V.V.VANNIAPERUMAL COLLEGE FOR WOMEN
(Belonging to Virudhunagar Hindu Nadars)
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VIRUDHUNAGAR - 626 001

PEOs, POs, PSOs and COs

B.Sc. CHEMISTRY

Programme Educational Objectives (PEOs)

PEOs are broad statements that describe the career and professional achievements, that the Programme is preparing the graduates to achieve within the first few years after graduation. PEOs are framed for each Programme and should be consistent with the Mission of the Institution.

Programme Outcomes (POs)

POs shall be based on Graduate Attributes (GAs) of the Programme. The GAs are the attributes expected of a graduate from a Programme in terms of knowledge, skills, attitude and values. The Graduate Attributes include Disciplinary Knowledge, Communication Skills, Critical Thinking, Problem Solving, Analytical Reasoning, Research Related Skills, Co-operation/Team Work, Scientific Reasoning, Reflective Thinking, Information/Digital Literacy, Multicultural Competence, Moral and Ethical Awareness/Reasoning, Leadership Qualities and Lifelong Learning.

On successful completion of the Programme, the students will be able to

1 Apply effectively the acquired knowledge and skill in the field of Arts, Physical Science, Life Science, Computer Science, Commerce and Management for higher studies and employment. (*Disciplinary Knowledge*)

2 Communicate proficiently and confidently with the ability to express original/complex ideas effectively in different situations. (*Communication Skills)*

3 Identify, formulate and solve problems in real life situations scientifically/ systematically by adapting updated skills in using modern tools and techniques. (*Scientific Reasoning and Problem Solving)*

4 Critically analyse, synthesise and evaluate data, theories and ideas to provide valid suggestions for the betterment of the society. (*Critical Thinking and Analytical Reasoning)*

5 Use ICT in a variety of self-directed lifelong learning activities to face career challenges in the changing environment. (*Digital Literacy, Self - directed and Lifelong Learning)*

6 Self-manage and function efficiently as a member or a leader in diverse teams in a multicultural society for nation building. (*Co-operation/Team Work and Multicultural Competence)*

7 Uphold the imbibed ethical and moral values in personal, professional and social life for sustainable environment. (*Moral and Ethical Awareness)*

Programme Educational Objectives (PEOs)

The students will be able to

- To pursue further studies and succeed in academic and research Careers.
- To have opportunities to get employment at local and national level and to work as a teacher, analyst, quality controller, research assistant and in government sector jobs.
- To provide solutions for social issues such as environmental protection, occupational health and safety resource management and appropriate business skills.

Key components of the mission statement	**PEO 1**	**PEO 2**	**PEO 3**
Deep knowledge in theoretical and practical chemistry	✓	✓	✓
Profession development	✓	✓	✓
Research aptitude and personality	✓	✓	-
Applications of chemistry in everyday life to progress as entrepreneurs	-	✓	✓
Social awareness and responsibility	-	✓	✓

Programme Specific Outcomes (PSOs)

Based on the Programme Outcomes, Programme Specific Outcomes are framed for each UG Programme**.** Programme Specific Outcomes denote what the students would be able to do at the time of graduation. They are Programme specific. It is mandatory that each PO should be mapped to the respective PSO.

On completion of B.Sc. Chemistry Programme, the students will be able to

PO1-*Disciplinary Knowledge*

PSO 1.a: Apply the gained advanced knowledge in inorganic, organic and physical chemistry and related courses to pursue higher studies and employment.

PSO 1.b: Apply the good laboratory practices in core and related courses by appropriate experimental methods and safety measures and thereby updating their knowledge and skills.

PO2-*Communication Skills*

PSO 2: Develop the confidence to articulate the basic concepts in chemistry in a clear and concise manner, to draw complex chemical structures and to execute and report the results of an experiment in a systematic way.

PO3 -*Scientific Reasoning and Problem Solving*

PSO 3.a: Identify chemical formulae and analyse food, water and oil samples qualitatively and quantitatively by adapting updated skills in using modern tools and techniques.

PSO 3.b: Characterize the compounds extracted from natural sources by applying the basic principles of various chemical methods.

PO4 -*Critical thinking and Analytical Reasoning*

PSO 4.a: Critically analyze the concepts, theories and equations in various divisions of chemistry and perceive their significance in chemical industries and to conserve the environment in daily life

PSO 4.b: Apply the integrated knowledge of different sections of chemistry and associated courses to design experiments and thereby developing their analytical evidences.

PO5 -*Digital Literacy, Self - directed and Lifelong learning*

PSO 5: Acquire the ability to engage in independent and life-long learning trained at personal/ career development concerning to their area of interest using contemporary digital tools to face the alteration of personal and social circumstances.

PO6 -*Cooperation/Team Work and Multi-Cultural Competence*

PSO 6: Promote self-management in efficient functioning of an individual as an exemplary in representing and solving the current issues in a multicultural society for good nation building through their internship, group practical, co-curricular, extracurricular and extension activities.

PO7- *Moral and Ethical awareness*

PSO 7: Adapt the universal ethics and morals of chemical acts and practice the imbibed moral principles in their career and humanity to accomplish a green environment

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Semester I	**INORGANIC CHEMISTRY - I**	**Hours/Week: 4**	
Core Course-1		**Credits: 4**	
Course Code 20UCHC11		**Internal 25**	**External 75**

COURSE OUTCOMES

On completion of the course, the students will be able to

CO1: explain the basic concepts of inorganic chemistry, arrangements of elements in the long form of the Periodic table, nature of bonding, compounds of hydrogen and general properties of IA, IIA, and IIIA group elements. [K1]

CO2: understand the periodic properties of elements, postulates of various theories, molecular forces, redox reactions, manufacturing process, properties and uses of some inorganic compounds. [K2]

CO3: determine the periodic properties by different scales, hybridization- sp, sp2, sp3, sp^3d and $sp^3d^2$of inorganic molecules , balancing of redox equation , diagonal relationship of IA, IIA and IIIA group elements. [K2]

CO4: examine the shielding effect on periodic properties, VSEPR theory in simple inorganic molecules, oxidation state of redox equations, peculiar structure of IA,IIA and IIIA elements. [K3]

CO5: analyze the cause of effective nuclear charge in periodicity, lattice energy, bonding properties , oxidation number and ion-electron methods, process of metallurgy and contrast behavior of elements in the same group. [K4]

Course Code 20UCHC11	**PO1**		**PO2**	**PO3**		**PO4**		**PO5**	**PO6**	**PO7**
	PSO 1.a	**PSO 1. b**	**PSO 2 .**	**PSO 3a**	**PSO 3.b**	**PSO 4a**	**PSO 4b**	**PSO5**	**PSO6**	**PSO7**
CO1	**L**	**L**	**H**	**L**	**M**	**L**	**M**	**L**	**-**	**L**
CO2	**L**	**L**	**H**	**M**	**M**	**H**	**M**	**M**	**-**	**L**
CO3	**M**	**M**	**H**	**M**	**H**	**H**	**M**	**M**	**-**	**L**
CO4	**M**	**M**	**H**	**L**	**L**	**H**	**H**	**M**	**-**	**L**
CO5	**M**	**M**	**H**	**L**	**L**	**M**	**M**	**M**	**-**	**L**

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Semester I	**ORGANIC AND PHYSICAL CHEMISTRY**	**Hours/Week: 4**	
Core Course-2		**Credits: 4**	
Course Code 20UCHC12		**Internal 25**	**External 75**

COURSE OUTCOMES

On completion of the course, the students will be able to

CO1: remember the IUPAC nomenclature of organic compounds, the gas laws, postulates of kinetic theory of gases, velocity of gas, movement of gas particles, size and types of colloids. [K1]

CO2: understand the detection procedure for the elements present, nature of intermediates, nature of isomeric relation existing between organic compounds, critical phenomena, liquefaction of gases, effect of temperature on the various velocities, nature of collision, classification and properties of colloids. [K2]

CO3: determine the molecular weight of organic acids and bases , empirical and molecular formula , Avogadro number – Loschmidt number, calculation of various velocities, van der Waal's and critical constants and applications of colloids. [K3]

CO4: examine the type of organic reaction, polarization effects on the reaction mechanism, stability of intermediates , the reactivity of hydrocarbons, deviation of gases from ideal behavior, the different types of velocities, properties of colloids. [K4]

CO5: analyse the PV isotherm of real and ideal gases, Maxwell's distribution curve, effect of temperature on various velocities, verification of Maxwell's law, stability of colloids. [K4]

Course Code 20UCHC12	**PO1**		**PO2**	**PO3**		**PO4**		**PO5**	**PO6**	**PO7**
	PSO 1. a	**PSO 1. b**	**PSO 2.**	**PSO 3. a**	**PSO 3. b**	**PSO 4. a**	**PSO 4. b**	**PSO5**	**PSO6**	**PSO7**
CO1	**L**	**L**	**H**	**L**	**L**	**M**	**M**	**H**	**-**	**L**
CO2	**L**	**L**	**H**	**L**	**L**	**L**	**M**	**M**	**-**	**M**
CO3	**M**	**L**	**M**	**L**	**L**	**L**	**M**	**H**	**-**	**L**
CO4	**M**	**M**	**H**	**L**	**L**	**H**	**M**	**H**	**-**	**L**
CO5	**M**	**M**	**M**	**L**	**L**	**H**	**M**	**H**	**-**	**M**

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Semester I	**ALLIED MATHEMATICS–I**	**Hours/Week:6**	
Allied Course-I		**Credits:4**	
Course Code 20UMTA11		**Internal 25**	**External 75**

COURSEOUTCOMES

On completion of this course, the students will be able to

CO1: retrieve the fundamental principles, concepts in the areas of differential calculus, integral calculus, differential equations and Algebra. [K1]

CO2: explain curvature & evolute of a curve, method of solving exact differential equations and Linear differential equations with constant coefficients**.** [K2]

CO3: find the derivative and partial derivative of a given function, solution of simultaneous linear equations, eigen values and eigen vectors of a given matrix and double & triple integrals. [K2].

