Regulations of the Integrated M.Sc. programmes, April 2024

Cochin University of Science and Technology

(2024 Admission onwards)

PREAMBLE

These Regulations shall be called '**Regulations for the Four-Year Under-Graduate Programme (FYUGP) and Five-Year Integrated Post-Graduate Programme (FYIPGP)**'. These regulations will be part of the Five-Year Integrated M.Sc. Major in Biological Sciences/ Five-Year Integrated M.Sc. Major in Chemistry/ Five-Year Integrated M.Sc. Major in Mathematics/ Five-Year Integrated M.Sc. Major in Physics/ Five-Year Integrated M.Sc. Major in Statistics / Five-Year Integrated M.Sc. Major in Computer Science (Artificial Intelligence & Data Science)/ Five-Year Integrated M.Sc. Major in Photonics.

The regulations are designed to serve as a comprehensive resource for the preparation of curriculum for the Four-Year Under-Graduate (FYUG) and Five-Year Integrated Post-Graduate (FYIPG) programs. The regulations aim to provide a structured and comprehensive educational experience for students pursuing a specific academic degree. The document aims to facilitate a transformative process that ensures both the UG and PG programs will be student-centred, and aligned with the evolving needs of higher education and employment.

1. **Scope**

1.1. These regulations shall apply to the Five-Year Integrated M.Sc. Major in Biological Sciences/ Five-Year Integrated M.Sc. Major in Chemistry/ Five-Year Integrated M.Sc. Major in Mathematics/ Five-Year Integrated M.Sc. Major in Physics/ Five-Year Integrated M.Sc. Major in Statistics / Five-Year Integrated M.Sc. Major in Computer Science (Artificial Intelligence & Data Science)/ Five-Year Integrated M.Sc. Major in Photonics under the Faculty of Science and Faculty of Technology of the Cochin University of Science and Technology with effect from 2024 admissions.

1.2. The provisions herein supersede all other regulations with respect to the Five-Year Integrated M.Sc. in Biological Sciences/ Five-Year Integrated M.Sc. in Chemistry/ Five-Year Integrated M.Sc. in Mathematics/ Five-Year Integrated M.Sc. in Physics/ Five-Year Integrated M.Sc. in Statistics / Five-Year Integrated M.Sc. in Computer Science (Artificial Intelligence & Data Science)/ Five-Year Integrated M.Sc. in Photonics under the Faculty of Science and Faculty of Technology of the Cochin University of Science and Technology.

2. Definitions

2.1. **Department/School** means Department/School instituted in the University as per Cochin University of Science and Technology Statutes and Act.

2.2. **Credit** is the quantity of instruction given or the learning outcomes and a notional time to achieve those outcomes.

2.3. **Major** component is the subject that is the main focus of the study. By selecting a major, the student would be provided with an opportunity to pursue an in-depth study of a particular subject or discipline.

2.4. **Minor** component is a set of courses in a particular subject or a theme that complements the Major.

2.5. **Discipline Specific Course** is that focuses on a specific subject or field of study. These courses are designed to provide students with a deep understanding of the theories, concepts, and practices within a particular discipline.

2.6. **Discipline Specific Core (DSC)** is a course that should be pursued by a student as a mandatory requirement of his/her programme of study.

2.7. **Discipline Specific Elective (DSE)** is a course of a particular discipline that a student has the choice to select from a pool of such courses from his/her programme of study. The DSEs to offer in a program of study would be identified by the concerned Department/School.

2.8. **Capstone level courses** allow the students to demonstrate their cumulative knowledge in their field of study. It plays a vital role in preparing students for the world of work with practical applications, professional knowledge, and skills.

2.9. **Ability Enhancement Courses (AEC)** are the courses designed specifically to achieve competency in modern Indian/world languages and English with special emphasis on communication skills.

2.10. **Skill Enhancement Courses (SEC)** are designed to develop Creativity, Critical Thinking, Communication, and Collaboration, which are known as 21st-century skills.

2.11. **Value Addition Courses (VAC)** are the courses meant for personality development, perspective building and developing self-awareness of a graduate student.

2.12. **Multi-Disciplinary Courses (MDC)** are the courses intended to broaden the intellectual experience and to build a conceptual foundation about arts, science, commerce, language, and social sciences among students.

2.13. **Audit Course** means a course which can be opted by a student but which will not accrue any credit.

2.14. **MOOC Course** means a Massively Open Online Course offered by UGC, CUSAT or any other recognized educational agencies approved by the University.

3. Structure of FYUG and FYIPG Programmes

The new FYUGP and FYIPGP curriculum framework shall provide an overall redesign strategy to address the specific needs of the UG and PG programmes and, allow a systematic and evidence-based approach to curriculum transformation. The structure of the programmes shall assure quality and continuous improvement.

The programme pathways available for the students are the following.

3.1. **3-year UG Degree:** Students who wish to exit after 3 years of the program will be awarded a UG Degree in a Major discipline after the successful completion of three years, securing a minimum of 133 credits and satisfying the minimum course requirements as given in tables.

3.2. **4-year UG Degree (Honours):** A four-year UG Honours Degree in a Major discipline will be awarded to those who complete a four-year degree program securing a minimum of 177 credits and have satisfied the minimum course requirements as given in the tables. Honours students have to undertake a mini project/internship of 4 credits under a faculty member of the University/any higher education institution HEI)/research institution/industry in their fourth year of the programme.

3.3. **4-year UG Degree (Honours with Research):** Students who are highly motivated to opt for research as their career can choose honours with a research stream in

the fourth year. They should do a research project or dissertation under the guidance of a faculty/Scientist of the University/ College/ Department/INIs/National Labs/Foreign Institutions of Higher learning or Research/R&D Laboratories of Industry as approved by the Department Council. The research project/dissertation shall be in the major discipline. The students who secure a minimum of 177 credits, including 12 credits from a research project/dissertation, are awarded a UG Degree (Honours with Research). The minimum requirement for a student to be considered for the 4-year UG Degree (Honors with Research) programme shall be CGPA 8.0 up to sixth semester. The number of seats and the exact selection criteria shall be fixed by the respective Department/School Council.

3.4. **5-year Integrated PG Degree:** A five-year PG Degree in a Major discipline will be awarded to those who complete a five-year post graduate degree program securing a minimum of 221 credits and have satisfied the minimum course requirements as given in the tables.

