such as Power BI, Teachable Machine, and ChatGPT) to clean, analyze, and visualize structured and unstructured data.

CO3: Develop data-driven insights and simple predictive models using no-code or low-code AI tools in real-world or domain-specific scenarios.

CO4: Evaluate the ethical implications and limitations of using AI tools in data science, with regard to privacy, bias, and responsible use.



Module1: Introduction to AI & Data Science Concepts

What is Data Science? Lifecycle & Components, Role of AI in Data Science, Types of Data: Structured, Unstructured, Text, Image, Introduction to AI Tools: ChatGPT, Gemini, Notion AI, Google Sheets, GPT Prompt Engineering for Data Use

Module2: Data Collection, Cleaning & Visualization

Data import/export (Excel, CSV, Google Sheets, APIs), Data wrangling: missing values, outliers, transformations, Descriptive statistics, filtering, grouping, Visualization with Power BI & Google Looker Studio, Introduction to dashboards and storytelling with data

Module3: Predictive Analytics using AI Tools

Supervised Learning: Classification & Regression, Intro to Machine Learning with no-code tools, Teachable Machine: Train image or sound models, Google AutoML / ML for Sheets, Introduction to Forecasting with Power BI or Google Sheets AI



Module4:Domain Applications and Ethics in Data Science

Use Cases: Healthcare: Predictive health indicators, visualizing medical data, **Business:** Customer segmentation, demand forecasting, **Education:** Student performance, dropout prediction, **Social Science:** Sentiment analysis, opinion mining, **Environmental Studies:** Climate trends, disaster prediction

Ethics & Responsibility: Data privacy, fairness, and algorithmic bias, Limitations of AI tools (hallucinations, black-box models), Open Data & Responsible Sharing.

Suggested Books:

- 1) Provost, F., & Fawcett, T. (2013). *Data science for business: What you need to know about data mining and data-analytic thinking*. O'Reilly Media.
- 2) Kelleher, J. D. (2019). *Data science*. The MIT Press.
- 3) Winston, W. L. (2014). *Microsoft Excel data analysis and business modeling* (5th ed.). Microsoft Press.
- 4) Murtaza, K. (2020). *Power BI data analysis and visualization*. BPB Publications. Wirth, N. (2021). *A beginner's guide to artificial intelligence with ChatGPT and other tools*. Independently published.
- 5) Dignum, V. (2019). *Responsible artificial intelligence: How to develop and use AI in a responsible way*. Springer.
- 6) Dean, J. (2014). *Big data, data mining, and machine learning: Value creation for business leaders and practitioners*. Wiley.
- 7) Aurélien, G. (2019). *Hands-on machine learning with Scikit-Learn, Keras, and TensorFlow* (2nd ed.). O'Reilly Media.
- 8) Eckerson, W. (2011). *Performance dashboards: Measuring, monitoring, and managing your business* (2nd ed.). Wiley.
- 9) Marr, B. (2018). *Data-driven HR: How to use analytics and AI to improve employee performance*. Kogan Page Publishers.

Second Semester

Course 1: Research Methods and Ethics

Pre-requisites: UG level Research Methodology course

Course Objectives:

1. Equip students with a comprehensive understanding of various research designs.



2. Enable students to design effective research questionnaires using appropriate question formats and measurement scales.
3. Foster awareness of publication ethics, including standards set by COPE and WAME, authorship norms, and the identification and prevention of misconduct

Course Outcomes: By the end of this course, learners will be able to

CO1: Understand and Differentiate Research Designs and Data Types

CO2: Design Reliable Research Instruments Using Appropriate Measurement Scales

CO3: Evaluate Ethical Standards and Detect Publication Misconduct

CO4: Integrate Research Design, Measurement, and Ethics to Formulate Sound Research Proposals.

Syllabus

Module 1: Research Design & Data Type

Types of research design; Similarities and dissimilarities among the methods; Exploratory research design- Focus group-characteristics of traditional and online focus groups; Projective techniques for data collection; Descriptive research design- types of survey and observation methods, Concept of Causal research. Cross sectional, Longitudinal Data.

Module2 : Questionnaire and Scale of Measurement:

Designing Questionnaires for research; Types of Questions Scales of Measurement- nominal, ordinal, interval and ratio scales; Attitude measurement-Semantic differential scale and Likert scale, Concept of reliability.

Module 3:Publication Ethics

Publication ethics: definition, introduction and importance, Best practices/standards setting initiatives and guidelines: COPE, WAME etc., Conflicts of interest, Publication misconduct: Definition, concept, problems that lead to unethical behaviour and vice versa, types, Violation of publication ethics, authorship and contributorship, Identification of publication misconduct, complaints and appeals, Predatory publishers and journals, Open access publications and initiatives.

Suggested Books:

1. Malhotra, N. K., & Dash, S. (2016). *Marketing research: An applied orientation* (7th ed.). Pearson Education India.



2. Zikmund, W. G., Babin, B. J., Carr, J. C., & Griffin, M. (2013). *Business research methods* (9th ed.). Cengage Learning.
3. Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications.
4. Bryman, A. (2016). *Social research methods* (5th ed.). Oxford University Press.
5. American Psychological Association. (2020). *Publication manual of the American Psychological Association* (7th ed.). American Psychological Association.
6. Wager, E., & Kleinert, S. (2011). *Responsible research publication: International standards for authors*. In Mayer, T., & Steneck, N. (Eds.), *Promoting research integrity in a global environment* (pp. 309–316). World Scientific Publishing.

