Four Year Undergraduate Programme (FYUGP)

Syllabus

B.Sc. Polymer Chemistry
(Honours with Research)

Fatima Mata National College (Autonomous), Kollam

The following institutions are offering their facilities for doing Internship/Project for students of Dept of Chemistry, FMN College, Kollam	
1	Kerala Minerals and Metals Ltd. Chavara
2	Central Institute of Plastics Engineering and Technology, Govt of India, Palaghat
3	Common Facility Service Centre, Govt. of Kerala, Changanaserry
4	Centre for Earth Science Studies, Govt of India, Thiruvananthapuram
5	Cochin University of Science and Technology, Cochin
6	NIIST, CSIR, Thiruvananthapuram
7	PSG Institute of Technology, Coimbatore

PREAMBLE

The Four Year Undergraduate Programme in Polymer Chemistry (FYUGP POLYMER CHEMISTRY-HONOURS WITH RESEARCH) offered by Fatima Mata National College has a student centric approach in which the student can choose their own pathway for learning. The syllabus has been revised and the revised syllabus is to be effective from 2024 admission. On successful attainment of 133 credits in a three-year period, a student shall be awarded an Undergraduate Degree. In a four-year period, the student can successfully attain 177 credits and shall be awarded with either Undergraduate Honours Degree or Undergraduate Honours with Research Degree. The students can acquire credits through the following categories of subjects.

1. Discipline Specific Core (DSC) Courses
2. Discipline Specific Elective (DSE) Courses
3. General Foundation Courses

a) Multi-Disciplinary (MDC) Courses
b) Ability Enhancement Courses
c) Value Addition Courses
d) Skill Enhancement Courses

Discipline Specific Core (DSC) courses are the core credit courses in a particular discipline. Students may choose DSC courses as their major or minor course of study. Discipline Specific Elective (DSE) Courses are a pool of credit courses in a particular discipline. These courses offer specialisation to students in a particular discipline. It can be a major or minor course of study. Multi-Disciplinary Courses (MDC) are Generic Elective courses meant to ensure multi-disciplinary/interdisciplinary education to students. Every Discipline has to offer MDCs. Ability Enhancement Courses (AEC) are courses offered by language and Literature Disciplines to ensure enhancement of language proficiency among students.

Students who secure at least 75 % of marks in all the six semesters can choose Undergraduate Honours with Research stream in the fourth year. Value Addition Courses (VAC) are meant to inculcate ethics, constitutional values, soft skills, sports and such similar values to students. Every discipline may offer VACs. Skill Enhancement Courses (SEC) are skill based courses in all disciplines which may inculcate skill, competencies and hands on training. In the first three semesters of the FYUGP, the student should learn one Multi-Disciplinary Course (MDC) each from a discipline other than the Major and Minor disciplines already chosen. The first and second MDC (MDC1 and MDC2), respectively in the first and second semesters, can be offered by all departments. The third MDC (MDC3) in the third semester is common to all the students, with Kerala-specific content (KS), and offered by English (E) and Other Language (OL) departments. Each MDC has 3 credits. Total 9 credits shall be earned from MDC. The four Ability Enhancement Courses (AEC) are to be offered by English and Other language departments. Out of the total 4 Courses, the student has to Choose two from English department and another two from any of the other languages department. VAC and SEC shall be offered by all Disciplines.

Exit Points and Credit Requirements

On Completion of 3 Years (6 Semesters) the student has an option to exit the programme with 133 credits and shall be awarded with a bachelor's degree. The Maximum credit a student can acquire in three-year period is limited to 150. On Completion of 4 years of study (8 Semesters) by acquiring 177 credit the student shall be awarded with a Bachelors (Honours) Degree or Bachelors (Honours with Research) Degree

One semester is defined as 90 working days and an academic year is divided into two semesters and an optional summer fast track semester. In addition to the 90 working days, 10 working days in a semester shall be used for co-curricular activities. ·An academic year shall consist of 200 working days. ·One semester consisting of 18 weeks with 5 working days per week. In each semester 15 days (3week) should be kept a side for examinations including internal examination evaluation and other academic activities. The maximum available weeks for curriculum transactions should be fixed as15 in each semester. Minimum of 5 teaching / tutorial hours could be made available for a day in a 5-day week. A 4 - year Degree with (Honours/Research) program shall have a minimum credit requirement of 177. A 3-year exit option (Bachelor's Degree) is given to a student completing 133 credits.