4. Possible Academic Pathways available for the students

In FYUGP, there are five possible structures or combinations, called **Academic Pathways**. Each pathway is defined by a specific combination of Discipline-Specific Courses.

4.1. **Single Major Pathway:** This pathway is recommended to those students who wish to do an in-depth study in a particular discipline without systematically exploring specific minor pathways.

4.1.1. The students pursuing FYUGP in a specific discipline shall be awarded a UG Degree in a Major discipline if they secure a minimum of 68 credits in that Major discipline (50% of the total credits of 133 required for the three-year programme).

4.1.2. The 26 credits (24 credits from different courses and 2 credits from Internship) in Discipline-Specific Courses can be acquired either from the same Major discipline or from other disciplines.

4.1.3. The students who have taken this pathway need to complete their 3 MDC courses from other disciplines.

4.1.4. If the students continue to the fourth year of FYUGP, to be eligible for a UG Honours Degree in the Major Discipline, they should earn a minimum of 36 credits in that Major discipline from Capstone level courses including a project, and an additional 8 credits from Major or other disciplines.

4.2. **Major with Minor Pathway:** This pathway is recommended to students who wish to do an in-depth study in more than one discipline with more focus on one discipline (Major) and relatively less focus on the other (Minor).

4.2.1. If students pursuing FYUGP are awarded a Major Degree in a particular discipline, they are eligible to be awarded a Minor in another discipline of their choice, if they earn a minimum of 27 credits (20% of the total credits of 133 required for the three-year programme) from six discipline-specific pathway courses (24 credits) and one Skill Enhancement Course (SEC) in that Minor discipline (3 credits).

4.2.2. The students who take this pathway need to complete their 3 MDC courses from disciplines different from their Major and Minor.

4.2.3. If they continue to the fourth year of FYUGP, to be eligible for a UG Honours Degree in their Major with a Minor, they should earn a further 8 credits from two courses in the chosen Minor discipline over and above the 27 credits earned in the first three years to have a total of 35 (27 + 8) credits in that Minor discipline (20% of the total credits of 177 required for the four-year programme).

4.2.4. The credit requirements for the Major discipline are the same as given for the Single Major Pathway.

4.3. **Major with Multiple Disciplines Pathway:** This pathway is recommended for students who wish to develop core competency in multiple disciplines of study. In this case, the credits for the minor pathway shall be distributed among the constituent disciplines/subjects.

4.3.1. If students pursuing FYUGP are awarded a UG Degree in a Major discipline, they are eligible to get mentioned their core competencies in other discipline(s) of their choice if they have earned 12 credits from the pathway courses of a particular discipline. In the first three years of FYUGP, this pathway is composed of one Major discipline with 68 credits, and maximum two other disciplines, with 12 credits from 3 courses in each discipline.

4.3.2. The students who have taken this pathway need to complete their 3 MDC courses from other than major and selected pathway disciplines.

4.3.3. If the students continue to the fourth year of FYUGP, to be eligible for a UG Honours Degree in the Major discipline, they should earn a minimum of 36 credits in that Major discipline from Capstone level courses including a project, and an additional 8 credits from Major or other disciplines.

5. Curriculum Structure of the FYUGP

The curriculum structure of FYUGP contains the following mandatory components.

5.1. General Foundation Components (4 major course baskets)

- Ability Enhancement courses (AEC)
- Skill Enhancement Courses (SEC)
- Value Addition Courses (VAC)
- Multi-Disciplinary Courses (MDC)

5.2. Discipline Specific Pathway Components (Major/Minor)

- Discipline Specific Core Course (DSC) (Level 100- 300)
- Discipline Specific Elective Course (DSE) (Level 300)
- (DSC courses at Level 100 are for building the foundations)

5.3. Discipline Specific Capstone Components.

- Advanced DSC and DSE Courses (Level 400, 500)
- Projects, field training, internship, community activity etc.
- (Any programmes to promote experiential learning)

6. Credit Structure of the FYUGP and FYIPGP

6.1. General Foundation Courses

6.1.1. It is mandatory for all the students who enrolled for an FYUG degree programme to acquire 39 credits from general foundation courses, which are classified into four different sub-categories (approximately 30% credit decided for the three-year programme).

6.1.2. General Foundation Courses can be grouped into 4 major baskets, namely (1) Ability Enhancement Courses (AEC), (2) Skill Enhancement Courses (SEC), (3) Value Addition Courses (VAC), and (4) Multi-Disciplinary Courses (MDC).

6.1.3. All these foundation courses are 3-credit courses.

6.1.4. The ability Enhancement Courses (AEC) and Skill Enhancement Courses can include practicum components as well.

6.1.5. The students have to complete 12 credits (4 courses) from AEC, 9 credits (3 courses) from SEC, 9 credits (3 courses) from VAC, and 9 credits (3 courses) from MDC as part of their UG Programme.

General Foundation Courses			
Sl. No.	Name of the General Foundation Course	No. of Courses	Required Credit
1.	Ability Enhancement Courses (AEC)	4	12
2.	Skill Enhancement Courses (SEC)	3	9
3.	Value Addition Courses (VAC)	3	9
4.	Multi-Disciplinary Courses (MDC)	3	9
	Total in the first three years of FYUGP	**13**	**39**

6.2. **Discipline-Specific Foundation and Pathway Courses for a 3-year Degree**

6.2.1. The student who wishes to exit with a degree after three years needs to acquire 94 credits (approximately 70% of the total 133 credits) from Discipline Specific pathway, and capstone level courses, decided for the three-year programme.

6.2.2. Each DSC has 4 credits. The credit distributions for each of the subcategories of DSCs in the first three years of UGP are given below.