CO4: apply the knowledge gained in calculus, differential equations and algebra to other field [3]

CO5: analyse the challenging problems in calculus, differential equations and algebra. [K4]

Course Code 20UMTA11	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	**H**	**M**	**H**	**M**	**L**	**M**	**-**
CO2	**H**	**M**	**H**	**M**	**L**	**M**	**-**
CO3	**M**	**M**	**H**	**M**	**L**	**M**	**-**
CO4	**H**	**H**	**H**	**H**	**L**	**M**	**-**
CO5	**H**	**M**	**H**	**M**	**L**	**H**	**-**

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Semester I	**TAXONOMY OF ANGIOSPERMS AND MEDICINAL BOTANY**	**Hours/Week: 4**	
Allied Paper		**Credits: 4**	
Course Code 20UBYA11		**Internal 25**	**External 75**

COURSE OUTCOMES

On completion of this course, the students will be able to

CO1 : state the important plants in the natural ecosystem. [K1]

CO2 : interpret the different groups of plants on earth with their names, distribution, habit, characteristics and affinities. [K2]

CO3 : explain the medicinal and economic importance of angiosperms. [K2]

CO4 : identify angiosperms in the field condition with their vegetative and floral characters and prepare herbarium as per the principles. [K3]

CO5 : distinguish the use of traditional medicine in their life and to develop herbal preparations. [K4]

Course Code 20UBYA11	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	**H**	**M**	**M**	**L**	**L**	**-**	**-**
CO2	**H**	**M**	**M**	**L**	**L**	**-**	**-**
CO3	**H**	**M**	**M**	**L**	**L**	**-**	**-**
CO4	**M**	**M**	**M**	**M**	**L**	**-**	**-**
CO5	**M**	**M**	**M**	**M**	**M**	**-**	**-**

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Semester I	**VALUE EDUCATION**	**Hours/Week: 2**	
Ability Enhancement Course		**Credits: 2**	
Course Code 20UGVE11		**Internal 100**	**External -**

COURSE OUTCOMES

On completion of the course, the students will be able to

CO1: describe the general human values and their associated values that are essential to make them committed and responsible individuals. [K1]

CO2: indicate the importance and benefits of upholding human values. [K2]

CO3: explain the steps to be taken for upholding human values and human rights. [K2]

CO4: practice the individual values needed for maintaining harmonious relationship with members of family, institution, organization or society for preserving and transmitting its tradition and culture. [K3]

CO5: uphold the legal, moral, ethical and spiritual values for nurturing health and happiness leading to national integrity and peace and for the existence of human beings with humanity. [K3]

Course Code 20UGVE11	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	H	M	-	-	L	-	H
CO2	H	M	-	-	L	-	H
CO3	H	M	-	-	L	-	H
CO4	H	M	-	-	H	H	H
CO5	H	M	-	-	L	H	H

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Semester II	**ORGANIC CHEMISTRY-I**	**Hours/Week: 4**	
Core Course III		**Credits: 4**	
Course Code 20UCHC21		**Internal 25**	**External 75**

COURSE OUTCOMES

On completion of the course, the students will be able to

CO1: recognize the reactivities of organic compounds in a given chemical reaction. [K1]

CO2: explain the preparation, properties and uses of aliphatic halogens, alcohols, ethers and carbonyl compounds, summarise the chemistry of aliphatic acids and their derivatives. [K2]

CO3: sketch the process of rectification of alcohols, predict the mechanism of various organic reactions , relate the properties of aliphatic acids. [K3]

CO4: discriminate the reactivities of aldehydes and ketones , compare the acidity of aliphatic carboxylic acids, estimate the number of hydroxyl and alkoxy groups, categorise substituted acids . [K4]

CO5: analyze the synthetic utility of organometallic compounds, active methylene compounds , aldehydes & ketones, alcohols and ethers. [K4]

Course Code 20UCHC21	**PO1**		**PO2**	**PO3**		**PO4**		**PO6**	**PO7**	
	PSO 1. a	**PSO 1. b**	**PSO 2.**	**PSO 3. a**	**PSO 3. b**	**PSO 4 .a**	**PSO 4. b**	**PSO5**	**PSO6**	**PSO7**
CO1	**M**	**M**	**M**	**M**	**H**	**H**	**M**	**M**	**-**	**L**
CO2	**L**	**L**	**M**	**M**	**H**	**H**	**M**	**M**	**-**	**L**
CO3	**L**	**L**	**L**	**L**	**H**	**H**	**H**	**H**	**-**	**-**
CO4	**L**	**L**	**H**	**H**	**H**	**H**	**H**	**H**	**-**	**L**
CO5	**H**	**H**	**L**	**M**	**M**	**H**	**H**	**H**	**-**	**L**

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Semester II	**ORGANIC CHEMISTRY-I**	**Hours/Week: 4**	
Core Course III		**Credits: 4**	
Course Code 20UCHC21N		**Internal 25**	**External 75**

COURSE OUTCOMES

On completion of the course, the students shall be able to

CO1: recognize the reactivities of organic compounds in a given chemical reaction [K1]

CO2: explain the preparation,properties and uses of aliphatic halogens, alcohols, ethers and carbonyl compounds, summarise the chemistry of aliphatic acids and their derivatives [K2]

CO3: predict the mechanism of various organic reactions , relate the properties of aliphatic acids [K3]

CO4: discriminate the reactivities of aldehydes and ketones, compare the acidity of aliphatic carboxylic acids, estimate the number of hydroxyl and alkoxy groups, categorise substituted acids [K4]

CO5: analyze the synthetic utility of organometallic compounds, active methylene compounds aldehydes& ketones, alcohols and ethers [K4]

Course code	**PO1**		**PO2**	**PO3**		**PO4**		**PO5**	**PO6**	**PO7**
20UCHC21N	**PSO 1 a**	**PSO 1 b**	**PSO 2**	**PSO 3 a**	**PSO 3 b**	**PSO 4 a**	**PSO 4 b**	**PSO 5**	**PSO 6**	**PSO 7**
CO 1	**H**	**H**	**M**	**M**	**H**	**H**	**M**	**M**	**H**	**H**
CO 2	**H**	**H**	**M**	**M**	**H**	**H**	**M**	**M**	**H**	**H**
CO 3	**H**	**H**	**L**	**L**	**H**	**H**	**H**	**H**	**H**	**H**
CO 4	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**
CO 5	**H**	**H**	**L**	**M**	**M**	**H**	**H**	**H**	**H**	**H**

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Semester II	**INORGANIC AND PHYSICAL CHEMISTRY**	**Hours/Week: 4**	
Core Course-4		**Credits: 4**	
Course Code 20UCHC22		**Internal 25**	**External 75**

COURSE OUTCOMES

On completion of the course, the students will be able to

CO 1: recognize the metallurgical process, adsorption, catalysis, characteristics of IV A, VA, VII group elements and liquid state. [K1]

CO 2: understand the important ores, extraction of the metals, oxides, preparation, properties and uses of carbon, nitrogen and halogen compounds, properties of liquid state and the importance of catalysis and adsorption. [K2]

CO 3: explain the extraction of metals from the ores, preparation and properties of sulphur compounds, estimation of available chlorine in bleaching powder, predict the various physical properties of substances in liquid state, surface area, factors influencing adsorption. [K2]

CO4: apply the alloys, oxides, inter halogen compounds, xenon compounds, properties of liquid state, types of adsorption isotherm and catalysis to diversified fields. [K3]

CO 5: analyze the separation, purification of metals, preparation and properties of various compounds in IV A and VA group, isolation and estimation of halogens, various properties of liquids, different isotherms and catalysis. [K4]

Course Code 20UCHC22	**PO1**		**PO2**	**PO3**		**PO4**		**PO5**	**PO6**	**PO7**
	PSO 1.a	**PSO 1.b**	**PSO 2.**	**PSO 3.a**	**PSO 3.b**	**PSO 4.a**	**PSO 4.b**	**PSO5**	**PSO6**	**PSO7**
CO1	**L**	**M**	**M**	**L**	**H**	**M**	**L**	**-**	**-**	**L**
CO2	**L**	**M**	**L**	**L**	**H**	**M**	**L**	**-**	**-**	**L**
CO3	**M**	**L**	**L**	**L**	**H**	**L**	**M**	**-**	**-**	**L**
CO4	**M**	**M**	**H**	**L**	**H**	**L**	**M**	**-**	**-**	**-**
CO5	**M**	**M**	**H**	**L**	**H**	**L**	**M**	**-**	**-**	**L**

