UNIVERSITY OF CALICUT

B.Sc. MATHEMATICS HONOURS

(MAJOR, MINOR AND GENERAL FOUNDATION COURSES)

SYLLABUS & MODEL QUESTION PAPERS

w.e.f. 2024 Admission Onwards

(CUFYUGP Regulations 2024)

B.Sc. MATHEMATICS HONOURS

(MAJOR, MINOR AND GENERAL FOUNDATION COURSES)

SYLLABUS

PROGRAMME OUTCOMES (PO):

At the end of the graduate programme at Calicut University, a student would:

PO1	**Knowledge Acquisition:** Demonstrate a profound understanding of knowledge trends and their impact on the chosen discipline of study.
PO2	**Communication, Collaboration, Inclusiveness, and Leadership:** Become a team player who drives positive change through effective communication, collaborative acumen, transformative leadership, and a dedication to inclusivity.
PO3	**Professional Skills:** Demonstrate professional skills to navigate diverse career paths with confidence and adaptability.
PO4	**Digital Intelligence:** Demonstrate proficiency in varied digital and technological tools to understand and interact with the digital world, thus effectively processing complex information.
PO5	**Scientific Awareness and Critical Thinking:** Emerge as an innovative problem-solver and impactful mediator, applying scientific understanding and critical thinking to address challenges and advance sustainable solutions.
PO6	**Human Values, Professional Ethics, and Societal and Environmental Responsibility:** Become a responsible leader, characterized by an unwavering commitment to human values, ethical conduct, and a fervent dedication to the well-being of society and the environment.
PO7	**Research, Innovation, and Entrepreneurship:** Emerge as a researcher and entrepreneurial leader, forging collaborative partnerships with industry, academia, and communities to contribute enduring solutions for local, regional, and global development.

PROGRAMME SPECIFIC OUTCOMES (PSO):

At the end of the B.Sc. Mathematics Honours Programme at Calicut University, a student would:

Programme Specific Outcome (Major)	
PSO1	**Advanced Mathematical Knowledge: Understand core mathematical abstract concepts/theories and demonstrate a high level of mathematical rigor and logical reasoning**
PSO2	**Modelling and Problem-Solving Skills: Apply mathematical techniques to solve complex problem situations across various domains and interpret the result, demonstrating critical thinking and analytical skills.**
PSO3	**Computational Proficiency: Apply mathematical understanding to solve problems and explicitly work out step by step either by self or by software based computational tools.**
PSO4	**Research Aptitude: Analyse mathematical abstract ideas effectively and present/communicate mathematical arguments and solutions in a clear and coherent manner leading to research in Mathematics**
Programme Specific Outcome (Minor)	
PSO5	**Mathematics Proficiency: Demonstrate a strong understanding of mathematical principles and problem solving**
PSO6	**Interdisciplinary Integration: Integrate Mathematics with relevant disciplines to develop more holistic approaches to solve problems, leading to innovative solutions and advancements in various fields.**

MINIMUM CREDIT REQUIREMENTS OF THE DIFFERENT PATHWAYS

IN THE THREE-YEAR PROGRAMME IN CUFYUGP

Sl. No.	Academic Pathway	Major	Minor/ Other Disciplines	Foundation Courses AEC: 4 MDC: 3 SEC: 3 VAC: 3	Intern- ship	Total Credits	Example
		Each course has 4 credits		Each course has 3 credits			
1	Single Major (A)	68 (17 courses)	24 (6 courses)	39 (13 courses)	2	133	Major: Mathematics + six courses in different disciplines in different combinations
2	Major (A) with Multiple Disciplines (B, C)	68 (17 courses)	12 + 12 (3 + 3 = 6 courses)	39 (13 courses)	2	133	Major: Mathematics + Statistics and Computer Science
3	Major (A) with Minor (B)	68 (17 courses)	24 (6 courses)	39 (13 courses)	2	133	Major: Mathematics Minor: Physics
4	Major (A) with Vocational Minor (B)	68 (17 courses)	24 (6 courses)	39 (13 courses)	2	133	Major: Mathematics Vocational Minor: Data Analysis
5	Double Major	A: 48	-	12 + 9+9 +9	2	133	

(A, B)	(12 courses) B: 44 (11 courses)	The 24 credits in the Minor stream are distributed between the two Majors. 2 MDC, 2 SEC, 2 VAC and the Internship should be in Major A. Total credits in Major A should be 48 + 20 = 68 (nearly 50% of 133) 1 MDC, 1 SEC and 1 VAC should be in Major B. Total credits in Major B should be 44 + 9 = 53 (40% of 133)		Mathematics and Physics double major
		Exit with UG Degree / Proceed to Fourth Year with 133 Credits		

B.Sc. MATHEMATICS HONOURS PROGRAMME

COURSE STRUCTURE FOR PATHWAYS 1 – 4

1. Single Major   **2. Major with Multiple Disciplines**

3. Major with Minor   **4. Major with Vocational Minor**

Semester	Course Code	Course Title	Total Hours	Hours/ Week	Credits	Marks		
						Internal	External	Total
1	MAT1CJ101/ MAT1MN100	Core Course 1 in Major – Differential Calculus	60	4	4	30	70	100
		Minor Course 1	60/ 75	4/ 5	4	30	70	100
		Minor Course 2	60/ 75	4/ 5	4	30	70	100
	ENG1FA101(2)	Ability Enhancement Course 1– English (with Theory T & Practicum P)	30+30 (T+P)	2+2 (T+P)	2+1 (T+P)	25	50	75
		Ability Enhancement Course 2 – Additional Language	45	3	3	25	50	75
		Multi-Disciplinary Course 1 – Other than Major	45	3	3	25	50	75
		Total		22/ 24	21			525
2	MAT2CJ101/ MAT2MN100	Core Course 2 in Major – Integral Calculus	60	4	4	30	70	100
		Minor Course 3	60/ 75	4/ 5	4	30	70	100
		Minor Course 4	60/ 75	4/ 5	4	30	70	100
	ENG2FA103(2)	Ability Enhancement Course 3– English	30+30	2+2	2+1	25	50	75