Discipline Specific Foundation/Pathway Courses for 3-year UGP				
Sl. No.	Name of the Pathway Courses	No. of Courses	Required Minimum Credits	Possible Maximum Credits
1.	Major Pathway Courses	17	68	80
2.	Minor Pathway Courses	6 + 1*	24 + 3*	30
3.	Internship/Apprenticeship	1**	2	2
	Total	**23**	**94*** **	**112**

(* to be acquired from SEC offered in the Minor discipline; **not counted as a course; *** excluding the 3 credits of the SEC done in the Minor discipline)

6.2.3. The consolidated minimum requirement of credits in the 3-year UGP are given below.

Sl. No.	Categorization of Courses for all Programmes	Minimum Number of credits for the 3-year UG
1.	Major	68
2.	Minor (Multiple Discipline) Pathway	27* (12** + 12**)
3.	Multi-Disciplinary Courses	9
4.	Ability Enhancement Courses	12
5.	Skill Enhancement Courses	6 (9**)
6.	Value Addition Courses	9
7.	Summer Internship / field-based learning etc.	2***
	Total	**133**

* The students who opt for a Major with a Minor discipline has to acquire 27 credits from 6 courses of 4 credits each from Minor discipline with a total of 24 credits, and 3 credits from SEC of the minor discipline; **The students who opt for a Major with Multi-Disciplinary discipline(s) have to acquire 12 + 12 credits from 3 + 3 courses of 4 credits each from those multidisciplinary discipline(s); *** not counted as a course.

6.3. Discipline Specific foundation and Pathway courses for 4-year Honours Degree

6.3.1. The student who wishes to continue to the fourth year for the Honours degree, he/she should successfully complete 133 credits in the first 3 years and should acquire 44 credits during their fourth year, out of which 36 credits should be from the Major discipline at the advanced level and 8 credits can be from a Minor pathway.

6.3.2. For students opting for other pathways not involving a Minor, these 8 credits can be in the Major discipline or in any other discipline.

6.3.3. There are two pathways in the FYUGP. The students can either exit the FYUGP or can continue with the FYIPGP. In the first case, the students can either opt for the Four-Year Honours Degree or can opt for Four-Year Honours with Research Degree. Those who opt to continue with the FYIPGP shall also be awarded the Four-Year Honours Degree/Four-Year Honours with Research Degree, however, the certificate for the same shall be awarded after completion of FYIPGP.

6.3.4. For students who opt for Honours Degree or continue with FYIPGP, it is mandatory to complete a mini project of 4 credits in the fourth year.

6.3.5. For students who opt for Honours with Research Degree, it is mandatory to complete an original research project of 12 credits in the fourth year.

6.3.6. The eligibility for a student to be considered for the 4-year UG Degree (Honours with Research) programme shall be CGPA 8.0 up to sixth semester. The number of seats and the selection criteria shall be fixed by the respective Department Council.

The consolidated minimum requirement of credits in the FYUGP are given below.

Minimum Number of Credits				
Sl. No.	Categorization of Courses for all Programmes	Minimum Number of Credits Required		
		3-year UG	4-year UG Honours	4-year UG Honours with Research
1.	Major	68	100 (100 + 8*)	92 (92 + 8*)
2.	Minor (Multiple Discipline) Pathway	27 (12 + 12)	27 + 8 (12 + 12)	27 + 8 (12 + 12)
3.	Multi-Disciplinary Courses	9	9	9
4.	Ability Enhancement Courses	12	12	12
5.	Skill Enhancement Courses	6 (9)	6 (9)	6 (9)
6.	Value Addition Courses	9	9	9
7.	Summer Internship / field-based learning etc.	2*	2*	2*
8.	Mini Project/Research Project		4	12
	Total	**133**	**177**	**177**

The figures in brackets indicate the minimum credit requirements for the multidisciplinary pathway courses; *students who opted for multi-disciplinary pathway may acquire 8 credits from major or other disciplines ** not counted as a course.

6.4. **Discipline-Specific Courses in the Fifth Year of the FYIPGP**

6.4.1. Students aspiring to progress to the fifth year of the FYIPGP must first accomplish 177 credits in the Undergraduate Honours Degree pathway.

6.4.2. The curriculum structure of the 2-year PG programme should be meticulously tailored to mirror the FYUGP stream, ensuring a seamless transition and integration for the students.

6.4.3. The curriculum for the fifth year is designed to offer 7 to 12 courses, with a total of 44 credits.

Discipline Specific Courses in fifth year of Integrated PG			
Sl. No.	Name of the Pathway Courses	No. of Courses	Required Credits
1.	Major Advanced/Capstone/PG Level Courses (Ninth Semester)	5	20
2.	Research Project/ PG Level Courses (Tenth Semester)	1-5	20
3.	Courses in Online or blended mode (Ninth and Tenth Semesters)	1-2	4
	Total in the fifth year of FYPGP	**7-12**	**44**

6.5. Capstone Level Courses

The capstone level courses allow the students to demonstrate their cumulative knowledge in their field of study. Capstone level courses include topics on specialized/advanced level, internships, community engagement and services, vocational training, professional training, or other kinds of work experience.

6.5.1. **Advanced major (Specialization):** Advanced major courses include courses with a focused area of study attached to a specific major, which are optional in nature. These courses include courses on research methodology as well. These courses will help the graduates to deepen their knowledge in a particular area of study with more focus and direction.

6.5.2. **Summer Internship/Apprenticeship:** This promotes the induction into actual work situations. All students have to undergo internships/ apprenticeships in a firm, industry, or organization or training in labs with faculty and researchers in their own or other HEIs/research institutions during the summer term. Students will be provided with opportunities for internships with local industry, business organizations, health, and allied areas, local governments (such as panchayats, municipalities), Parliament or elected representatives, media organizations, artists, crafts persons, and agricultural sector, so that the students may actively engage with the practical side of their learning and, as a by-product, further improving their employability.

6.5.3. Internship has 2 credits, and it should be completed in the first three years of FYUGP. The firm /institution from which the student shall undergo internship should be prior-approved by the HoD/Department Council, after verifying the quality and genuineness of the firm/institution.

6.5.4. **Field-based learning/minor project:** Provides opportunities for students to understand the different socio-economic contexts. It will aim at giving students exposure to development-related issues in rural and urban settings.

6.5.5. **Community engagement and service:** Seeks to expose students to the socio-economic issues in society so that the theoretical learnings can be supplemented by actual life experiences to generate solutions to real-life problems.

6.5.6. **Vocational Education and Training:** The ever-changing global scenario makes the world more competitive and requires high levels of lateral thinking and the spirit of entrepreneurship to cope with emerging challenges.

6.6. **Signature Courses**

6.6.1. Each Department can design signature courses in DSE/SEC/VAC/ Vocational Courses offered by their faculty members, approved by the BoS or the academic committee.