Semester I/II	**CORE PRACTICAL - I VOLUMETRIC ANALYSIS**	**Hours/Week: 2**	
Core Course Practical -I		**Credits: 2**	
Course Code 20UCHC21P		**Internal 40**	**External 60**

COURSE OUTCOMES

On completion of the course, the students will be able to

CO1: apply the Principles involved in the Volumetric analysis. [K3]

CO2: prepare the primary standard solutions. [K3]

CO3: estimate the amount of the substance present in the given solution by volumetric analysis. [K3]

CO4: determine the concentration of the unknown solutions. [K4]

CO5: analyse and evaluate the accuracy of the results. [K4]

Course Code 20UCHC21P	PO1		PO2	PO3		PO4		PO6	PO7	
	PSO 1. a	PSO 1. b	PSO 2	PSO 3. a	PSO 3. b	PSO 4 .a	PSO 4. b	PSO5	PSO6	PSO7
CO1	L	L	L	L	L	L	L	M	H	H
CO2	L	M	M	M	M	M	M	M	H	H
CO3	M	L	H	M	M	M	M	L	H	H
CO4	H	M	H	M	M	H	M	L	H	H
CO5	H	H	H	H	M	M	M	L	H	H

Semester II	**ALLIED MATHEMATICS -II**	**Hours/Week:3**	
Allied Course-I		**Credits:3**	
Course Code 20UMTA21		**Internal 25**	**External 75**

COURSEOUTCOMES

On completion of this course, the students will be able to

CO1: retrieve the basic concepts in differentiation, integration, algebraic equations and trigonometric functions. [K1]

CO2: explain the concepts in Algebra, Vector Calculus and Trigonometry. [K2]

CO3: apply vector differentiation, vector integration and trigonometric functions in various fields. [K3]

CO4: find approximate solutions, establish the relation between roots and coefficients of an equation. [K3]

CO5: analyze the challenging problems in Vector Calculus, Algebra and Trigonometry. [K4]

Course Code 20UMTA21	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	**H**	**M**	**H**	**M**	**M**	**-**	**-**
CO2	**H**	**L**	**H**	**M**	**M**	**L**	**-**
CO3	**H**	**M**	**H**	**M**	**M**	**L**	**-**
CO4	**M**	**M**	**L**	**M**	**M**	**-**	**-**
CO5	**H**	**L**	**L**	**M**	**M**	**L**	**-**

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Semester II	**ALLIED MATHEMATICS - III**	**Hours/Week:3**	
Allied Course-I		**Credits:3**	
Course Code		**Internal**	**External**
20UMTA22		**25**	**75**

COURSEOUTCOMES

On completion of this course, the students will be able to

CO1: retrieve the basic concepts in Statistics and Operations Research. [K1]

CO2: explain the techniques used to solve the problems in Statistics and Operations Research. [K2]

CO3: calculate some statistical constants to get statistical inference and use O.R techniques to solve real life problems. [K3]

CO4: examine the statistical data to draw conclusion in Correlation and Regression. [K4]

CO5: analyze the challenging problems in real life to get solutions. [K4]

Course Code 20UMTA22	PO1	PO2	PO3	PO4	PO5	PO6	PO 7
CO1	H	M	H	H	H	H	-
CO2	H	M	H	H	H	M	-
CO3	H	H	H	H	H	M	-
CO4	H	M	H	H	H	M	-
CO5	H	M	H	H	H	M	-

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Semester II	**APPLIED BOTANY**	**Hours/Week: 4**	
Allied Course		**Credits: 4**	
Course Code 20UBYA21		**Internal 25**	**External 75**

COURSE OUTCOMES

On completion of the course, the students will be able to

CO1 : state the applied areas of Botany. [K1]

CO2 : learnt skills related to laboratory as well as industries based work. [K2]

CO3 : explain the applications of plants in various industries and how to become an entrepreneur. [K2]

CO4 : solve the issues related to the applied areas of Botany. [K3]

CO5 : analyze the applied potential areas/branches of Botany. [K4]

Course Code 20UBYA21	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	**H**	**M**	**L**	**L**	**L**	**-**	**-**
CO2	**H**	**M**	**M**	**M**	**L**	**-**	**-**
CO3	**H**	**M**	**M**	**M**	**L**	**-**	**-**
CO4	**M**	**M**	**M**	**M**	**L**	**-**	**-**
CO5	**M**	**M**	**M**	**M**	**L**	**-**	**-**

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Semester II	**TAXONOMY OF ANGIOSPERMS, MEDICINAL BOTANY AND APPLIED BOTANY**	**Hours/Week: 2**	
Allied Course		**Credits: 2**	
Course Code 20UBYA21P		**Internal 40**	**External 60**

COURSE OUTCOMES

On completion of the course, the students will be able to

CO1 : apply the basic concepts learn in taxonomy for the identification of Botanical families and preparation of slides. [K3]

CO2 : draw the morphological features and identify the therapeutic properties of medicinal plants. [K3]

CO3 : observe and comment on the applied botany specimens. [K3]

CO4 : infer about the Horticulture technique. [K3]

CO5 : analyze and categorize the horticultural techniques and in the related areas. [K4]

Course Code 20UBYA21P	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	**H**	**M**	**H**	**M**	**L**	**-**	**L**
CO2	**H**	**M**	**H**	**M**	**L**	**M**	**L**
CO3	**H**	**M**	**H**	**M**	**L**	**M**	**L**
CO4	**H**	**M**	**H**	**M**	**L**	**M**	**L**
CO5	**H**	**M**	**H**	**M**	**L**	**M**	**L**

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Semester II	**POLYMER CHEMISTRY**	**Hours/Week: 2**	
Skill Enhancement Course -1		**Credits: 2**	
Course Code 20UCHS21		**Internal 40**	**External 60**

COURSE OUTCOMES

On completion of the course, the students will be able to

CO1: remember the basic concepts in organic and inorganic polymers. [K1]

CO2: understand the various types and synthesis of organic and inorganic polymers. [K2]

CO3: discuss about the various types of polymerization, plastics and rubber with its preparation and uses. [K2]

CO4: apply the steps to prepare and improve the quality of different types of polymers. [K3]

CO5: analyse the different methodology for preparations, classification, properties and uses of polymers.[K4]

Course Code 20UCHS21	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1. a	PSO 1. b	PSO 2	PSO 3. a	PSO 3. b	PSO 4. a	PSO 4 b	PSO5	PSO 6	PSO7
CO1	H	M	H	H	L	L	M	--	-	M
CO2	H	H	H	H	M	M	M	--	-	M
CO3	H	H	H	H	H	H	H	---	-	H
CO4	H	H	M	M	H	L	M	---	-	H
CO5	H	H	H	M	M	M	M	---	-	H

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Semester II	**POLYMER CHEMISTRY**	**Hours/Week: 2**	
Skill Enhancement Course -1		**Credits: 2**	
Course Code 20UCHS21N		**Internal 40**	**External 60**

COURSE OUTCOMES

On successful completion of the course, the learners shall be able to

CO1: explain the classification of polymers [K1]
CO2: to recognize the chemistry of polymer formation [K2]
CO3: understand the mode of preparation of vulcanized rubber, resins, plastics and biomedical polymers [K2]
CO4: apply the techniques of polymer preparation into a novel polymeric compound [K3]
CO5: analyse the utility of different polymers [K4]

	PO1		PO2	PO3		PO4		PO5	PO6	PO7
20UCHS21N	**PSO 1 a**	**PSO 1 b**	**PSO 2**	**PSO 3 a**	**PSO 3 b**	**PSO 4 a**	**PSO 4 b**	**PSO 5**	**PSO 6**	**PSO 7**
CO 1	**H**	**M**	**H**	**H**	**L**	**L**	**M**	**M**	**L**	**M**
CO 2	**H**	**H**	**H**	**H**	**M**	**M**	**M**	**M**	**L**	**M**
CO 3	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**M**	**H**
CO 4	**H**	**H**	**M**	**M**	**H**	**L**	**M**	**M**	**M**	**H**
CO 5	**H**	**H**	**H**	**M**	**M**	**M**	**M**	**M**	**M**	**H**

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Semester III	**INORGANIC, ORGANIC AND PHYSICAL CHEMISTRY-I**	**Hours/Week: 5**	
Core Course-5		**Credits: 5**	
Course Code 20UCHC31		**Internal 25**	**External 75**

COURSE OUTCOMES

On completion of the course, the students will be able to

CO1: know the basic concepts of semi micro qualitative analysis, aliphatic nitrogen and alicyclic compounds colligative properties, solid state and group theory . [K1]

CO2: explain the principles of qualitative analysis, properties of aliphatic nitrogen and alicyclic compounds and the theory of dilute solutions solid state and group theory. [K2]

CO3: apply the principles of qualitative analysis, sketch the conformations of cyclic and a Cycle compounds, experiment with the colligative properties and identify the types of solid and group properties.[K3]

CO4: analyse the applications of solubility product principle in qualitative analysis, Tautomerism, Nitrogthe relation between different colligative properties, crystal structure and various aspects of group theory. [K4]

CO5: appraise the use of organic reagents in inorganic analysis, the stability of conformers and the structure of crystal systems. [K5]