Course outline

Semester	Course Code	Course Title	Type of Course	Academic Level	Instructional hrs/Week			Credit
					T	P	Total	
I	24UPO-DSC111	Basics of Polymer Chemistry	**DSC**	100-199	3	2	5	4
	24UPO-MDC111	Chemistry in Everyday Life	**MDC**	100-199	3	0	3	3
II	24UPO-DSC211	General Chemistry	**DSC**	100-199	3	2	5	4
	24UPO-MDC211	Food Chemistry	**MDC**	100-199	3	0	3	3
III	24UPO-DSC321	Inorganic Chemistry - I	**DSC**	200-299	3	2	5	4
	24UPO-DSE321	Introduction to Environmental Chemistry	**DSE**	200-299	4	0	4	4 (Any one DSE)
	24UPO-DSE322	Polymers in day to day life	**DSE**	200-299	4	0	4	
	24UPO-VAC321	Rubber Technology	**VAC**	200-299	4	0	4	4
IV	24UPO-DSC421	Polymer Chemistry-I	**DSC**	200-299	3	2	5	4
	24UPO-DSC422	Organic Chemistry-I	**DSC**	200-299	2	4	6	4
	24UPO-DSE421	Latex and Rubber Processing Technology	**DSE**	200-299	3	2	5	4
	24UPO-VAC421	Biofriendly Polymers	**VAC**	200-299	3	0	3	3

	24UPO-VAC422	Polymer Industry and Sustainable Environment	**VAC**	200-299	3	0	3	3
	24UPO-SEC421	Polymer Analysis	**SEC**	200-299	3	0	3	3
Summer Internship (2 Credits)								
V	24UPO-DSC531	Polymer Chemistry-II	**DSC**	300-399	4	0	4	4
	24UPO-DSC532	Inorganic Chemistry - II	**DSC**	300-399	4	0	4	4
	24UPO-DSC533	Physical Chemistry - I	**DSC**	300-399	3	2	5	4
	24UPO-DSE531	Polymer waste Management	**DSE**	300-399	4	0	4	4
	24UPO-DSE532	Plastics and Fibre Technology	**DSE**	300-399	3	2	5	4
	24UPO-SEC531	Biodegradable Polymers for Sustainability	**SEC**	300-399	3	0	3	3
VI	24UPO-DSC631	Physical Chemistry-II	**DSC**	300-399	4	0	4	4
	24UPO-DSC632	Organic Chemistry-II	**DSC**	300-399	4	0	4	4
	24UPO-DSC633	Polymer Chemistry-III	**DSC**	300-399	3	2	5	4
	24UPO-DSE631	Emerging Functional Polymers	**DSE**	300-399	4	0	4	4
	24UPO-DSE632	Polymers In Industry	**DSE**	300-399	3	2	5	4
VII	24UPO-DSC741	Advanced Physical Chemistry	**DSC**	400-499	3	2	5	4
	24UPO-DSC742	Advanced Organic Chemistry	**DSC**	400-499	4	0	4	4 (Any one DSC)
	24UPO-DSC743	Polymer Product Manufacture, Entrepreneurship and Quality Management	**DSC**	400-499	4	0	4	
	24UPO-DSE741	Research Methodology in Polymer Science	**DSE**	400-499	4	0	4	4
VIII	24UPO-DSC841	Online/Distance learning mode- A List of courses approved by BoS	**DSC**	400-499	-	-	-	4
	24UPO-DSC842		**DSC**	400-499	-	-	-	4
	Mandatory Research Project for UG Honours with Research or Internship Project for UG Honours.							12