6.6.2. A Department can empanel distinguished individuals who have excelled in their field of specialization like science and technology, industry, commerce, social research, media, literature, fine arts, civil services etc. as adjunct faculty as per the UGC guidelines with the approval of the University. With approval of the BoS or the academic committee, the adjunct faculty can offer DSE/SEC/ VAC/Vocational Courses as signature courses.

6.6.3. Guest faculty/Visiting faculty/Visiting Scholars can also offer DSE/SEC/VAC/ Vocational Courses as signature courses, approved by the BoS or the academic committee.

6.7. **Audit Course**

A student has the choice of auditing not more than one course in each semester. Students who desire to audit courses over and above the number of courses prescribed have to choose from amongst the courses offered by different Departments in that semester and inform their department in writing. Courses thus audited should also be indicated in the course Registration forms along with other courses opted for that semester.

6.8. **Credit Details**

The proposed number of credits per course and the credit distribution of them for the FYUGP and FYIPGP are given below:

6.8.1. A course that includes one hour of lecture or tutorial or a minimum of two hours of lab work, practical work, or field work per week is given one credit hour.

6.8.2. One credit in a semester should be designed for 15 hours of Lectures or Tutorials or 30 hours of practicum and learner engagement in terms of course-related activities such as seminar preparation, submitting assignments, etc.

6.8.3. A one-credit seminar or internship or studio activities or field work/ projects or community engagement and service will have two-hour engagements per week (30 hours of engagement per semester).

6.8.4. A course can have a combination of lecture credits, tutorial credits, and practicum credits, as

- (1) Lecture (L): Courses involving lectures
- (2) Tutorial (T): Courses involving problem-solving and discussions
- (3) Practicum or Laboratory (P): Course requiring students to participate in a project or practical or lab act Seminar: Course requiring structured discussion/conversation or debate focused on assigned tasks Internship: Course requiring actual work situations. Internships involve working with local industry, government etc. Studio activities: creativity artistic activities Field practice/projects: Learning in field Community engagement and service: expose students to the socio-economic issues in society.

6.8.5. A course should be of a minimum of 2 credits, and a maximum of 4 credits.

6.8.6. A student shall be able to opt for a certain number of extra credits over and above the requirements for the award of a Degree.

6.8.7. Maximum Number of credits that a student can earn per semester shall be restricted to 30. Hence a student shall have the option of acquiring extra credits to a maximum of 180 credits for a 6-semester UG program, and 240 credits for a 4-year (8-semester) UG program.

7. Duration of programmes, credits requirements and options

7.1. Students will be offered the opportunity to take breaks during the programme and resume after the break, but the total duration for completing the programme shall be as mentioned in 7.2.

7.2. Students may complete the undergraduate programme at a slower pace. They will be allowed to pursue a 3-year UG programme within a period of 5 years, 4-year UG programme within a period of 6 years, and FYIGP within a period of 7 years without obtaining readmission.

7.3. The University shall admit candidates not only for programmes, but also for courses, however, the admission is subject to the availability of seats in the respective departments.

7.4. The lateral entry for programmes in the odd semesters are allowed based on the admission rules of the University from time to time, and subject to the availability of seats in the concerned Department/School.

8. Academic Levels of Pathway Courses

The pathway courses shall be coded based on the learning outcomes, levels of difficulty, and academic rigor. The coding structure is as follows.

000–099: Prerequisite courses for a foundation/introductory course with no credits.

100–199: Foundation or Introductory courses that are intended for students to gain an understanding and basic knowledge about the subjects and help them decide the subject or discipline of interest. These Courses may also be a prerequisite for courses in the major subject. These courses generally focus on foundational theories, concepts, perspectives, principles, methods, and procedures for critical thinking to provide a broad basis for taking up more advanced courses.

Students of FYUGP may opt for a minimum of 24 credits at this level. These courses are taught in semesters 1 and 2 of FYUGP.

200–299: Intermediate-level courses, including Discipline-Specific Courses intended to meet the credit requirements for Major and Minor areas of learning. These courses can be a part of a Major and can be prerequisite courses for advanced-level Major courses.

Students of FYUGP may opt for a minimum of 32 credits at this level. These courses are taught in semesters 3 and 4 of FYUGP.

300–399: Higher-level courses which are required for majoring in a disciplinary/ interdisciplinary area of study for award of degree. These courses can be a part of the Major pathway and can be prerequisite courses for advanced-level Major courses.

Students of FYUGP may opt for a minimum of 38 credits at this level, including the 2 credits of Internship. These courses are taught in semesters 5 and 6 of FYUGP.

400–499: Advanced courses/Capstone level courses, which would include taught courses with practicum, first-year postgraduate degree level courses, seminar-based courses, term papers, research methodology, advanced lab experiments, software training, capstone projects, research projects, hands-on training, internship/apprenticeship projects at the undergraduate level, etc.

Students of FYUGP may opt for a minimum of 44 credits at this level, out of which 8 credits can be of the level 300-399 if they are Minor Pathway courses. These courses are taught in semesters 7 and 8 of FYUGP.

500--599: Courses at the first-year postgraduate degree level for a 2-year PG Degree programme.

600--699: Courses at the second-year postgraduate degree level for a 2-year PG Degree programme.

700--799 and above: Courses limited to doctoral students.

Academic Levels of Pathway Courses				
Sl. No.	Academic Level	Nature of the Courses	Implementation in FYUGP and FYIPGP	
			Semesters	Minimum credits required
1.	00-99	Prerequisites for Foundation Courses	-	-
2.	100 – 199	Foundation Level Courses	1 & 2	24
3.	200-299	Intermediate Level courses	3 & 4	32
4.	300-399	Higher Level Courses	5 & 6	38*
5.	400-599	Advanced/Capstone/First year PG level courses	7 & 8	44**
6.	600-699	Second-year PG-level courses in a two-year PG degree programme	9 & 10	
7.	700-799	Courses in a doctoral programme		

* Out of 38 credits, 2 credits are from Internship.

** In the case of students opting for a pathway with a Minor, 8 credits out of 44 can be of 300-399 level

9. Changing the Major, the Minor, and the Academic Pathway

9.1. The course structure should be such that, in the first two semesters, the student has the choice of attending courses in different disciplines through Major, Minor and MDC. The student also has the choice of attending online courses in any discipline from repositories approved by the Board of Study.

