Sadakathullah Appa College

(Autonomous)

(Reaccredited by NAAC at an 'A++' Grade. An ISO 9001:2015 Certified Institution)

Rahmath Nagar, Tirunelveli- 11.

Tamil Nadu.

DEPARTMENT OF CHEMISTRY

CBCS SYLLABUS

Learning Outcome-based Curriculum Framework for

CHEMISTRY (B.Sc.)

(Applicable for the students admitted from June 2024 as per the Resolutions of the Academic Council Meeting held on 01.06.2024)

Sadakathullah Appa College, Rahmath Nagar, Tirunelveli – 627 011.
Programme Structure & Credits – UG (Sciences)* - 2024 – 2027
CHEMISTRY

Sem	Part	Course Type	Title of the Course	Course Code	H/W	C	Marks		
							I	E	T
I	I	Lang-I	Prose	24ULAR11	6	3	25	75	100
			பொதுத் தமிழ் 1 - இலக்கிய வரலாறு - 1	24ULTA11					
	II	Lang-II	General English - I	24ULEN11	6	3	25	75	100
	III	Core-I	General Chemistry–I	24UCCH11	5	5	25	75	100
	III	Core-P-I	Quantitative Inorganic Estimation (Titrimetry) and Inorganic Preparations	24UCCH1P	3	3	40	60	100
	III	EC-T-I (GE)	Biochemistry – I	24UABC11	4	4	25	75	100
	III	EC-P-I (GE)	Analysis of Carbohydrates and Fatty Acids	24UABC1P	2	1	20	30	50
	IV	SEC-I (NME)	Food Chemistry	24UNCH11	2	2	15	35	50
	IV	FC	Fundamental Concepts in Chemistry	24UFCH11	2	2	15	35	50
					30	**23**			**650**
II	I	Lang-I	Grammar	24ULAR21	6	3	25	75	100
			பொதுத் தமிழ் 2 - தமிழ் இலக்கிய வரலாறு - 2	24ULTA21					
	II	Lang-II	General English - II	24ULEN21	6	3	25	75	100
	III	Core-II	General Chemistry-II	24UCCH21	5	5	25	75	100
	III	Core-P-II	Preparation of Organic Compounds and Determination of Physical Constants	24UCCH2P	3	3	40	60	100
	III	EC-T-II (GE)	Biochemistry-II	24UABC21	4	4	25	75	100
	III	EC-P-II (GE)	Analysis of Amino Acids and Proteins	24UABC2P	2	1	20	30	50
	IV	SEC-II (NME)	Cosmetics And Personal Grooming	24UNCH21	2	2	15	35	50
	IV	SEC-III	Value Education –I	24USVE2A	2	2	15	35	50
			Value Education –II	24USVE2B					
					30	**23**			**650**

* Alled Biochemistry

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Programme Structure & Credits – UG (Sciences)* - 2024 – 2027
CHEMISTRY

Sem	Part	Course Type	Title of the Course	COURSE CODE	H/W	C	Marks		
							I	E	T
I	I	Lang-I	Prose	24ULAR11	6	3	25	75	100
			பொதுத் தமிழ் 1 - தமிழ் இலக்கிய வரலாறு - 1	24ULTA11					
	II	Lang-II	General English - I	24ULEN11	6	3	25	75	100
	III	Core-I	General Chemistry–I	24UCCH11	5	5	25	75	100
	III	Core-P-I	Quantitative Inorganic Estimation (Titrimetry) and Inorganic Preparations	24UCCH1P	3	3	40	60	100
	III	EC-T-I (GE)	Statistics, Algebra and Trigonometry	24UAMA11	6	5	25	75	100
	IV	SEC-I (NME)	Food Chemistry	24UNCH11	2	2	15	35	50
	IV	FC	Fundamental Concepts in Chemistry	24UFCH11	2	2	15	35	50
					30	**23**			**600**
II	I	Lang-I	Grammar	24ULAR21	6	3	25	75	100
			பொதுத் தமிழ் 2 - தமிழ் இலக்கிய வரலாறு - 2	24ULTA21					
	II	Lang-II	General English - II	24ULEN21	6	3	25	75	100
	III	Core-II	General Chemistry-II	24UCCH21	5	5	25	75	100
	III	Core-P-II	Preparation of Organic Compounds and Determination of Physical Constants	24UCCH2P	3	3	40	60	100
	III	EC-T-II (GE)	Vector Calculus and Group Theory	24UAMA21	6	5	25	75	100
	IV	SEC-II (NME)	Cosmetics And Personal Grooming	24UNCH21	2	2	15	35	50
	IV	SEC-III	Value Education –I	24USVE2A	2	2	15	35	50
			Value Education –II	24USVE2B					
					30	**22**			**600**

* Alled Mathematics

Programme Outcome (PO)
(Aligned with Graduate Attributes) for
B.Sc.

PO	Upon completion of B.Sc. Degree Programme, the students will be able to:
PO 1	**Disciplinary Knowledge** • Acquire scientific knowledge and an understanding of major concepts and theoretical principles.
PO 2	**Creative Thinking and Practical Skills / Problem-Solving Skills** • Enrich skills of observation/research-related skills to draw logical inferences from scientific experiments/ programming and skills of creative thinking to develop novel ideas. • Hone problem-solving skills in theoretical, experimental, and computational areas and apply them in research fields and real-life situations.
PO 3	**Sense of inquiry and Skilled Communicator** • Develop the capability to raise appropriate questions relating to the current/emerging issues encountered in the scientific field and plan, execute, and express the results of experiments / investigations through technical writings and oral presentations
PO 4	**Ethical Awareness / Team Work / Environmental Conservation and Sustainability** • Equip them for conducting work as an individual / as a member, or as a leader in diverse teams upholding values such as honesty and precision and thus preventing unethical behaviors such as fabrication, falsification, misrepresentation of data, plagiarism, etc. to ensure academic integrity. • Realize that environment and humans are dependent on one another and know about the responsible management of our ecosystem for survival and the well-being of the future generation.
PO 5	**Usage of ICT/ Lifelong Learning / Self-Directed Learning** • Inculcate the habit of learning continuously through the effective adoption of ICT to update knowledge in the emerging areas in Sciences for inventions/discoveries and engage in remote/independent learning.
PO 6	**Research-related skills**: • A sense of inquiry and capability for asking relevant/appropriate questions, problem arising, synthesising and articulating; Ability to recognise cause-and-effect relationships, define problems, formulate hypotheses, test hypotheses, analyse, interpret and draw conclusions from data, establish hypotheses, predict cause-and-effect relationships; ability to plan, execute and report the results of an experiment or investigation.

Programme Specific Outcomes

PSO No.	Upon completion of B.Sc. Chemistry Degree Programme, the students will be able to:	POs Mapped
PSO-1	**Disciplinary Knowledge:** Demonstrate knowledge of theoretical, Physical, Organic and Inorganic Chemistry and be able to apply the knowledge to analyze a variety of chemical problems.	PO1
PSO-2	**Critical Thinking:** Enrich laboratory skills to carry out reactions in a Chemical laboratory, analyze the reactions, apply the theoretical knowledge to practical situations and draw valid conclusions.	PO2
PSO-3	**Problem Solving:** Develop oral and written communication skills, to present results of experiments/investigations effectively, combine theoretical ideas and critical thinking skills with mathematical and scientific abilities.	PO 2,3
PSO-4	**Scientific reasoning & Research related skills:** Uphold academic and professional integrity for designing, setting up and carrying out experiments independently/as a group with an understanding of chemical hazards to save the environment.	PO4, 6
PSO-5	**Self-directed & Lifelong Learning:** Learn lifelong independently using ICT to update knowledge in current/ emerging areas.	PO5

Semester - I	PROSE		24ULAR11			
LANG – I			L	T	P	C
Hrs./Week: 6	Hrs./Semester : 60	Marks :100	6	-	-	3

General Objective: To make the students to understand the structure of Arabic language and impove the reading and writing skills.

Learning Objectives

LO	The learners will be able to:
LO-1	Understand basic Arabic grammar.
LO-2	Understand the structure of Arabic language.
LO-3	Employ sentence making.
LO-4	Enhance vocabulary.
LO-5	Improve reading and writing skills.

UNIT I - من الدرس الأول إلى الدرس الرابع

UNIT II - من الدرس الخامس إلى الدرس الثامن

UNIT III – من الدرس التاسع إلى الدرس الثالث عشر

UNIT IV – من الدرس الرابع عشر إلى الدرس الثامن عشر

UNIT V – من الدرس التاسع عشر إلى الدرس الثالث و العشرون

Textbooks:

1. دروس اللغة العربية لغير الناطقين بها، الجزء الأول، الدكتور ف. عبد الرحيم

Reference Books:

1. معجم الكلمات الواردة في دروس اللغة العربية لغير الناطقين بها
2. مفتاح دروس اللغة العربية لغير الناطقين بها
3. القراءة الراشدة – للشيخ أبي الحسن علي الحسني الندوي
4. القراءة المفيدة – للدكتور محمد يوسف كوكن العمري
5. منهاج العربية -السيد النبي حيدرآبادي

www.alnahw.com

Course Outcomes

CO	Upon completion of this course, students would have learned to:	PSOs Addressed	Cognitive Level
CO-1	Understand the correct pronunciation of Arabic letters	PSO 1	K2
CO-2	Apply the structure-based composition	PSO 1,2	K3
CO-3	List out the new vocabulary in Arabic	PSO 1	K4
CO-4	Evaluate and read the Arabic sentences without diacritical marks	PSO 1,2	K5
CO-5	Able to create the simple sentences in Arabic without errors.	PSO 1	K6

K1-Remembering; K2 – Understanding; K3 - Applying; K4 - Analyzing; K5 – Evaluating; K6 – Creating

Relationship Matrix

Semester	Course Code	Title of the Course	Hours	Credits
I	24ULAR11	PROSE	90	3

Course Outcomes (COs)	Programme Outcomes (POs)						Programme Specific Outcomes (PSOs)				
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO1	PSO2	PSO3	PSO4	PSO5
CO-1	3	3	1	2	1	1	3	2	2	1	1
CO-2	3	3	1	2	1	1	3	2	2	1	1
CO-3	3	3	1	2	1	1	3	2	2	1	1
CO-4	3	3	1	2	1	1	3	2	2	1	1
CO-5	3	3	1	2	1	1	3	2	2	1	1

STRONG – 3, MEDIUM – 2 , LOW – 1

Prepared by : Dr. S.A.Mohamed Rafeek Checked by: Dr. J. Ubaiyathulla

Head of the Department

Semester - I	பொதுத்தமிழ் - 1		24ULTA11			
LANG – I	தமிழ் இலக்கிய வரலாறு - 1		L	T	P	C
Hrs./Week: 6	Hrs./Semester : 90	Marks :100	6	-	-	3

General Objective:

- தமிழ் இலக்கியம் சார்ந்த போட்டித் தேர்வுகளுக்கு ஏற்ப கற்பித்தல் நடைமுறைகளை மேற்கொள்ளுதல்.

Learning Objectives:

LO	The learners will be able to:
LO - 1	தமிழ் இலக்கண, இலக்கியங்களை மாணவர்கள் அறியுமாறு செய்து அவர்களின் படைப்பாற்றலைத் தூண்டுதல்.
LO - 2	சங்க இலக்கியத்தில் காணப்பெறும் வாழ்வியல் சிந்தனைகளை அறிந்து கொள்வர்.
LO - 3	அற இலக்கியங்களை அறியச் செய்து வாழ்வின் விழுமியங்களை பயிற்றுவித்தல்.
LO - 4	காப்பியங்களை அறிமுகம் செய்து அதன் வழி வாழ்வியலை புரியச் செய்தல்.
LO - 5	பக்தி இலக்கியங்களின் மூலம் பக்தியுணர்வை ஊட்டுதல்.