Discipline	POLYMER CHEMISTRY				
Course Code	24UPO-DSC111				
Course Title	BASICS OF POLYMER CHEMISTRY				
Type of Course	DSC / DSE / MDC / SEC / VAC / AEC				
Semester	I				
Academic Level	100 - 199				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	3 hours	-	2 hours	5
Pre-requisites	1. Basic knowledge in general chemistry 2. Basic knowledge in physics and mathematics				
Course Summary	History and development of Polymers, Inorganic Polymers and Diverse Applications of Polymers, Laboratory safety & Disaster management, Biomolecules, Petrochemicals & Alternate energy sources,				

Discipline	POLYMER CHEMISTRY				
Course Code	24UPO-MDC111				
Course Title	Chemistry in Everyday Life				
Type of Course	DSC / DSE / MDC / SEC / VAC / AEC				
Semester	I				
Academic Level	100 - 199				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	3	3 hours	-	-	3
Pre-requisites	1. Basic knowledge of Chemistry				
Course Summary	Chemistry in Everyday Life provides a comprehensive understanding of how chemistry permeates various aspects of our daily life.				

Discipline	POLYMER CHEMISTRY
Course Code	24UPO-DSC211
Course Title	GENERAL CHEMISTRY
Type of Course	DSC / DSE / MDC / SEC / VAC / AEC
Semester	II
Academic Level	100 - 199

Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	3 hours	-	2 hours	5
Pre-requisites	1. Basic Knowledge in Chemistry. 2. Basic knowledge in mathematics and Computer science				
Course Summary	Principles of Polymer Science, Introduction to Research Methodology, Cheminformatics, Analytical Chemistry I, Environmental Chemistry				

Discipline	POLYMER CHEMISTRY				
Course Code	24UPO-MDC211				
Course Title	Food Chemistry				
Type of Course	MDC				
Semester	II				
Academic Level	100 - 199				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	3	3 hours	-	-	3
Pre-requisites	1. Basic understanding of Chemistry.				
Course Summary	This course provides a comprehensive understanding of the composition of food and a brief idea of food processing and packaging.				

Discipline	POLYMER CHEMISTRY				
Course Code	24UPO-DSC321				
Course Title	Inorganic Chemistry - I				
Type of Course	DSC / DSE / MDC / SEC / VAC / AEC				
Semester	III				
Academic Level	200 - 299				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	3 hours	-	2 hours	5
Pre-requisites	1. Basic knowledge in Inorganic chemistry 2. Basic knowledge in laboratory practice				
Course Summary	Atomic Structure and Periodicity, Chemical Bonding – I, Acids, Bases & Non-aqueous solvents, Analytical chemistry-II, Nuclear Chemistry				

Discipline	POLYMER CHEMISTRY
Course Code	24UPO-DSE321
Course Title	Introduction to Environmental Chemistry
Type of Course	DSC / DSE / MDC / SEC / VAC / AEC
Semester	III
Academic Level	200 - 299

Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	4 hours	-		4
Pre-requisites	1. Fundamental concept of Environmental Chemistry 2. Terminology associated with Environment				
Course Summary	This course provides students with the knowledge of ecosystem and the different types of pollution caused by human activities. This course enlighten the students about the need to protect and conserve our environment for future generation. The course also highlight the green protocols and methodology being adopted for preserving the Environment .				

Discipline	POLYMER CHEMISTRY				
Course Code	24UPODSE322				
Course Title	Polymers in day to day life				
Type of Course	DSC / DSE / MDC / SEC / VAC / AEC				
Semester	3				
Academic Level	200 - 299				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	4 hours	-	-	4
Pre-requisites	1. Understanding of General Chemistry				
Course Summary	Polymers are a vital component of modern industries, found in countless products we use every day, ranging from packaging materials and clothing to medical devices and electronics. Their versatility, durability, and ease of processing make them indispensable in various applications.				

Discipline	POLYMER CHEMISTRY				
Course Code	24UPO VAC321				
Course Title	RUBBER TECHNOLOGY				
Type of Course	VAC				
Semester	III				
Academic Level	200 - 299				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	3	3 hours	-	0 hours	3
Pre-requisites	1. A basic idea of polymers				
Course Summary	This course provides an understanding of natural and synthetic rubbers, latex processing, compounding and vulcanization, rubber processing, compounding and vulcanization, characterisation of finished products, quality control and quality maintenance of rubber products.				