9.2. At the end of the second semester, the student has the choice of changing the Major and Minor disciplines, and the academic pathway chosen at the time of admission. In that case, the new Major should be one of the disciplines in which minimum two courses should be attended in-person by the student, and in which minimum 8 credits should be already earned by the student. However, the change of minor to major shall be allowed subject to the availability of seats in the Department concerned.

9.3. It is also possible to change the Major to a discipline in which a minimum two courses as MDC are already attended in-person by the student in the first two semesters. In this case, only 6 credits are earned by the student by attending in-person the two MDC in any single discipline. In such a case, the student has to earn an additional 2 credits in the major discipline from any online courses through repositories approved by the Department Council.

9.4. Throughout the first two semesters, the academic advisor should guide the student to properly plan for the change of Major and academic pathway.

9.5. When a student changes the Major to one of the disciplines in which he/she has earned a minimum of 8 credits as a Minor or as a combination of MDC and online courses, the credits acquired by the student by these courses will be transferred to the total credits required for the new Major.

9.6. The student who switches to a new discipline in a broad stream different from the one to which he/she originally sought admission should be equipped to learn that new discipline. To ensure that such a student has acquired the prerequisite knowledge and skill set needed for the new discipline, each BoS should specify the minimum credits to be earned from the prerequisite courses of level 0-99 in that discipline. If the student has not learned these courses at the higher secondary level, he/she should do them online mode during the first two semesters. The credits earned from the prerequisite courses will not be added to the credits earned in the FYUGP.

10. **Admission**

The students are admitted to any of the following departments/schools which offer FYIPGP as per their choice through the Common Admission Test of the University.

Department/School	Academic Pathways Offered
Department of Applied Chemistry	Chemistry (Major, Minor, Multi-Disciplinary)
Department of Biotechnology	Biological Sciences (Major, Minor, Multi-disciplinary)
Department of Mathematics	Mathematics (Major, Minor, Multi-Disciplinary)

Department of Physics	Physics (Major, Minor, Multi-Disciplinary)
Department of Statistics	Statistics (Major, Minor, Multi-Disciplinary)
Department of Computer Science	Computer Science (Artificial Intelligence & Data Science) (Major, Minor, Multi-Disciplinary)
International School of Photonics	Photonics (Major, Minor, Multi-Disciplinary)

10.1. **Eligibility and Entrance Examination**

10.1.1. Candidates with **60% marks or 6.5 CGPA in the Plus Two examination** of the state of Kerala or any other examination accepted as equivalent thereto can apply, satisfying the following conditions.

Programme of Study	Eligibility
Five-Year Integrated M.Sc. in Biological Sciences	60% marks or 6.5 CGPA in the qualifying examination with Biology, Physics and Chemistry as subjects
Five-Year Integrated M.Sc. in Chemistry	60% marks or 6.5 CGPA in the qualifying examination with Mathematics, Physics and Chemistry as subjects
Five-Year Integrated M.Sc. in Mathematics	60% marks or 6.5 CGPA in the qualifying examination with Mathematics, Physics and Chemistry as subjects
Five-Year Integrated M.Sc. in Physics	60% marks or 6.5 CGPA in the qualifying examination with Mathematics, Physics and Chemistry as subjects
Five-Year Integrated M.Sc. in Statistics	60% marks or 6.5 CGPA in the qualifying examination with Mathematics, Physics and Chemistry as subjects
Five-Year Integrated M.Sc. in Computer Science (Artificial Intelligence & Data Science)	60% marks or 6.5 CGPA in the qualifying examination with Mathematics, Physics and Chemistry as subjects
Five-Year Integrated M.Sc. in Photonics	60% marks or 6.5 CGPA in the qualifying examination with Mathematics, Physics and Chemistry as subjects

10.1.2. Students shall register their major option for the preferred programme of study *i.e.*, Five-Year Integrated M.Sc. Major in Biological Sciences/ Five-Year Integrated M.Sc. Major in Chemistry/ Five-Year Integrated M.Sc. Major in Mathematics/ Five-Year Integrated M.Sc. Major in Physics/ Five-Year Integrated M.Sc. Major in Statistics / Five-Year Integrated M.Sc. Major in Computer Science (Artificial Intelligence & Data Science)/ Five-Year Integrated M.Sc. Major in Photonics at the time of submission of the application.

10.1.3. The rules in force regarding the relaxation in qualifying marks/grades and the reservation in admission shall be applicable to candidates belonging to the reservation categories.

10.2. **Entrance Examination**

10.2.1. The admission to the Five-Year Integrated M.Sc. Major in Biological Sciences/ Five-Year Integrated M.Sc. Major in Chemistry/ Five-Year Integrated M.Sc. Major in Mathematics/ Five-Year Integrated M.Sc. Major in Physics/ Five-Year Integrated M.Sc. Major in Statistics / Five-Year Integrated M.Sc. Major in Computer Science (Artificial Intelligence & Data Science)/ Five-Year Integrated M.Sc. Major in Photonics will be through the Common Admission Test examination (CAT) of CUSAT conducted by the Directorate of Admissions, CUSAT.

10.2.2. The students applying for the Five-Year Integrated M.Sc. Major in Chemistry/ Five-Year Integrated M.Sc. Major in Mathematics/ Five-Year Integrated M.Sc. Major in Physics/ Five-Year Integrated M.Sc. Major in Statistics / Five-Year Integrated M.Sc. Major in Computer Science (Artificial Intelligence & Data Science)/ Five-Year Integrated M.Sc. Major in Photonics have to write the entrance examination with Test code 101.

10.2.3. The students applying for Five-Year Integrated M.Sc. Major in Biological Sciences shall write Test Code 104.

10.2.4. The patterns of Test Codes 101 and 104 are given as follows.

Subject	
Test Code 101	Test Code 104
Physics	Physics
Chemistry	Chemistry
Mathematics	Biology

10.2.5. The scheme of the test shall be devised by the Directorate of Admissions and announced through the admission prospectus.

10.2.6. While preparing the Selection List, if tie arises, the following criteria shall be followed, one after the other, to resolve the ties, when more than one candidate secures the same total marks in the entrance examination:

Rank list for Five-Year Integrated M.Sc. Major in Biological Sciences

(a) The rank list for Five-Year Integrated M.Sc. Major in Biological Sciences shall be prepared from the test code 104 who opted for the Five-Year Integrated M.Sc. Major in Biological Sciences programme. Total marks of Physics, Chemistry, and Biology will be ranked in the order.