Course 2: Applied Machine Learning

Prerequisites: Programming for Data Science, Basic Statistics, Linear Algebra

Course Objectives:

- 1) To provide a foundational understanding of machine learning types, workflows, and real-world applications.
- 2) To equip students with data preprocessing, exploratory analysis, and visualization techniques essential for model development.
- 3) To enable learners to apply supervised and unsupervised learning algorithms to real-world datasets.
- 4) To familiarize students with evaluation metrics, dimensionality reduction, and model interpretation for informed decision-making.

Course Outcomes:

- CO1.** Explain the types, workflow, and lifecycle of machine learning systems and perform data preprocessing techniques
- CO2.** Apply exploratory data analysis and data visualization techniques.
- CO3.** Implement core supervised and unsupervised learning algorithms.
- CO4.** Analyze model performance using appropriate evaluation metrics.

Module 1: Introduction & Data Pre-processing

Introduction to ML: Types and Applications, ML Workflow & Lifecycle, Feature Engineering and Scaling, Handling Missing Data and Outliers, Train-test split, cross-validation, Overview of ML Libraries: scikit-learn, XGBoost



Module 2: Exploratory data analysis (EDA) and Data Visualization

Data Loading and Initial Inspection, Handling Missing Values, Univariate Analysis, Bivariate and Multivariate Analysis, Outlier Detection, Feature Engineering (initial exploration), Data Cleaning, Matplotlib and Seaborn basics, Line plots, bar charts, histograms, boxplots, heatmaps, Exploratory Data Analysis (EDA), Correlation and pattern recognition

Module 3: Supervised Learning Algorithms

Linear and Logistic Regression, k-Nearest Neighbors, Decision Trees and Random Forests, Support Vector Machines, Artificial Neural Networks, Evaluation Metrics: Accuracy, Precision, Recall, F1-score, ROC-AUC

Module 4: Unsupervised Learning & Dimensionality Reduction

Clustering: k-Means, Hierarchical, DBSCAN, Dimensionality Reduction: PCA, t-SNE, Association Rule Mining (Apriori, FP-Growth), Use cases in marketing, healthcare, biology, social sciences

Textbooks and References:

1. Géron, A. (2022). Hands-on machine learning with Scikit-Learn, Keras, and TensorFlow: Concepts, tools, and techniques to build intelligent systems (3rd ed.). O'Reilly Media.
2. Raschka, S., & Mirjalili, V. (2022). Python machine learning: Machine learning and deep learning with Python, scikit-learn, and TensorFlow 2 (4th ed.). Packt Publishing.
3. Muller, A. C., & Guido, S. (2016). Introduction to machine learning with Python: A guide for data scientists. O'Reilly Media.
4. Grus, J. (2019). Data science from scratch: First principles with Python (2nd ed.). O'Reilly Media.
5. Venkatesan, R., & Shafer, R. (2023). A hands-on approach to machine learning (2nd ed.). Springer.
6. James, G., Witten, D., Hastie, T., & Tibshirani, R. (2021). *An introduction to statistical learning: With applications in R* (2nd ed.). Springer.
7. Goodfellow, I., Bengio, Y., & Courville, A. (2016). *Deep learning*. MIT Press.
8. Aggarwal, C. C. (2015). *Data mining: The textbook*. Springer.
9. Albon, C. (2018). *Machine learning with Python cookbook: Practical solutions from preprocessing to deep learning*. O'Reilly Media.
10. Shalev-Shwartz, S., & Ben-David, S. (2014). *Understanding machine learning: From theory to algorithms*. Cambridge University Press.

Course 3: Statistics for Data Science

Course Objectives:

1. To build a strong foundation in statistical reasoning and techniques for data analysis
2. To enable students to summarize, visualize, and interpret data using statistical tools



3. To provide knowledge of statistical inference, hypothesis testing, and regression analysis
4. To apply statistical methods to real-world, interdisciplinary datasets using Python/R

Course Outcomes:

After successful completion of the course, the students will be able to

- CO1. Describe fundamental statistical concepts and their relevance in data science
- CO2. Apply descriptive and inferential statistics to structured data
- CO3. Evaluate relationships between variables using correlation and regression techniques
- CO4. Perform statistical data analysis using appropriate tools and interpret results effectively

Module 1: Descriptive Statistics & Data Visualization

Types of Data and Measurement Scales, Frequency Distributions, Data Visualization: Histograms, Boxplots, Scatterplots, Introduction to Python/R for statistical computing

Module 2: Probability & Distributions

Basic Probability Rules, Conditional Probability, Bayes' Theorem, Random Variables: Discrete and Continuous, Probability Distributions: Binomial, Poisson, Normal, Exponential, Central Limit Theorem and Law of Large Numbers

Module 3: Statistical Inference & Hypothesis Testing

Sampling and Sampling Distributions, Point and Interval Estimation, Hypothesis Testing: Z-test, t-test, Chi-square test, ANOVA, p-values, Confidence Intervals, Type I and Type II errors

Module 4: Correlation, Regression & Applications

Correlation: Pearson, Spearman, Simple and Multiple Linear Regression, Assumptions of Regression, R-squared, Adjusted R-squared, Introduction to Logistic Regression, Applications in healthcare, marketing, education, social sciences.

Textbooks:

- 1) Provost, F., & Fawcett, T. (2013). Data science for business: What you need to know about data mining and data-analytic thinking. O'Reilly Media.
- 2) Utts, J. M., & Heckard, R. F. (2014). Mind on statistics (5th ed.). Cengage Learning.
- 3) Rice, J. A. (2006). Mathematical statistics and data analysis (3rd ed.). Cengage Learning.
- 4) Downey, A. B. (2014). Think stats: Exploratory data analysis in Python (2nd ed.). O'Reilly Media.