Course Code 20UCHC31	**PO1**		**PO2**	**PO3**		**PO4**		**PO5**	**PO6**	**PO7**
	PSO 1. a	**PSO 1. b**	**PSO 2**	**PSO 3.a**	**PSO 3. b**	**PSO 4. a**	**PSO 4. b**	**PSO 5**	**PSO 6**	**PSO 7**
CO1	**L**	**L**	**H**	**L**	**M**	**M**	**M**	**--**	**-**	**H**
CO2	**M**	**M**	**H**	**H**	**M**	**H**	**H**	**---**	**-**	**H**
CO3	**L**	**L**	**L**	**L**	**M**	**H**	**M**	**---**	**-**	**L**
CO4	**M**	**M**	**M**	**H**	**H**	**H**	**H**	**---**	**-**	**H**
CO5	**H**	**H**	**L**	**M**	**L**	**H**	**H**	**--**	**-**	**M**

Semester III	**Properties of Matter and Heat**	**Hours/Week:4**	
Allied Course		**Credits:4**	
Course Code 20UPCA31		**Internal 25**	**External 75**

COURSE OUTCOMES

On completion of the course, the students will be able to

CO1: explain the basic laws, concepts in properties of matter and heat. [K1]

CO2: derive mathematical relations involved in properties of matter and heat.[K2]

CO3: discuss the experimental methods to determine the physical parameters related to properties of matter and heat.[K2]

CO4: illustrate the applications of properties of matter and heat.[K3]

CO5: analyze the different moduli of elasticity, molecular theory of surface tension, Isothermal and adiabatic changes, Applications of Curie's law and Maxwell's law of distribution of molecular speed. [K4]

Course Code 20UPCA31	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**
CO1	**H**	**M**	**L**	**-**	**-**	**-**	**M**
CO2	**H**	**H**	**H**	**L**	**-**	**-**	**-**
CO3	**H**	**M**	**M**	**M**	**-**	**-**	**-**
CO4	**H**	**H**	**H**	**M**	**-**	**L**	**-**
CO5	**H**	**M**	**M**	**M**	**H**	**-**	**-**

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Semester III	**FOOD CHEMISTRY**	**Hours/Week: 2**	
Skill Enhancement Course- 2		**Credits: 2**	
Course Code 20UCHS31		**Internal 40**	**External 60**

COURSE OUTCOMES

On completion of the course, the students will be able to

CO1: state the classification and functions of food, food processing, food preservation, food additives, food adulteration and food poisons. [K1]

CO2: explain the functions of food, types of food preservation, food processing, sweeteners, common food adulterants and sources of chemical poisons in food. [K2]

CO3: discuss the role of carbohydrates, proteins, chemical preservatives, food colours, food adulterants and food poisons. [K2]

CO4: interpret the functions of proteins, lipids, effect of cooking on various food stuffs, flavouring agents, antioxidants, food adulterants in food items and food poisons. [K3]

CO5: analyze the concept of various nutrients in food, food processing methods, food additives, food adulteration and treatment of food poisoning. [K4]

Course Code 20UCHS31	**PO1**		**PO2**	**PO3**		**PO4**		**PO5**	**PO6**	**PO7**
	PSO 1. a	**PSO 1. b**	**PSO 2 .**	**PSO 3. a**	**PSO 3. b**	**PSO 4. a**	**PSO 4. b**	**PSO 5**	**PSO 6**	**PSO 7**
CO1	**L**	**M**	**L**	**H**	**M**	**H**	**M**	**---**	**-**	**H**
CO2	**L**	**M**	**L**	**H**	**L**	**H**	**H**	**---**	**-**	**H**
CO3	**M**	**L**	**L**	**H**	**L**	**L**	**H**	**---**	**-**	**H**
CO4	**M**	**L**	**L**	**M**	**L**	**L**	**H**	**---**	**-**	**H**
CO5	**H**	**M**	**M**	**H**	**L**	**M**	**H**	**---**	**-**	**H**

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Semester III	**INDUSTRIAL CHEMISTRY**	**Hours/Week: 2**	
Non Major Elective Course -1		**Credits: 2**	
Course Code 20UCHN31		**Internal 40**	**External 60**

COURSE OUTCOMES

On completion of the course, the students will be able to

CO1: identify the chemistry of fertilizers, milk products, and fuels, polymers, cleaning agents, cements, insecticides and pesticides. [K1]

CO2: classify the different types and composition of milk products, plant nutrients, pesticides, polymers, cleaning agents, fuels and raw materials of cement. [K2]

CO3: discuss on the composition and uses of dairy products, plant nutrients, polymers, fuels, manufacture of soap, detergents and cement. [K2]

CO4: illustrate on the composition and effect of heating milk, fertilizers, pesticides and its health hazards, preparation and uses of polymers, manufacture of cement, soap and detergents with its effect in water resources, different fuels and air pollution by automobiles with control measures. [K3]

CO5: predict about the types, composition, preparation, uses, effects and remedies for dairy products, fertilizers, pesticides, polymers, cleaning agents, fuels and cement with different industries in India. [K3]

Course Code 20UCHN31	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	**M**	**M**	**L**	**M**	**L**	**M**	**M**
CO2	**M**	**L**	**L**	**M**	**M**	**L**	**M**
CO3	**L**	**M**	**M**	**L**	**M**	**L**	**L**
CO4	**L**	**L**	**L**	**-**	**L**	**L**	**L**
CO5	**L**	**-**	**L**	**L**	**L**	**L**	**L**

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Semester III	**WOMEN STUDIES**	**Hours/Week:1**
Generic Elective Course-1		**Credit : 1**
Course Code 20UGEW32		**Internal 100**

COURSE OUTCOMES

On completion of the course, the students will be able to

CO 1: state the significance of Women Studies in establishing Gender Justice. [K1]

CO 2: identify the multi-faceted role of Women in the Current Scenario. [K1]

CO 3: summarise their knowledge on Women Studies and Women Rights. [K2]

CO 4: illustrate the challenges and strategies in upholding Women Empowerment. [K2]

CO 5: manipulate awareness on policies, schemes, atrocities and legal protection For Women. [K3]

Course Code 20UGEW32	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	H	M	-	-	-	-	M
CO2	H	M	-	-	-	M	-
CO3	H	M	-	-	L	L	M
CO4	H	M	-	-	L	-	-
CO5	H	M	-	-	L	M	M

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Semester IV	**INORGANIC, ORGANIC AND PHYSICAL CHEMISTRY-II**	**Hours/Week: 5**	
Core Course-6		**Credits: 5**	
Course Code 20UCHC41		**Internal 25**	**External 75**

COURSE OUTCOMES

On completion of the course, the students will be able to

CO1: know the basic concepts of d block elements, stereochemistry, carbohydrates, oils and fats, nuclear and quantum chemistry. [K1]

CO2: understand the properties of d block elements, stereoisomers, sugars and non-sugars, oils and fats, theory behind nuclear and quantum chemistry. [K2]

CO3: explain the metallurgy of coinage metals, dualistic nature of matter and principle of nuclear bomb, sketch the configuration of stereoisomers and carbohydrates. [K3]

CO4: compare coinage metals and eighth group elements, chiral and achiral compounds, oils and fats, applications of radioactivity and derive Schrodinger equation. [K4]

CO5: interpret the alloys and compounds of coinage metals, parameters of stereoisomers, oils and fats, uncertainity principle, life period of radioactive elements. [K5]

Course Code 20UCHC41	**PO1**		**PO2**	**PO3**		**PO4**		**PO5**	**PO6**	**PO7**
	PSO 1. a	**PSO 1. b**	**PSO 2**	**PSO 3. a**	**PSO 3. b**	**PSO 4. a**	**PSO 4. b**	**PSO 5**	**PSO 6**	**PSO 7**
CO1	**L**	**L**	**L**	**H**	**H**	**H**	**H**	**L**	**-**	**---**
CO2	**L**	**L**	**L**	**H**	**M**	**H**	**M**	**L**	**-**	**---**
CO3	**L**	**M**	**M**	**L**	**L**	**H**	**H**	**--**	**-**	**---**
CO4	**M**	**H**	**H**	**H**	**H**	**H**	**H**	**--**	**-**	**--**
CO5	**H**	**M**	**L**	**L**	**M**	**M**	**H**	**--**	**-**	**--**

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Semester IV	**INORGANIC, ORGANIC AND PHYSICAL CHEMISTRY-II**	**Hours/Week: 5**	
Core Course-6		**Credits: 5**	
Course Code 20UCHC41N		**Internal 25**	**External 75**

COURSE OUTCOMES

On completion of the course, the students shall be able to

CO1: comprehend the chemistry of d block elements, basic concepts of stereochemistry, carbohydrates, oils, fats, nuclear and quantum chemistry. [K1]

CO2: understand the characteristics of d block elements, distinguish the stereoisomers, sugars and non- sugars, oils and fats, different types of nuclear reactions and reactors.[K2]

CO3: relate coinage metals and the eighth group elements, dualistic nature of matter and principle of atom bomb and hydrogen bomb, predict the configuration of stereoisomers and elucidate the structure of carbohydrates. [K3]

CO4: analyse the metallurgy of coinage metals, the cause of optical activity in chiral and achiral compounds, artificial radioactivity and significance of Schrodinger's wave equation and examine oils and fats. [K4]