அலகு 1 இலக்கணம்

1. தொல்காப்பியம், இறையனார் களவியல் உரை, நம்பியகப் பொருள், புறப்பொருள் வெண்பா மாலை, நன்னூல், தண்டியலங்காரம், யாப்பருங்கலக்காரிகை - நூல்கள்
2. மொழிப் பயிற்சி - ஒற்றுப்பிழை தவிர்த்தல்
    - வல்லினம் மிகும் இடங்கள்
    - வல்லினம் மிகா இடங்கள்
    - ஈரொற்று வரும் இடங்கள்
    - ஒரு, ஓர் வரும் இடங்கள்
    - அது, அ.ஃது வரும் இடங்கள்
    - தான், தாம் வரும் இடங்கள்

1. சங்க இலக்கியம் - எட்டுத் தொகை, பத்துப்பாட்டு.
2. அற இலக்கியம் - பதினெண்கீழ்க்கணக்கு நூல்கள்.
3. காப்பிய இலக்கியம் - ஐம்பெருங் காப்பியங்கள், ஐஞ்சிறு காப்பியங்கள், சமயக் காப்பியங்கள்.
4. பக்தி இலக்கியமும் (பன்னிரு திருமுறைகள் நாலாயிர திவ்வியப் பிரபந்தம்), பகுத்தறிவு இலக்கியமும் (சித்தர் இலக்கியங்கள், புலவர் குழந்தையின் இராவண காவியம்)

அலகு 2 சங்க இலக்கியம் - எட்டுத்தொகை, பத்துப்பாட்டு

எட்டுத்தொகை

1. நற்றிணை - முதல் பாடல் - நின்ற சொல்லர்
2. குறுந்தொகை 3 ஆம் பாடல் - நிலத்தினும் பெரிதே
3. ஐங்குறுநூறு - "நெல் பல பொலிக! பொன் பெரிது சிறக்க!"(முதல் பாடல்) வேட்கைப் பத்து.
4. கலித்தொகை - 51- சுடர்த்தொடீஇக் கேளாய் - குறிஞ்சிக் கலி.
5. புறநானூறு - 189 தெண்கடல் வளாகம் பொதுமையின்றி, நாடா கொன்றோ -187

பத்துப்பாட்டு

1. முல்லைப்பாட்டு (முழுவதும்)

அலகு 3 அற இலக்கியம் பதினெண்கீழக்கணக்கு நூல்கள்

1. திருக்குறள் - அறன் வலியுறுத்தல் அதிகாரம்
2. நாலடியார் - பாடல் : 131 (குஞ்சியழகும்)
3. நான்மணிக்கடிகை - நிலத்துக்கு அணியென்ப
4. பழமொழி நானூறு - தம் நடை நோக்கர்
5. இனியவை நாற்பது - 37 இளமையை மூப்பு என்று

அலகு 4 காப்பிய இலக்கியம் (ஐம்பெருங் காப்பியங்கள், ஐஞ்சிறு காப்பியங்கள், சமயக் காப்பியங்கள்)

1. சிலப்பதிகாரம் - வழக்குரைகாதை
2. மணிமேகலை - பாத்திரம் பெற்ற காதை
3. பெரியபுராணம் - பூசலார் நாயனார் புராணம்
4. கம்பராமாயணம் - குகப் படலம்
5. சீறாப்புராணம் - மானுக்குப் பிணை நின்ற படலம்
6. இயேசு காவியம் - ஊதாரிப்பிள்ளை

அலகு 5 பக்தி இலக்கியமும், பகுத்தறிவு இலக்கியமும் (பக்தி இலக்கியம் பன்னிரு திருமுறைகள், நாலாயிர திவ்வியப் பிரபந்தம் - பகுத்தறிவு இலக்கியம் (சித்தர் இலக்கியங்கள், புலவர் குழந்தையின் இராவண காவியம்)

பக்தி இலக்கியம்:

1. திருநாவுக்கரசர் தேவாரம் - "நாமார்க்கும் குடியல்லோம்" எனத் தொடங்கும் பாடல் மட்டும்
2. மாணிக்கவாசகர் திருவாசகம் - "நமச்சிவாய வாழ்க நாதன் தாள் வாழ்க" முதல் "சிரம்குவிவார் ஓங்குவிக்கும் சீரோன் கழல் வெல்க" வரை.
3. பொய்கையாழ்வார் - வையந் தகளியா வார்கடலே
4. பூதத்தாழ்வார் - அன்பே தகளியா

5. பேயாழ்வார் - திருக்கண்டேன் பொன்மேனி கண்டேன்
6. ஆண்டாள் - திருப்பாவை மார்கழித் திங்கள் (முதல் பாடல்)

பகுத்தறிவு இலக்கியம்

1. திருமூலர் - திருமந்திரம் (270, 271, 274, 275 285) பட்டினத்தார் திருவிடை மருதூர் (காடே திரிந்து – எனத் தொடங்கும் பாடல் பா.எண். 279, 280)
2. கடுவெளிச் சித்தர் - பாபஞ்செய் யாதிரு மனமே (பாடல் முழுவதும்)
3. இராவண காவியம் - தாய்மொழிப் படலம் - 18, ஏடுகையில்லா ரில்லை முதல்- 22 செந்தமிழ் வளர்த்தார் வரை.

பாட நூல்:

பதிப்பாசிரியர் முனைவர் ச.மகாதேவன், பொதுத்தமிழ் 1,
சதக்கத்துல்லாஹ் அப்பா கல்லூரி வெளியீடு,2024 – 2025(முதற் பதிப்பு).

பார்வை நூல்கள் :

1. மு. வரதராசன், தமிழ் இலக்கிய வரலாறு, சாகித்ய அகாதெமி, புதுடெல்லி.
2. மது. ச. விமலானந்தன், தமிழ் இலக்கிய வரலாறு, மீனாட்சி புத்தக நிலையம், மதுரை.
3. தமிழண்ணல், புதிய நோக்கில் தமிழ் இலக்கிய வரலாறு, மீனாட்சி புத்தக நிலையம், மதுரை.
4. தமிழ் இலக்கிய வரலாறு – முனைவர்.சிற்பி பாலசுப்ரமணியம், முனைவர்.சொ.சேதுபதி
5. புதிய தமிழ் இலக்கிய வரலாறு – முனைவர்.சிற்பி பாலசுப்ரமணியம், நீல.பத்மநாபன்
6. தமிழ் இலக்கிய வரலாறு - டாக்டர்.அ.கா.பெருமாள்
7. தமிழ் இலக்கிய வரலாறு - முனைவர். ப.ச.ஏசுதாசன்
8. தமிழ் இலக்கிய வரலாறு – ஸ்ரீகுமார்
9. வகைமை நோக்கில் தமிழ் இலக்கிய வரலாறு – பாக்கியமேரி
10. தமிழ் பயிற்றும் முறை, பேராசிரியர் ந. சுப்புரெட்டியார் - மணிவாசகர் பதிப்பகம், சிதம்பரம்

- https://www.chennailibrary.com/
- https://www.sirukathaigal.com
- https://www.tamilvirtualuniversity.org
- https://www.noolulagam.com
- https://www.katuraitamilblogspot.com

Course Outcomes

CO	Upon completion of this course, students will be able to	PSO Addressed	Cognitive Level
CO-1	மொழியறிவோடு சிந்தனைத் திறனைப் பெறுவர்.	1, 2, 3	K4
CO-2	சங்க இலக்கியத்தில் காணப்பெறும் வாழ்வியல் சிந்தனைகளை அறிந்து கொள்வர்.	1, 4	K3, K4
CO-3	அற இலக்கியம் தமிழ்க் காப்பியங்களின் வழி வாழ்வியல் சிந்தனையைப் பெறுவர்.	2.3,4	K3, K4,
CO-4	பக்தி இலக்கியங்களைக் கற்பதன் மூலம் பக்தி நெறியினை அறிவர்.	4,5	K3, K6
CO-5	பகுத்தறிவு இலக்கியங்களைக் கற்பதன் வழி சமய நல்லிணக்கத்தைப் பின்பற்றுவர்.	2,3,4	K5, K6

K1-Remembering; K2 – Understanding; K3 - Applying; K4 - Analyzing; K5 – Evaluating; K6 – Creating

Relationship Matrix

Semester	Course Code	Title of the Course	Hours	Credits
I	24ULTA11	தமிழ் இலக்கிய வரலாறு - 1	90	3

Course Outcomes (COs)	Programme Outcomes (POs)						Programme Specific Outcomes (PSOs)				
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO-1	3	2	3	3	3	2	2	2	3	2	3
CO-2	3	3	2	2	2	3	2	3	3	2	2
CO-3	3	2	3	3	2	2	2	3	2	3	2
CO-4	-	3	3	2	2	2	3	2	3	2	2
CO-5	-	3	2	2	2	3	3	2	2	2	2

3 - STRONG, 2 - MEDIUM, 1- LOW

Prepared by : Dr. A.S. Shaik Sindha

Checked by: Dr.S.Mahadevan

Head of the Department

Semester - I	General English - 1		24ULEN11			
LANG- II			L	T	P	C
Hrs./Week: 6	Hrs./Semester : 90	Marks :100	6	-	-	3

General Objective:

To train learners to communicate effectively, think critically, and express themselves creatively.

Learning Objectives (LO)

LO	The learners will be able to :
LO – 1	Acquire self-awareness and develop positive thinking which are required in various situations.
LO – 2	Develop the attribute of empathy
LO – 3	Acquire creative and critical thinking skills
LO – 4	Learn the basics of grammar
LO – 5	Develop Listening, Speaking, Reading and Writing (LSRW) skills

Unit - I

The Skill-focused: Self-Awareness and Positive Thinking

Autobiography

1. *I am Malala* (Chapter 1) by Malala Yousafzai.
2. *The Story of My Experiments with Truth* (Chapters 1, 2 and 3) by M.K.Gandhi.

Poetry

1. "Where the Mind is Without Fear" (*Gitanjali*, Verse – 35) by Rabindranath Tagore
2. "Love Cycle by Chinua Achebe"

Unit – II

The Skill Focused: Empathy

Poetry

1. "Nine Gold Medals" – David Roth
2. "Alice Fell or Poverty" – William Wordsworth

Short Story

1. The School for Sympathy – E.V. Lucas
2. Barn Burning – William Faulkner

Unit – III

The Skills Focused:Critical and Creative Thinking

Poetry

1. "The Things That Haven't Been Done Before" – Edgar Guest
2. "Stopping by the Woods on a Snowy Evening" – Robert Frost

Readers Theatre

1. The Magic Brocade – A Tale of China
2. "Three Sideway Stories from Wayside School" by Louis Sachar adapted from the book *Stories on Stage* by Aaron Shepard.

Unit – IV

Parts of Speech

1. Articles
2. Noun
3. Pronoun
4. Verb
5. Adverb
6. Adjective
7. Preposition

Unit – V

Paragraph and Essay Writing

1. Descriptive
2. Expository
3. Persuasive
4. Narrative

Reading Comprehension

Types of Reading: Extensive and Intensive Reading
Vocabulary Building
Critical text analysis
Deep reading (Pages 72 to 84 from TANSCHE Syllabus - 2022)

Textbooks

1. Malala Yousafzai. *I am Malala*, Little, Brown and Company, 2013.
2. M.K. Gandhi. *An Autobiography* or *The Story of My Experiments with Truth* (Chapter – I), Rupa Publications, 2011.
3. Rabindranath Tagore. "Gitanjali 35" from *Gitanjali* (Song Offerings): A Collection of Prose Translations made by the Author from the Original Bengali. Mac Millan, 1913.
4. N. Krishnasamy, *Modern English: A Book of Grammar, Usage and Composition*, Macmillan, 1975.
5. Aaron Shepard. *Stories on Stage*, Shepard Publications, 2017.
6. J.C. Nesfield. *English Grammar, Composition and Usage*, Macmillan, 2019.

Web Sources

1. Malala Yousafzai. I am Malala (Chapter 1) https://archive.org/details/i-am-malala.
2. M.K Gandhi. An Autobiography or The Story of My Experiments with Truth (Chapter-1)-Rupa Publication, 2011. https://www.indiastudychannel.com/resources/146521-Book-

Review-An-Autobiography-or-The-story-of-my-experiments-with-Truth.aspx
3. Rabindranath Tagore. "Gitanjali 35" from Gitanjali (Song Offerings) https://www.poetryfoundation.org/poems/45668/gitanjali-35
4. Aaron Shepard.Stories on Stage, Shepard Publications, 2017. https://amzn.eu/d/9rVzlNv
5. J C Nesfield. Manual of English Grammar and Composition.https://archive.org/details/in.ernet.dli.2015.44179

Course Outcomes

CO	Upon completion of this course, students would have learned to:	PSOs Addressed	Cognitive Level
CO-1	Understand self- awareness and positive thinking required in various life situations	1,2,3	K1, K2
CO-2	Acquire the attribute of empathy.	1,2,3,4	K2, K3
CO-3	Develop creative and critical thinking abilities.	1,2,3,4	K3, K4
CO-4	Explain basic grammar, develop and integrate the use of four language skills (LSRW)	2, 3	K4, K5
CO-5	Compose original poems and personal narratives.	1,2,3,4	K5, K6

K1-Remembering; K2 – Understanding; K3 - Applying; K4 - Analyzing; K5 – Evaluating; K6 - Creating

Relationship Matrix

Semester	Course Code	Title of the Course	Hours	Credits
1	24ULEN11	General English 1	90	3

Course Outcomes (COs)	Programme Outcomes (POs)						Programme Specific Outcomes (PSOs)				
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	3	3	1	2	3	3	3	3	3	3
CO2	3	3	3	1	2	3	3	3	3	1	1
CO3	3	3	1	3	3	2	3	3	3	1	1
CO4	3	3	1	2	1	3	3	3	3	3	3
CO5	3	3	3	3	3	2	3	3	3	3	3

STRONG – 3, MEDIUM – 2 AND LOW - 1

Prepared by: Dr.L.Faustina Leo

Checked by
Dr.S.Mohamed Haneef
Head of the Department

Semester - I	GENERAL CHEMISTRY – I		24UCCH11			
Core – I			L	T	P	C
Hrs./Week: 5	Hrs./Semester : 75	Marks :100	5	-	-	5

General Objective:

The course focuses on atomic structure, quantum mechanics, periodic properties, chemical bonding, and basic concepts of Organic Chemistry.