Sem	Course Code	Course Title	Hours					
		Ability Enhancement Course 4 – Additional Language	45	3	3	25	50	75
		Multi-Disciplinary Course 2 – Other than Major	45	3	3	25	50	75
		Total		22/ 24	21			525
3	MAT3CJ201	Core Course 3 in Major– Multi Variable Calculus (with Theory T & Practicum P)	45+30 (T+P)	3+2 (T+P)	3+1 (T+P)	30	70	100
	MAT3CJ202/ MAT3MN200	Core Course 4 in Major– Matrix Algebra	60	4	4	30	70	100
		Minor Course 5	60/ 75	4/ 5	4	30	70	100
		Minor Course 6	60/ 75	4/ 5	4	30	70	100
		Multi-Disciplinary Course 3 – Kerala Knowledge System	45	3	3	25	50	75
	ENG3FV108(2)	Value-Added Course 1 – English	45	3	3	25	50	75
		Total		23/ 25	22			550
4	MAT4CJ203	Core Course 5 in Major –Real Analysis I	45+30	3+2	3+1	30	70	100
	MAT4CJ204	Core Course 6 in Major – Basic Linear Algebra	60	4	4	30	70	100
	MAT4CJ205	Core Course 7 in Major – Fundamentals of Python and SageMath (with Theory T & Practical P)	45+30 (T+P)	3+2 (T+P)	3+1 (T+P)	30	70	100

	ENG4FV109(2)	Value-Added Course 2 – English	45	3	3	25	50	75
		Value-Added Course 3 – Additional Language	45	3	3	25	50	75
	ENG4FS111 (2)	Skill Enhancement Course 1 – English	30+30	2+2	2+1	25	50	75
		Total		24	21			525
5	MAT5CJ301	Core Course 8 in Major –Real Analysis II	45+30	3+2	3+1	30	70	100
	MAT5CJ302	Core Course 9 in Major –Abstract Algebra I	60	4	4	30	70	100
	MAT5CJ303	Core Course 10 in Major – Complex Analysis I	60	4	4	30	70	100
		Elective Course 1 in Major	60	4	4	30	70	100
		Elective Course 2 in Major	60	4	4	30	70	100
		Skill Enhancement Course 2	45	3	3	25	50	75
		Total		24	23			575
6	MAT6CJ304/ MAT8MN304	Core Course 11 in Major – Complex Analysis II (For choosing this course as minor from other departments, students must have acquainted themselves with necessary contents of MAT5CJ303, as prerequisites)	60	4	4	30	70	100
	MAT6CJ305/ MAT8MN305	Core Course 12 in Major – Elementary Number Theory	60	4	4	30	70	100

	MAT6CJ306/ MAT8MN306	Core Course 13 in Major – Methods of Differential Equations	60	4	4	30	70	100
		Elective Course 3 in Major	60	4	4	30	70	100
		Elective Course 4 in Major	60	4	4	30	70	100
	MAT6FS113	Skill Enhancement Course 3 – Data Science with Python	45	3	3	25	50	75
	MAT6CJ349	Internship in Major (Credit for internship to be awarded only at the end of Semester 6)	60		2	50	-	50
		Total		23	25			625
Total Credits for Three Years					133			3325
7	MAT7CJ401	Core Course 14 in Major – Mathematical Analysis	45+30	3+2	3+1	30	70	100
	MAT7CJ402	Core Course 15 in Major –General Topology	45+30	3+2	3+1	30	70	100
	MAT7CJ403	Core Course 16 in Major – Abstract Algebra II	45+30	3+2	3+1	30	70	100
	MAT7CJ404	Core Course 17 in Major – Linear Algebra	45+30	3+2	3+1	30	70	100
	MAT7CJ405	Core Course 18 in Major – Discrete Mathematics	45+30	3+2	3+1	30	70	100
		Total		25	20			500
8	MAT8CJ406 / MAT8MN406	Core Course 19 in Major – Basic Measure Theory	45+30	3+2	3+1	30	70	100

	MAT8CJ407 / MAT8MN407	Core Course 20 in Major – Number Theory	60	4	4	30	70	100
	MAT8CJ408 / MAT8MN408	Core Course 21 in Major – Differential Equations	60	4	4	30	70	100
OR (instead of Core Courses 19 to 21 in Major)
	MAT8CJ449	Project (in Honours programme)	360*	13*	12	90	210	300
OR (instead of Core Courses 19 to 21 in Major)
	MAT8CJ499	Project (in Honours with Research programme)	360*	13*	12	90	210	300
		Elective Course 5 in Major / Minor Course 7	60	4	4	30	70	100
		Elective Course 6 in Major / Minor Course 8	60	4	4	30	70	100
		Elective Course 7 in Major / Minor Course 9 / Major Course in any Other Discipline	60	4	4	30	70	100
OR (instead of Elective Course 7 in Major, in the case of Honours with Research Programme)
	MAT8CJ489	Research Methodology in Mathematics	60	4	4	30	70	100
		Total		25	24			600
	Total Credits for Four Years	177			4425

* **The teacher should have 13 hrs/week of engagement (the hours corresponding to the three core courses) in the guidance of the Project(s) in Honours programme and Honours with Research programme, while each student should have 24 hrs/week of engagement in the Project work. Total hours are given based on the student's engagement.**

CREDIT DISTRIBUTION FOR PATHWAYS 1 – 4

1. Single Major   **2. Major with Multiple Disciplines**

3. Major with Minor   **4. Major with Vocational Minor**

Semester	Major Courses	Minor Courses	General Foundation Courses	Internship/ Project	Total
1	4	4 + 4	3 + 3 + 3	-	21
2	4	4 + 4	3 + 3 + 3	-	21
3	4 + 4	4 + 4	3 + 3	-	22
4	4 + 4 + 4	-	3 + 3 + 3	-	21
5	4 + 4 + 4 + 4 + 4	-	3	-	23
6	4 + 4 + 4 + 4 + 4	-	3	2	25
Total for Three Years	68	24	39	2	133
7	4 + 4 + 4 + 4 + 4	-	-	-	20
8	4 + 4 + 4	4 + 4 + 4	-	12[*]	24
*Instead of three Major courses					
Total for Four Years	88 + 12 = 100	36	39	2	177

DISTRIBUTION OF MAJOR COURSES IN Mathematics

FOR PATHWAYS 1 – 4

1. Single Major

2. Major with Multiple Disciplines

3. Major with Minor

4. Major with Vocational Minor

Semester	Course Code	Course Title	Hours/ Week	Credits
1	MAT1CJ101 /MAT1MN100	Core Course 1 in Major – Differential Calculus	4	4
2	MAT2CJ101 /MAT2MN100	Core Course 2 in Major – Integral Calculus	4	4
3	MAT3CJ201	Core Course 3 in Major – Multi Variable Calculus	5	4
	MAT3CJ202 /MAT3MN200	Core Course 4 in Major – Matrix Algebra	4	4
4	MAT4CJ203	Core Course 5 in Major – Real Analysis I	5	4
	MAT4CJ204	Core Course 6 in Major – Basic Linear Algebra	4	4
	MAT4CJ205	Core Course 7 in Major – Fundamentals of Python and SageMath (P)	5	4
5	MAT5CJ301	Core Course 8 in Major – Real Analysis II	5	4
	MAT5CJ302	Core Course 9 in Major – Abstract Algebra I	4	4
	MAT5CJ303	Core Course 10 in Major – Complex Analysis I	4	4
		Elective Course 1 in Major	4	4
		Elective Course 2 in Major	4	4
6	MAT6CJ304 / MAT8MN304	Core Course 11 in Major – Complex Analysis II	4	4