CO5: categorize the alloys of coinage metals, select appropriate methods for racemization, resolution of racemic mixtures and asymmetric synthesis, ascend and descend the sugar series and apply carbon dating and Schrodinger's wave equation to 1-dimensional and 3-D boxes. [K5]

Course code	**PO1**		**PO2**	**PO3**		**PO4**		**PO5**	**PO6**	**PO7**
20UCHC41N	**PSO 1 a**	**PSO 1 b**	**PSO 2**	**PSO 3 a**	**PSO 3 b**	**PSO 4 a**	**PSO 4 b**	**PSO 5**	**PSO 6**	**PSO 7**
CO 1	**H**	**H**	**L**	**H**	**H**	**H**	**H**	**M**	**L**	**M**
CO 2	**H**	**H**	**L**	**H**	**M**	**H**	**M**	**L**	**H**	**H**
CO 3	**H**	**H**	**M**	**L**	**L**	**H**	**H**	**M**	**H**	**H**
CO 4	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**M**	**H**
CO 5	**H**	**H**	**L**	**L**	**M**	**M**	**H**	**M**	**M**	**H**

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Semester IV	**INORGANIC SEMI MICRO QUALITATIVE ANALYSIS**	**Hours/Week: 2**	
Core Practical - 2		**Credits: 2**	
Course Code 20UCHC41P		**Internal 40**	**External 60**

COURSE OUTCOMES

On completion of the course, the students will be able to

CO1: apply systematic procedure and find out the non-interfering and interfering anions present in the given mixture. [K3]

CO2: identify the cations present in the given mixture. [K3]

CO3: find out a method to eliminate the interfering anions. [K3]

CO4: interpret the result & record them. [K4]

CO5: analyse the concentration of unknown solution of Fe (II) & Cu (II) ions and compare the result with the standard solution. [K4]

Course Code 20UCHC41P	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1 a	PSO 1 b	PSO 2.	PSO 3 a	PSO 3 b	PSO 4 a	PSO 4 b	PSO 5.b	PSO 6	PSO 7
CO1	L	L	H	M	M	M	L	L	--	M
CO2	L	L	H	M	M	M	L	L	--	M
CO3	M	L	H	M	M	M	L	L	--	M
CO4	M	L	H	M	M	H	L	L	--	M
CO5	H	M	H	M	M	H	L	L	--	M

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Semester IV	**Optics, Electricity & Electromagnetism and Electronics**	**Hours/Week:4**	
Allied Course		**Credits:4**	
Course Code 20UPCA41		**Internal 25**	**External 75**

COURSE OUTCOMES

On completion of the course, the students will be able to

CO1: explain the basic concepts inoptics, electricity, electromagnetism and Digital lectronics. [K1]

CO2: derive mathematical relations involved inoptics, electricity, electro magnetism, and digital electronics by applying the relevant concepts.[K2]

CO3: discuss the experimental methods to determine the physical parameters related to electricity, electromagnetism, optics. [K2]

CO4: illustrate the applications of electricity, electromagnetism, optics and ogicgates.[K3]

CO5: analyze the series and parallel resonance circuits, applications of spectroscopy, kirchoff's law, applications of half adder and full adder. [K4]

Course Code 20UPCA41	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	**H**	**M**	**L**	**-**	**-**	**-**	**M**
CO2	**H**	**H**	**H**	**L**	**-**	**-**	**-**
CO3	**H**	**M**	**M**	**M**	**-**	**-**	**-**
CO4	**H**	**H**	**H**	**M**	**-**	**L**	**-**
CO5	**H**	**M**	**M**	**M**	**H**	**-**	**-**

Semester III/IV	**GENERAL PHYSICS**	**Hours/Week:2**	
Allied Course II Practical		**Credits:2**	
Course Code 20UPCA41P		**Internal 40**	**External 60**

COURSE OUTCOMES

On completion of the practical, the students will be able to

CO1: apply the theoretical concepts in Mechanics and Properties of matter, Optics and electronics related experiments. [K3]

CO2: draw the circuit diagram /experimental set up with tabular column and use the formula to calculate the necessary physical parameters. [K3]

CO3: develop technical skills in handling the equipment and components and make required measurements related to the experiment. [K3]

CO4: work as ateam while doing group practical and uphold the truthfulness in all aspects of work by avoiding unethical or misrepresenting data. [K3]

CO5: analyze and evaluate the accuracy of the results obtained and compare it with the theoretical value. [K4, K5]

Course Code 20UPCA41P	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	**M**	**L**	**M**	**H**	**M**	**M**	**M**
CO2	**M**	**M**	**M**	**M**	**L**	**L**	**L**
CO3	**M**	**L**	**M**	**M**	**L**	**M**	**L**
CO4	**M**	**L**	**M**	**H**	**L**	**M**	**M**
CO5	**M**	**L**	**M**	**M**	**M**	**M**	**L**

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Semester IV	**LEATHER CHEMISTRY**	**Hours/Week: 2**	
Skill Enhancement Course- 3		**Credits: 2**	
Course Code 20UCHS41		**Internal 40**	**External 60**

COURSE OUTCOMES

On completion of the course, the students will be able to

CO1: know about the history of tanning industry, leather processing, tanning process and pollution due to tanneries. [K1]

CO2: understand the various steps involved in processing of leather and tanning and treatment of pollutants. [K2]

CO3: classify the different tannage materials, different methods for tanning process and Types of pollution arise from leather industry. [K2]

CO4: apply different steps of leather processing, tanning and finishing process to get different types of leather. [K3]

CO5: analyze the effect of various types of leather processing, tanning and finishing process, pollution due to tanneries and the treatment of tannery effluents. [K4]

Course Code 20UCHS41	PO1		PO2	PO3		PO4		PO6	PO7	
	PSO 1.a	PSO 1.b	PSO 2.	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO 6	PSO 7.a	PSO 7.b
CO1	L	L	L	L	L	H	L	M	-	---
CO2	L	L	M	L	L	H	M	M	-	--
CO3	L	L	M	L	L	H	M	M	-	L
CO4	M	H	M	L	L	H	M	H	-	L
CO5	H	M	M	M	L	H	L	H	-	L

Semester IV	**Internship / Field Project (2020 -21 onwards)**	**Hours/Week: 0**
PART IV		**Credit: 1**
Course Code 20UCHI41G		**Internal 100**

COURSE OUTCOMES

On completion of the Internship/Field Project, students will be able to

CO1: relate their theoretical insights with hands-on experience. [K3]

CO2: develop technical skills to their respective field of study. [K3]

CO3: demonstrate the attributes such as observational skills, team spirit and inter personal skills built through site visits. [K3]

CO4: exhibit the written communication skills acquired through internship/field project. [K3]

CO5: analyze the observations and results and communicate their academic and technological knowledge appropriately oral means. [K4]

Course Code 20UCHI41G	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	H	M	M	M	M	H	-
CO2	H	M	M	M	M	H	
CO3	H	M	-	-	-	H	
CO4	H	H	M	M	-	M	H
CO5	H	M	H	H	M	-	

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Semester IV	**DRUGS AND NATURAL PRODUCTS**	**Hours/Week: 2**	
Non Major Elective Course - 2		**Credits: 2**	
Course Code 20UCHN41		**Internal 40**	**External 60**

COURSE OUTCOMES

On completion of the course, the students will be able to

CO1: define the various drug terminologies, antibiotics, chemotherapy agents, vitamins, hormones and natural products. [K1]

CO2: classify the drugs studies, antibiotics, chemotherapeutic agents, vitamins, hormones and natural products. [K2]

CO3: discuss the pharmaceutical terminologies, antibiotics drug action and effects, types of therapeutic agents, effects and uses of vitamins, hormones and natural products. [K2]

CO4: interpret the pharmaceutical terms, activity and effects of bacterial inflectional drugs, action of different therapeutic agents, biological importance and deficiency of vitamins and hormones, medicinal significance of terpenoids and alkaloids. [K3]

CO5: predict the drug terminologies, drug activity and effects of antibiotics nature and types of therapeutic agents, effects and importance of vitamins and steroids, medicinal uses of natural products. [K3]

Course Code 20UCHN41	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	**M**	**M**	**L**	**L**	**M**	**M**	**L**
CO2	**L**	**L**	**M**	**M**	**L**	**L**	**M**
CO3	**M**	**M**	**L**	**L**	**L**	**M**	**L**
CO4	**M**	**L**	**L**	**L**	**-**	**L**	**L**
CO5	**L**	**L**	**L**	**-**	**L**	**L**	**M**

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Semester IV	**CONSTITUTION OF INDIA**	**Hours/Week: 1**
Generic Elective Course		**Credit : 1**
Course Code 20UGEC41		**Internal 100**

COURSE OUTCOMES

On completion of the course, the students will be able to

CO1: identify the importance of Constitution in a State. [K1]

CO2: recognize the concepts and features of Indian constitutions. [K1]

CO3: discuss the forms and functions of Government and its political institutions. [K2]

CO4: trace the functions of legislative, executive and judiciary in the Constitution. [K2]

CO5: construct knowledge over the Indian Constitution. [K3]

Course Code 20UGEC41	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	H	M	-	-	-	-	M
CO2	H	M	-	-	-	-	M
CO3	H	M	-	-	-	M	M
CO4	H	M	-	-	-	-	M
CO5	H	M	-	-	M	M	M