5) Levine, D. M., Stephan, D. F., Krehbiel, T. C., & Berenson, M. L. (2020). *Statistics for managers using Microsoft Excel* (9th ed.). Pearson Education.

Reference Books:

- 1) Montgomery, D. C., & Runger, G. C. (2018). *Applied statistics and probability for engineers* (7th ed.). Wiley.
- 2) Ross, S. M. (2017). *Introduction to probability and statistics for engineers and scientists* (5th ed.). Academic Press.
- 3) Field, A. (2018). *Discovering statistics using IBM SPSS Statistics* (5th ed.). Sage Publications.
- 4) Larsen, R. J., & Marx, M. L. (2011). *An introduction to mathematical statistics and its applications* (5th ed.). Pearson.
- 5) Verzani, J. (2014). *Using R for introductory statistics* (2nd ed.). CRC Press.

Course 4: Major Project

The Major Project is a key component of the program, requiring students to tackle a complex data science problem using advanced methodologies. Students are expected to design a complete solution—ranging from data collection to model development and evaluation—and present their work in a professional and structured manner.

Course Objectives:

1. To foster the ability to formulate and investigate complex, research-oriented problems in data science.
2. To train students in designing and executing comprehensive, advanced data science projects using current tools and techniques.
3. To encourage critical evaluation of models, interpretation of results, and iterative refinement based on analyses.
4. To promote independent research skills, ethical responsibility, and the ability to present a substantial dissertation or product demonstrating the application of advanced data science concepts.

Course Outcome:



CO1: Formulate complex, research-oriented data science problems and propose innovative solutions.

CO2: Apply advanced data science workflows using state-of-the-art algorithms and tools.

CO3: Critically evaluate model performance, interpret results, and refine solutions based on quantitative and qualitative analyses.

CO4: Develop and present a comprehensive dissertation and/or product demonstrating independent research, teamwork, and ethical responsibility.

Course components expected to be submitted:

- **Project Proposal** – Detailed explanation of your problem, objective, data source, and plan.
- **Literature Review** – A summary of existing research or solutions related to your topic.
- **Data Processing and Workflow** – Clear documentation of how you handled the data and built your model.
- **Modeling and Analysis** – Application of advanced ML/AI algorithms with proper performance evaluation.
- **Final Report / Dissertation** – A complete report explaining your project in detail.
- **Presentation / Demo** – A final presentation (with a demo if applicable) and Viva Voce session



Guidelines to be followed:

- Students should complete the project within the stipulated duration.
- Students will select a complex and meaningful problem relevant to industry or research.
- Student can work individually or in a group (max 2-3), as advised by course mentor.
- Use advanced tools like Tensor Flow, scikit-learn, Tableau, or cloud platforms, as and if required.
- The project should show clear innovation, depth, and professional quality.
- Maintain a project logbook or file with weekly updates, as advised by course mentor.
- Review meetings with faculty mentor(s) should be conducted every 2–3 weeks.
- The final report / dissertation should follow academic standards (proper structure, citations, and ethical practices).
- Plagiarism, unethical practices, or misrepresentation should be strictly avoided.
- Preparation for a final viva/demo of the project to be presented to a panel.

Major Project Course Assessment:

CO	Description	Assessment Activity	Weightage
CO1	Formulate a complex, research-oriented data science problem	Detailed Proposal + Problem Framing Review	10%
CO2	Apply advanced DS workflows & tools	Workflow/Architecture Document + Codebase Review	25%
CO3	Evaluate model performance, iterate, and refine	Evaluation Metrics Report + Iteration Logs	25%
CO4	Present comprehensive work with professionalism and ethics	Final Report + Viva + Demo	40%
Total			100%

Bridge Course on Mathematics and Statistics:

Course: Basic Mathematics and Statistics

This is a bridge course for those students who do not have the Mathematics/Statistics/Quantitative Techniques as a course in their undergraduate or higher secondary level. This is a Non-Credit course and students will learn the course simultaneously with first semester courses.

Course Objective:

1. To acquire the knowledge of mathematical tools and statistical operations.
2. To identify the techniques to solve optimization problems
3. To apply probability distribution to socio, economic- demographic data
4. To examine sampling techniques and different statistical tests in order to support fact-based decision making.

Course Outcomes:

1. Understand the basics of mathematics and statistics.
2. Explain the importance of quantitative techniques in solving socio-economic problems
3. Analyse the data in scientific ways
4. Evaluate the inferences and results in a scientific manner.

Syllabus

Module 1

Set Theory; concepts of sets, set operators

Relations and functions

Functions involving more than one independent variable

Module 2

Differential Calculus – Derivatives - Basic concepts and its applications

First order and second order derivatives of various functions. Application of derivatives

Module 3

Introduction to probability using coins, dice and cards

Concept of addition (or) and multiplication (and), conditional probability, joint probability, mutually exclusive events

Module 4

Concept of correlation - Understanding positive and negative correlation and degree of association.

Measuring Correlation coefficient

Understanding linear regression and regression coefficients

Regression equations

Suggested Books:

1. Baruah. S.N.,(2003)*Basic Mathematics and its Application in Economics*, 2nd edition. Macmillan Publishers, India.
2. Sharma J. K.(2006) *Business Statistics*, 2nd Edition, Pearson
3. Bajpai. N. (2013) *Business Statistics*, 2nd Edition, Pearson



Agenda BOM.8/2025-11/06: Proposal for Introducing Dual Degree B.Tech. - MBA Programme (4+1)

A proposal to introduce a Dual Degree B.Tech.–MBA Programme (4+1), integrating the disciplines of Engineering and Management from the Academic Session 2026–27, was placed before the Board of Management for discussion and necessary approval. *(Placed at Annex–IV.)*

Resolution: BOM.8/2025-11/06:

Resolved to approve the proposal for introducing the Dual Degree B.Tech.–MBA Programme (4+1), integrating Engineering and Management disciplines and commencing from the Academic Session 2026–27, upon completion of the required regulatory and administrative processes.