	MAT6CJ305 /MAT8MN305	Core Course 12 in Major – Elementary Number Theory	4	4
	MAT6CJ306 /MAT8MN306	Core Course 13 in Major – Methods of Differential Equations	4	4
		Elective Course 3 in Major	4	4
		Elective Course 4 in Major	4	4
	MAT6CJ349	Internship in Major	-	2
Total for the Three Years				70
7	MAT7CJ401	Core Course 14 in Major - Mathematical Analysis	5	4
	MAT7CJ402	Core Course 15 in Major – General Topology	5	4
	MAT7CJ403	Core Course 16 in Major – Abstract Algebra II	5	4
	MAT7CJ404	Core Course 17 in Major – Linear Algebra	5	4
	MAT7CJ405	Core Course 18 in Major – Discrete Mathematics	5	4
	MAT8CJ406 / MAT8MN406	Core Course 19 in Major – Basic Measure Theory	5	4
	MAT8CJ407 / MAT8MN407	Core Course 20 in Major – Number Theory	4	4
	MAT8CJ408 / MAT8MN408	Core Course 21 in Major – Differential Equations	4	4
OR (instead of Core Courses 19 - 21 in Major)				
	MAT8CJ449	Project (in Honours programme)	13	12
	MAT8CJ499	Project (in Honours with Research programme)	13	12
		Elective Course 5 in Major	4	4
		Elective Course 6 in Major	4	4

		Elective Course 7 in Major	4	4
8	OR (instead of Elective course 7 in Major, in Honours with Research programme)			
	MAT8CJ489	Research Methodology in Mathematics	4	4
Total for the Four Years				114

ELECTIVE COURSES IN MATHEMATICS   WITH SPECIALISATION

Group No.	Sl. No.	Course Code	Title	Semester	Total Hrs	Hrs/ Week	Credits	Marks		
								Internal	External	Total
1		MATHEMATICAL COMPUTING								
	1	MAT5EJ301 (1)	Mathematical Foundations of Computing	5	60	4	4	30	70	100
	2	MAT5EJ302 (1)	Data Structures and Algorithms	5	60	4	4	30	70	100
	3	MAT6EJ301 (1)	Numerical Analysis	6	60	4	4	30	70	100
	4	MAT6EJ302 (1)	Mathematics for Digital Images	6	60	4	4	30	70	100
2		DATA SCIENCE*								
	1	MAT5EJ303 (2)	Convex Optimization	5	60	4	4	30	70	100
	2	MAT5EJ304 (2)	Applied Probability	5	60	4	4	30	70	100
	3	MAT6EJ303 (2)	Machine Learning I	6	60	4	4	30	70	100
	4	MAT6EJ304 (2)	Machine Learning II	6	60	4	4	30	70	100

ELECTIVE COURSES IN MATHEMATICS WITH NO SPECIALISATION

Sl. No.	Course Code	Title	Semester	Total Hrs	Hrs/ Week	Credits	Marks		
							Internal	External	Total
1	MAT5EJ305	Higher Algebra.	5	60	4	4	30	70	100
2	MAT5EJ306	Linear Programming	5	60	4	4	30	70	100
3	MAT6EJ305	Topology of Metric Spaces.	6	60	4	4	30	70	100
4	MAT6EJ306	Introduction to Fourier Analysis	6	60	4	4	30	70	100
5	MAT8EJ401	Advanced Topology	8	60	4	4	30	70	100
6	MAT8EJ402	Partial Differential Equations	8	60	4	4	30	70	100
7	MAT8EJ403	Rings and Modules	8	60	4	4	30	70	100
8	MAT8EJ404	Coding Theory	8	60	4	4	30	70	100
9	MAT8EJ405	Foundations of Mathematics	8	60	4	4	30	70	100
10	MAT8EJ406	Operations Research	8	60	4	4	30	70	100
11	MAT8EJ407	Cryptography	8	60	4	4	30	70	100
12	MAT8EJ408	Introduction to Fractals*	8	60	4	4	30	70	100

*These courses are beyond the minimum course requirements and their syllabi are under preparation and will be updated soon.

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GROUPING OF MINOR COURSES IN MATHEMATICS

Group No.		Sl. No.	Course Code	Title	Semester	Total Hrs	Hrs/ Week	Credits	Marks		
									Internal	External	Total
1				Minor Group I - Mathematical Methods for Science							
		1	MAT1MN 101	Calculus	1	60	4	4	30	70	100
		2	MAT2MN 101	Differential Equations and Matrix Theory	2	60	4	4	30	70	100
		3	MAT3MN 201	Multi Variable Calculus	3	60	4	4	30	70	100
2				Minor Group II – Foundations for Mathematical Applications							
		1	MAT1MN 102	Differential and Integral Calculus	1	60	4	4	30	70	100
		2	MAT2MN 102	Calculus and Matrix Algebra	2	60	4	4	30	70	100
		3	MAT3MN 202	Differential Equations and Fourier Series	3	60	4	4	30	70	100
3				Minor Group III - Integrated Mathematical Methods							
		1	MAT1MN 103	Basic Calculus	1	60	4	4	30	70	100
		2	MAT2MN 103	Analysis and Some Counting Principles	2	60	4	4	30	70	100
		3	MAT3MN 203	Matrix Algebra and Vector Calculus	3	60	4	4	30	70	100

4				Minor Group IV - Discrete Mathematics							
		1	MAT1MN 104	Mathematical Logic, Set Theory and Combinatorics	1	60	4	4	30	70	100
		2	MAT2MN 104	Graph theory and Automata	2	60	4	4	30	70	100
		3	MAT3MN 204	Boolean Algebra and System of Equations	3	60	4	4	30	70	100
				Minor Group V – Linear Algebra							
		1	MAT1MN 105	Matrix Theory	1	60	4	4	30	70	100
		2	MAT2MN 105	Vector Spaces and Linear Transformations	2	60	4	4	30	70	100
		3	MAT3MN 205	Optimization Techniques	3	60	4	4	30	70	100

* Students from other disciplines can select up to one group (a total of three courses) from the first three options, as the first three groups have partially overlapped topics.