Semester V	**ORGANIC CHEMISTRY-II**	**Hours/Week: 4**	
Core Course-7		**Credits: 4**	
Course Code 20UCHC51		**Internal 25**	**External 75**

COURSE OUTCOMES

On completion of the course, the students will be able to

CO1: acquire basic knowledge about aromatic compounds. [K1]

CO2: explain the chemistry of aromatic compounds. [K2]

CO3: make use of aromatic compounds according to the needs of the society. [K3]

CO4: analyse benzenoid and non-benzenoid compounds. [K4]

CO5: compare aromatic and aliphatic compounds and estimate aromatic compounds volumetrically. [K5]

Course Code 20UCHC51	**PO1**		**PO2**	**PO3**		**PO4**		**PO5**	**PO6**	**PO7**
	PSO 1. a	**PSO 1. b**	**PSO 2.**	**PSO 3. a**	**PSO 3. b**	**PSO 4. a**	**PSO 4. b**	**PSO 5**	**PSO 6**	**PSO 7**
CO1	**H**	**H**	**H**	**L**	**L**	**H**	**H**	**H**	**-**	**H**
CO2	**H**	**H**	**H**	**L**	**L**	**H**	**H**	**M**	**-**	**H**
CO3	**H**	**H**	**H**	**L**	**L**	**H**	**H**	**H**	**-**	**H**
CO4	**H**	**H**	**H**	**L**	**L**	**H**	**H**	**H**	**-**	**H**
CO5	**H**	**H**	**H**	**L**	**L**	**H**	**H**	**H**	**-**	**H**

Semester V	**INORGANIC CHEMISTRY - II**	**Hours/Week: 4**	
Core Course-8		**Credits: 4**	
Course Code 20UCHC52		**Internal 25**	**External 75**

COURSE OUTCOMES

On completion of the course, the students shall be able to

CO1: understand the basic concepts of coordination compounds. [K1]

CO2: know the classifications and applications of organometallic and inorganic polymers in industrial level. [K2]

CO3: apply the extraction techniques of inner – transition elements in global level. [K3]

CO4: make use of acid, base and non-aqueous solvents in chemical industries. [K4]

CO5: appreciate the role elements in bioinorganic molecules in human wellbeing. [K5]

Course Code 20UCHC52	**PO1**		**PO2**	**PO3**		**PO4**		**PO5**	**PO6**	**PO7**
	PSO 1. a	**PSO 1. b**	**PSO 2**	**PSO 3. a**	**PSO 3. b**	**PSO 4. a**	**PSO 4. b**	**PSO 5**	**PSO 6**	**PSO 7**
CO1	**H**	**H**	**H**	**L**	**L**	**H**	**H**	**H**	**-**	**H**
CO2	**H**	**H**	**H**	**L**	**L**	**H**	**H**	**M**	**-**	**H**
CO3	**H**	**H**	**H**	**L**	**L**	**H**	**H**	**H**	**-**	**H**
CO4	**H**	**H**	**H**	**L**	**L**	**H**	**H**	**H**	**-**	**H**
CO5	**H**	**H**	**H**	**L**	**L**	**H**	**H**	**H**	**-**	**H**

Semester V	**PHYSICAL CHEMISTRY-I**	**Hours/Week: 4**	
Core Course- 9		**Credits: 4**	
Course Code 20UCHC53		**Internal 25**	**External 75**

COURSE OUTCOMES

On completion of the course, the students will be able to

CO1: gain knowledge on the first, second, third law of thermodynamics, concepts of phase rule, chemical kinetics and photochemistry. [K1]

CO2: understand the facts of thermochemistry, Nernst heat theorem, Absolute entropy, Gibb's phase rule, theories of reaction rates and comparative study of thermal and Photochemical reactions. [K2]

CO3: Apply the fundamental concepts of thermodynamics to various systems, phase rule to simple systems, various photochemical processes, reaction rate and rate law. [K3]

CO4: Analyze the physical significance of enthalpy, entropy, partial molar properties, theory of fractional distillation, Nernst distribution law, photophysical processes and various theories of reaction rate. [K4]

CO5: Evaluate variation of enthalpy, entropy with P,V,T, the utility of Gibb's –Helmholtz equation, Maxwell's relations, fugacity, activity, residual entropy, solvent extraction, ARRT and photochemistry. [K5]

Course Code 20UCHC53	**PO1**		**PO2**	**PO3**		**PO4**		**PO5**	**PO6**	**PO7**
	PSO 1. a	**PSO 1. b**	**PSO 2.**	**PSO 3. a**	**PSO 3. b**	**PSO 4. a**	**PSO 4. b**	**PSO 5**	**PSO 6**	**PSO 7**
CO1	**H**	**H**	**H**	**H**	**H**	**H**	**M**	**H**	**-**	**M**
CO2	**H**	**H**	**H**	**L**	**M**	**M**	**M**	**M**	**-**	**M**
CO3	**H**	**H**	**H**	**L**	**H**	**H**	**H**	**H**	**-**	**M**
CO4	**H**	**H**	**H**	**H**	**L**	**H**	**H**	**H**	**-**	**M**
CO5	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**-**	**M**

Semester V	**Analytical Instrumentation and CHEMDRAW**	**Hours/Week: 4**	
Discipline Specific Elective1(DSEC 1)		**Credits: 4**	
Course Code 20UCHE51		**Internal 25**	**External 75**

COURSE OUTCOMES

On completion of the course, the students shall be able to

CO1: understand the basic principles in precipitation and analytical instrumentation. [KI]

CO2: classify the thermo gravimetric and colorimetric methods. [K2]

CO3: appraise the Software tools and the chromatographic techniques. [K3]

CO4: analyse the graphical results and working parts of NMR, UV and IR. [K4]

CO5: calculate the significant figures and measure the structures using software tools. [K5]

Course Code 20UCHE51	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1. a	PSO 1. b	PSO 2.	PSO 3. a	PSO 3. b	PSO 4. a	PSO 4. b	PSO 5	PSO 6	PSO 7
CO1	H	H	H	H	H	H	M	H	-	M
CO2	H	H	H	L	M	M	M	M	-	M
CO3	H	H	H	L	H	H	H	H	-	M
CO4	H	H	H	H	L	H	H	H	-	M
CO5	H	H	H	H	H	H	H	H	-	M

Semester V	**NANO SCIENCE**	**Hours/Week: 4**	
DSEC-1		**Credits: 4**	
Course Code 20UPHE52		**Internal 25**	**External 75**

COURSE OUTCOMES

On completion of the course, the students will be able to

CO1 : explain the fundamentals in related to bulk materials, preparation and characterization of nanomaterials. [K1]

CO2 : discuss the techniques involved in preparation, characterization properties and applications of nanomaterials. [K2]

CO3 : apply the learned concepts to synthesize and characterize the nanomaterials. [K3]

CO4 : analyze the different structures of nanomaterials. [K4]

CO5 : Justify the impact of nanomaterials in the field of medicine, sensors, energy storage devices and commercial products. [K5]

Course Code 20UPHE52	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1a	PSO 1b	PSO 2	PSO 3a	PSO 3b	PSO 4a	PSO 4b	PSO 5	PSO 6	PSO 7
CO1	H	-	H	H	-	M	H	H	-	M
CO2	H	H	M	M	-	M	H	M	-	M
CO3	H	H	M	L	L	H	H	-M	-	-
CO4	H	M	M	M	L	H	H	M	-	-
CO5	H	H	M	M	L	H	H	M	M	M

Semester V	**TEXTILE CHEMISTRY**	**Hours/Week: 4**	
Discipline Specific Elective1 (DSEC 3)		**Credits: 4**	
Course Code 20UCHE53		**Internal 25**	**External 75**

COURSE OUTCOMES

On completion of the course, the students will be able to

CO1 : understand the classification of natural fibres and their physical and chemical properties. [K1]

CO2 : know about different synthetic fibres, their manufacture and properties. [K2]

CO3 : acquire knowledge about scouring and desizing processes. [K3]

CO4 : clear idea about bleaching technique. [K4]

CO5 : acquire knowledge about principles of dyeing, synthesis of dyestuffs and fastness properties. Students should be able to dye different fibres and test various fastness properties. [K5]

Course Code 20UCHE53	**PO1**		**PO2**	**PO3**		**PO4**		**PO5**	**PO6**	**PO7**
	PSO 1. a	**PSO 1. b**	**PSO 2.**	**PSO 3. a**	**PSO 3. b**	**PSO 4. a**	**PSO 4. b**	**PSO 5.a**	**PSO 6**	**PSO 7**
CO1	**H**	**H**	**H**	**H**	**H**	**H**	**M**	**H**	**-**	**M**
CO2	**H**	**H**	**H**	**L**	**M**	**M**	**M**	**M**	**-**	**M**
CO3	**H**	**H**	**H**	**L**	**H**	**H**	**H**	**H**	**-**	**M**
CO4	**H**	**H**	**H**	**H**	**L**	**H**	**H**	**H**	**-**	**M**
CO5	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**-**	**M**

Semester VI	**PROJECT**	**Hours/Week: 0**
Core Course-10		**Credits: 1**
Course Code 20UCHC5PR		**Internal 100 Marks**