Learning Objectives:

LO	The learners will be able to:
LO-1	Learn the fundamentals of atoms and various theories associated with it.
LO-2	Acquire knowledge about the arrangement of elements in the periodic table, periodic properties and quantum mechanics.
LO-3	Gain knowledge about the nature of bonding and shapes of molecules.
LO-4	Understand the Valence bond and Molecular Orbital Theory of Homo and Hetero nuclear diatomic molecules.
LO-5	Learn the basic concepts and electronic effects in Organic Chemistry.

UNIT I- Atomic structure and Periodic trends

History of atom (J. J. Thomson, Rutherford); Moseley's Experiment and Atomic number, Atomic Spectra; Black-Body Radiation and Planck's quantum theory - Bohr's model of atom; Interpretation of H- spectrum; Photoelectric effect, Compton effect; Dual nature of Matter- De- Broglie wavelength-Davisson and Germer experiment Heisenberg's Uncertainty Principle; Electronic Configuration of Atoms and ions- Hund's rule, Pauli' Exclusion principle and Aufbau principle.

Numerical problems involving the core concepts**.**

Unit II- Introduction to Quantum mechanics

Classical mechanics, Wave mechanical model of atom, distinction between a Bohr orbit and orbital; Postulates of quantum mechanics; probability interpretation of wavefunctions, Formulation of Schrodinger wave equation - Probability and electron density-visualizing the orbitals - Probability density and significance of Ψ and Ψ^2.

Modern Periodic Table

Cause of periodicity; Features of the periodic table; classification of elements - Periodic trends for atomic size- Atomic radii, Ionic, crystal and Covalent radii; ionization energy, electron affinity, electronegativity-electronegativity scales, applications of electronegativity.

Problems involving the core concepts.

UNIT-III- Structure and bonding – I

Ionic bond: Lewis dot structure of ionic compounds; properties of ionic compounds; Energy involved in ionic compounds; Born Haber cycle – lattice energies, Madelung constant; relative effect of lattice energy and solvation energy; Ion polarisation– polarising power and polarizability; Fajans' rule - effects of polarisation on properties of compounds; problems involving the core concepts.

Covalent bond: Shapes of orbitals, overlap of orbitals – σ and Π bonds; directed valency - hybridization; VSEPR theory - shapes of molecules of the type AB_2, AB_3, AB_4, AB_5 and AB_6.

Partial ionic character of covalent bond-dipole moment, application to molecules of the type A2, AB, AB_2, AB_3, AB_4; percentage ionic character-numerical problems based on calculation of percentage ionic character.

UNIT-IV- Structure and bonding - II

VB theory – application to hydrogen molecule; concept of resonance - resonance structures of some inorganic species – CO_2, NO_2, CO_3^{2-}, NO_3^- ; limitations of VBT; MO theory - bonding, antibonding and nonbonding orbitals, bond order; MO diagrams of H_2, C_2, O_2, N_2, NO, HF, CO; magnetic characteristics, comparison of VB and MO theories.

Coordinate bond: Definition, Formation of BF_3, NH_3, NH_4^+, H_3O^+.

Metallic bond-electron sea model, Band theory-mechanism of conduction in solids; conductors, insulator, semiconductor – types.

Weak Chemical Forces - Vander Waals forces, ion-dipole forces, dipole-dipole interactions, induced dipole interactions, Instantaneous dipole-induced dipole interactions. Repulsive forces; Hydrogen bonding – Types and applications.

UNIT-V-Basic concepts in Organic Chemistry and Electronic effects

Types of bond cleavage – heterolytic and homolytic; arrow pushing in organic reactions; reagents and substrates; Types of reagents - electrophiles, nucleophiles, free radicals; Reaction intermediates – carbanions, carbocations, carbenes and nitrenes.

Inductive effect - reactivity of alkyl halides, basicity of amines.

Electromeric effects.

Resonance – resonance energy, conditions for resonance - acidity of phenols, basicity of aromatic amines.

Hyperconjugation - stability of alkenes.

Types of organic reactions- Definition and examples- addition, substitution, elimination and rearrangements.

Text books:

1. Madan, R. D. and Sathya Prakash, *Modern Inorganic Chemistry,* 2nd ed.; S. Chand and Company: New Delhi, 2003.
2. Rao, C.N. R. University General Chemistry, Macmillan Publication: New Delhi, 2000.
3. Puri, B. R. and Sharma, L.R. *Principles of Physical Chemistry,* 38th ed.; Vishal Publishing Company: Jalandhar, 2002.
4. Bruce, P. Y. and Prasad K. J. R. *Essential Organic Chemistry*, Pearson Education: New Delhi, 2008.
5. Dash UN, Dharmarha OP, Soni P.L. Textbook of Physical Chemistry, Sultan Chand & Sons: New Delhi, 2016.

Reference books:

1. Maron, S. H. and Prutton C. P. *Principles of Physical Chemistry,*4th ed.; The Macmillan Company: Newyork,1972.
2. Lee, J. D. *Concise Inorganic Chemistry,* 4th ed.; ELBS William Heinemann: London,1991.
3. Gurudeep Raj, *Advanced Inorganic Chemistry,* 26th ed.; Goel Publishing House: Meerut, 2001.
4. Atkins, P.W. & Paula, J. *Physical Chemistry*, 10th ed.; Oxford University Press: New York, 2014.

5. Huheey, J. E. *Inorganic Chemistry: Principles of Structure and Reactivity,* 4th ed.; Addison, Wesley Publishing Company: India, 1993.

Website and e-learning source

1) https://onlinecourses.nptel.ac.in
2) http://www.mikeblaber.org/oldwine/chm1045/notes_m.htm
3) http://www.ias.ac.in/initiat/sci_ed/resources/chemistry/Inorganic.html
4) https://swayam.gov.in/course/64-atomic-structure-and-chemical-bonding
5) https://www.chemtube3d.com/

COURSE OUTCOMES

CO No.	Upon completion of the course, the students will be able to:	PSOs Addressed	Cognitive Level
CO-1	Explain the atomic structure, wave particle duality of matter, periodic properties bonding, and properties of compounds.	1	K2
CO-2	Classify the elements in the periodic table, types of bonds, reaction intermediates electronic effects in organic compounds, types of reagents.	2, 3, 4	K4
CO-3	Apply the theories of atomic structure, bonding, to calculate energy of a spectral transition, Δx, Δp electronegativity, percentage ionic character and bond order.	3, 4	K3
CO-4	Evaluate the relationship existing between electronic configuration, bonding, geometry of molecules and reactions; structure reactivity and electronic effects.	4, 5	K5
CO-5	Construct MO diagrams, predict trends in periodic properties, assess the properties of elements, and explain hybridization in molecules, nature of H – bonding and organic reaction mechanisms.	2, 3, 5	K6

K1-Remembering; K2 – Understanding; K3 - Applying; K4 - Analyzing; K5 – Evaluating; K6 – Creating

RELATIONSHIP MATRIX

Semester	Course Code	Title of the Course				Hours	Credits				
I	24UCCH11	GENERAL CHEMISTRY - I				75	5				
Course Outcomes (COs)	Programme Outcomes (POs)						Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4	PSO5
CO-1	2	-	-	-	-	-	2	-	-	-	-
CO-2	-	2	2	2	-	1	-	2	2	2	-
CO-3	-	2	2	2	-	1	-	-	2	2	-
CO-4	-	-	-	2	2	1	-	-	-	2	1
CO-5		2	2	-	2	-	-	2	2	-	1

STRONG (3), MEDIUM (2) and LOW (1)

Prepared by

Name: Dr. M. A. Sabitha

Checked by: Dr.A.Syed Mohamed

Head of the Department

Semester - I	QUANTITATIVE INORGANIC ESTIMATION (TITRIMETRY) AND INORGANIC PREPARATIONS		24UCCH1P			
Core – IP			L	T	P	C
Hrs./Week: 3	Hrs./Semester : 45	Marks :100	-	-	3	3

General Objective:

This course focuses on the estimation of the concentration of compounds present in a solution by titration, preparation of inorganic complexes and providing knowledge on laboratory safety.

Learning Objectives:

	The learners will be able to:
LO-1	Understand the common hazards and lab safety.
LO-2	Gain knowledge about the apparatus used in titrations.
LO-3	Learn about the principles of different volumetric estimations.
LO-4	Acquire knowledge to prepare standard solutions and stock solutions.
LO-5	Determine the type of indicator to be used in different titrations and calculate the yield of inorganic complexes.

Unit I-Chemical Laboratory Safety in Academic Institutions

Introduction **-** importance of safety education for students, common laboratory hazards, assessment and minimization of the risk of the hazards, prepare for emergencies from uncontrolled hazards; concept of MSDS; importance and care of PPE; proper use and operation of chemical hoods and ventilation system; fire extinguishers-types and uses of fire extinguishers, demonstration of operation; chemical waste and safe disposal.

Common Apparatus Used in Quantitative Estimation (Volumetric)

Description and use of burette, pipette, standard flask, measuring cylinder, conical flask, beaker, funnel, dropper, clamp, stand, wash bottle, watch glass, wire gauge and tripod stand.

Principle of Quantitative Estimation (Volumetric)

Equivalent weight of an acid, base, salt, reducing agent, oxidizing agent; concept of mole, molality, molarity, normality; primary and secondary standards, preparation of standard solutions; theories of acid-base, redox, complexometric, iodimetric and iodometric titrations**;** indicators – types,

theory of acid–base, redox, metal ion and adsorption indicators, choice of indicators.

Unit II-Quantitative Estimation (Volumetric)

Preparation of standard solution, dilution from stock solution

Permanganometry

1. Estimation of sodium oxalate using standard ferrous ammonium sulphate

Dichrometry

2. Estimation of ferric alum using standard dichromate (external indicator)
3. Estimation of ferric alum using standard dichromate (internal indicator)

Iodometry

4. Estimation of copper in copper sulphate using standard dichromate

Argentimetry (Course work)

5. Estimation of chloride in barium chloride using standard sodium chloride.
6. Estimation of chloride in sodium chloride (Volhard's method)

Unit III Complexometry

1. Estimation of hardness of water using EDTA

Estimations

2. Estimation of iron in iron tablets
3. Estimation of ascorbic acid.

Preparation of Inorganic compounds- Potash alum, Tetraammine copper (II) sulphate, Hexamminecobalt (III) chloride, Mohr's Salt.

Text books:

1. Venkateswaran, V.; Veeraswamy, R.; Kulandivelu, A.R. *Basic Principles ofPractical Chemistry,* 2nd ed.; Sultan Chand & Sons: New Delhi, 1997.

2. Nad, A. K.; Mahapatra, B.; Ghoshal, A.; *An advanced course in Practical Chemistry,* 3rd ed.; New Central Book Agency: Kolkata, 2007.

Reference books:

1. Mendham, J.; Denney, R. C.; Barnes, J. D.; Thomas, M.; Sivasankar,

B.; *Vogel's Textbook of Quantitative Chemical Analysis*, 6th ed.; Pearson Education Ltd: New Delhi, 2000.

COURSE OUTCOMES

CO	Upon completion of the course, the students will be able to:	PSOs Addressed	Cognitive Level
CO-1	Explain the basic principles involved in titrimetric analysis and inorganic preparations.	1	K2
CO-2	Compare the methodologies of different titrimetric analysis.	2, 3	K3
CO-3	Calculate the concentrations of unknown solutions in different ways and develop the skillto estimate the amount of a substance present in a given solution.	2, 3, 4	K4
CO-4	Assess the yield of different inorganic preparations and identify the end point of various titrations.	2, 3, 4	K5
CO-5	Formulate standard solutions with different concentrations.	2, 4, 5	K6

K1-Remembering; K2 – Understanding; K3 - Applying; K4 - Analyzing; K5 – Evaluating; K6 – Creating

RELATIONSHIP MATRIX

Semester	Course Code	Title of the Course	Hours	Credits
I	24UCCH1P	QUANTITATIVE INORGANIC ESTIMATION (TITRIMETRY) AND INORGANIC PREPARATIONS	45	3

Course Outcomes (COs)	Programme Outcomes (POs)						Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PO6	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO-1	2	-	-	-	-	-	2	-	-	-	-
CO-2	-	2	2	-	-	-	-	2	2	-	-
CO-3	-	2	2	1	-	1	-	2	2	1	-
CO-4	-	2	2	1	-	1	-	2	2	1	-
CO-5	-	-		1	1	1	-	2	-	1	1

STRONG (3), MEDIUM (2) and LOW (1)

Prepared by
Name:Dr. M. A. Sabitha

Checked by: Dr.A.Syed Mohamed
Head of the Department

Semester - I	BIOCHEMISTRY – I		24UABC11			
EC-I (Allied)			L	T	P	C
Hrs./Week: 4	Hrs./Semester : 60	Marks :100	4	-	-	4

General Objectives:

This course emphasises on the occurrence, classifications, reactions, structure and metabolism of carbohydrates and lipids.