**From the Minor Courses listed above, a maximum of one group (three courses) can be offered to students who have taken Mathematics as the major discipline.

GROUPING OF VOCATIONAL MINOR COURSES IN MATHEMATICS

Group No.	Sl. No.	Course Code	Title	Semester	Total Hrs	Hrs/ Week	Credits	Marks		
								Internal	External	Total
VOCATIONAL MATHEMATICS – DATA ANALYTICS										
Pathway - I										
1										
	1	MAT1VN 101	Python Programming	1	75	5	4	30	70	100
	2	MAT2VN 101	Linear Algebra for Machine Learning	2	75	5	4	30	70	100
	3	MAT3VN 201	Introduction to Machine Learning	3	75	5	4	30	70	100
	4	MAT8VN 301	Introduction to Artificial Intelligence	8	75	5	4	30	70	100
2	Pathway - II									
	1	MAT1VN 102	Statistics for Data Science	1	75	5	4	30	70	100
	2	MAT2VN 102	R Programming	2	75	5	4	30	70	100
	3	MAT3VN 202	Data Mining	3	75	5	4	30	70	100
	4	MAT8VN 302	Data Visualization	8	75	5	4	30	70	100

(i). Students in Single Major pathway can choose course/courses from any of the Minor/ Vocational Minor groups offered by a discipline other than their Major discipline.

(ii). Students in Major with Multiple Disciplines pathway can choose as one of the multiple disciplines, all the three courses from any one of the Minor/ Vocational Minor groups offered by any discipline, including their Major discipline. If they choose one of the Minor/ Vocational

Minor groups offered by their Major discipline as the first one of the multiple disciplines, then their choice as the second one of the multiple disciplines should be any one of the Minor/ Vocational Minor groups offered by a discipline other than the Major discipline. If the students choose any one of the Minor/ Vocational Minor groups in Mathematics as given above, then the title of the group will be the title of that multiple discipline.

(iii). Students in Major with Minor pathway can choose all the courses from any two Minor groups offered by any discipline. If the students choose any two Minor groups in Mathematics as given above, then the title of the Minor will be Functional Mathematics.

(iv). Students in Major with Vocational Minor pathway can choose all the courses from any two Vocational Minor groups offered by any discipline. If the students choose any two Vocational Minor groups in Mathematics as given above, then the title of the Vocational Minor will be Vocational Mathematics.

DISTRIBUTION OF GENERAL FOUNDATION COURSES IN MATHEMATICS

Semester	Course Code	Course Title	Total Hours	Hours / Week	Credits	Marks		
						Internal	External	Total
1	MAT1FM105(1)	Multi-Disciplinary Course 1 - Matrices and Basics of Probability theory	45	3	3	25	50	75
1	MAT1FM105(2)	Multi-Disciplinary Course 2 -Mathematics for Competitive Exams - Part I	45	3	3	25	50	75
2	MAT2FM106(1)	Multi-Disciplinary Course 3 -Graph Theory and LPP	45	3	3	25	50	75
2	MAT2FM106(2)	Multi-Disciplinary Course 4 – Mathematics for Competitive Exams - Part II	45	3	3	25	50	75

3	MAT3FV109(1)	Value-Added Course 1 - History of Mathematics	45	3	3	25	50	75
3	MAT3FV109(2)	Value-Added Course 2 - Computational Logic	45	3	3	25	50	75
4	MAT4FV110(1)	Value-Added Course 3 - Statistics and Mathematics with R	45	3	3	25	50	75
4	MAT4FV110(2)	Value-Added Course 4 - The Mathematical Practices of Medieval Kerala	45	3	3	25	50	75
5	MAT5FS112	Skill Enhancement Course 2 - Mathematical Type Setting System - LaTeX	45	3	3	25	50	75
6	MAT6FS113	Skill Enhancement Course 3 - Data Science with Python	45	3	3	25	50	75

COURSE STRUCTURE FOR BATCH A1(B2)

IN PATHWAY 5: DOUBLE MAJOR

A1: 68 credits in Mathematics (Major A)   *B1: 68 credits in Major B*

A2: 53 credits in Mathematics (Major A)   *B2: 53 credits in Major B*

The combinations available to the students: (A1 & B2), (B1 & A2)

Note: Unless the batch is specified, the course is for all the students of the class

Semester	Course Title	Total Hours	Hours/ Week	Credits	Marks Internal	Marks External	Marks Total
1	Core Course 1 in Major Mathematics – Differential Calculus	60	4	4	30	70	100
	Core Course 1 in Major B	60/ 75	4/ 5	4	30	70	100
	Core Course 2 in Major Mathematics – Matrix Algebra (for batch A1 only)	60	4	4	30	70	100
	Ability Enhancement Course 1 – English	30+30	2+2	2+1	25	50	75
	Ability Enhancement Course 2 – Additional Language	45	3	3	25	50	75
	Multi-Disciplinary Course 1 in Mathematics – Matrices and Basics of Probability theory *Or* Mathematics for Competitive Exams – Part I (for batch A1 only)	45	3	3	25	50	75
	Total		24/ 25	21			525

2	Core Course 3 in Major Mathematics – Integral Calculus	60	4	4	30	70	100
	Core Course 2 in Major B	60/ 75	4/ 5	4	30	70	100
	Core Course 3 in Major B – (for batch B2 only)	60/ 75	4/ 5	4	30	70	100
	Ability Enhancement Course 3 – English	30+30	2+2	2+1	25	50	75
	Ability Enhancement Course 4 – Additional Language	45	3	3	25	50	75
	Multi-Disciplinary Course 2 in Mathematics – Graph Theory and LPP *Or* Mathematics for Competitive Exams – Part II	45	3	3	25	50	75
	Total		23 / 25	21			525
3	Core Course 4 in Major Mathematics – Multi Variable Calculus.	75	5	4	30	70	100
	Core Course 5 in Major Mathematics – Basic Linear Algebra	60	4	4	30	70	100
	Core Course 4 in Major B	60/ 75	4/ 5	4	30	70	100
	Core Course 5 in Major B	60/ 75	4/ 5	4	30	70	100
	Multi-Disciplinary Course 1 in B	45	3	3	25	50	75