Annex-IV

GIRIJANANDA CHOWDHURY UNIVERSITY, ASSAM

Department of Business Administration

Proposal for Introducing Dual Degree B.Tech - MBA Programme

1. Introduction

A Dual Degree B.Tech.-MBA program integrating the disciplines of Engineering and Management is proposed to be introduced from the Academic Session 2026-27. Designed as a single, cohesive course, it can be completed in five years, compared to the six years required if pursued separately. The program seeks to blend two distinct yet complementary domains, enabling students to explore their interests in both areas while enhancing their professional versatility. With its well-established School of Engineering (SoE) and School of Management & Commerce (SoMC), Girijananda Chowdhury University, Assam offers strong faculty expertise and state-of-the-art infrastructure to support this initiative. The proposed program is expected to create a synergistic impact by integrating the strengths of both Engineering and Management.

2. Nomenclature of the Programme

Dual Degree B.Tech.-MBA



3. Duration of the Programme

A one-year MBA module undertaken after the successful completion of a four-year B.Tech. programme with selected management courses completed alongside the B.Tech. Curriculum.

4. Programme Objectives

- To develop techno-managerial professionals equipped with strong engineering knowledge and managerial competencies to address complex real-world challenges.
- To foster innovation, leadership, and entrepreneurial skills by integrating technical expertise with business acumen.
- To prepare graduates for dynamic career opportunities in technology-driven industries, management roles, and entrepreneurship through a multidisciplinary learning approach.

5. Programme Outcomes

- To produce competent techno-managerial professionals with a strong foundation in engineering principles and managerial practices.
- To integrate technical knowledge with business decision-making skills, enabling graduates to effectively bridge the gap between technology and management.
- To foster innovation, creativity, and entrepreneurial thinking for developing sustainable solutions to real-world problems.
- To cultivate leadership qualities, ethical values, and effective communication skills essential for managing teams and organizations.
- To enhance analytical, problem-solving, and critical thinking abilities through experiential and project-based learning.
- To prepare students for diverse career opportunities in industries, research, consultancy, and entrepreneurship.
- To encourage lifelong learning and adaptability in response to evolving technologies and global business environments.
- To contribute to national and global development by producing professionals capable of driving growth through technology and management excellence.



6. Eligibility and progression

All B.Tech. Students who have successfully earned a minimum of 50 credits – comprising 28 credits from courses embedded within the B.Tech. Curriculum and 22 credits from courses offered concurrently during the 5th to 8th Semesters – shall be eligible for admission to the MBA Lateral module (i.e., the fifth year or the final/second year of the MBA programme) under the Dual Degree framework.

Eligible students upon successful completion of the four-year B.Tech. Programme, may seamlessly progress to the fifth year (9th and 10th Semesters) to complete the MBA curriculum without any academic interruption.

Moreover, eligible students who wish to pursue the MBA Lateral module after a gap of one or more academic years following the completion of their B.Tech. Degree will be required to re-enroll for the MBA component of the programme.

In addition, eligible B.Tech. graduates who are employed in any organisation and wish to undertake the MBA Lateral module of the Dual Degree Programme may enroll afresh along with the MBA (Working Professionals) Batch, which is offered in a blended learning mode to ensure flexibility alongside their professional responsibilities.

7. Programme intake

60 (sixty) and shall be offered to all Engineering Branches, proportionately to the Branch's intake.

8. Area of Specialisations

Students enrolled in the Dual Degree B.Tech.-MBA programme will specialise in their respective Engineering discipline after completion of their first four years of study. In the 9th and 10th Semesters, they will have the opportunity to pursue dual specialisations in areas such as Marketing, Finance, Human Resources, or any other areas of specialisation offered by the Department of Business Administration. The availability of these specialisations will, however, depend on the minimum number of students opting for each specialisation.

9. Multiple Exit Options

The programme offers flexibility through multiple exit options. A student may choose to exit after four years with a B.Tech. Degree, or continue to complete the fifth year to



earn an MBA Degree. However, eligibility for any lateral exit option requires successful completion of the prescribed internship at the corresponding stage in accordance with NEP guidelines.

10. Total Programme Credits

Credit Distribution for MBA Component of Dual Degree Programme	
Credits exempted for Management-related Courses in B.Tech. Curriculum (In case of shortfall, students can earn Credits through regular courses/MOOCs/SWAYAM)	28 Credits
Credits transferred for undertaking Grand Project (addressing a management-related problem area in addition to the engineering discipline)	08-12 Credits
Credits to be earned from management courses alongside the regular B.Tech. programme (5 th to 8 th Semesters)	22 Credits
Credit to be earned from Courses in Fifth Year (9 th & 10 th Semesters)	47 Credits

Total Credit to be completed from MBA Lateral Module shall be minimum 100. Of these, students must complete –

- Earn 28 Credits from management-related courses embedded in B.Tech. Curriculum. In case of any shortfall, students can earn credit from regular courses/MOOCs/SWAYAM so as to fulfil the required 28 credits. List of Courses that may be considered for exemption is given in **Annexure I**.
- A minimum of 22 Credits from Management minor courses offered during the 5th to 8th Semesters. There shall be two courses per Semester. Details of the same are given in **Annexure II**.
- A minimum of 50 credits must be earned from the MBA component, corresponding to the final/second year of the MBA programme (9th and 10th Semesters). Of these, 47 credits shall be obtained from courses offered during the final year of MBA programme. Three Credit allotted to Summer Internship Project shall be exempted for undertaking Grand Project, addressing a management-related problem area in B.Tech Programme and such credit shall be transferred for the award of MBA Degree.