Learning Objectives:

LO	The learners will be able to:
LO-1	Study the classification, reactions, structure and qualitative tests of carbohydrates.
LO-2	Know about the classification, reactions, structure and functions of Di- and Polysaccharides.
LO-3	Learn about the major pathways of carbohydrate metabolism.
LO-4	Gain knowledge on classification of lipids and fatty acids and determine the iodine number, acid number, saponification value and RM value.
LO-5	Acquire knowledge about metabolism, structure and functions of fatty acids.

UNIT I CARBOHYDRATE I

Carbohydrates – Occurrence, functions, classifications and biochemical importance – Reactions, structure and qualitative tests for glucose and fructose (structural elucidation not required) – mutarotation – epimerization – glycosides - Interconversion of monosaccharide - D - Arabinose to D - Glucose and vice - versa. D - Glucose to D - fructose and vice – versa.

UNIT II CARBOHYDRATE II

Disaccharides – occurrence, biochemical importance, structure, reactions and qualitative tests for maltose, sucrose and lactose (structural elucidation not required) – inversion of sucrose.

Polysaccharides – homopolysaccharides – Occurrence, structure and uses of starch and cellulose - heteropolysaccharides – composition, functions and structure of hyaluronic acid and chondroitin sulphate.

UNIT III CARBOHYDRATE METABOLISM

Metabolism – Basic concepts of catabolism and anabolism and its pathway.

Major pathways of carbohydrate metabolism - Embden-Meyerhof pathway (or) glycolysis, TCA cycle, gluconeogenesis, glycogenesis and HMP shunt - salient features and its reactions.

UNIT IV LIPIDS

Lipids – classification and functions – fatty acids – occurrence and classification – essential fatty acids – functions and deficiency –

triacylglycerol – properties – determination of fatty acids – iodine number, saponification value, acid number and Reichert-Meissl (RM) number.

Cholesterol – occurrence, structure and functions.

UNIT V LIPID METABOLISM

Body fuel reserve, fatty acid oxidation - β oxidation - Ketone bodies, Ketogenesis - Biosynthesis of fatty acids – Palmitate, Structure of fatty acid synthase complex – functional significance, comparison between fatty acid synthesis and β oxidation.

Recommended Text

1. Jain J.L. *Fundamentals of Biochemistry*, S. Chand & Co. Ltd.: New Delhi, 2005.
2. Satyanarayana U. & Chakrapani U. *Biochemistry*, 4th edition: Elsevier: India, 2013.
3. Kuchel P.W. and Ralstol G.B. *Biochemistry*, Schaum's Outlines, Tata McGraw Hill Publishing Company Ltd.: New Delhi, 2005.

Reference Books

1. Stryer L. *Biochemistry*, 5th edition: W.H. Freeman and Company: New York, 2002.
2. Donald Voet, Judith G. Voet. *Biochemistry*, 4th edition: John Wiley & sons: New York, 2010.
3. Thomas M. Delvin. *Textbook of Biochemistry*, 7th edition: John Wiley & sons: New York, 2010.

COURSE OUTCOMES

CO	Upon completion of the course, the students will be able to:	PSOs Addressed	Cognitive Level
CO-1	Describe the occurrence, functions, classifications, reactions and biochemical importance of carbohydrates and lipids.	1,5	K2
CO-2	Explain the basic concepts of metabolism, ketone bodies and ketogenesis.	1,5	K2
CO-3	Calculate the biochemical tests (iodine number, saponification number, acid number and RM number) for purity of fatty acids	1,2,3,5,6	K3
CO-4	Analyse the qualitative tests for carbohydrates	1,2,3,5,6	K4
CO-5	Assess the pathways involved in glycolysis, TCA cycle, gluconeogenesis, glycogenesis, HMP shunt, fatty acid synthase complex and fatty acid oxidation.	1,3,5	K5

K1-Remembering; K2 – Understanding; K3 - Applying; K4 - Analyzing; K5 – Evaluating; K6 – Creating

RELATIONSHIP MATRIX

Semester	Course Code	Title of the Course	Hours	Credits
I	24UABC11	BIOCHEMISTRY-I	60	4

Course Outcomes (COs)	Programme Outcomes (POs)						Programme Specific Outcomes (PSOs)				
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO-1	3	-	-	-	2	-	3	-	-	-	2
CO-2	3	-	-	-	2	-	3	-	-	-	2
CO-3	3	3	3	-	2	2	3	3	3	-	2
CO-4	3	3	3	-	2	2	3	3	3	-	2
CO-5	3	-	3	-	2	-	3	-	3	-	2

STRONG (3), MEDIUM (2) and LOW (1)

Prepared by

Name: Dr. P. JESLIN KANAGA INBA

Checked by: Dr.A.Syed Mohamed

Head of the Department

Semester - I	ANALYSIS OF CARBOHYDRATES AND FATTY ACIDS		24UABC1P			
EC-IP (Allied)			L	T	P	C
Hrs./Week: 2	Hrs./Semester : 30	Marks :50	-	-	2	1

General Objectives:

This course focuses on the identification and estimation of carbohydrate and quantification of fatty acids in oil.

Leaning Objectives:

LO	The learners will be able to
LO-1	Analyze mono, di and polysaccharides.
LO-2	Estimate the amount of glucose present in the sample.
LO-3	Estimate the acid number of oil.
LO-4	Determine quantitatively the weight of fatty acid present in a sample.
LO-5	Calculate the saponification number and iodine number of oil.

I Qualitative analysis of carbohydrates

1. Analysis of monosaccharides – Glucose and Fructose.
2. Analysis of disaccharides - Maltose, Lactose, and Sucrose.
3. Analysis of polysaccharides – Starch

II Quantitative analysis

1. Estimation of glucose by colorimetric method.
2. Estimation of acid number of oil.
3. Estimation of fatty acids

Course Work

1. Estimation of saponification value of oil.
2. Estimation of iodine number of oil.

Textbooks:

1. Lab Manual for Analysis of Carbohydrates and Fatty Acids, Department of Chemistry, Sadakathullah Appa College, (2024).

REFERENCE BOOKS

1. Dr. P. Palanivelu Laboratory manual for Analytical Biochemistry & Separation Techniques, Fifth edition, Twenty first century Publications, Coimbatore, (2016).
2. J. Jeyaraman, Laboratory Manual in Biochemistry, New Age International Publishers, (1996).
3. T. Mary Vijaya, M.L. Mani, K. Sunitha Kumari & K.R.T. Asha,Practical Clinical Biochemistry Manual, Rishi Publications, Kalikavilai, (2003).
4. Geetha Damodaran, Practical Biochemistry, Jaypee Brothers Medical Publishers (P) Ltd., New Delhi, (2011).

COURSE OUTCOMES

CO	Upon completion of the course, the students will be able to:	PSOs Addressed	Cognitive Level
CO-1	Distinguish mono-, di- and poly-saccharides.	1,2	K2
CO-2	Identify the different carbohydrates present in each sample	1,2,4	K4
CO-3	Estimate the amount of glucose present in the sample.	1,2,4,5	K4
CO-4	Determine the acid number, saponification value and iodine number of oil.	1,2,4,5	K4
CO-5	Estimate quantitatively the weight of the fatty acids.	1,2,4	K4

K1-Remembering; K2 – Understanding; K3 - Applying; K4 - Analyzing; K5 – Evaluating; K6 – Creating

RELATIONSHIP MATRIX

Semester	Course Code	Title of the Course	Hours	Credit
I	24UABC1P	ANALYSIS OF CARBOHYDRATES AND FATTY ACIDS	30	1

Course Outcomes (COs)	Programme Outcomes (POs)						Programme Specific Outcomes (PSOs)				
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO-1	3	3	3	1	2	1	2	3	1	2	2
CO-2	3	3	3	1	2	1	2	3	1	2	2
CO-3	3	3	3	1	2	1	2	3	1	2	2
CO-4	3	3	3	1	2	1	2	3	1	2	2
CO-5	3	3	3	1	2	1	2	3	1	2	2

STRONG (3), MEDIUM (2) and LOW (1)

Prepared by
Name: Dr. I. Antony Danish

Checked by: Dr.A.Syed Mohamed
Head of the Department

Semester - I	STATISTICS, ALGEBRA AND TRIGONOMETRY		24UAMA11			
EC – I (Allied)			L	T	P	C
Hrs./Week: 6	Hrs./Semester : 90	Marks :100	5	1	-	5

General Objective:

- To introduce students to the concept of central tendency and its significance in statistical analysis.
- To provide students with a comprehensive understanding of fundamental concepts in algebraic equations.
- To provide students with the skills to apply trigonometric functions to solve problems.

Learning Objectives

LO	The learners will be able :
LO-1	Equip students with the skills to calculate and interpret measures of central tendency using appropriate statistical techniques.
LO-2	Enable students to understand the techniques for solving algebraic equations.
LO-3	Discussvarious types of transformation of equations and Explain the algorithm of Newton's and Horner's method to find the approximate solutions of numerical equations
LO-4	Develop their knowledge in Matrices and apply Cayley Hamilton theorem to determine characteristic polynomial and compute Eigen values.
LO-5	Evaluateinverse hyperbolic functions and logarithm of Complex numbers.

UNIT I: Measures of Central Tendency – simple average – Mean, Median andMode–Geometrical mean and Harmonicmean.- Measures of dispersion standard deviation–coefficient of variation.

UNIT II: Theory of Equation–Relation between roots and coefficients– Symmetric functions of roots interms of coefficients.

UNITIII: Transformation of Equations–Approximate solutions to equations -

Newton's method - Horner's method.

UNITIV: Matrices – Characteristic equation of a matrix – Eigen values and Eigen vectors – Cayley Hamilton Theorem and Simple problems

UnitV: Hyperbolic functions - Inverse Hyperbolic functions - Logarithm of Complex Numbers – Gregory's Series.

Textbooks:

1. Arumugam. S. and Thangapandi Issac. A., *Statistics,* New Gamma Publishing House, Palayamkottai Edition 2013.
2. Arumugam. S. and Thangapandi Issac. A., *Allied Mathematics Paper 1,* New Gamma Publishing House, Palayamkottai-Edition2016
3. Arumugam. S. and Thangapandi Issac.A., *Summation of Series and Trigonometry,* New Gamma Publishing House, Palayamkottai–Edition 2003

UnitI :TB1:ChapterII: Section2.0-2.4ChapterIIISection3.1

UnitII :TB2:ChapterI: Section 1.0-1.2;

UnitIII :TB2:ChapterI: Section 1.4 -1.5

UnitIV :TB2:ChapterIISection2.1,2.3,2.4

UnitV :TB3: Chapter 2, Chapter 3 and Chapter 4: Section 4.4.

ReferenceBooks:

1. Gupta S.C. and Kapoor V.K.*Fundamentals of Mathematical Statistics*. Published by Sulthan Chand & Sons, New Delhi, 11th Edition.
2. Manicavachagam Pillai T.K., and Natarajan T. and Ganabathy K. S. *Algebra (Volume I)*,Viswanathan Printers & Publishers Pvt Ltd, Chennai Edition 2014.
3. Narayanan, S and Manicavachagom Pillay T.K.*Trigonometry.* S. Viswanathan Printers and Publishers Pvt. Ltd, Chennai: 2006.

COURSEOUTCOMES

CO	Upon completion of the course, the students will be able to:	PSOs Addressed	Cognitive Level
CO-1	Demonstrate proficiency in calculating measures of central tendency for both grouped and ungrouped data sets	3,5	K3
CO-2	Demonstrate a clear understanding of the properties and characteristics of different types of equations.	3,5	K2,K3
CO-3	Solve equations using appropriate methods.	3,5	K3
CO-4	Determine Eigen vectors and Eigen values using Cayley Hamilton theorem	3,5	K5
CO-5	Outline trigonometric identities and apply them to simplify expressions and solve equations..	3,5	K3,K4

K1-Remembering; K2 – Understanding; K3 - Applying; K4 - Analyzing; K5 – Evaluating; K6 – Creating

Relationship Matrix

Semester	CourseCode	TitleoftheCourse	Hours	Credits
I	24UAMA11	Statistics, Algebra and Trigonometry	90	5

Course Outcomes (COS)	Programme Outcomes (POs)						Programme Specific Outcomes (PSOs)				
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO-1	-	3	3	-	2	-	-	-	3	-	2
CO-2	-	3	3	-	2	-	-	-	3	-	2
CO-3	-	3	3	-	2	-	-	-	3	-	2
CO-4	-	3	3	-	2	-	-	-	3	-	2
CO-5	-	3	3	-	2	-	-	-	3	-	2

STRONG (3), MEDIUM (2) and LOW (1)

Prepared by: Dr.S.Jamal Fathima Checked by: Dr.S.Firthous Fatima

Head of the Department

Semester - I	FOOD CHEMISTRY		24UNCH11			
SEC – I (NME)			L	T	P	C
Hrs./Week: 2	Hrs./Semester : 30	Marks :50	2	-	-	2

General Objective:

This course focuses on types of food, food adulteration, poisoning, food additives, beverages and edible oils.

Learning Objectives:

The learners will be able to:

LO	Learning
LO-1	Learn about food adulteration and adulterants.
LO-2	Know about food poisoning.
LO-3	Gain knowledge on food additives.
LO-4	Learn about the process of preparation of beverages and the adverse effect of alcohol addiction.
LO-5	Learn to analyze the quality of oils.