	Value-Added Course 1 in Mathematics – History of Mathematics *Or* Computational Logic (for batch A1 only)	45	3	3	25	50	75
	Total		23 / 25	22			550
4	Core Course 6 in Major Mathematics – Real Analysis	45+30	3+2	2+2	30	70	100
	Core Course 6 in Major B	60/ 75	4/ 5	4	30	70	100
	Core Course 7 in Major Mathematics -Abstract Algebra I	60	4	4	30	70	100
	Value-Added Course 2 in Mathematics – Statistics and Mathematics with R *Or* The Mathematical Practices of Medieval Kerala	45	3	3	25	50	75
	Value-Added Course 1 in B –	45	3	3	25	50	75
	Skill Enhancement Course 1 in Mathematics – Fundamentals of Python and SageMath	30+30	2+2	3	25	50	75
	Total		23/ 24	21			525
5	Core Course 8 in Major – Complex Analysis	45+30	3+2	2+2	30	70	100
	Core Course 7 in Major B –	60/ 75	4/ 5	4	30	70	100

	Core Course 9 in Major Mathematics – Methods of Differential Equations (for batch A1 only)	60	4	4	30	70	100
	Elective Course 1 in Major Mathematics	60	4	4	30	70	100
	Elective Course 1 in Major B	60	4	4	30	70	100
	Skill Enhancement Course 1 in B	45	3	3	25	50	75
	Total		24/ 25	23			575
6	Core Course 10 in Major Mathematics – Elementary Number Theory	60	4	4	30	70	100
	Core Course 8 in Major B –	60/ 75	4/ 5	4	30	70	100
	Core Course 9 in Major B – (for batch B2 only)	60	4	4	30	70	100
	Elective Course 2 in Major Mathematics	60	4	4	30	70	100
	Elective Course 2 in Major B	60	4	4	30	70	100
	Skill Enhancement Course 2 in Mathematics – Mathematical Type Setting System - LaTeX (for batch A1 only)	45	3	3	25	50	75
	Internship in Major Mathematics (Credit for internship to be awarded only at the end of Semester 6)	60		2	50	-	50
	Total		24/ 25	25			625
				133			3325

CREDIT DISTRIBUTION FOR BATCH A1 (B2)

IN PATHWAY 5: DOUBLE MAJOR

Semester	Major Courses in Mathematics	General Foundation Courses in Mathematics	Internship/ Project in Mathematics	Major Courses in B	General Foundation Courses in B	AEC	Total
1	4 + 4	3	-	4	-	3 + 3	21
2	4	3	-	4 + 4	-	3 + 3	21
3	4 + 4	3	-	4 + 4	3	-	22
4	4 + 4	3 + 3	-	4	3	-	21
5	4 + 4 + 4	-	-	4 + 4	3	-	23
6	4 + 4	3	2	4 + 4 + 4	-	-	25
Total for Three Years	48	18	2	44	9	12	133
	68			53		12	133

	Major Courses in Mathematics	Minor Courses					
7	4 + 4 + 4 + 4 + 4	-			-	-	20
8	4 + 4 + 4	4 + 4 + 4	12[*]		-	-	24
[*] Instead of three Major courses							
Total for Four Years	88 + 12 = 100	12					177

COURSE STRUCTURE FOR BATCH B1(A2)

IN PATHWAY 5: DOUBLE MAJOR

A1: 68 credits in Mathematics (Major A)   *B1: 68 credits in Major B*

A2: 53 credits in Mathematics (Major A)   *B2: 53 credits in Major B*

Note: Unless the batch is specified, the course is for all the students of the class

Semester	Course Title	Total Hours	Hours/ Week	Credits	Marks		
					Internal	External	Total
1	Core Course 1 in Major Mathematics – Differential Calculus	60	4	4	30	70	100
	Core Course 1 in Major B	60/ 75	4/ 5	4	30	70	100
	Core Course 2 in Major B (for batch B1 only)	60/ 75	4/ 5	4	30	70	100
	Ability Enhancement Course 1 – English	60	4	3	25	50	75
	Ability Enhancement Course 2 – Additional Language	45	3	3	25	50	75
	Multi-Disciplinary Course 1 in B – (for batch B1 only)	45	3	3	25	50	75
	Total		23 / 25	21			525
2	Core Course 3 in Major Mathematics – Integral Calculus	60	4	4	30	70	100
	Core Course 3 in Major B –	60/ 75	4/ 5	4	30	70	100
	Core Course 2 in Major Mathematics – Elementary Number Theory (for batch A2 only).	60	4	4	30	70	100
	Ability Enhancement Course 3 – English	60	4	3	25	50	75

	Ability Enhancement Course 4 – Additional Language	45	3	3	25	50	75
	Multi-Disciplinary Course 1 Matrices and Basics of Probability theory *or* Mathematics for Competitive Exams - Part I	45	3	3	25	50	75
	Total		24/ 25	21			525
3	Core Course 5 in Major Mathematics – Multi Variable Calculus	45+30	3+2	3+1	30	70	100
	Core Course 4 in Major Mathematics – Elementary Linear Algebra	45+30	3+2	3+1	30	70	100
	Core Course 4 in Major B	60/ 75	4/ 5	4	30	70	100
	Core Course 5 in Major B	60/ 75	4/ 5	4	30	70	100
	Multi-Disciplinary Course 2 in B –	45	3	3	25	50	75
	Value-Added Course 1 in B – (for batch B1 only)	45	3	3	25	50	75
	Total		23/25	22			550
4	Core Course 6 in Major Mathematics – Real Analysis	45+30	3+2	3+1	30	70	100
	Core Course 6 in Major B	60/ 75	4/ 5	4	30	70	100
	Core Course 7 in Major B – (for batch B1 only)	60/ 75	4/ 5	4	30	70	100

	Value-Added Course 1 in Mathematics – History of Mathematics *or* Computational Logic	45	3	3	25	50	75
	Value-Added Course 2 in B –	45	3	3	25	50	75
	Skill Enhancement Course 1 in Mathematics – Fundamentals of Python and SageMath		4	3	25	50	75
	Total		22 / 24	21			525
5	Core Course 7 in Major Mathematics – Abstract Algebra I	60	4	4	30	70	100
	Core Course 8 in Major B –	60/ 75	4/ 5	4	30	70	100
	Core Course 9 in Major B – (for batch B1 only)	60	4	4	30	70	100
	Elective Course 1 in Major Mathematics	60	4	4	30	70	100
	Elective Course 1 in Major B	60	4	4	30	70	100
	Skill Enhancement Course 1 in B	45	3	3	25	50	75
	Total		24/ 25	23			575
6	Core Course 8 in Major Mathematics – Methods of Differential Equations	60	4	4	30	70	100
	Core Course 10 in Major B –	60/ 75	4/ 5	4	30	70	100
	Core Course 9 in Major Mathematics – Complex Analysis (for batch A2 only)	45+30	3+2	2+2	30	70	100