(b) For Tie Breaking in Five-Year Integrated M.Sc. Major in Biological Sciences rank list, marks obtained for Biology will be considered first.

(c) If the tie continues the number of correct answers scored in Biology will be counted.

(d) If the tie continues after applying the above two conditions, the date of birth of the candidates in the descending order (older to younger) will be considered.

(e) If the tie continues after applying the above three conditions, the names of the candidates in alphabetical order will be considered.

Rank list for Five-Year Integrated M.Sc. Major in Chemistry

(a) The rank list for Five-Year Integrated M.Sc. Major in Chemistry shall be prepared from the test code 101 who opted for the Five-Year Integrated M.Sc. Major in Chemistry programme. Total marks of Physics, Chemistry, and Mathematics will be ranked in the order.

(b) For Tie Breaking in Five-Year Integrated M.Sc. Major in Chemistry rank list, marks obtained for Chemistry will be considered first with higher marks given preference.

(c) If the tie continues the number of correct answers scored in Chemistry will be considered next.

(d) If the tie continues after applying the above two conditions, the date of birth of the candidates in the descending order (older to younger) will be considered.

(e) If the tie continues after applying the above three conditions, the names of the candidates in alphabetical order will be considered.

Rank list for Five-Year Integrated M.Sc. Major in Physics/ Five-Year Integrated M.Sc. Major in Photonics:

(a) The rank list for Five-Year Integrated M.Sc. Major in Physics/ Five-Year Integrated M.Sc. Major in Photonics shall be prepared from the test code 101 who opted for the Five-Year Integrated M.Sc. Major in Physics/ Five-Year Integrated M.Sc. Major in Photonics programme. Total marks of Physics, Chemistry, and Mathematics will be ranked in the order.

(b) For Tie Breaking in Five-year Integrated M.Sc. Physics/Five-Year Integrated M.Sc. Photonics rank list, marks obtained for Physics will be considered first with higher marks given preference.

(c) If the tie continues the number of correct answers scored in Physics will be considered next.

(d) If the tie continues after applying the above two conditions, the date of birth of the candidates in the descending order (older to younger) will be considered.

(e) If the tie continues after applying the above three conditions, the names of the candidates in alphabetical order will be considered.

Rank list for Five-Year Integrated M.Sc. Major in Mathematics/ Five-Year Integrated M.Sc. Major in Statistics/ Five-Year Integrated M.Sc. Major in Computer Science (Artificial Intelligence & Data Science):

(a) The rank list for Five-Year Integrated M.Sc. Major in Mathematics/ Five-Year Integrated M.Sc. Major in Statistics/ Five-Year Integrated M.Sc. Major in Computer Science (Artificial Intelligence & Data Science) shall be prepared from the test code 101 who opted for the M.Sc. Major in Mathematics/ Five-Year Integrated M.Sc. Major in Statistics/ Five-Year Integrated M.Sc. Major in Computer Science (Artificial Intelligence & Data Science) programmes. Total marks of Physics, Chemistry, and Mathematics will be ranked in the order. There shall be a separate rank list for the Mathematics, Statistics and Computer Science (Artificial Intelligence & Data Science) programmes.

(b) For Tie Breaking in the Five-Year M.Sc. Major in Mathematics/ Five-Year Integrated M.Sc. Major in Statistics/ Five-Year Integrated M.Sc. Major in Computer Science (Artificial Intelligence & Data Science)

rank list, marks obtained for mathematics will be considered first with higher marks given preference.

(c) If the tie continues the number of correct answers scored in Mathematics will be considered next.

(d) If the tie continues after applying the above two conditions, the date of birth of the candidates in the descending order (older to younger) will be considered.

(e) If the tie continues after applying the above three conditions, the names of the candidates in alphabetical order will be considered.

11. Course Registration and Attendance

11.1. The Integrated M. Sc. Programmes are conducted in conformity with the attributes of the Outcome Based Education (OBE) and Choice Based Credit System (CBCS). The syllabi of all academic programmes are to be prepared in such a way that they contain the OBE attributes such as Programmes Outcomes (POs), Programme Specific Outcomes (PSOs), Course Outcomes (COs), course prerequisites, credits etc.

11.2. Students have to choose their academic pathway as specified in Section 4 of the Regulations and register for the courses of their choice within a week of the commencement of the first semester. Before commencement of each semester, the students have to choose and register their courses as per the minimum requirements of FYUGP and FYIPGP. From second semester onwards, the departments shall ensure the availability of seats for various discipline specific courses under Minor/Multi-Disciplinary pathways so that students who have taken these pathways will not have any difficulty in fulfilling their minimum credit requirements. Additional seats for the same courses may be allotted on a first-come-first-serve basis.

11.3. All students have to register for the general foundation and core courses. They can choose the elective courses of their choice in consultation with their mentors.

11.4. The student can drop/re-register any elective/audit course(s) within 15 working days after the commencement of the classes.

11.5. The students can choose MOOC courses from CUSAT, SWAYAM or other platforms as approved by the Department Council from time to time.

11.6. The course registration and provision for credit transfer for the credits acquired from the MOOC/SWAYAM platform shall be as per the general rules and regulations for MOOC courses issued by the university from time to time.

11.7. A minimum of 75% attendance is compulsory for the continuous evaluation and the End semester examination. The university may condone the shortage of attendance on valid grounds as per the existing university rules.

12. **Evaluation**

12.0.1 The final result in each course will be determined on the basis of continuous assessment and performance in the end semester examination which will be in the ratio of 50:50 in the case of theory courses.

12.0.2 The faculty handling the course shall be responsible for evaluating all the components of Continuous Assessment (CA).

12.0.3 For Laboratory Courses (Practical Courses), Open Ended Laboratory Courses, Mini project work and Final semester project work there shall be only Continuous Assessment (CA) as per procedures laid down by the Department Council of the department offering the programme.

12.0.4 For the Open-Ended Laboratory Courses, Mini project work and Final semester project work at the end of the Semester, the Students will have to submit a report of the work done; they will present the results in a Seminar and should defend the work in a Viva-Voce.

12.1. **Continuous Assessment (CA)**

The CUSAT has a scheme of rigorous and continuous internal assessment.