UNIT I- Food Adulteration

Sources of food, types, advantages and disadvantages. Food adulteration - contamination of wheat, rice, milk, butter etc. with clay stones, water and toxic chemicals -Common adulterants, Ghee adulterants and their detection. Detection of adulterated foods by simple analytical techniques.

Unit II- Food Poison

Food poisons - natural poisons (alkaloids - nephrotoxin) - pesticides, (DDT, BHC, Malathion) -Chemical poisons - First aid for poison consumed victims.

UNIT III- Food Additives

Food additives -artificial sweeteners – Saccharin - Cyclomate and Aspartate Food flavours -esters, aldehydes and heterocyclic compounds – Food colours– Emulsifying agents – preservatives -leavening agents. Baking powder –yeast – tastemakers – MSG - vinegar.

UNIT IV- Beverages

Beverages-softdrinks-soda-fruitjuices-alcoholicbeverages-examples.

Carbonation-addiction to alcohol– diseases of liver and social problems.

UNIT V- Edible Oils

Fats and oils - Sources of oils - production of refined vegetable oils - preservation. Saturated and unsaturated fats - iodine value - role of MUFA and PUFA in preventing heart diseases-determination of iodine value, RM value, saponification values and their significance.

Text books:

1. Food Chemistry, H. K. Chopra, P. S. Panesar, Narosa Publishing house, 2010.
2. Jayashree Ghosh, Fundamental Concepts of Applied Chemistry, S. Chand & Co. Publishers, second edition, 2006.
3. Food chemistry, H. K. Chopra, P. S. Panesar, Narosa Publishning house, 2010.
4. Food Chemistry, Dr. L. Rakesh Sharma, Evincepub Publishing, 2022.
5. Food processing and preservation, G. Subbulakshmi, Shobha A Udipi, Pdmini S Ghugre, New age international publishers, second edition, 2021.

Reference books:

1. H.-D. Belitz, Werner Grosch, Food Chemistry Springer Science & Business Media, 4th Edition, 2009.
2. M.Swaminathan, Food Science and Experimental Foods, Ganesh and Company, 1979.
3. Hasenhuettl, Gerard. L.; Hartel, Richard. W. Food Emulsifiers and their applications Springer New York 2nd ed. 2008.
4. Food Chemistry, H.-D. Belitz, W. Grosch, P. Schieberle, Springer, fourth revised and extended edition, 2009.
5. Principles of food chemistry, John M. deMan, John W. Finley, W. Jefferey Hurst, Chang Yong Lee, Springer, Fourth edition, 2018.

COURSE OUTCOMES

CO	Upon completion of the course, the students will be able to:	PSOs Addressed	Cognitive Level
CO-1	Learn about Food adulteration - contamination of Wheat, Rice, Milk, Butter.	1	K2
CO-2	Get an awareness about food poisons like natural poisons (alkaloids - nephrotoxin) pesticides, DDT, BHC, Malathion.	1, 2, 5	K4
CO-3	Get an exposure on food additives, artificial sweeteners, Saccharin, Cyclomate and Aspartate in the food industries.	1, 2, 5	K4
CO-4	Acquire knowledge on beverages, soft drinks, soda, fruit juices and alcoholic beverages examples.	1, 4	K4
CO-5	Study about fats and oils - Sources of oils - production of refined vegetable oils - preservation. Saturated and unsaturated fats –MUFA and PUFA	1, 2, 5	K4

K1-Remembering; K2 – Understanding; K3 - Applying; K4 - Analyzing; K5 – Evaluating; K6 – Creating

RELATIONSHIP MATRIX

Semester	Course Code	Title of the Course	Hours	Credits
I	24UNCH11	FOOD CHEMISTRY	30	2

Course Outcomes (COs)	Programme Outcomes (POs)						Programme Specific Outcomes (PSOs)				
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO-1	2	-	-	-	-	-	2	-	-	-	-
CO-2	2	2	-	-	1	-	2	2	-	-	1
CO-3	2	2	-	-	1	-	2	2	-	-	1
CO-4	2	-	-	2	-	1	2	-	-	2	1
CO-5	2	2	-	-	1	-	2	2	-	-	1

STRONG (3), MEDIUM (2) and LOW (1)

Prepared by

Name: Dr. M. A. Sabitha

Checked by: Dr.A.Syed Mohamed

Head of the Department

Semester - I	FUNDAMENTAL CONCEPTS IN CHEMISTRY		24UFCH11			
FC – I			L	T	P	C
Hrs./Week: 2	Hrs./Semester : 30	Marks :50	2	-	-	2

General Objective:

The course focuses on redox reactions, balancing the equations, classification and nomenclature of organic compounds, various gas laws and error analysis.

Learning Objectives:

LO	The learner will be able to:
LO-1	Learn the fundamental concepts of atoms and oxidation-reduction reactions.
LO-2	Know about the classification and IUPAC nomenclature of organic compounds.
LO-3	Acquire knowledge about nomenclature of organic compounds with functional groups and bicyclic systems.
LO-4	Gain knowledge about various gas laws and gas equations.
LO-5	Study about error analysis, accuracy, precision and significant figures.

Unit I: General Chemistry

States of Matter-Differences between Solid, Liquid, and Gaseous states – Atoms, Elements and Compounds – Isotopes - Isobars - Isotones. Oxidation and Reduction number – Redox reactions – half reactions- Balancing of equations – Oxidation number method and Ion-electron method.

Unit II: Organic Chemistry -I

Classification of organic compounds based on - the nature of carbon skeleton and functional groups – Systems of naming organic compounds- Trivial, Derived, and Systematic names. IUPAC system of nomenclature of common organic compounds (up to C-10) – alkanes, alkenes, alkynes and cycloalkanes.

Unit III: Organic Chemistry -II

Naming of organic compounds with one functional group – Halogen compounds, Alcohols, Phenol, Aldehydes, Ketones, Mono carboxylic acid, Cyano compounds, Amines and Nitro compounds (only aliphatic) – Bicyclic systems.

Unit IV: Physical Chemistry

Gaseous laws - Boyle's Law, Charles' law, Avogadro's Law - Vapour pressure, Dalton's Law of Partial Pressures, Ideal Gases - Ideal Gas equation - Real Gases - Van der Waals Equation – Critical Constants (P_c, V_c, T_c) – Problems.

Unit V: Analytical Chemistry

Error analysis- Types of errors- Minimizing errors- Accuracy and Precision, Methods of expressing precision, mean, median, mean deviation, standard deviation and confidence limit-Curve fitting, Method of least squares- Significant figures – Problems.

Recommended Text:

1. Puri,B. R. and Sharma, L. R. *Principles of Physical Chemistry,* 38th ed.; Vishal Publishing Company: Jalandhar, 2002.
2. Sathya Prakash, Tuli G D, Basu S K and Madan R D, (2003), Advanced Inorganic Chemistry, 17th ed., S.Chand and Company, NewDelhi.
3. Bahl BS, Arul Bhal, (2003), Advanced Organic Chemistry, 3rd ed., S. Chand and Company, NewDelhi.

Reference Books

1. Gurudeep Raj, *Advanced Inorganic Chemistry,* 26th ed.; Goel Publishing House: Meerut, 2001.
2. Atkins, P. W. & Paula, J. *Physical Chemistry*,10th ed.; Oxford University Press: New York, 2014.
3. P. L. Soni, and H. M. Chawla-*Text Book of Organic Chemistry*, New Delhi, Sultan Chand & Sons, twenty ninth edition, 2007.

COURSE OUTCOMES

CO	Upon completion of the course, the students will be able to:	PSOs Addressed	Cognitive Level
CO-1	Know about the redox reaction and balancing the equations.	1,2,5	K2
CO-2	Understand the classification and systems of naming organic compounds.	1,2,3,5	K2
CO-3	Utilize the IUPAC naming conventions to systematically name organic compounds	1,2,3,5	K3
CO-4	Relate the various gas laws to various real-world applications.	1,2,3,5	K4
CO-5	Apply the calibration techniques and use standard measurements to ensure accurate measurements.	1,2,3,5,6	K5

K1-Remembering; K2 – Understanding; K3 - Applying; K4 - Analyzing; K5 – Evaluating; K6 – Creating

RELATIONSHIP MATRIX

Semester	Course Code	Title of the Course	Hours	Credits
I	24UFCH11	FUNDAMENTAL CONCEPTS IN CHEMISTRY	30	2

Course Outcomes (COs)	Programme Outcomes (POs)						Programme Specific Outcomes (PSOs)				
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO-1	3	3			2		3	3			2
CO-2	3	3	2		2		3	3			2
CO-3	3	3	2		2		3	3	2		2
CO-4	3	3	2		2		3		2		2
CO-5	3	3	2		2	2	3		2		2

STRONG (3), MEDIUM (2) and LOW (1)

Prepared by
Dr. P. JESLIN KANAGA INBA

Checked by: Dr.A.Syed Mohamed
Head of the Department

Semester – II	GRAMMAR		24ULAR21			
LANG – I			L	T	P	C
Hrs./Week: 6	Hrs./Semester : 90	Marks :100	6	-	-	3

General Objective: To make the students to develop the skill of basic Arabic Grammar and Translation skills from Arabic to English vice-versa.

Learning Objectives

LO	The learners will be able to:
LO 1	Understand basic Arabic grammar.
LO 2	Understand the correct usage of Arabic grammar.
LO 3	Employ sentence making.
LO 4	Enhance vocabulary.
LO 5	Improve reading and writing skills.

UNIT I - Lessons 1 to 4 (Text Book – 1) من الدرس الأول إلى الدرس الرابع

UNIT II - Lessons 5 to 8 (Text Book – 1) من الدرس الخامس إلى الدرس الثامن

UNIT III – Lessons 9 to 12 (Text Book – 1) من الدرس التاسع إلى الدرس الثاني عشر

UNIT IV – Lessons 13 to 16 (Text Book – 1) من الدرس الثالث عشر إلى الدرس السادس عشر

UNIT V – Lessons 17 to 20 (Text Book – 1) من الدرس السابع عشر إلى الدرس العشرون

Textbooks:

1. قواعد اللغة العربية الأساسية، الدكتور سيد رحمة الله، رئيس سابق لقسم اللغة العربية، الكلية الجديدة، شنائي

Basic Arabic Grammar, By Dr. Syed Rahmathullah

Reference Books:

النحو الواضح – علي الجارم ومصطفى أمين
دليل النحو الواضح – الدكتور بشير أحمد جمالي
سهل العوامل _ الدكتور تاج الدين المناني
النحو الميسر للكبار والصغار – علي محمود عقيلي
القواعد التطبيقية في اللغة العربية – الدكتور نديم دعكور

www.alnahw.com

Course Outcomes

CO	Upon completion of this course, students would have learned to:	PSOs Addressed	Cognitive Level
CO-1	Able to use basic grammatical structure.	PSO-1,2,4	K2
CO-2	Develop reading skills and reading speed	PSO-1,2	K2
CO-3	Acquire new vocabulary in Arabic	PSO-1,2,3	K3
CO-4	Understand the different types of sentences.	PSO-1,2,3	K4
CO-5	Able to construct simple sentences in Arabic	PSO-1,2,5	K5

K1-Remembering; K2 – Understanding; K3 - Applying; K4 - Analyzing; K5 – Evaluating; K6 – Creating

Relationship Matrix

Semester	Course Code	Title of the Course	Hours	Credits
II	24ULAR21	GRAMMAR	90	3

Course Outcomes (COs)	Programme Outcomes (POs)						Programme Specific Outcomes (PSOs)				
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO1	PSO2	PSO3	PSO4	PSO5
CO-1	3	2	2	2	2	2	3	2	2	2	1
CO-2	2	2	2	3	1	3	2	2	2	3	1
CO-3	3	3	3	2	2	1	3	3	3	2	2
CO-4	3	3	2	3	3	2	3	3	2	3	3
CO-5	2	2	1	2	3	2	2	2	1	2	3

STRONG – 3, MEDIUM – 2 , LOW – 1

Prepared by : Dr. J. Ubaiyathulla

Checked by: Dr. J. Ubaiyathulla
Head of the Department

Semester - II	பொதுத்தமிழ் - 2		24ULTA21			
LANG – I	தமிழ் இலக்கிய வரலாறு - 2		L	T	P	C
Hrs./Week: 6	Hrs./Semester : 90	Marks :100	6	-	-	3

General Objective:

- தமிழ் இலக்கியப் போக்குகளையும் இலக்கணங்களையும் மாணவர் .
- அறியுமாறு செய்து அவர்களின் படைப்பாற்றலைத் தூண்டுதல்
- தமிழ் இலக்கியம் சார்ந்த போட்டித் தேர்வுகளுக்கு ஏற்ப கற்பித்தல்.
- நடைமுறைகளை மேற்கொள்ளுதல்

Learning Objectives:

LO	The Learners will be able to:
LO - 1	சிற்றிலக்கியங்களின் வழி இலக்கியச் சுவையினையும் பண்பாட்டு அறிவினையும் பெறுதல்
LO - 2	புதுக்கவிதை வரலாற்றினை அறிந்து கொள்வர்
LO - 3	திராவிட இயக்க இலக்கியங்களைக் கற்பதன் மூலம் மொழி உணர்வு , இன உணர்வு, சமத்துவம் சார்ந்த சிந்தனைகளை ஊட்டுதல்
LO - 4	தமிழ்மொழியைப் பிழையின்றி எழுதவும், புதிய கலைச்சொற்களை உருவாக்கவும் அறிந்து கொள்ளுதல்
LO - 5	போட்டித் தேர்வுகளில் வெற்றி பெறுவதற்குத் தமிழ்ப் பாடத்தினைப் பயன்கொள்ளும் வகையில் மேடைப்பேச்சு மற்றும் கட்டுரை, கதை எழுதுவதற்கு பயிற்சி பெறுதல்.