The credit distribution per semester will be framed in accordance with the University regulations and AICTE guidelines.



11. Teaching Departments

A student enrolled in the Dual Degree B.Tech.-MBA programme will complete four years (1st to 8th Semesters) of the B.Tech. curriculum in their respective branch of Engineering at the School of Engineering (SoE), followed by the Fifth/final year (9th & 10th Semesters) at the Department of Business Administration under the School of Management & Commerce (SoMC).

During 5th to 8th Semesters, the student will also undertake Minor courses offered by the Department of Business Administration. In addition, each student will be assigned a Co-guide from the Department of Business Administration for their Grand Project, which must focus on a problem area related to the management domain along with their Engineering Specialisation area.

12. Proposed Fee Structure

The proposed fee structure for the Dual Degree B.Tech.-MBA programme is a given below –

5th to 8th Semesters: Fee structure for Engineering + Rs. 5,000/Semester

9th & 10th Semesters: Rs. 1,36,000/- (inclusive of Tuition Fee, Examination fee, Development fees, Student activity & welfare fund etc.)

Total Fee for the programme = Fee structure of B.Tech. programme + Rs. 1,56,000

However, students who opt to join the MBA Lateral module after a gap of one or more years will be required to pay an additional Rs. 20,000/-, which comprises of an admission fee of Rs. 10,000/- and refundable caution money of Rs. 10,000/-.

13. Course Structure and Syllabus Designing

The course structure and detailed syllabi will be developed by the Programme Committee constituted for the Dual Degree B.Tech.-MBA Programme. This Committee shall comprise the Heads of all Engineering Departments and the Head of the Department of Business Administration.

14. AICTE approval

As per AICTE Approval Process Handbook 2024-25 to 2026-2027, to include new nomenclatures in the Diploma/Under Graduate/Post Graduate Degree Courses, approval from the University/Board, as applicable along with the Curriculum and Syllabus shall be sent to the Policy and Academic Council, AICTE for approval



(Chapter VIII, Point No. 5). As both B.Tech. and MBA Programmes are professional programmes and under the purview of the AICTE, the GCU Academic Council/GCU AICTE Cell, need to initiate the approval from the AICTE prior to introduction of the Dual-Degree B.Tech.-MBA programme effective from Academic Session 2026-2027.

Annexure – I

Tentative List of Exempted Courses that are embedded in B.Tech. Curriculum –

1. Principles of Management
2. Economics for Engineers
3. Financial Accounting
4. Computer Application
5. Design Thinking & Innovation
6. Production & Operations Management/Industrial Management/Construction Management
7. Entrepreneurship & Start-up
8. Industrial Laws

Total Credit : 32 [8 Courses × 4 Credits]

Annexure – II

Proposed Courses from 5th to 8th Semesters

Semester	Name of the Courses
Fifth	Organisational Behaviour (3 Credit) Business Ethics (2 Credit)
Sixth	Research Methods in Business (3 Credit) Emotional Intelligence/Emotional Health & Wellbeing/Stress Management (2 Credit)
Seventh	Financial Management (3 Credit) Marketing Management (3 Credit)
Eighth	Human Resource Management (3 Credit) Legal Aspects in Business (3 Credit)

Total Credits : 22



Annexure III

Final Year Course Structure of MBA Programme

Third Semester				
Code	Course	Category of Course	L-T-P	Total Credit
MBA23601T	Business Policy and Strategic Management	Core	3-0-0	3
	Specialization – A1***	Elective	2-0-0	2
	Specialization – A2***	Elective	3-0-0	3
	Specialization – A3***	Elective	3-0-0	3
	Specialization – B1***	Elective	2-0-0	2
	Specialization – B2***	Elective	3-0-0	3
	Specialization – B3***	Elective	3-0-0	3
	Elective – II**	Elective	3-0-0	3
MBA23602R	Summer Internship Project	Core	0-0-6	3
TOTAL				25

Fourth Semester				
Code	Course	Category of Course	L-T-P	Total Credit
MBA23603T	Corporate Environment	Core	3-0-0	3
MBA23604T	Entrepreneurship Management	Core	3-0-0	3
	Specialization – A4***	Elective	2-0-0	2
	Specialization – A5***	Elective	3-0-0	3
	Specialization – A6***	Elective	3-0-0	3
	Specialization – B4***	Elective	2-0-0	2
	Specialization – B5***	Elective	3-0-0	3
	Specialization – B6***	Elective	3-0-0	3
	Elective – III**	Elective	3-0-0	3

***Third Semester				
Code	Course	Category of Course	L-T-P	Total Credit
Finance				



MBA23605FT	Behavioural Finance	Elective	2-0-0	2
MBA23606FT	Tax Planning & Management	Elective	3-0-0	3
MBA23607FT	Investment Analysis & Portfolio Management	Elective	3-0-0	3
Human Resource				
MBA23605HT	Managerial & Behavioural Effectiveness	Elective	2-0-0	2
MBA23606HT	Industrial Relations & Labour Legislation	Elective	3-0-0	3
MBA23607HT	Organisational Change & Development	Elective	3-0-0	3
Marketing				
MBA23605MT	Brand Management & Advertising	Elective	2-0-0	2
MBA23606MT	Logistics & Supply Chain Management	Elective	3-0-0	3
MBA23607MT	Consumer Behavioural Analysis	Elective	3-0-0	3