Elective Course 2 in Major Mathematics	60	4	4	30	70	100
Elective Course 2 in Major B	60	4	4	30	70	100
Skill Enhancement Course 2 in B – (for batch B1 only)	45	3	3	25	50	75
Internship in Major B (Credit for internship to be awarded only at the end of Semester 6)	60		2	50	-	50
Total		24/ 25	25			625
Total Credits for Three Years			133			3325

CREDIT DISTRIBUTION FOR BATCH B1(A2)

IN PATHWAY 5: DOUBLE MAJOR

Semester	Major Courses in B	General Foundation Courses in B	Internship/ Project in B	Major Courses in Mathematics	General Foundation Courses in Mathematics	AEC	Total
1	4 + 4	3	-	4	-	3 + 3	21
2	4	-	-	4 + 4	3	3 + 3	21
3	4 + 4	3 + 3	-	4 + 4	-	-	22
4	4 + 4	3	-	4	3 + 3	-	21
5	4 + 4 + 4	3	-	4 + 4	-	-	23
6	4 + 4	3	2	4 + 4 + 4	-	-	25
Total for Three Years	48	18	2	44	9	12	133
	68			53		12	133

	Major Courses in B	Minor Courses					
7	4 + 4 + 4 + 4 + 4	-			-	-	20
8	4 + 4 + 4	4 + 4 + 4	12*		-	-	24
* instead of three Major courses							
Total for Four Years	88 + 12 = 100	12					177

EVALUATION SCHEME

1.   The evaluation scheme for each course contains two parts: internal evaluation (about 30%) and external evaluation (about 70%). Each of the Major and Minor courses is of 4-credits. It is evaluated for 100 marks, out of which 30 marks is from internal evaluation and 70 marks, from external evaluation. Each of the General Foundation course is of 3-credits. It is evaluated for 75 marks, out of which 25 marks is from internal evaluation and 50 marks, from external evaluation.

2.   The 4-credit courses (Major and Minor courses) are of two types: (i) courses with only theory and (ii) courses with 3-credit theory and 1-credit Practical/Practicum.

    In 4-credit courses with only theory component, out of the total 5 modules of the syllabus, one open-ended module with 20% content is designed by the faculty member teaching that course, and it is internally evaluated for 10 marks. The internal evaluation of the remaining 4 theory modules is for 20 marks.

    In 4-credit courses with 3-credit theory and 1-credit Practical/Practicum components, out of the total 5 modules of the syllabus, 4 modules are for theory and the fifth module is for Practical/Practicum. The Practical/Practicum component is internally evaluated for 20 marks. The internal evaluation of the 4 theory modules is for 10 marks.

3.   All the 3-credit courses (General Foundational Courses) in Mathematics are with only theory component. Out of the total 5 modules of the syllabus, one open-ended module with 20% content is designed by the faculty member teaching that course, and it is internally evaluated for 5 marks. The internal evaluation of the remaining 4 theory modules is for 20 marks.

Sl. No.	Nature of the Course		Internal Evaluation in Marks (About 30% of the Total)		External Exam on 4 Modules (Marks)	Total Marks
			Open-ended Module / Practical/Practicum	On the other 4 Modules		
1	4-credit course	only theory (5 modules)	10	20	70	100
2	4-credit course	Theory (4 modules) + Practical/Practicum	20	10	70	100
3	3-credit course	only theory (5 modules)	5	20	50	75

1. MAJOR AND MINOR COURSES

1.1. INTERNAL EVALUATION OF THEORY COMPONENT

Sl. No.	Components of Internal Evaluation of Theory Part of a Major / Minor Course	Internal Marks for the Theory Part of a Major / Minor Course of 4-credits			
		Theory Only		Theory + Practical/Practicum	
		4 Theory Modules	Open-ended Module	4 Theory Modules	Practical/Practicum
1	Test paper/ Mid-semester Exam	10	4	5	-
2	Seminar/ Viva/ Quiz	6	4	3	-
3	Assignment	4	2	2	-
Total		20	10	10	20[*]
		30		30	

[*] Refer the table in section 1.2 for the evaluation of Practical/Practicum component

1.2. EVALUATION OF PRACTICAL/PRACTICUM COMPONENT

The evaluation of Practical/Practicum component in Major and Minor courses is completely by internal evaluation.

- Continuous evaluation of Practical/Practicum by the teacher-in-charge shall carry a weightage of 50%.

- The end-semester Practical/Practicum examination and viva-voce, and the evaluation of Practical/Practicum records shall be conducted by the teacher in-charge and an internal examiner appointed by the Department Council.

- The process of continuous evaluation of Practical/Practicum courses shall be completed before 10 days from the commencement of the end-semester examination.

- Those who passed in continuous evaluation alone will be permitted to appear for the end-semester examination and viva-voce.

The scheme of continuous evaluation and the end-semester examination and viva-voce of Practical/Practicum component shall be as given below:

Sl. No.	Evaluation of Practical/Practicum Component of Credit-1 in a Major / Minor Course	Marks for Practical/Practicum	Weightage
1	Continuous evaluation of Practical/Practicum/ exercise performed in Practical/Practicum classes by the students	10	50%
2	End-semester examination and viva-voce to be conducted by teacher-in-charge along with an additional examiner arranged internally by the Department Council	7	35%
3	Evaluation of the Practical/Practicum records submitted for the end semester viva–voce examination by the teacher-in-charge and additional examiner	3	15%
	Total Marks	20	

1.3. EXTERNAL EVALUATION OF THEORY COMPONENT

External evaluation carries 70% marks. Examinations will be conducted at the end of each semester. Individual questions are evaluated in marks and the total marks are converted into grades by the University based on 10-point grading system (refer section 5).

PATTERN OF QUESTION PAPER FOR MAJOR AND MINOR COURSES

Duration	Type	Total No. of Questions	No. of Questions to be Answered	Marks for Each Question	Ceiling of Marks
2 Hours	Short Answer	10	8 – 10	3	24
	Paragraph/ Problem	8	6 – 8	6	36
	Essay	2	1	10	10
				Total Marks	70

2. INTERNSHIP

- All students should undergo Internship of 2-credits during the first six semesters in Research Institutions, Universities, firm, industry or organization, or training in labs with faculty and researchers of their own institution or other Higher Educational Institutions (HEIs) or research institutions.
- Internship can be for enhancing the employability of the student or for developing the research aptitude.
- Internship can involve hands-on training on a particular skill/ equipment/ software. It can be a short project on a specific problem or area. Attending seminars or workshops related to an area of learning or skill can be a component of Internship.