அலகு 1 தமிழ் இலக்கிய வரலாறு அறிமுகம்

1. சிற்றிலக்கியம் குறவஞ்சி, கலம்பகம், உலா, பரணி, பள்ளு, பிள்ளைத்தமிழ், தூது, அந்தாதி.
2. தனிப்பாடல் அறிமுகம்.
3. இக்கால இலக்கியம், கவிதை, சிறுகதை, நாடகம், உரைநடை , திராவிட இயக்கம் வளர்த்த தமிழ்

அலகு 2 சிற்றிலக்கியமும் தனிப்பாடலும்

சிற்றிலக்கியம்

1. கலிங்கத்துப் பரணி- விருந்தினரும் வறியவரு நெருங்கி யுண்ணரும் - முதல் - கேட்பாரைக் காண்மின் காண்மின் வரை.
2. திருக்குற்றாலக் குறவஞ்சி - வானரங்கள் கனிகொடுத்து.
3. முக்கூடற் பள்ளு - ஆற்று வெள்ளம் நாளை வரத்.
4. அபிராமி அந்தாதி- கலையாத கல்வியும் குறையாத வயதும் (பதினாறு செல்வங்கள்).
5. திருவரங்கக் கலம்பகம் – மறம் -பிள்ளைப் பெருமாள் ஐயங்கார்- பேசவந்த தூத செல்லரித்த ஓலை செல்லுமோ.

6. தமிழ்விடு தூது முதல் பத்து கண்ணிகள்

தனிப்பாடல்

1. வான்குருவியின் கூடு - ஔவையார்
2. ஆமணக்குக்கும் யானைக்கும் சிலேடை - முத்திருக்கும் கொம்பசைக்கும் மூரித்தண்டே - காளமேகப் புலவர்
3. இம்பர் வான் எல்லை இராமனையே பாடி - வீரராகவர்
4. நாராய் நாராய் - சத்தி முத்தப் புலவர்

அலகு 3 இக்கால இலக்கியம் - 1

1. பாரதியார் - பாரத சமுதாயம் வாழ்கவே
2. பாரதிதாசன் - சிறுத்தையே வெளியில் வா
3. நாமக்கல் கவிஞர்- கத்தியின்றி
4. தமிழ் ஒளி – மீன்கள் (அந்தி நிலா பார்க்க வா)
5. ஈரோடு தமிழன்பன் – எட்டாவது சீர் (வணக்கம் வள்ளுவ)

சிறுகதைகள்

1. புதுமைப்பித்தன் - கடிதம்
2. ஜெயகாந்தன் - வாய்ச் சொற்கள் (மாலை மயக்கம் - தொகுப்பு)
3. ஆர். சூடாமணி - அந்நியர்கள்

உரைநடை

1. மு வ கடிதங்கள் - தம்பிக்கு நூலில் முதல் இரண்டு கடிதங்கள்

அலகு 4 இக்கால இலக்கியம் - 2

1. தந்தை பெரியார் – திருக்குறள்(மாநாட்டு) உரை
2. பேரறிஞர் அண்ணா – இரண்டாம் உலகத் தமிழ் மாநாட்டு உரை
3. கலைஞர் மு. கருணாநிதி – தொல்காப்பிய பூங்கா –எழுத்து -முதல் நூற்பா கட்டுரை

நாடகம் - திரைத்தமிழ்

1. வேலைக்காரி –திரைப்படம்
2. ராஜா ராணி -சாக்ரடீஸ் -ஓரங்க நாடகம்

இதழியல் தமிழ்:

முரசொலி கடிதம்

1. செம்மொழி வரலாற்றில் சில செப்பேடுகள்

அலகு 5 மொழிப் பயிற்சி

சொல் வேறுபாடு / பிழை தவிர்த்தல்

ரகர – றகர வேறுபாடுகள்

நகர – ணகர – னகர வேறுபாடுகள்

லகர – ளகர – ழகர வேறுபாடுகள்

பாட நூல்:

பதிப்பாசிரியர் முனைவர் ச.மகாதேவன், பொதுத்தமிழ் 2,
சதக்கத்துல்லாஹ் அப்பா கல்லூரி வெளியீடு 2024 – 2025(முதற் பதிப்பு).

பார்வை நூல்கள் :

1. மு. வரதராசன், தமிழ் இலக்கிய வரலாறு, சாகித்ய அகாதெமி, புதுடெல்லி.
2. மது. ச. விமலானந்தன், தமிழ் இலக்கிய வரலாறு, மீனாட்சி புத்தக நிலையம், மதுரை.
3. தமிழண்ணல், புதிய நோக்கில் தமிழ் இலக்கிய வரலாறு, மீனாட்சி புத்தக நிலையம், மதுரை.
4. தமிழ் இலக்கிய வரலாறு – முனைவர்.சிற்பி பாலசுப்ரமணியம், முனைவர்.சொ.சேதுபதி
5. புதிய தமிழ் இலக்கிய வரலாறு – முனைவர்.சிற்பி பாலசுப்ரமணியம், நீல.பத்மநாபன்
6. தமிழ் இலக்கிய வரலாறு - டாக்டர்.அ.கா.பெருமாள்
7. தமிழ் இலக்கிய வரலாறு - முனைவர். ப.ச.ஏசுதாசன்
8. தமிழ் இலக்கிய வரலாறு – ஸ்ரீகுமார்
9. வகைமை நோக்கில் தமிழ் இலக்கிய வரலாறு – பாக்கியமேரி.
10. தமிழ் பயிற்றும் முறை, பேராசிரியர் ந. சுப்புரெட்டியார் - மணிவாசகர் பதிப்பகம், சிதம்பரம்

- https://www.chennailibrary.com/
- https://www.sirukathaigal.com
- https://www.tamilvirtualuniversity.org
- https://www.noolulagam.com
- https://www.katuraitamilblogspot.com

Course Outcomes

CO	Upon completion of this course, students will be able to	PSO Addressed	Cognitive Level
CO-1	சிற்றிலக்கியங்களின்வழி இலக்கியச் சுவையினையும் பண்பாட்டு அறிவினையும் பெறுவர்	2,4	K2, K3
CO-2	புதுக்கவிதை வரலாற்றினை அறிந்து கொள்வர்	1,4	K2
CO-3	திராவிட இயக்க இலக்கியங்களைக் கற்பதன் மூலம் மொழி உணர்வு, இன உணர்வு, சமத்துவம் சார்ந்த சிந்தனைகளைப் பெறுவர்	2,4,5	K4,K5
CO-4	தமிழ்மொழியைப் பிழையின்றி எழுதவும், புதிய கலைச்சொற்களை உருவாக்கவும் அறிந்து கொள்வர்	1,3	K3,K6
CO-5	போட்டித் தேர்வுகளில் வெற்றி பெறுவதற்குத் தமிழ்ப் பாடத்தினைப் பயன்கொள்ளும் வகையில் மேடைப்பேச்சு மற்றும் கட்டுரை, கதை எழுதுவதற்கு பயிற்சி பெறுவர் பயிற்சி பெறுவர்.	1,2,3,4	K4, K6

K1-Remembering; K2 – Understanding; K3 - Applying; K4 - Analyzing; K5 – Evaluating; K6 – Creating

Relationship Matrix

Semester	Course Code	Title of the Course	Hours	Credits
II	24ULTA21	தமிழ் இலக்கிய வரலாறு - 2	90	3

Course Outcomes (COs)	Programme Outcomes (POs)						Programme Specific Outcomes (PSOs)				
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO-1	3	2	3	3	3	2	2	2	3	2	3
CO-2	3	3	2	2	2	3	2	3	3	2	2
CO-3	3	2	3	3	2	2	2	3	2	3	3
CO-4	3	3	3	2	2	2	3	2	3	2	2
CO-5	3	3	2	2	2	3	3	2	2	2	2

3 - STRONG, 2 - MEDIUM, 1- LOW

Prepared by : Dr. A.S. Shaik Sindha

Checked by: Dr.S.Mahadevan
Head of the Department

Semester - II	General English-II		24ULEN21			
LANG – II			L	T	P	C
Hrs./Week: 6	Hrs./Semester : 90	Marks :100	6	-	-	3

General Objective:

To teach the four skills viz. Listening, Speaking, Reading and Writing to train the students the skills necessary for social and academic interactions.

Learning Objectives (LO)

LO	The learners will be able to:
LO-1	To make students realize the importance of resilience
LO-2	To enable them to become good decision makers
LO-3	To enable them to develop problem-solving skills
LO-4	To enable them to use tenses appropriately
LO-5	To help them use English effectively at workplace.

Unit – I

The Skill Focussed: Resilience

Poetry

1. "Don't Quit" – Edgar A. Guest
2. "Still Here" – Langston Hughes

Short Story

3 Engine Trouble – R.K. Narayan

4 Rip Van Winkle – Washington Irving

Unit – II

The Skill Focussed: Decision Making

Short Story

1. The Scribe – Kristin Hunter
2. The Lady or the Tiger - Frank Stockton

Poetry

3. "The Road not Taken" – Robert Frost
4. "Snake" – D. H Lawrence

Unit – III

The Skill Focussed: Problem Solving

Autobiography

1. How I taught My Grandmother to Read – Sudha Murthy
2. How Frog Went to Heaven – A Tale of Angolo
3. Wings of Fire (Chapters 1,2,3) by A.P.J Abdul Kalam

Unit – IV

Grammar

Tenses

1. Present
2. Past
3. Future
4. Concord

Unit - V

English in the Workplace

1.e-mail – Invitation, Enquiry, Seeking Clarification

2. Circular
3. Memo
4. Minutes of the Meeting

Textbook:

1. Board of Editors. General English – II. Tamil Nadu State Council for Higher Education (TANSCHE). Chennai: 2024.

Reference Books:

1. Martin Hewings, *Advanced English Grammar*, Cambridge University Press, 2000.
2. SP Bakshi, Richa Sharma, *Descriptive English,* Arihant Publications (India) Ltd., 2019.
3. Sheena Cameron, Louise Dempsey, *The Reading Book: A Complete Guide to Teaching Reading*, S&L. Publishing, 2019.
4. Barbara Sherman, *Skimming and Scanning Techniques*, Liberty University Press, 2014.
5. ShaikhMoula, *Communication Skills: A Practical Approached*.
6. Ramendra Kumar, *Stories of Resilience*, Blue Rose Publications, 2020.

Course Outcomes

CO	Upon completion of this course, students will be able to	PSO Addressed	Cognitive Level
CO-1	Understand the importance of resilience	1, 2, 4	K1, K2
CO-2	Acquire knowledge to make good decisions	1, 2, 3, 4	K2, K3
CO-3	Develop problem-solving skills	1, 2, 3, 4	K3, K4
CO-4	Evaluate the uses of tenses in English	1, 2, 3	K4, K5
CO-5	Use English effectively at the workplace.	2, 4, 5	K5, K6

K1-Remembering; K2 – Understanding; K3 - Applying; K4 - Analyzing; K5 – Evaluating; K6 – Creating

Relationship Matrix

Semester	Course Code			Title of the Course			Hours		Credits		
II	24ULEN21			General English - II			90		3		
Course Outcomes (COs)	Programme Outcomes (POs)						Programme Specific Outcomes (PSOs)				
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO-1	3	3	1	3	1		1	3	3	3	1
CO-2	3	3	3	3	2		3	3	3	3	2
CO-3	3	3	3	3	1		3	3	3	3	1
CO-4	3	3	3	2	1		3	3	3	1	2
CO-5	1	3	2	3	3		3	3	3	3	3
	STRONG – 3, MEDIUM – 2 , LOW – 1										

Prepared by : Dr.L.Faustina Leo Checked by: Dr. S. Mohamed Haneef

Head of the Department

Semester – II	GENERAL CHEMISTRY-II		24UCCH21			
Core – II			L	T	P	C
Hrs./Week: 5	Hrs./Semester : 75	Marks :100	5	-	-	5

General Objective:

This course aims at providing an overall view of Chemistry of acids, bases, and ionic equilibrium, properties of s- and p-block elements, chemistry of hydrocarbons, applications of acids and bases, compounds of main block elements and hydrocarbons.