Fourth Semester				
Code	Course	Category of Course	L-T-P	Total Credit
Finance				
MBA23608FT	Management of Financial Services	Elective	2-0-0	2
MBA23609FT	Advanced Corporate Accounting	Elective	3-0-0	3
MBA23610FT	Financial Engineering & Derivatives Management	Elective	3-0-0	3
Human Resource				
MBA23608HT	Strategic Human Resource Management	Elective	2-0-0	2
MBA23609HT	Performance Appraisal, Training & Development	Elective	3-0-0	3
MBA23610HT	Negotiation and Counselling	Elective	3-0-0	3
Marketing				
MBA23608MT	Sales & CRM	Elective	2-0-0	2
MBA23609MT	Marketing of Services	Elective	3-0-0	3
MBA23610MT	Rural Marketing	Elective	3-0-0	3
***Basket of Electives				
Code	Course	Category	L-T-P	Total Credit



		of Course		
MBA23518ET	Cost & Management Accounting	Elective	3-0-0	3
MBA23519ET	Operations Research for Industry	Elective	3-0-0	3
MBA23520ET	International Business	Elective	3-0-0	3
MBA23521ET	Foreign Language	Elective	3-0-0	3
MBA23522ET	Quality Control & Management	Elective	3-0-0	3
MBA23523ET	Project Management	Elective	3-0-0	3
MBA23524ET	Management of Social and Non-profit sectors	Elective	3-0-0	3
MBA23525ET	Luxury Brand Management	Elective	3-0-0	3
MBA23526ET	Design Thinking	Elective	3-0-0	3
MBA23527ET	Computer Language	Elective	3-0-0	3
MBA23528ET	Retail Management	Elective	3-0-0	3

Agenda BOM.8/2025-11/07: Restructuring and Renaming of programmes and approval of new programmes

The following matters were placed before the Board of Management for deliberation and necessary approval:

- Approval for increase of intake in B.Tech. Civil Engineering from 60 to 90.
- Approval of new programme B.Tech. CSE (AI & ML) with an intake of 30.
- Approval of B.Tech. ECE (Honours) with specializations in AI & ML, IoT, VLSI, 5G Technology, etc.
- Approval of 3-month / 6-month / 1-year Certificate Courses in Cyber Security.
- Approval for renaming M.Tech. (VLSI) to M.Tech. Electronics and Electrical Technology.
- Approval for renaming M.Tech. Civil (SE) to M.Tech. Civil Engineering.
- Proposal to incorporate MDC courses offered by all Schools as Open Electives for all UG students across the University.

Resolution: BOM.11/2025-11/07: Resolved that the proposals relating to restructuring, renaming, and introduction of new academic programmes, as placed before the Board of Management, be approved:

- 7.1 Resolved to increase the intake of B.Tech. Civil Engineering from 60 to 90.
- 7.2 Resolved to approve the introduction of B.Tech. CSE (AI & ML) with an intake of 30.
- 7.3 Resolved to approve B.Tech. ECE (Honours) with specializations in AI & ML, IoT, VLSI, 5G Technology, etc.
- 7.4 Resolved to approve the 3-month / 6-month / 1-year Certificate Courses in Cyber Security.
- 7.5 Resolved to approve the renaming of M.Tech. (VLSI) to M.Tech. Electronics and Electrical Technology.



- 7.6 Resolved to approve the renaming of M.Tech. Civil (SE) to M.Tech. Civil Engineering.
- 7.7 Resolved to approve the incorporation of MDC courses offered by all Schools as Open Electives for all UG students.
- 7.8 Resolved further that the concerned Schools and Departments shall take necessary steps for implementation from the upcoming academic session.

Agenda BOM.8/2025-11/08: Restructuring & Renaming of Programmes in the School of Allied Health Sciences

The following matters were placed before the Board of Management for deliberation and necessary action:

- Approval of increase in intake for BPT from 60 to 100
- Proposal to adopt Physiotherapy (UG & PG) syllabi as per the National Commission for Allied and Healthcare Professions (NCAHP) guidelines and circular
- Renaming of Medical Laboratory Technology (MLT) programmes to Medical Laboratory Science (MLS)

Resolution: BOM.8/2025-11/08:

- 8.1 Resolved to increase the intake of BPT from 60 to 100.
- 8.2 Resolved to adopt the Physiotherapy (UG & PG) syllabi as per the NCAHP guidelines and circular.
- 8.3 Resolved to rename the Medical Laboratory Technology (MLT) programmes as Medical Laboratory Science (MLS).

Agenda BOM.8/2025-11/09: Retirement/Superannuation age for teaching and non-teaching employees

A proposal was placed before the Board to finalise the retirement/superannuation age for regular teaching and non-teaching employees of Girijananda Chowdhury University. With the implementation of the new Leave Rules from 1 June 2025 and the forthcoming revision of the Service Rules, the University underscores the need to formally determine superannuation age in accordance with Clause 1.6 of the Service Rules and relevant Government of Assam directives. As per government norms, the superannuation age is fixed at 60 years for Assistant Professors, Associate Professors, and all non-teaching staff in colleges and universities, and at 65 years for Professors. In line with these stipulations, the University proposes adopting 60 years as the retirement age for non-teaching staff, Assistant Professors, and Associate Professors, and 65 years for Professors. The proposal was submitted for discussion and necessary approval.



Resolution BOM.8/2025-11/09:

The Board considered the proposal regarding the retirement/superannuation age for teaching and non-teaching employees as given below:

9.1 Resolved that the superannuation age for all non-teaching staff shall be **60 (sixty) years**.

9.2 Resolved that the superannuation age for all Assistant Professors and Associate Professors shall be **60 (sixty) years**.

9.3 Resolved that the superannuation age for all Professors shall be **65 (sixty-five) years**.

The Board approved the proposal and directed that the above provisions be incorporated into the revised Service Rules of the University.