Discipline	POLYMER CHEMISTRY

Course Code	24UPO-DSC421				
Course Title	Polymer Chemistry-I				
Type of Course	DSC / DSE / MDC / SEC / VAC / AEC				
Semester	IV				
Academic Level	200 - 299				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	3 hours	-	2 hours	5
Pre-requisites	1. Basic idea of Polymers				
Course Summary	Chemistry of Polymerisation, Polymerisation Techniques, Determination of molecular mass and polymer degradation				

Discipline	POLYMER CHEMISTRY				
Course Code	24UPO-DSC422				
Course Title	Organic Chemistry-I				
Type of Course	DSC / DSE / MDC / SEC / VAC / AEC				
Semester	IV				
Academic Level	200 - 299				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	2 hours	-	2 hours	6
Pre-requisites	1. Basic knowledge in Organic Chemistry 2. Basic chemical Laboratory awareness				
Course Summary	Electron displacement effects & Reaction intermediates, Organic Reaction Mechanism, Stereochemistry-I, Stereochemistry-II, Organic photochemistry and Pericyclic reactions				

Discipline	POLYMER CHEMISTRY				
Course Code	24UPO-DSE421				
Course Title	LATEX AND RUBBER PROCESSING TECHNOLOGY				
Type of Course	DSC / DSE / MDC / SEC / VAC / AEC				
Semester	4				
Academic Level	200 - 299				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	3 hours	-	2 hours	5
Pre-requisites	1. Students should know the classification of polymers. 2. They should be aware of the various uses of latex and rubber products.				
Course Summary	To impart the basic concepts of latex and rubber compounding, principles of compounding and vulcanization. To design various recipes to meet vulcanisate properties.				

Discipline	POLYMER CHEMISTRY
Course Code	24UPO-VAC421

Course Title	BIOFRIENDLY POLYMERS				
Type of Course	VAC				
Semester	IV				
Academic Level	200 - 299				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	3	3 hours	-	0 hours	3
Pre-requisites	1. A basic idea of polymers				
Course Summary	This course provides an understanding of history and basic concepts of polymers, Natural and synthetic polymers, Biopolymers and Biodegradable polymers, Polymer degradation and stability and polymers in everyday life.				

Discipline	POLYMER CHEMISTRY				
Course Code	24UPO- VAC422				
Course Title	Polymer Industry and Sustainable Environment				
Type of Course	VAC				
Semester	IV				
Academic Level	200 - 299				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	3	3 hours	-	0 hours	3
Pre-requisites	1. Knowledge on Environmental Conservation 2. A basic idea of polymers used in industry				
Course Summary	Course deals with the study of different types of polymers and their Applications Give a general understanding about polymer waste management Introduce the concept of sustainability in polymer science				

Discipline	POLYMER CHEMISTRY				
Course Code	24UPO-SEC421				
Course Title	Polymer Analysis				
Type of Course	SEC				
Semester	IV				
Academic Level	200 - 299				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	3	3 hours	-	0 hours	3
Pre-requisites	1. Basic knowledge of polymers				
Course Summary	1. Detailed study about different types of polymers, their properties and application. 2. The course deals with the production and modification of natural rubber				

	3. The course offers practical experience in latex analysis and real-world application exploration in an analytical laboratory setting.

Discipline	POLYMERCHEMISTRY				
Course Code	24UPO-DSC531				
Course Title	Polymer Chemistry-II				
Type of Course	DSC / DSE / MDC / SEC / VAC / AEC				
Semester	V				
Academic Level	300 – 399				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	4 hours	-	-	4
Pre-requisites	1. Basic knowledge in general chemistry 2. Basic knowledge in physics and mathematics				
Course Summary	Structure and properties of Polymers, Characterisation of Polymers, Kinetics of Polymerisations, Thermodynamics of Polymer Solutions				