Learning Objectives:

LO	The learners will be able to:
LO-1	Understand the concept of acids, bases, and ionic equilibria, indicators and buffer action.
LO-2	Explain the periodic properties of s- and p- block elements and its important compounds.
LO-3	Learn about the general characteristics, preparation and properties of halogens and noble gases.
LO-4	Elaborate the process of petroleum refining, reactions of alkenes and alkadienes.
LO-5	Explain the structure, reactions of benzene and polynuclear hydrocarbons.

UNIT I -Acids, bases, and Ionic equilibria

Concepts of Acids and Bases - Arrhenius concept, Bronsted-Lowry concept, Lewis's concept; Relative strengths of acids, bases, and dissociation constant, ionic product of water, pH scale, pH of solutions; Degree of dissociation, common ion effect, factors affecting degree of dissociation; acid base indicators, theory of acid-base indicators – use of acid-base indicators.

Buffer solutions – types, mechanism of buffer action in acid and basic buffer, Henderson-Hasselbalch equation;

Salt hydrolysis - salts of weak acids and strong bases, weak bases and strong acids, weak acids, and weak bases - hydrolysis constant, degree of hydrolysis - relation between hydrolysis constant and degree of hydrolysis.

Solubility product - determination and applications; numerical problems involving the core concepts**.**

UNIT II - Chemistry of s - Block & p- Block Elements (Group 13 & 14)

Hydrogen: Position of hydrogen in the periodic table. Alkali metals: Comparative study of the elements with respect to oxides, hydroxides,

halides, carbonates, and bicarbonates. Diagonal relationship of Li with Mg. Preparation, properties, and uses of NaOH, Na_2CO_3, KBr, $KClO_3$ alkaline earth metals. Anomalous behaviour of Be.

Preparation and structure of diborane and borazine. Chemistry of borax. Extraction of Al and its uses. Alloys of Al.

Comparison of carbon with silicon. Carbon-di-sulphide – Preparation, properties, structure and uses. Percarbonates, per monocarbonates and per dicarbonates.

UNIT III – Chemistry of p- Block Elements (Group 15-18)

General characteristics of elements of Group 15; chemistry of $H_2N\text{-}NH_2$, NH_2OH, HN_3 and HNO_3. Chemistry of PH_3, PCl_3, PCl_5, $POCl_3$, P_2O_5 and oxy acids of phosphorous (H_3PO_3 and H_3PO_4).

General properties of elements of group 16 - Structure and allotropy of elements - chemistry of ozone - Classification and properties of oxides - oxides of sulphur and selenium – Oxy acids of sulphur (Caro's and Marshall's acids).

Chemistry of Halogens: General characteristics of halogen with reference to electro-negativity, electron affinity, oxidation states and oxidizing power. Peculiarities of fluorine. Halogen acids (HF, HCl, HBr and HI), oxides and oxy acids ($HClO_4$). Inter-halogen compounds (ICl, ClF_3, BrF_5 and IF_7), pseudo halogens [$(CN)_2$ and $(SCN)_2$] and basic nature of Iodine.

Noble gases: Position in the periodic table. Preparation, properties, and structure of XeF_2, XeF_4, XeF_6 and $XeOF_4$; uses of noble gases – clathrate compounds.

UNIT IV – Hydrocarbon Chemistry-I

Petroproducts: Fractional distillation of petroleum; cracking, isomerization, alkylation, reforming and uses

Alkenes: Nomenclature – Mechanism of elimination reactions – E1 and E2 mechanism - factors influencing – stereochemistry – orientation – Hoffmann and Saytzeff's rules – addition reactions – mechanisms – Markownikoff's rule, oxidation reactions – hydroxylation.

Alkadienes: Nomenclature - classification – isolated, conjugated, and

cumulated dienes; stability of conjugated dienes; mechanism of electrophilic addition to conjugated dienes - 1, 2 - and 1, 4 - additions; free radical addition to conjugated dienes – Diels–Alder reactions.

Alkynes: Nomenclature; acidic nature of terminal alkynes and acetylene.

Cycloalkanes: Nomenclatures, Relative stability of cycloalkanes, Bayer's strain theory and its limitations. Conformational analysis of cyclohexane, mono- and di- substituted cyclohexanes.

UNIT V – Hydrocarbon Chemistry - II

Benzene: Structure of benzene, stability of benzene ring, molecular orbital picture of benzene, aromaticity, Huckel's (4n+2) rule and its applications - General mechanism of aromatic electrophilic substitution - nitration, sulphonation, halogenation, Friedel-Craft's alkylation, and acylation.

Polynuclear Aromatic hydrocarbons: Naphthalene - Haworth synthesis – Electrophilic substitution reaction, nitration, sulphonation, halogenation, Friedel – Crafts acylation & alkylation – reduction, oxidation – uses.

Anthracene – synthesis by Diels – Alder reaction and Haworth synthesis; reactions - Diels-Alder reaction, preferential substitution at C-9 and C-10; uses.

Textbooks:

1. Madan RD, Sathya Prakash, Modern Inorganic Chemistry, 2nd ed, S. Chand and Company, New Delhi. (2003),
2. Sathya Prakash, Tuli G D, Basu S K and Madan R D, Advanced Inorganic Chemistry,17th ed., S. Chand and Company, New Delhi. (2003).
3. Bahl BS, Arun Bhal, Advanced Organic Chemistry, 3rd ed., S. Chand and Company, New Delhi. (2003).
4. Tewari KS, Mehrothra SN and Vishnoi NK, Textbook of Organic Chemistry, 2nd ed., Vikas Publishing House, New Delhi., (1998).
5. Puri BR, Sharma LR, Principles of Physical Chemistry, 38th ed., Vishal Publishing Company, Jalandhar, (2002).

Reference Books:

1. Maron S H and Prutton C P, Principles of Physical Chemistry, 4th ed., The Macmillan Company, New York, (1972).
2. Barrow G M, Physical Chemistry, 5th ed., Tata McGraw Hill, New Delhi, (1992).
3. Lee J D, Concise Inorganic Chemistry, 4th ed., ELBS William Heinemann, London, (1991).
4. Huheey J E, Inorganic Chemistry: Principles of Structure and Reactivity, 4th ed., Addison Wesley Publishing Company, India, (1993).
5. Gurudeep Raj, Advanced Inorganic Chemistry Vol – I, 26th ed., Goel Publishing House, Meerut, (2001).
6. Agarwal O P, Reactions and Reagents in Organic Chemistry, 8th ed., Goel Publishing House, Meerut, (1995).

Website and e-learning source:

https://onlinecourses.nptel.ac.in

http://cactus.dixie.edu/smblack/chem1010/lecture_notes/4B.htmlhttp://www.auburn.edu/~deruija/pdareson.pdfhttps://swayam.gov.in/course/64-atomic-structure-and-chemical-bonding.

MOOC components

Lecture1: Classification of elements and periodic properties:

http://nptel.ac.in/courses/104101090/

COURSE OUTCOMES

CO	Upon completion of this course, students would have learned to:	PSOs Addressed	Cognitive Level
CO-1	Explain the concept of acids, bases, and ionic equilibria; periodic properties of s- and p-block elements, preparation, and properties of aliphatic and aromatic hydrocarbons.	1,2,5	K4
CO-2	Discuss the periodic properties of s- and p-block elements, reactions of aliphatic and aromatic hydrocarbons and strength of acids	1,2,4	K3
CO-3	Classify hydrocarbons, types of reactions, acids, and bases, examine the properties-and p- block elements, reaction mechanisms of aliphatic and aromatic hydrocarbons.	1,4,5	K3
CO-4	Justify the theories of acids, bases and indicators, buffer action and important compounds of s- and p- block elements	1,2,4,5	K5
CO-5	Assess the application of hard and soft acids indicators, buffers, compounds of s-and p-block elements and hydrocarbons	1,2,4,5	K5

K1-Remembering; K2 – Understanding; K3 - Applying; K4 - Analyzing; K5 – Evaluating; K6 – Creating

RELATIONSHIP MATRIX

Semester	Course Code	Title of the Course	Hours	Credits
II	24UCCH21	GENERAL CHEMISTRY-II	75	5

Course Outcomes (COs)	Programme Outcomes (POs)						Programme Specific Outcomes (PSOs)				
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO-1	3	2	-	-	2	-	3	2	3	-	2
CO-2	3	2	-	-	2	-	3	2	3	1	2
CO-3	3	2	1	-	2	-	3	2	1	1	2
CO-4	3	2	1	-	2	-	3	1	1	1	2
CO-5	3	2	1	-	2	-	3	2	1	-	2

STRONG (3), MEDIUM (2) and LOW (1)

Prepared by
Name: Dr. I. Antony Danish

Checked by: Dr.A.Syed Mohamed
Head of the Department

Semester – II	QUALITATIVE ORGANIC ANALYSIS AND PREPARATION OF ORGANIC COMPOUNDS		24UCCH2P			
Core – IIP			L	T	P	C
Hrs./Week: 3	Hrs./Semester : 45	Marks :100	-	-	3	3

General Objective:

This course aims at providing knowledge on Laboratory safety, handling glass wares, preparation and purification of organic compounds.

Learning Objectives:

LO	The learners will be able to:
LO-1	Understand the safety procedures to be adopted in the chemistry laboratory.
LO-2	Gain knowledge about the different flames and glass wares used in experiments.
LO-3	Plan different organic reactions to transform the functional group of the given organic compounds.
LO-4	Set up an organic reaction to prepare different organic compounds and purify the crude compound formed by recrystallization.
LO-5	Determine the physical constants of organic compounds.

UNIT I

Safety rules, symbols, and first-aid in chemistry laboratory

Basic ideas about Bunsen burner, its operation, and parts of the flame.

Chemistry laboratory glassware –basis information and uses.

UNIT II – A. Preparation of Organic Compounds

1. Nitration - Picric acid from Phenol
2. Halogenation - *p*-Bromo acetanilide from Acetanilide
3. Oxidation - Benzoic acid from Benzaldehyde
4. Hydrolysis:
    i) Benzoic acid from Methyl benzoate
    ii) Salicylic acid from Methyl Salicylate
    iii) Benzoic Acid from Benzamide
5. Benzoylation: Preparation of Phenyl benzoate from Phenol.
6. Condensation: Preparation of Glucosazone from Glucose
7. Diazotization: Preparation of Methyl orange from Sulphanilic acid
8. Rearrangement - Benzil to Benzilic Acid

B. Purification Techniques and Determination of Physical Constants

i. Purification of organic compounds by crystallization (from water / alcohol) and distillation

ii. Determination of melting and boiling points of organic compounds.

Textbooks:

2. Lab Manual for Qualitative Organic Analysis and Preparation of Organic Compounds, Department of Chemistry, Sadakathullah Appa College, (2024).

Reference Books:

1. Venkateswaran, V., Veeraswamy, R., Kulandaivelu, A.R. Basic Principles of Practical Chemistry, 2nd ed.; Sultan Chand: New Delhi, (2012).
2. Manna, A.K., Practical Organic Chemistry, Books and Allied: India, (2018).
3. Gurtu, J. N; Kapoor, R. Advanced Experimental Chemistry (Organic), Sultan Chand: New Delhi, (1987).
4. Furniss, B. S., Hannaford, A. J., Smith, P. W. G., Tatchell, A.R. Vogel's Textbook of Practical Organic Chemistry, 5th ed.; Pearson: India, (1989).

Website and e-learning source

https://www.vlab.co.in/broad-area-chemical-sciences

https://vlab.amrita.edu/?sub=2&brch=191

COURSE OUTCOMES

CO	Upon completion of this course, students would have learned to:	PSOs Addressed	Cognitive Level
CO-1	Observe the physical state, odour, colour and solubility of the given organic compound.	1,2,3	K4
CO-2	Identify the presence of special elements and functional group in an unknown organic compound performing a systematic analysis.	1,2,3	K4
CO-3	Compare mono- and di-carboxylic acids, primary, secondary, and tertiary amines, mono- and di-amides, mono and polyhydric phenols, aldehyde, and ketone, reducing and non- reducing sugars and explain the reactions behind it.	1,3,4	K5
CO-4	Exhibit a solid derivative with respect to the identified functional group.	1,3,4	K5
CO-5	Determine the method of extraction and physical constants of organic compounds	1,3,4,5	K5

K1-Remembering; K2 – Understanding; K3 - Applying; K4 - Analyzing; K5 – Evaluating; K6 – Creating

RELATIONSHIP MATRIX

Semester	Course Code	Title of the Course	Hours	Credits
II	24UCCH2P	Qualitative Organic Analysis and Preparation of Organic Compounds	45	3

Course Outcomes (COs)	Programme Outcomes (POs)						Programme Specific Outcomes (PSOs)				
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO-1	3	3	3	-	2	1	2	3	3	-	1
CO-2	3	3	3	-	2	1	2	3	3	1	1
CO-3	3	3	3	-	2		2	3	3	-	2
CO-4	3	3	3	2	2	1	2	3	3	1	2
CO-5	3	3	3	2	2	1	2	3	3	1	2

STRONG (3), MEDIUM (2) and LOW (1)

Prepared by
Name: Dr. I. Antony Danish

Checked by: Dr.A.Syed Mohamed
Head of the Department

Semester – II	BIOCHEMISTRY-II		24UABC21			
EC – II (Allied)			L	T	P	C
Hrs./Week: 4	Hrs./Semester : 60	Marks :100	4	-	-	4

General Objectives:

This course focuses on amino acids, proteins, nucleic acids, enzymes and clinical biochemistry.