12.1.1. Written exams shall be precisely designed using a variety of tools and processes (e.g., constructed responses, open-ended items, multiple-choice with more than one correct answer), and the students should be informed about the evaluation modalities well in advance.

12.1.2. The time schedule for the CA and the nature of tests/assignments/quizzes that are relevant to the course may be followed. The specific nature of the assignments/tests will be described by the faculty in the class and can vary from course to course.

12.1.3. The student shall be given a minimum of two tests per semester in each course.

12.1.4. The faculty concerned can choose the mode of evaluation and compilation of final marks of CA ensuring all modules in the course syllabus covered in the assessment process with the approval of the department council.

12.1.5. The marks obtained in the continuous assessment shall be displayed on the notice board of the Department and grievances if any may be addressed to the respective Head of the Department. The Department Council which offers the concerned programme/course shall finalize the marks of the continuous assessment of each course after addressing such grievances.

12.2. **End-semester Examination (ESE)**

12.2.1. A final examination at the end of the semester in each course will follow the internal assessments during the semester. The end semester examination shall cover the entire syllabus of the course.

12.2.2. The question paper for the end semester examination for each course is to be set by the concerned course teacher in advance, which must be scrutinized by a committee, consisting of one or two faculties, who are competent in the subjects/course regarding, appointed by the Head/department council to ensure that questions are within the scope of the syllabus and also the entire syllabus of the course is fairly covered in the question paper. Modifications suggested by this committee should be reflected in the final question paper.

12.2.3. There shall be only a single internal evaluation for the end semester examination. Immediately after the examination is over, course teachers shall complete the evaluations and the results shall be finalized within 10 working days after the last examination is over so as to enable students who have failed to appear for the makeup examination.

12.2.4. The marks and grades in all the subjects obtained by the students have to be displayed on the notice board and the answer scripts can be made available to the students for scrutiny if necessary.

12.2.5. The final result in each course is calculated on the basis of continuous assessment and performance in the end-semester examination.

12.2.6. For End Semester Examination, the students have to score a minimum of 40% marks to get a pass. Also, the students should get a total of 50% marks for each course (Sum of CA and ESE) to get a pass in the course.

12.2.7. Heads of the Departments shall publish the marks obtained by the students, in the continuous assessment and end semester examination.

12.2.8. If the student has any grievance about the result of a course the student can approach the concerned Head of the Department and submit his/her grievance with supporting documents/arguments. The teacher, and the Head of the Department offering the course will examine the case and decide on his/her grievance. If the student is not convinced with the decision, he/she can approach the appellate authority, which is the department council of the department offering the programme to which the student is admitted. The appellate authority shall examine the grievance and take a final decision which must be intimated to the student in writing. The decision of the appellate authority shall be final.

12.2.9. The final marks and grades obtained by the students shall be published on the notice board. Those who could not obtain 40% marks in the End semester examination and 50% marks (Grade D) in total for a course will be declared as failed in that course.

12.2.10. Those who fail in any core or elective course shall approach the Head of the Department if necessary for a makeup examination. Within one week of the display of the results on the notice board, the Head of the Department with the help of the course teacher shall conduct an additional end semester examination for these candidates. This makeup is only to enable the student to pass the examination so by completing the course successfully.

12.2.11. If he/she completes the course successfully making use of this additional chance, he/she will be awarded only a D grade for that course. If student does not appear for the makeup examination, the he/she can appear for the supplementary examination next year.

12.2.12. **Supplementary Examination:** The students, who after completion of the prescribed duration of the course, are left with backlogs, are eligible to appear for supplementary exams.

12.2.13. The results of the examinations will be finalized and published by the Department council of the department offering the programme within 30 days of the last examination of the semester and the minutes shall be sent to the controller of examinations to issue the mark list of that examination.

12.3. **Backlogs**

No student of the FYUGP and FYIPGP shall be allowed to move to the 3rd, 5th or 7th semester, if he/she does not satisfy the following conditions.

Promotion to	Minimum number of credits to be earned
III Semester	Half of the total credits registered for Semester I
V Semester	Half of the total credits registered for Semesters I, II, & III put together
VII Semester	Pass all the registered courses up to Semesters VI

12.3.1. The students, who after completion of the prescribed duration of the six semesters, are left with backlogs, are eligible to appear for special supplementary examinations for their odd semester courses.

12.4. **Readmission**

12.4.1. The students who are not eligible for promotion to the next higher semester as per rules will be given opportunities to clear the backlogs in the previous semesters by appearing for supplementary examinations.

12.4.2. Once the student gets eligibility for promotion to the higher semester, he/she will be given re-admission along with the junior regular batch and can further continue his/her studies as a regular student from the semester where he/she is re-admitted.

12.4.3. This will be subject to the maximum period available for the completion of the course permitted by these regulations.

12.4.4. Re-admission under the above provision shall be permitted only once.

12.5. **Exit Option**

The option of an exit with a 3-year Bachelor's degree/4-year Bachelor's Degree with Honours/4-year Bachelor's degree with Honours (Research) shall be available for desiring students. The distinguishing features of the exit option are:

12.5.1. **Exit with 3-year UG Degree**

(a) The Exit Option with 3-year UG Degree will be available at the end of three years of the FYIPGP students.

(b) Students who seek to opt out after 3 years (six semesters) should have passed all the courses of the preceding six semesters. For exercising the Exit Option, the students should have secured a minimum of 133 Credits in toto for semesters 1-6.

(c) The students who exercise the Exit Option have to surrender the Mark lists of the previous semesters and pay a cancellation fee as per the rules of the University. They will be issued new mark lists in conformity with the 3-year UG Degree that will be conferred to them.

12.5.2. **Exit with 4-year UG Honours Degree**

(a) The Exit Option with 4-year UG Honours Degree will be available at the end of Four years for the FYIPGP students.

(b) Students who seek to opt out after 4 years (eight semesters) should have passed all the courses of the preceding eight semesters. For exercising the Exit Option, the students should have secured a minimum of 177 Credits in toto for semesters 1-8.

(c) The students who exercise the Exit Option have to surrender the Mark lists of the previous semesters and pay a cancellation fee as per the rules of the University. They will be issued new mark lists in conformity with the 4-year UG Honours Degree that will be conferred to them.