Agenda BOM.8/2025-11/10: Approval of PhD Supervisor recommended by the Academic Council

The applications of the following faculty members seeking recognition as PhD Supervisors were placed before the Board of Management for consideration and approval:

- Dr. Mona Alice Marbaniang – School of Humanities & Social Sciences
- Dr. Prakash Khundrakpam – School of Humanities & Social Sciences
- Dr. Ahana Choudhury – School of Humanities & Social Sciences
- Dr. Fariza Saidin – School of Humanities & Social Sciences
- Dr. Pallab Jyoti Das – School of Engineering & Technology
- Dr. Dheeman Bhuyan – School of Engineering & Technology
- Dr. Birina Bhuyan – School of Natural Sciences
- Dr. Bhagyashree Mahanta – School of Natural Sciences
- Dr. Shalini Qjha – School of Management & Commerce
- Dr. Junumoni Das – School of Management & Commerce

The Board reviewed the applications and took note of the eligibility parameters and supporting documents placed before it.

Resolution: BOM.8/2025-11/10:

10.1 Resolved that Ph.D. supervisorship shall be granted to faculty members who have a minimum of one year of teaching experience and at least one post-Ph.D. publication in a refereed/indexed journal (such as Scopus), duly certified by the Director, RDC, GCU.

10.2 Resolved further that as and when the above conditions are fulfilled, the respective faculty members shall be recognized as Ph.D. Supervisors.

Agenda BOM.8/2025-11/11: Approval of Formative Assessment SOP

A proposal for the approval of the Standard Operating Procedure (SOP) for Formative Assessments in Undergraduate and Postgraduate programmes (placed at annex-V), in alignment with NEP 2020 and UGC guidelines, is placed before the Board for discussion and approval.



Resolved to approve the Standard Operating Procedure (SOP) for Formative Assessments for Undergraduate and Postgraduate programmes. (placed at annex-V)

Annex-V

Girijananda Chowdhury University

Standard Operating Procedure (SOP)

for Formative Assessments in Undergraduate and Post Graduate programmes as per NEP 2020 and UGC guidelines

1. Introduction and Purpose

This SOP outlines the standardised procedures for planning, conducting, and evaluating formative assessments in undergraduate courses at Girijananda Chowdhury University, in alignment with the National Education Policy (NEP) 2020 and UGC guidelines. The primary purpose is to promote continuous learning, provide timely feedback to students, and shift from traditional summative evaluations to competency-based, holistic assessments that foster higher-order skills such as critical thinking, analysis, and application of knowledge. Formative assessments are designed to monitor student progress throughout the course, enabling adjustments in teaching-learning processes to optimise outcomes for all learners. The Formative Assessment is also considered as Feedback for teachers to assess the effectiveness of teaching-learning strategies and testing of innovative practices. The course mentors must adopt multiple strategies for teaching learning and assessment based on the principle of Equity, by abandoning the traditional “one coat fits all” approach.

This SOP ensures emphasis on learner-centric education, moving away from high-stakes examinations toward continuous and comprehensive evaluation.

2. Scope

This SOP applies to all undergraduate and post Graduate programs (e.g., 1 year or 2 years PG, 3-year or 4-year Bachelor's degrees with multiple exit options) offered by the university, including multidisciplinary and vocational courses. It covers all faculty, students, and administrative staff involved in assessment processes. It does not cover summative or end-semester examinations.

3. Definitions

Formative Assessment: Ongoing evaluations conducted during the learning process to provide feedback and improve student performance, rather than for final grading. Examples include quizzes, assignments, and projects.



Continuous (Internal) Evaluation (CE): A system of regular assessments integrated into the curriculum, contributing to the overall grade through sessional work and mid-term evaluations.

Competency-Based Assessment: Evaluations focused on measuring learning outcomes, skills, and application rather than rote memorisation.

Holistic Assessment: Multidimensional evaluation covering cognitive, affective, and psychomotor domains, including intellectual, emotional, and practical skills.

4. Key Principles from NEP 2020

Assessments must be competency-based, promoting learning and development by testing higher-order skills like analysis and conceptual clarity. Shift from summative to formative assessments to reduce the 'coaching culture' and encourage continuous improvement. Use of criterion-based grading to ensure fairness and comparability of outcomes. Integration of technology for tracking progress and providing feedback. Flexibility for institutions to innovate assessment methods while aligning with learning goals.

5. Procedures

5.1 Planning Formative Assessments

At the beginning of each semester, course mentor shall develop an assessment plan aligned with the course learning outcomes, as per the Curriculum and Credit Framework for Undergraduate and Post graduate Programmes. The plan must include a mix of formative methods, with at least 40% weightage for CE in the overall grading. Submit the plan to the department head for approval within the first week of the semester.

5.2 Types of Formative Assessments

Formative assessments shall- prioritise variety to suit the discipline and promote holistic development. Recommended methods include:

- Time-constrained quizzes or tests (closed-book/open-book).
- Problem-based assignments and homework.
- Practical/laboratory reports and observations of skills.
- Individual/team projects and reports.
- Oral presentations, seminars, and viva voce.
- Regularity in class activity/interactions and conduct.
- Internships, field-based learning, and community engagement projects.
- Participation in academic activities including sessions of experiential learning

5.3 Frequency and Scheduling

Conduct at least 3-4 formative assessments per course per semester, spaced evenly (e.g., weekly quizzes or bi-weekly assignments, tests in 4 weeks). Integrate assessments into the teaching schedule to provide ongoing feedback. (For final formative assessment we may pick the best two of these assessments)



5.4 Conducting Assessments

Use learner-centric pedagogies such as experiential learning, group discussions, and technology-aided tools (e.g., AI-based tracking or online platforms). Ensure inclusivity for diverse learners, including provisions for differently-abled students. Maintain transparency by sharing rubrics and criteria in advance.