COURSE OUTCOMES

On completion of the course, the students will be able to

CO1: apply the learned concepts to select projects in Organic, Inorganic and Physical chemistry. [K3]

CO2: apply the theoretical knowledge to synthesis and character study on the chemical compounds. [K3]

CO3: execute the technical skills in handling the equipment, apparatus and exhibit written communication skill acquired in related projects. [K3]

CO4: analyze the significance of spectroscopic data and elucidate the technological knowledge orally. [K4]

CO5: assess the project to meet the challenges to fulfill the global needs and satisfy the greener environment. [K5]

Course Code 20UCHC5PR	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1a	PSO 1b	PSO 2	PSO 3a	PSO 3b	PSO 4a	PSO 4b	PSO 5	PSO 6	PSO 7
CO1	H	H	H	H	H	H	H	M	H	H
CO2	H	H	M	H	H	M	H	M	M	M
CO3	H	H	M	M	M	H	H	M	H	M
CO4	H	H	H	M	M	H	H	M	H	M
CO5	H	H	M	M	M	H	H	M	H	M

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Semester V	**ANALYSIS OF OILS / FATS AND WATER**	**Hours/Week: 1T+1P**	
Skill Enhancement Course- 4		**Credits: 2**	
Course Code 20UCHS51P		**Internal 40**	**External 60**

COURSE OUTCOMES

On completion of the course, the students will be able to

CO1: experiment with various oils/fats and water samples. [K3]

CO2: choose the specific primary standard for different titrations. [K3]

CO3: make use of physical properties of oil to identify them. [K3]

CO4: organise water samples as soft and hard. [K3]

CO5: analyse the quality of water and oil. [K4]

Course Code 20UCHS51P	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO 2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO 5	PSO 6	PSO 7
CO1	H	H	H	M	M	H	L	L	H	M
CO2	H	H	H	M	M	H	L	L	H	M
CO3	H	H	H	M	M	H	L	L	H	M
CO4	H	H	H	M	M	H	L	L	H	M
CO5	H	H	H	M	M	H	L	L	H	M

Semester V	**SOIL CHEMISTRY**	**Hours/Week: 2**	
SEC (SEC 5)		**Credits: 2**	
Course Code 20UCHS52		**Internal 40**	**External 60**

COURSE OUTCOMES

On completion of the course, the students will be able to

CO1: recognize the soil and its formation. [K1]

CO2: classify the properties and reactions of soil. [K2]

CO3: describe the bio fertilizers and soil reclamation. [K2]

CO4: summarize the ion exchange reactions the factors affecting on soil pH. [K3]

CO5: illustrate the soil contents and bio conservation of agricultural waste. [K4]

Course Code 20UCHS52	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO 2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO 5.a	PSO 6	PSO 7
CO1	H	H	H	H	H	H	M	H	-	M
CO2	H	H	H	L	M	M	M	M	-	M
CO3	H	H	H	L	H	H	H	H	-	M
CO4	H	H	H	H	L	H	H	H	-	M
CO5	H	H	H	H	H	H	H	H	-	M

Semester V	**Laboratory Skills and Safety Measures**	**Hours/Week: 0**
Extra credit Course-1		**Credits: 2**
Course Code 20UCHCO51		**Internal 100**

COURSE OUTCOMES

On completion of the course, the students will be able to

CO1: recognize the fundamental concepts in chemicals and the skills to be handled

CO2: summarize the chemical laws and concentration terms of chemicals

CO3: relate the chemicals and skills to be applied in different stages of reactions

CO4: categorize the chemicals and the solutions

CO5: appraise the methods of equivalent weight, problems dealing with the preparation of reagents.

Semester V	**ENVIRONMENTAL STUDIES**	**Hours/Week: 2**	
PART IV		**Credits: 1**	
Course Code 20UGES51		**Internal 100**	**External -**

COURSE OUTCOMES

On completion of the course, students will be able to

CO1 : State the social aspects of the environment, the present condition of the earth and the impact of human activities locally and globally. [K1]

CO2 : Explain the biodiversity conservation, environmental hazards and current possible disasters. [K2]

CO3 : Describe the need for sustainable development. [K2]

CO4 : Solve the environmental associated problems. [K3]

CO5 : Identify environmental legislations and management strategies. [K3]

Course Code 20UGES51	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO 1	**H**	**H**	**L**	**L**	**L**	**-**	**L**
CO 2	**H**	**H**	**L**	**L**	**L**	**-**	**-**
CO 3	**H**	**H**	**L**	**L**	**L**	**-**	**-**
CO 4	**H**	**H**	**H**	**H**	**L**	**-**	**-**
CO 5	**H**	**H**	**H**	**H**	**L**	**-**	**H**

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Semester VI	**ORGANIC CHEMISTRY-III**	**Hours/Week: 5**	
Core Course-10		**Credits: 4**	
Course Code 20UCHC61		**Internal 25**	**External 75**

COURSE OUTCOMES

On completion of the course, the students will be able to

CO1: know the basic concepts of spectroscopy, natural products, biomolecules and molecular rearrangements. [K1]

CO2: outline the spectroscopic principles, classify natural products, biomolecules, molecular rearrangements and dyes. [K2]

CO3: identify spectrums, alkaloids and terpenoids in plants, biomolecules present in human body and choose reagents for synthesis. [K3]

CO4: analyse the significance of spectroscopy, natural products, biomolecules, molecular rearrangements and dyes. [K4]

CO5:interpret spectrums and elucidate structures to meet up global needs, value biomolecules and perceive the benefit of the reagents, rearrangements and dyes in accomplishing a greener environment. [K5]

Course Code 20UCHC61	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1. a	PSO 1. b	PSO 2.	PSO 3. a	PSO 3. b	PSO 4 .a	PSO 4. b	PSO 5.a	PSO 6	PSO 7
CO1	**H**	**H**	**M**	**M**	**H**	**H**	**M**	**M**	**-**	**M**
CO2	**H**	**H**	**M**	**M**	**H**	**H**	**M**	**M**	**-**	**M**
CO3	**H**	**H**	**L**	**L**	**H**	**H**	**H**	**H**	**-**	**H**
CO4	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**-**	**H**
CO5	**H**	**H**	**L**	**M**	**M**	**H**	**H**	**H**	**-**	**H**

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Semester VI	**PHYSICAL CHEMISTRY-II**	**Hours/Week: 5**	
Core Course- 11		**Credits: 4**	
Course Code 20UCHC62		**Internal 25**	**External 75**

COURSE OUTCOMES

On completion of the course, the students will be able to

CO1: recall the fundamental concepts of electrochemistry and principles of spectroscopic techniques like microwave, IR, Raman and UV visible spectroscopy. [K1]

CO2: understand the theories of electrochemical cells and spectroscopic techniques such as IR, Raman, microwave and UV visible. [K2]

CO3: apply the theory and applications of electrochemical principles and spectroscopic techniques such as IR, UV visible, Raman and microwave. [K3]

CO4: Analyze the conductivity, emf measurement and Compare IR and Raman spectroscopy and their applications. [K4]

CO5: Interpret the physical concepts of electrochemistry spectroscopy. [K5]

Course Code 20UCHC62	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1a	PSO 1b	PSO 2	PSO 3a	PSO 3b	PSO 4a	PSO 4b	PSO 5	PSO 6	PSO 7
CO1	H	H	H	L	H	L	M	L	-	M
CO2	H	H	H	M	M	H	M	M	-	M
CO3	H	H	H	M	H	H	M	M	-	M
CO4	H	H	H	L	L	H	H	M	-	M
CO5	H	H	H	L	L	M	M	M	-	M

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Semester VI	**APPLIED CHEMISTRY**	**Hours/Week: 5**	
Core Course- 12		**Credits: 4**	
Course Code 20UCHC63		**Internal 25**	**External 75**

COURSE OUTCOMES

On completion of the course, the students will be able to

CO1: understand the nutrients in fertilizers and raw chemical materials for industries. [K1]

CO2: summarize the processes involved in fertilizers, fireworks, petrochemicals and paper industry. [K2]

CO3: prepare the paints, wine, Beer and power alcohol. [K3]

CO4: classify the explosives, fuels, corrosion and prevention. [K4]

CO5: appraise the cement, glass and ceramic industries. [K5]

Course Code 20UCHC63	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1a	PSO 1b	PSO 2	PSO 3a	PSO 3b	PSO 4a	PSO 4b	PSO 5	PSO 6	PSO 7
CO1	**H**	**H**	**H**	**L**	**H**	**L**	**M**	**L**	**-**	**M**
CO2	**H**	**H**	**H**	**M**	**M**	**H**	**M**	**M**	**-**	**M**
CO3	**H**	**H**	**H**	**M**	**H**	**H**	**M**	**M**	**-**	**M**
CO4	**H**	**H**	**H**	**L**	**L**	**H**	**H**	**M**	**-**	**M**
CO5	**H**	**H**	**H**	**L**	**L**	**M**	**M**	**M**	**-**	**M**

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Semester V/VI	**GRAVIMETRIC ANALYSIS AND ORGANIC PREPARATION**	**Hours/Week: 3**	
Core Practical – 3		**Credits: 3**	
Course Code 20UCHC61P		**Internal 40**	**External 60**