12.5.3. **Exit with 4-year UG Honours (Research) Degree**

(a) The Exit Option with a 4-year Honours Degree will be available at the end of Four years for the FYIPGP students. The eligibility for a student to be considered for the 4-year UG Degree (Honors with Research) programme shall be a CGPA of 8.0 up to the sixth semester. The number of seats and the selection criteria shall be fixed by the respective Department Council.

(b) A student who opts for a 4-year Honours (Research) Degree should have to undertake a research project in the department. If opportunities are available, the respective department council may permit the candidate to undertake the research project in other departments for research on interdisciplinary themes/National Laboratories/ Institutes of National Importance/ Industrial R & D Laboratories to earn a minimum of 12 Credits. For exercising the Exit Option, the student should have secured a minimum of 177 Credits in toto for semesters 1-8.

(c) The students who exercise the Exit Option have to surrender the Mark lists of the previous semesters and pay a cancellation fee as per the rules of the University. They will be issued new mark lists in conformity with the 4-year Degree Honours (Research) that will be conferred to them.

12.6. **Merger with the 2-Year PG**

In the Fourth Year, students of the FYUGP may be integrated with the students admitted for the 2-Year PG programme offered by the respective Departments to which they are admitted. After the merger *i.e.*, from 7th semester, any provision under this regulation inconsistent with the PG regulations in force for FYIPGP shall not be applicable and the respective provision under PG regulation shall prevail.

12.7. **Grade Card**

The University under its seal shall issue a Grade Card to the students on completion of each semester. The Grade card shall contain the following:

a) Title of the course taken as core, elective and audit. (An audit course shall be listed only if the student has secured a pass).

b) The credits associated with and the grades awarded for each course.

c) The number of credits (core and elective separately) earned by the student and the Grade point Average.

d) The total credits (core and elective) earned till that semester.

e) The evaluation of FYUGP and FYIPGP is done under the Grading System. There will be 7 letter grades; S, A, B, C, D and F on a 10-point scale which carries 10, 9, 8, 7, 6, 0 grade points respectively.

Computation of SGPA/CGPA: The following grades will be awarded based on the overall performance in each course.

Range of Marks*	Grades	Grade Points (G_i)
90 - 100	O - Outstanding	10
80 - 90*	A - Excellent	9
70 - 80*	B - Very Good	8
60 - 70*	C - Good	7
50 - 60*	D - Satisfactory	6
Below 50	F - Fail	0
	Ab - Absent	0

(*where X –Y range denotes X inclusive and Y exclusive)

The following is the procedure to compute the Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA).

(i) The SGPA is the ratio of the sum of the product of the number of credits with the grade points scored by a student in all the courses taken by a student and the sum of the number of credits of all the courses undergone by a student, *i.e.*,

$$\text{SGPA(Si)} = \sum(C_i \times G_i) / \sum C_i$$

where C_i is the number of credits of the ith course and G_i is the grade point scored by the student in the ith course.

(ii) The CGPA is also calculated in the same manner taking into account all the courses done by a student over all the semester of a programme, i.e.,

$$\text{CGPA(Si)} = \sum(C_i \times S_i) / \sum C_i$$

where S_i is the SGPA of the ith semester and C_i is the total number of credits in each semester.

Classification for the Degree will be given as follows:

Classification for the Degree CGPA	
First Class with distinction	8.0 and above
First Class	6.5 – 8.0*
Second Class	6.0 – 6.5*

(*where X - Y range denotes X inclusive and Y exclusive)

(iii) The Grade Card issued at the end of the final semester shall contain the details of all the courses taken which shall include the titles of the courses, the credits associated with each course, the CGPA and the class. The rank shall be awarded based on CGPA corrected to the 2nd Decimal.

13. Degrees Awarded to FYUGP and FYIPGP

After successful completion of FYUGP or FYIPGP, the degrees in respective subject(s) will be awarded to the students.

(i) The format of the 3-year UG Degree shall be 'Bachelor of Science Major in [subject]' for Single Major Pathway; 'Bachelor of Science Major in [subject] with Minor [subject]' for Major with Minor Academic Pathway; and 'Bachelor of Science Major in [subject] with [subject], [subject]' for Major with Multiple Discipline(s) Academic Pathway.

(ii) The format of the FYUG (Honours) Degree shall be 'Bachelor of Science (Honours) Major in [subject]' for Single Major Pathway; 'Bachelor of Science (Honours) Major in [subject] with Minor [subject]' for Major with Minor Academic Pathway; and 'Bachelor of Science (Honours) Major in [subject] with [subject], [subject]' for Major with Multiple Discipline(s) Academic Pathway.

(iii) The format of the FYUG (Honours with Research) Degree shall be 'Bachelor of Science (Honours with Research) Major in [subject]' for Single Major Pathway; 'Bachelor of Science (Honours with Research) Major in [subject] with Minor [subject]' for Major with Minor Academic Pathway; and 'Bachelor of Science (Honours with Research) Major in [subject] with [subject], [subject]' for Major with Multiple Discipline(s) Academic Pathway.

(iv) The format of the FYIPG Degree shall be 'Master of Science in [subject]', irrespective of the Academic Pathway the student has chosen.

(iv) On successful completion of FYIPGP, students will be awarded FYIPGP Degree certificates as mentioned in Clause 13(iv) and their respective 3-Year Under-Graduate Degree certificates as mentioned in Clause 13(i). The students have to give separate applications forms for getting their Four-Year (Honours and Honours with Research) Under-Graduate Degree certificates, as mentioned in Clause 13(ii) and 13(iii).

14. Mentoring, Tutorial and Remedial classes

A system of mentoring by a teacher for a group of 5 students shall be coordinated by respective departments/schools. Mentors shall conduct orientation sessions to plan studies, utilize library and other common university and departmental resources. Mentors shall monitor academic progress of their mentee and identify weak learners in advance and arrange for remedial sessions in association with Centre for Integrated Studies (CIS) /Equal opportunity cell as the case may be. Special talents of their mentee may be identified and given guidance to nurture them. Mentors in association with CIS/Department shall coordinate internships/summer research programs/vacation activity during vacation months.

15. Transitory Provisions

Notwithstanding anything contained in these regulations, the Vice Chancellor shall, for a period of one year from the date of coming into force of these regulations, have the power to provide by order that these regulations shall be applicable to any programme with such modifications as may be necessary.