Discipline	POLYMER CHEMISTRY				
Course Code	24UPO-DSC532				
Course Title	Inorganic Chemistry - II				
Type of Course	DSC / DSE / MDC / SEC / VAC / AEC				
Semester	V				
Academic Level	300 - 399				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	4 hours	-		4
Pre-requisites	1. Basic knowledge in Inorganic chemistry 2. Basic knowledge in physics				
Course Summary	Elements– Classification, Coordination Chemistry, Bioinorganic chemistry, Chemical bonding –II, Instrumental Methods of Analysis				

Discipline	POLYMER CHEMISTRY				
Course Code	24UPO-DSC533				
Course Title	Physical Chemistry-I				
Type of Course	DSC / DSE / MDC / SEC / VAC / AEC				
Semester	V				
Academic Level	300 - 399				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	3 hours	-	2 hours	5
Pre-requisites	1. Basic knowledge of physical chemistry				

	2. Basic knowledge in mathematics				
Course Summary	Chemical and Ionic Equilibria, Chemical kinetics, Chemical Thermodynamics, Electrical Conductance, Electromotive Force				
Discipline	POLYMER CHEMISTRY				
Course Code	24UPO-DSE531				
Course Title	POLYMER WASTE MANAGEMENT				
Type of Course	DSC / DSE / MDC / SEC / VAC / AEC				
Semester	5				
Academic Level	300 - 399				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	3	3 hours	-	-	3
Pre-requisites	1. Student has to study polymer chemistry papers of previous semesters 2. Prior Knowledge of classification of waste				
Course Summary	To impart a better knowledge on types of wastes and the ways to collect, segregate and manage it.				

Discipline	POLYMER CHEMISTRY				
Course Code	24UPO-DSE532				
Course Title	PLASTIC AND FIBER TECHNOLOGY				
Type of Course	DSC / DSE / MDC / SEC / VAC / AEC				
Semester	5				
Academic Level	300 - 399				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	3 hours	-	2 hours	5
Pre-requisites	1. Students should know the classification of polymers. 2. They should be aware of the various uses of plastic products and fibres.				
Course Summary	To impart the basic concepts of mixing and compounding various moulding techniques. Understand about reinforced plastics, fibre technology and coir based products in Kerala				

Discipline	POLYMER CHEMISTRY				
Course Code	24UPO-SEC531				
Course Title	Biodegradable Polymers for sustainability				
Type of Course	DSC / DSE / MDC / SEC / VAC / AEC				
Semester	V				
Academic Level	300-399				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	3	3 hours	-	-	3
Pre-requisites	1. Basic knowledge of polymers				

	2. General awareness about the need for biodegradable polymers
Course Summary	Introduction to Biodegradable polymers - Sustainability and Responsibility Approaches Structures Favouring Biodegradability Polymer Recycling and Product Manufacturing Biodegradability in Polymers and Assessing Methods Case study

Discipline	POLYMER CHEMISTRY				
Course Code	24UPO-DSC631				
Course Title	Physical Chemistry-II				
Type of Course	DSC / DSE / MDC / SEC / VAC / AEC				
Semester	VI				
Academic Level	300 - 399				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	4 hours	-	-	4
Pre-requisites	1. Basic Knowledge in Physical Chemistry 2. Basic knowledge in Physics and mathematics				
Course Summary	Gaseous State, Liquid state and Dilute solutions, Solid state, Colloids & Adsorption, Spectroscopy				

Discipline	POLYMER CHEMISTRY				
Course Code	24UPO-DSC632				
Course Title	Organic Chemistry-II				
Type of Course	DSC / DSE / MDC / SEC / VAC / AEC				
Semester	VI				
Academic Level	300 - 399				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	4 hours	-	-	4
Pre-requisites	1. Basic knowledge in Organic chemistry 2. Basic knowledge of Natural products				
Course Summary	Organic functional groups-I, Organic functional groups-II, Organic functional groups-III, Heterocyclic, Organometallic and Active methylene Compounds, Natural Products				

Discipline	POLYMER CHEMISTRY				
Course Code	24UPO-DSC633				
Course Title	Polymer Chemistry-III				
Type of Course	DSC / DSE / MDC / SEC / VAC / AEC				
Semester	VI				
Academic Level	300 - 399				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week