COURSE OUTCOMES

On completion of the course, the students shall be able to

CO1: apply the theoretical concepts of gravimetric analysis in lead, barium, copper and nickel by gravimetric estimation. [K3]

CO2: make use of the principles of chromatography to separate carbohydrates, lipids and amino acids. [K3]

CO3: prepare organic compounds on applying simple reaction mechanism. [K3]

CO4: analyse the metal ions by gravimetric method. [K3]

CO5: to differentiate carbohydrates, lipids and amino acids from the given mixture. [K4]

Course Code 20UCHC61P	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1 a	PSO 1 b	PSO 2	PSO 3 a	PSO 3 b	PSO 4 a	PSO 4 b	PSO 5	PSO 6	PSO 7
CO1	H	H	H	M	M	H	L	L	H	M
CO2	H	H	H	M	M	H	L	L	H	M
CO3	H	H	H	M	M	H	L	L	H	M
CO4	H	H	H	M	M	H	L	L	H	M
CO5	H	H	H	M	M	H	L	L	H	M

Semester VI	**ORGANIC ANALYSIS AND ESTIMATION**	**Hours/Week: 3**	
Core Practical - 4		**Credits: 3**	
Course Code 20UCHC62P		**Internal 40**	**External 60**

COURSE OUTCOMES

On completion of the course, the students shall be able to

CO1: apply the theoretical concepts of organic chemistry in qualitative and quantitative analyses of organic compounds. [K3]

CO2: write the systematic procedure for the analysis of organic Compounds. [K3]

CO3: develop the laboratory skills in handling the reagents and chemicals required for analysing organic compounds. [K3]

CO4: Discriminate the various organic compounds based on functional group. [K3]

CO5: Characterise the organic compounds using IR Spectrometer. [K4]

Course Code 20UCHC62P	**PO1**		**PO2**	**PO3**		**PO4**		**PO5**	**PO6**	**PO7**
	PSO 1 a	**PSO 1 b**	**PSO 2.**	**PSO 3 a**	**PSO 3 b**	**PSO 4 a**	**PSO 4 b**	**PSO 5 PSO 5.b**	**PSO 6**	**PSO 7**
CO1	**H**	**H**	**H**	**M**	**M**	**H**	**L**	**L**	**H**	**M**
CO2	**H**	**H**	**H**	**M**	**M**	**H**	**L**	**L**	**H**	**M**
CO3	**H**	**H**	**H**	**M**	**M**	**H**	**L**	**L**	**H**	**M**
CO4	**H**	**H**	**H**	**M**	**M**	**H**	**L**	**L**	**H**	**M**
CO5	**H**	**H**	**H**	**M**	**M**	**H**	**L**	**L**	**H**	**M**

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Semester VI	**PHYSICAL CHEMISTRY EXPERIMENTS**	**Hours/Week: 2**	
Core Practical - 5		**Credits: 2**	
Course Code 20UCHC63P		**Internal 40**	**External 60**

COURSE OUTCOMES

On completion of the course, the students shall be able to

CO1: Apply standard procedure to carryout the various types of conductometric and potentiometric titrations. [K3]

CO2: Apply standard procedure to carryout the various types of reactions using pH meter, UV photo reactor. [K3]

CO3: Develop analytical skill to perform kinetics and phase rule experiments. [K3]

CO4: Examine the metal ions such as Cu^{2+}, Fe^{2+} and Ni^{2+} ions by spectrophotometric Techniques and compare their strengths with the standard solution. [K3]

CO5: Interpret the results obtained from partition coefficient and Nernst distribution law. [K4]

Course Code 20UCHC63P	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1 a	PSO 1 b	PSO 2.	PSO 3 a	PSO 3 b	PSO 4 a	PSO 4 b	PSO 5 PSO 5.b	PSO 6	PSO 7
CO1	H	H	H	M	M	H	L	L	H	M
CO2	H	H	H	M	M	H	L	L	H	M
CO3	H	H	H	M	M	H	L	L	H	M
CO4	H	H	H	M	M	H	L	L	H	M
CO5	H	H	H	M	M	H	L	L	H	M

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Semester VI	**DAIRY CHEMISTRY**	**Hours/Week:5**	
DSEC -2		**Credits: 4**	
Course Code 20UCHE61		**Internal 25**	**External 75**

COURSE OUTCOMES

On completion of the course, the students will be able to

CO1: understand the chemical composition of milk. [K1]

CO2: know the techniques of milk processing. [K2]

CO3: acquire knowledge about various milk products. [K3]

CO4 understand about different types of special milk. [K4]

CO5: comprehend techniques of fermentation of milk and various milk products. [K5]

Course Code 20UCHE61	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1a	PSO 1b	PSO 2	PSO 3a	PSO 3b	PSO 4a	PSO 4b	PSO 5	PSO 6	PSO 7
CO1	H	H	H	L	H	L	M	L	-	M
CO2	H	H	H	M	M	H	M	M	-	M
CO3	H	H	H	M	H	H	M	M	-	M
CO4	H	H	H	L	L	H	H	M	-	M
CO5	H	H	H	L	L	M	M	M	-	M

Semester VI	**MEDICAL PHYSICS**	**Hours/Week: 5**	
DSEC-2		**Credits: 4**	
Course Code 20UPHE62		**Internal 25**	**External 75**

COURSE OUTCOMES

On completion of the course, the students will be able to

CO1 : explain bio potential, transducers, biomedical recorders, radio therapy, medical and safety instrumentation. [K1]

CO2 : describe the principle of bio electrodes, active & passive transducers, biomedical recorders, X-ray, Laser and safety instrumentation. [K2]

CO3 : apply the theories to calculate the relevant physical parameters for medical devices/instrumentation. [K3]

CO4 : examine the structure and mechanism of cells, transducers, biomedical recorders, medical and safety instrumentation. [K4]

CO5 : justify the Medical Instrumentation techniques based on their safety level. [K5]

Course Code 20UPHE62	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1.a	PSO 1.b	PSO 2	PSO 3.a	PSO 3.b	PSO 4.a	PSO 4.b	PSO 5	PSO 6	PSO 7
CO1	**H**	**-**	**M**	**-**	**-**	**L**	**-**	**M**	**-**	**H**
CO2	**H**	**L**	**M**	**L**	**-**	**L**	**-**	**M**	**-**	**M**
CO3	**H**	**-**	**-**	**-**	**M**	**L**	**L**	**H**	**-**	**-**
CO4	**H**	**L**	**L**	**-**	**-**	**M**	**L**	**H**	**-**	**L**
CO5	**H**	**-**	**L**	**-**	**-**	**M**	**M**	**H**	**L**	**L**

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Semester VI	**MEDICINAL CHEMISTRY**	**Hours/Week:5**	
DSEC -2		**Credits: 4**	
Course Code 20UCHE63		**Internal 25**	**External 75**

COURSE OUTCOMES

On completion of the course, students will be able to

CO1: recall common diseases, poisons and sources of drugs. [KI]

CO2: classify important pharmacy terminologies, drugs and their actions. [K2]

CO3: use first aid box , Paracetamol, aspirin and inorganic compounds for sufferings. [K3]

CO4: explain routes of administration and biological responses of drugs for major diseases. [K4]

CO5: summarize the treatment, mechanism, assay and side effects of drugs for diseases. [K5]

Course Code 20UCHE63	**PO1**		**PO2**	**PO3**		**PO4**		**PO5**		**PO6**	**PO7**
	PSO 1. a	**PSO 1. b**	**PSO 2.**	**PSO 3. a**	**PSO 3. b**	**PSO 4 .a**	**PSO 4. b**	**PSO 5.a**	**PSO 5.b**	**PSO 6**	**PSO 7**
CO1	**H**	**H**	**M**	**M**	**H**	**H**	**M**	**H**	**M**	**-**	**M**
CO2	**H**	**H**	**M**	**M**	**H**	**H**	**M**	**H**	**M**	**-**	**M**
CO3	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**-**	**H**
CO4	**H**	**H**	**H**	**H**	**M**	**H**	**M**	**M**	**M**	**-**	**H**
CO5	**H**	**H**	**H**	**M**	**M**	**M**	**M**	**H**	**M**	**-**	**H**

Semester VI	**GREEN CHEMISTRY**	**Hours/Week: 2**	
Skill Enhancement Course- 6		**Credits: 2**	
Course Code 20UCHS61		**Internal 40**	**External 60**

COURSE OUTCOMES

On completion of the course, the students shall be able to

CO1: understand the need and the principles of green chemistry. [K1]

CO2: summarize the concept of atom economy and selectivity. [K2]

CO3: prepare the composites using microwave irradiation in solvents and solvent less. [K2]

CO4: compare the green and classical reactions. [K3]

CO5: construct the green synthesis using ultra sound assisted reactions. [K4]

Course Code 20UCHS61	PO1		PO2	PO3		PO4		PO5	PO6	PO7
	PSO 1a	PSO 1b	PSO 2	PSO 3a	PSO 3b	PSO 4a	PSO 4b	PSO 5	PSO 6	PSO 7
CO1	H	H	H	L	H	L	M	L	-	M
CO2	H	H	H	M	M	H	M	M	-	M
CO3	H	H	H	M	H	H	M	M	-	M
CO4	H	H	H	L	L	H	H	M	-	M
CO5	H	H	H	L	L	M	M	M	-	M