A faculty member/ scientist/ instructor of the respective institution, where the student does the Internship, should be the supervisor of the Internship

2.1. GUIDELINES FOR INTERNSHIP

1. Internship can be in Mathematics or allied disciplines.

2. There should be minimum 60 hrs. of engagement from the student in the Internship.

3. Summer vacations and other holidays can be used for completing the Internship.

4. In B.Sc. Mathematics Honours programme, institute/ industry visit or study tour is a requirement for the completion of Internship. Visit to minimum one national research institute, research laboratory and place of scientific importance should be part of the study tour. A brief report of the study tour has to be submitted with photos and analysis.

5. The students should make regular and detailed entries in to a personal log book through the period of Internship. The log book will be a record of the progress of the Internship and the time spent on the work, and it will be useful in writing the final report. It may contain mathematical results, ideas, expressions, experimental conditions, rough work and calculation, computer file names etc. All entries should be dated. The Internship supervisor should periodically examine and countersign the log book.

6. The log book and the typed report must be submitted at the end of the Internship.

7. The institution at which the Internship will be carried out should be prior-approved by the Department Council of the college where the student has enrolled for the UG Honours programme.

2.2. VALUATION OF INTERNSHIP

- The evaluation of Internship shall be done internally through continuous assessment mode by a committee internally constituted by the Department Council of the college where the student has enrolled for the UG Honours programme.

- The credits and marks for the Internship will be awarded only at the end of semester 6.

- The scheme of continuous evaluation and the end-semester viva-voce examination based on the submitted report shall be as given below:

Sl. No.	Components of Evaluation of Internship		Marks for Internship 2 Credits	Weightage
1	Continuous evaluation of internship through interim presentations and reports by the committee internally constituted by the Department Council	Acquisition of skill set	10	40%
2		Interim Presentation and Viva-voce	5	
3		Punctuality and Log Book	5	
4	Report of Institute Visit/ Study Tour		5	10%
5	End-semester viva-voce examination to be conducted by the committee internally constituted by the Department Council	Quality of the work	6	35%
6		Presentation of the work	5	
7		Viva-voce	6	
8	Evaluation of the day-to-day records, the report of internship supervisor, and final report submitted for the end semester viva–voce examination before the committee internally constituted by the Department Council		8	15%
		Total Marks	50	

3. PROJECT

3.1. PROJECT IN HONOURS PROGRAMME

·   In Honours programme, the student has the option to do a Project of 12-credits instead of three Core Courses in Major in semester 8.

·   The Project can be done in the same institution/ any other higher educational institution (HEI)/ research centre/ training centre.

·   The Project in Honours programme can be a short research work or an extended internship or a skill-based training programme.

·   A faculty member of the respective institution, where the student does the Project, should be the supervisor of the Project.

3.2. PROJECT IN HONOURS WITH RESEARCH PROGRAMME

● Students who secure 75% marks and above (equivalently, CGPA 7.5 and above) cumulatively in the first six semesters are eligible to get selected to Honours with Research stream in the fourth year.

● A relaxation of 5% in marks (equivalently, a relaxation of 0.5 grade in CGPA) is allowed for those belonging to SC/ ST/ OBC (non-creamy layer)/ Differently-Abled/ Economically Weaker Section (EWS)/ other categories of candidates as per the decision of the UGC from time to time.

● In Honours with Research programme, the student has to do a mandatory Research Project of 12-credits instead of three Core Courses in Major in semester 8.

● The approved research centres of University of Calicut or any other university/ HEI can offer the Honours with Research programme. The departments in the affiliated colleges under University of Calicut, which are not the approved research centres of the University, should get prior approval from the University to offer the Honours with Research programme. Such departments should have minimum two faculty members with Ph.D., and they should also have the necessary infrastructure to offer Honours with Research programme.

● A faculty member of the University/ College with a Ph.D. degree can supervise the research project of the students who have enrolled for Honours with Research. One such faculty member can supervise maximum five students in Honours with Research stream.

The maximum intake of the department for Honours with Research programme is fixed by the department based on the number of faculty members eligible for project supervision, and other academic, research, and infrastructural facilities available.

● If a greater number of eligible students are opting for the Honours with Research programme than the number of available seats, then the allotment shall be based on the existing rules of reservations and merits.

3.3. GUIDELINES FOR THE PROJECT IN HONOURS PROGRAMME

AND HONOURS WITH RESEARCH PROGRAMME

1. Project can be in Mathematics or allied disciplines.
2. Project should be done individually.
3. Project work can be of theoretical/ experimental /computational in nature.

4. There should be minimum 360 hrs. of engagement from the student in the Project work in Honours programme as well as in Honours with Research programme.

5. There should be minimum 13 hrs./week of engagement (the hours corresponding to the three core courses in Major in semester 8) from the teacher in the guidance of the Project(s) in Honours programme and Honours with Research programme.

6. The various steps in project works are the following:
   - Wide review of a topic.
   - Investigation on a problem in a systematic way using appropriate techniques.
   - Systematic recording of the work.
   - Reporting the results with interpretation in a standard documented form.

Presenting the results before the examiners.

7. During the Project the students should make regular and detailed entries in to a personal log book through the period of investigation. The log book will be a record of the progress of the Project and the time spent on the work, and it will be useful in writing the final report. It may contain mathematical models and results, ideas, mathematical expressions, rough work and calculation, computer file names etc. All entries should be dated. The Project supervisor should periodically examine and countersign the log book.

8. The log book and the typed report must be submitted at the end of the Project. A copy of the report should be kept for reference at the department. A soft copy of the report too should be submitted, to be sent to the external examiner in advance.

9. It is desirable, but not mandatory, to publish the results of the Project in a peer reviewed journal.

10. The project report shall have an undertaking from the student and a certificate from the research supervisor for originality of the work, stating that there is no plagiarism, and that the work has not been submitted for the award of any other degree/ diploma in the same institution or any other institution.

11. The project proposal, institution at which the project is being carried out, and the project supervisor should be prior-approved by the Department Council of the college where the student has enrolled for the UG Honours programme.