5.5 Feedback Mechanism

Provide the students the detailed, constructive feedback within 7 days of each assessment and motivate them for improvement by providing remedial academic sessions and repeat assessment. Use holistic progress reports or digital dashboards to track individual student growth across cognitive, affective, and psychomotor domains. Solicit student feedback on assessments periodically to refine processes. The final score of Formative assessment must be notified to the students at least one week before the Summative Assessment (End Semester examinations).

5.6 Evaluation and Grading

Evaluate using criterion-based rubrics linked to learning outcomes. The Course mentors may either adopt letter grades: O (Outstanding, 10 points), A+ (9), A (8), B+ (7), B (6), C (5) or absolute marking in the formative Assessment, out of which 40% weightage shall be taken as the Final score.

Tentative components of formative assessments in the CE (suggestive) weightage pattern is

Participation in academic activities including experiential learning sessions/visits etc	30%
Assignments, Presentation, Class tests (written, oral and practical experiments) etc	40%
Tests/quiz/online examinations etc	30%
Total in each CE	100

5.7 Use of Technology

Leverage AI tools such as "Google notebookLM", "quizzes" etc. for adaptive assessments and progress tracking. Employ online platforms for submissions, evaluations, and feedback to ensure efficiency and accessibility.

6. Responsibilities

Course Mentors/Faculty: Design, conduct, evaluate assessments, and provide feedback.

Department Heads: Approve plans, monitor implementation, and resolve issues in consultation with the dean of the school.

Students: Participate actively, seek feedback, and adhere to academic integrity and conduct. Discuss their problems with their respective mentors.



University Administration: Provide training to faculty members on NEP-aligned assessments, resources (e.g., technology), and oversight through quality assurance cells.

7. Documentation and Records

Maintain digital records of assessment plans, rubrics, student submissions, grades, and feedback. Archive all documents for at least 5 years or as per university policy.

8. Monitoring and Review

The Internal Quality Assurance Cell (IQAC) shall review formative assessment practices annually, incorporating student and faculty feedback.

Conduct academic audits to ensure compliance with NEP 2020 and UGC guidelines.

Update this SOP as per revisions in national policies or institutional needs.

Agenda BOM.8/2025-11/12: Any Other Matter

12.1 Approval of the Guidelines proposed by the Governor for the Professor of Practice

A proposal regarding the approval of the Guidelines issued by the Hon'ble Governor for the appointment of Professor of Practice was placed before the Board of Management for consideration and approval.

Resolution: BOM.8/2025-11/12.1: Resolved to approve the Guidelines proposed by the Governor for the appointment of Professor of Practice.

12.2 Approval of the GCU Holiday List for the upcoming calendar year

A proposal regarding the approval of the GCU Holiday List for the forthcoming calendar year was placed before the Board of Management for consideration and approval.

Resolution: BOM.8/2025-11/12.2

Resolved to approve the GCU Holiday List for the upcoming calendar year.

12.3 Establishment of an Incubation Cell and visit to State Government Start-up facility

A proposal for establishing an Incubation Cell and arranging a visit of its members to the State Government Start-up facility was placed before the Board for consideration.

Resolution: BOM.8/2025-11/12.3

Resolved to approve the establishment of an Incubation Cell and facilitate a visit of its members to the State Government Start-up facility. Also, a request for SEED funding support from the Society for the Incubation Cell was made.

12.4 Alumni Reconnect – Re-registration and activation of Alumni Cell under a new name

An update regarding Alumni reconnection initiatives, including the re-registration and activation of the Alumni Cell under a new name, was placed before the Board.

Resolution: BOM.8/2025-11/12.4

Resolved to note and support the re-registration and activation of the Alumni Cell under its new name to strengthen alumni engagement.



12.5 Proposal for establishment of an Alumni Centre and appointment of a Director

A proposal to establish an Alumni Centre and appoint a Professor as its Director was placed before the Board for consideration.

Resolution: BOM.8/2025-11/12.5

Resolved to approve the establishment of an Alumni Centre and the appointment of a Professor as Director to oversee and guide alumni activities.

12.6 Strengthening collaboration with colleges and universities of the North-East region

A recommendation to build stronger connections and collaborations with educational institutions across the North-East region to support upcoming admissions was placed before the Board.

Resolution: BOM.8/2025-11/12.6

Resolved to strengthen collaboration with colleges and universities in the North-East region in support of future admissions.

12.7 Establishment of a Molecular Biology Laboratory

A proposal to establish a Molecular Biology Laboratory was placed before the Board for consideration.

Resolution: BOM.8/2025-11/12.7

Resolved to approve the establishment of a Molecular Biology Laboratory.

12.8 Modifications to the Animal House and addition of facilities and equipment

A proposal suggesting minor modifications to the Animal House and incorporation of additional facilities and equipment was placed before the Board.

Resolution: BOM.8/2025-11/12.8

Resolved to approve the proposed modifications to the Animal House and the addition of necessary facilities and equipment.

12.9 Appreciation – Prof. Bhanu P. Sahu

The matter regarding the expression of appreciation for the sincere service and contribution of Prof. Bhanu P. Sahu was placed before the Board.

Resolution: BOM.8/2025-11/12.9

Resolved to place on record the appreciation of the Board of Management for the dedicated service rendered by Prof. Bhanu P. Sahu to the institution.

As there was no other matter for discussion the meeting ended with a Vote of Thanks to and from the Chair.

**Registrar
Member Secretary**


**Vice-Chancellor
Chairman**