	4	3 hours	-	2 hours	5
Pre-requisites	1. Basic knowledge in Organic chemistry 2. Basic knowledge of polymer science				
Course Summary	Polymer reactions, Engineering & Specialty Plastics, Polymers in Drug Delivery and Tissue Engineering, Polymer Nanocomposites for Renewable Energy Storage Systems				

Discipline	POLYMER CHEMISTRY				
Course Code	24UPO-DSE631				
Course Title	Emerging Functional Polymers				
Type of Course	DSE				
Semester	6				
Academic Level	300 – 399				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	4	-	-	4
Pre-requisites	1. Students should have studied basic concepts of polymer chemistry. 2. They should be aware of the applications of polymers in various fields.				
Course Summary	Emerging Functional Polymers" is a course that explores the latest developments in the field of functional polymers, focusing on new materials and applications. The course covers the synthesis, characterization, properties, and applications of different functional polymers, with an emphasis on their unique functionalities and potential impact on various industries. The course will discuss cutting-edge applications of functional polymers in areas such as drug delivery, bioimaging, energy storage and sensors. Through lectures, discussions, and seminars, students will gain a comprehensive understanding of the field and be prepared to contribute to the development of future polymer technologies.				

Discipline	POLYMER CHEMISTRY				
Course Code	24UPO-DSE632				
Course Title	POLYMERS IN INDUSTRY				
Type of Course	DSE				
Semester	6				
Academic Level	300 – 399				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	3	-	2	5
Pre-requisites	1. Student has to study Polymer Chemistry core and elective papers in previous semesters 2. Student has to be aware of the applications of polymers in diverse industries.				

Course Summary	"Polymers in Industry" offers an in-depth exploration of the wide-ranging applications of polymers across various industrial sectors.

Discipline	POLYMER CHEMISTRY				
Course Code	24UPO-DSC741				
Course Title	Advanced Physical chemistry				
Type of Course	DSC / DSE / MDC / SEC / VAC / AEC				
Semester	VII				
Academic Level	400 - 499				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	3 hours	-	2 hours	5
Pre-requisites	1. Basic knowledge in Physical Chemistry 2. Basic knowledge in Physics, Mathematics and computer.				
Course Summary	Computational methods, Molecular symmetry and Applications of Group Theory, Resonance spectroscopy, Chemical kinetics, Electrochemistry				

Discipline	POLYMER CHEMISTRY				
Course Code	24UPO-DSC742				
Course Title	Advanced Organic Chemistry				
Type of Course	DSC / DSE / MDC / SEC / VAC / AEC				
Semester	VII				
Academic Level	400 - 499				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	3 hours	-	-	4
Pre-requisites	1. Basic knowledge in Organic chemistry 2. Basic knowledge in Chemical bonding				
Course Summary	Methods in organic synthesis, Symmetry controlled reactions, Organic spectroscopy, Molecular recognition and supramolecular chemistry, Green chemistry				

Discipline	POLYMER CHEMISTRY				
Course Code	24UPO-DSC743				
Course Title	Polymer Product Manufacture, Entrepreneurship and Quality Management				
Type of Course	DSC / DSE / MDC / SEC / VAC / AEC				
Semester	VII				
Academic Level	300 – 399				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	4 hours	-	-	4
Pre-requisites	1. Polymer Chemistry papers of previous semesters 2. Awareness about sustainable development				

Course Summary	Biopolymers and Biodegradable Polymers, Latex Testing & Compounding and Product Manufacturing, Entrepreneurship development, Quality Management, case study

Discipline	Polymer Chemistry				
Course Code	24UPO-DSE741				
Course Title	Research Methodology in Polymer Science				
Type of Course	DSE				
Semester	VII				
Academic Level	400 - 499				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	4hours	-	-	4
Pre-requisites	A pass in the level 3 course in polymer chemistry III				
Course Summary	Research Methods, Ethics in Research, Research Design and Hypothesis, Result Dissemination, Intellectual Property Rights				