3.4. EVALUATION OF PROJECT

- The evaluation of Project will be conducted at the end of the eighth semester by both internal and external modes.
- The Project in Honours programme as well as that in Honours with Research programme will be evaluated for 300 marks. Out of this, 90 marks is from internal evaluation and 210 marks, from external evaluation.
- The internal evaluation of the Project work shall be done through continuous assessment mode by a committee internally constituted by the Department Council of the college where the student has enrolled for the UG Honours programme. 30% of the weightage shall be given through this mode.
- The remaining 70% shall be awarded by the external examiner appointed by the University.
- The scheme of continuous evaluation and the end-semester viva-voce of the Project shall be as given below:

Sl. No	Components of Evaluation of Project	Marks for the Project (Honours/ Honours with Research)	Weightage
1	Continuous evaluation of project work through interim presentations and reports by the committee internally constituted by the Department Council	90	30%
2	End-semester viva-voce examination to be conducted by the external examiner appointed by the university	150	50%
3	Evaluation of the day-to-day records and project report submitted for the end-semester viva–voce examination conducted by the external examiner	60	20%
	Total Marks	300	

INTERNAL EVALUATION OF PROJECT

Sl. No	Components of Evaluation of Project	Marks for the Project (Honours/ Honours with Research)
1	Skill in doing project work	30
2	Interim Presentation and Viva-Voce	20
3	Punctuality and Log book	20
4	Scheme/ Organization of Project Report	20
Total Marks		90

EXTERNAL EVALUATION OF PROJECT

Sl. No	Components of Evaluation of Project	Marks for the Project (Honours/ Honours with Research) 12 credits
1	Content and relevance of the Project, Methodology, Quality of analysis, and Innovations of Research	50
2	Presentation of the Project	50
3	Project Report (typed copy), Log Book and References	60
4	Viva-Voce	50
Total Marks		210

4. GENERAL FOUNDATION COURSES

All the General Foundation Courses (3-credits) in Mathematics are with only theory component.

4.1. INTERNAL EVALUATION

Sl. No.	Components of Internal Evaluation of a General Foundation Course in Mathematics	Internal Marks of a General Foundation Course of 3-credits in Mathematics	
		4 Theory Modules	Open-ended Module
1	Test paper/ Mid-semester Exam	10	2
2	Seminar/ Viva/ Quiz	6	2
3	Assignment	4	1
		20	5
	Total	25	

4.2. EXTERNAL EVALUATION

External evaluation carries about 70% marks. Examinations will be conducted at the end of each semester. Individual questions are evaluated in marks and the total marks are converted into grades by the University based on 10-point grading system (refer section 5)

PATTERN OF QUESTION PAPER FOR GENERAL FOUNDATION COURSES

Duration	Type	Total No. of Questions	No. of Questions to be Answered	Marks for Each Question	Ceiling of Marks
1.5 Hours	Short Answer	10	8 – 10	2	16
	Paragraph/ Problem	5	4 – 5	6	24
	Essay	2	1	10	10
				Total Marks	50

5. LETTER GRADES AND GRADE POINTS
- Mark system is followed for evaluating each question.
- For each course in the semester letter grade and grade point are introduced in 10-point indirect grading system as per guidelines given below.
- The Semester Grade Point Average (SGPA) is computed from the grades as a measure of the student's performance in a given semester.
- The Cumulative GPA (CGPA) is based on the grades in all courses taken after joining the programme of study.
- Only the weighted grade point based on marks obtained shall be displayed on the grade card issued to the students.

LETTER GRADES AND GRADE POINTS

Sl. No.	Percentage of Marks (Internal & External Put Together)	Description	Letter Grade	Grade Point	Range of Grade Points	Class
1	95% and above	Outstanding	O	10	9.50 – 10	First Class with Distinction
2	Above 85% and below 95%	Excellent	A+	9	8.50 – 9. 49	
3	75% to below 85%	Very Good	A	8	7.50 – 8.49	
4	65% to below 75%	Good	B+	7	6.50 – 7.49	First Class
5	55% to below 65%	Above Average	B	6	5.50 – 6.49	
6	45% to below 55%	Average	C	5	4.50 – 5.49	Second Class
7	35% to below 45% aggregate (internal and external put together) with a minimum of 30% in external valuation	Pass	P	4	3.50 – 4.49	Third Class
8	Below an aggregate of 35% or below 30% in external evaluation	Fail	F	0	0 – 3.49	Fail
9	Not attending the examination	Absent	Ab	0	0	Fail

- When students take audit courses, they will be given Pass (P) or Fail (F) grade without any credits.
- The successful completion of all the courses and capstone components prescribed for the three-year or four-year programme with 'P' grade shall be the minimum requirement for the award of UG Degree or UG Degree Honours or UG Degree Honours with Research, as the case may be.

5.1. COMPUTATION OF SGPA AND CGPA

- The following method shall be used to compute the Semester Grade Point Average (SGPA):

  The SGPA equals the product of the number of credits (Ci) with the grade points (Gi) scored by a student in each course in a semester, summed over all the courses taken by a student in the semester, and then divided by the total number of credits of all the courses taken by the student in the semester,

  $$\text{i.e. SGPA (Si)} = \Sigma i \ (Ci \times Gi) \ / \ \Sigma i \ (Ci)$$

  where Ci is the number of credits of the ith course and Gi is the grade point scored by the student in the ith course in the given semester. Credit Point of a course is the value obtained by multiplying the credit (Ci) of the course by the grade point (Gi) of the course.

ILLUSTRATION – COMPUTATION OF SGPA

Semester	Course	Credit	Letter Grade	Grade point	Credit Point (Credit x Grade)
I	Course 1	3	A	8	3 x 8 = 24
I	Course 2	4	B+	7	4 x 7 = 28
I	Course 3	3	B	6	3 x 6 = 18
I	Course 4	3	O	10	3 x 10 = 30
I	Course 5	3	C	5	3 x 5 = 15
I	Course 6	4	B	6	4 x 6 = 24
	Total	20			139
	SGPA				139/20 = 6.950

The Cumulative Grade Point Average (CGPA) of the student shall be calculated at the end of a programme. The CGPA of a student determines the overall academic level of the student in a programme and is the criterion for ranking the students.

CGPA for the three-year programme in CUFYUGP shall be calculated by the following formula.

CGPA for the four-year programme in CUFYUGP shall be calculated by the following formula.

- The SGPA and CGPA shall be rounded off to three decimal points and reported in the transcripts.

- Based on the above letter grades, grade points, SGPA and CGPA, the University shall issue the transcript for each semester and a consolidated transcript indicating the performance in all semesters.