Learning Objectives:

LO	The learner will be able to
LO-1	Classify amino acids and proteins, discuss the reactions.
LO-2	Demonstrate the metabolism of amino acid.
LO-3	Learn about nucleic acids, DNA and RNA.
LO-4	Assess the mechanism of enzymes and different types of enzyme inhibitors.
LO-5	Acquire knowledge about analysis of glucose and cholesterol in blood.

UNIT I AMINO ACIDS AND PROTEINS

Amino acids – Classifications based on structure, polarity, nutrition and metabolic fate, Properties - Optical activity, isoelectric point & zwitter ion - Reactions due to amino and carboxylic acid group, Action of heat on alpha, beta and gamma amino acids – functions.

Triplet code for 20 amino acids.

Proteins – classification based on functions, chemical nature, solubility and nutritive value – properties – colour reactions – primary structure – determination - Secondary, tertiary and quarternary structure of proteins

UNIT II AMINO ACID METABOLISM

Transamination – salient features – Deamination – oxidative and non-oxidative deamination – decarboxylation - Urea cycle.

Metabolism of glycine, tyrosine, tryptophan - Kynurenine and Serotonin pathway – Melatonin, Serotonin and its functions.

UNIT III NUCLEIC ACIDS

Nucleic acids – Types, components – purine, pyrimidine derivatives, nucleoside and nucleotide – functions.

DNA structure – Watson – Crick model – RNA –types (mRNA, tRNA and rRNA) - structure of tRNA.

Comparison between DNA and RNA.

UNIT IV ENZYMES

Enzymes - Nomenclature - Classification - Factors affecting the enzyme activity - Michaelis - Menten equation - Derivation - Enzyme specificity – active site – mechanism of enzyme action – Lock and key model - Enzyme inhibition - Reversible, Irreversible and Allosteric - Coenzymes - Industrial and Medical applications of enzyme.

UNIT V CLINICAL BIOCHEMISTRY

Composition of blood – blood grouping – determination of blood group and matching - Blood pressure – hypertension – determination - Determination of glucose in serum – Folin and Wu's method - Determination of serum cholesterol – Sackett's method.

Estimation of glucose in urine - Diagnostic test for sugar in urine – Benedict's test – clinistix – strip test – Diagnostic test for salts in urine and serum.

REFERENCE BOOKS

1. Donald Voet, Judith G. Voet. *Biochemistry*, 4th edition: John Wiley & sons: New York, 2010.
2. Jain J.L. *Fundamentals of Biochemistry*, S. Chand & Co. Ltd.: New Delhi, 2005.
3. Kuchel P.W. and Ralstol G.B. *Biochemistry*, Schaum's Outlines, Tata McGraw Hill Publishing Company Ltd.: New Delhi, 2005.
4. Satyanarayana U. & Chakrapani U. *Biochemistry*, 4th edition: Elsevier: India, 2013.
5. Stryer L. *Biochemistry*, 5th edition: W.H. Freeman and Company: New York, 2002.
6. Thomas M. Delvin. *Textbook of Biochemistry*, 7th edition: John Wiley & sons: New York, 2010.

COURSE OUTCOMES

CO	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Describe the Classification, properties and reactions of amino acids and proteins	1,5	K1
CO-2	Explain the structure of proteins, DNA and RNA	1,3,5	K2
CO-3	Derive Michaelis-Menten equation and point out the industrial and medical applications of enzymes.	1,3,5	K3
CO-4	Examine the metabolism of amino acids and pathways involved in urea cycle	1,3,5	K4
CO-5	Estimate the clinical profile of blood and urine.	1,2,3,5	K5

K1-Remembering; K2 – Understanding; K3 - Applying; K4 - Analyzing; K5 – Evaluating; K6 – Creating

RELATIONSHIP MATRIX

Semester	Course Code	Title of the Course	Hours	Credits
II	24UABC21	BIOCHEMISTRY-II	60	4

Course Outcomes (COs)	Programme Outcomes (PO)						Programme Specific Outcomes (PSO)				
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO-1	2	-		-	1	2	1	-	-	-	1
CO-2	2	-	2	-	1	2	1	-	2	-	1
CO-3	2	-	2	-	1	-	1	-	2	-	2
CO-4	2	-	1	-	1	-	1	-	2	-	2
CO-5	2	1	1	-	1	-	1	2	2	-	2

STRONG (3), MEDIUM (2) and LOW (1)

Prepared by
Name: Dr. M. Thameem Ansari

Checked by: Dr.A.Syed Mohamed
Head of the Department

Semester – II	ANALYSIS OF AMINO ACIDS AND PROTEINS		24UABC2P			
EC – IIP (Allied)			L	T	P	C
Hrs./Week: 2	Hrs./Semester : 30	Marks :50	-	-	2	1

General Objectives:

This course concentrates on the detection and estimation of amino acids, proteins and sugar level in urine and blood.

Learning Objectives:

LO	The learners will be able to
LO-1	Analyse amino acids by qualitative tests.
LO-2	Investigate colour reactions of proteins.
LO-3	Examine amino acids.
LO-4	Estimate Proteins.
LO-5	Detect sugar in blood and urine.

I Qualitative analysis of amino acids

1. Analysis of tyrosine, tryptophan, arginine, histidine, cysteine and methionine
2. Colour reaction of proteins.

II Quantitative analysis

1. Estimation of glycine.
2. Estimation of Protein by Biuret method.
3. Estimation of amino acids by colorimetric method.

Course Work

1. Detection of sugar in urine.
2. Detection of sugar in blood.

REFERENCE BOOKS

1. Geetha Damodaran. *Practical Biochemistry*: Jaypee Brothers Medical Publishers (P) Ltd.: New Delhi, 2011.
2. Jeyaraman J. *Laboratory Manual in Biochemistry*: New Age International Publishers: India, 2011.
3. Mary Vijaya T., Mani M.L., Sunitha Kumari K. &Asha K.R.T. *Practical Clinical Biochemistry Manual*, Rishi Publications: Kalikavilai, 2003.
4. Palanivelu D.R. *Laboratory manual for Analytical Biochemistry & Separation Techniques:* School of Biotechnology, Madurai Kamaraj University: Madurai. 2000.

COURSE OUTCOMES

CO	Course Outcomes	PSOs Addressed	Cognitive Level
CO-1	Differentiate the colour reactions of proteins	1,2,3,4	K2
CO-2	Explore tyrosine, tryptophan, arginine, histidine, cysteine and methionine	1,2,3,4	K3
CO-3	Examine the amino acids by colorimetric method	1,2,4	K4
CO-4	Evaluate sugar in blood and urine	1,2,4,5	K5
CO-5	Estimate Protein and glycine	1,2,4	K5

K1-Remembering; K2 – Understanding; K3 - Applying; K4 - Analyzing; K5 – Evaluating; K6 – Creating

RELATIONSHIP MATRIX

Semester	Course Code	Title of the Course	Hours	Credit
II	24UABC2P	ANALYSIS OF AMINO ACIDS AND PROTEINS	30	1

Course Outcomes (COs)	Programme Outcomes (PO)						Programme Specific Outcomes (PSO)				
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO-1	2	1	2	-	-	2	1	2	1	1	-
CO-2	2	1	2	-	-	2	1	2	1	1	-
CO-3	2	1	-	-	-	-	1	1	-	1	-
CO-4	2	1	-	-	-	-	1	1	-	1	2
CO-5	2	1	-	-	-	-	1	1	-	1	-

STRONG (3), MEDIUM (2) and LOW (1)

Prepared by
Dr. M. Thameem Ansari

Checked by: Dr.A.Syed Mohamed
Head of the Department

Semester - II	VECTOR CALCULUS AND GROUP THEORY		24UAMA21			
EC – II (Allied)			L	T	P	C
Hrs./Week: 6	Hrs./Semester : 90	Marks :100	5	1	-	5

General Objective:

- To introduce students to the concept of vector-valued functions and their differentiation.
- To cultivate analytical thinking and problem-solving skills through the application of integral calculus to real-world scenarios involving lines, surfaces, and volumes
- To introduce students to the fundamental concepts of group theory, including groups, subgroups, group operations, and group properties

Learning Objectives:

LO	The learners will be able :
LO-1	To familiarize students with vector calculus operations such as gradient, divergence, curl
LO-2	To enable students to apply double and triple integrals in solving problems from physics, engineering and other disciplines.
LO-3	To provide students with the skills to apply line, surface, and volume integrals in solving problems
LO-4	To evaluate the solution of complicated integrals using Beta and Gamma functions.
LO-5	To Understand the familiar concepts about groups

UNITI **:** Vector Differentiation – Gradient – Divergence and Curl.

UNITII **:** Evaluation of double and triple integrals

UNITIII **:** Vector integration – Line, Surface and volume integrals

UNITIV **:**. BetaandGammafunctions

UNITV **:** Fundamental Concepts of Set theory – Groups – Definition and Examples – Elementary properties of a group – Permutation groups – Subgroups –Cyclic groups

Textbooks:

1. Arumugam. S. and Thangapandi Issac. A., *Allied Mathematics Paper I1, Vector Calculus and Fourier Series,* New Gamma Publishing House, Palayamkottai-Edition 2016
2. Arumugam. S. and Thangapandi Issac. A., *Calculus*. New Gamma Publications, Palaymkottai Edition 2005.
3. Arumugam. S. and Thangapandi Issac. A.,:*Modern Algebra*– SCITECH Publications (India) Pvt.Ltd., Chennai Edition 2007

UnitI :TB1:ChapterI

UnitII :TB1:ChapterII Section 2.1 – 2.3

UnitIII :TB1:ChapterIII

UnitIV :TB2:Part II - Chapter IV

UnitV :TB3: Chapter 3, Section 3.1-3.6

ReferenceBooks:

1. Joseph A.Mangaladoss, *Differential Equation & Vector Calculus,* Presi–Persi Publications,Tirunelveli 2012
2. Joseph A. Mangaladoss. *Abstract Algebra*, Presi-Persi Publications, Tirunelveli, Edition 2012.
3. Rawat K.S.,. *Integral Calculus.* Published by SARUP & Sons, New Delhi Edition 2008.
4. Manicavachagam Pillay T.K., Narayanan S. *Calculus (Volume II),*Viswanathan Printers & Publishers Pvt Ltd, Chennai Edition October 2014.

COURSE OUTCOMES

CO	Upon completion of this course, students would have learned to:	PSOs Addressed	Cognitive Level
CO-1	Interpret the physical meaning of vector differentiation operations in different contexts.	3,5	K2,K5
CO-2	Formulate and solve mathematical models involving multiple integrals in interdisciplinary settings..	3,5	K5
CO-3	Demonstrate proficiency in calculating line integrals, surface integrals, and volume integrals in various coordinate systems..	3,5	K3
CO-4	Estimate the value of integrals using Beta and Gamma functions.	3,5	K3,K5
CO-5	Demonstrate a solid understanding of group theory concepts including group axioms, group operations, and group properties.	3,5	K2,K3

K1-Remembering; K2 – Understanding; K3 - Applying; K4 - Analyzing; K5 – Evaluating; K6 – Creating

Relationship Matrix

Semester	Course Code	Title of the Course	Hours	Credits
II	24UAMA21	Vector Calculus and Group Theory	90	5

Course Outcomes (COs)	Programme Outcomes (POs)						Programme Specific Outcomes (PSOs)				
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO-1	-	3	3	-	2	-	-	-	3	-	2
CO-2	-	3	3	-	2	-	-	-	3	-	2
CO-3	-	3	3	-	2	-	-	-	3	-	2
CO-4	-	3	3	-	2	-	-	-	3	-	2
CO-5	-	3	3	-	2	-	-	-	3	-	2

STRONG (3), MEDIUM (2) and LOW (1)

Prepared by: Dr.S.Jamal Fathima Checked by: Dr.S.Firthous Fatima

Head of the Department

Semester – II	COSMETICS AND PERSONAL GROOMING		24UNCH21			
SEC – II (NME)			L	T	P	C
Hrs./Week: 2	Hrs./Semester : 30	Marks :50	2	-	-	2

General Objective:

This course focuses on skin care, hair care, dental care, makeup, perfumes and beauty treatments.

Learning Objectives:

LO	The learners will be able to
LO-1	Know about various skin care ingredients including moisturizers, cleansers, sunscreens and active compounds.
LO-2	Understand the role of ingredients in hair care and dental care products.
LO-3	Learn about makeup techniques, using makeup tools and products.
LO-4	Gain knowledge about classification and composition of perfumes.
LO-5	Learn skills in providing beauty treatments.

Unit I Skin care

Nutrition of the skin, skin care and cleansing of the skin; face powder – ingredients; creams and lotions – cleansing, moisturizing all purpose, shaving and sunscreen (formulation only); Gels – formulation and advantages; astringent and skin tonics – key ingredients, skin lightness, depilatories.

Unit II Hair care

Shampoos – types – powder, cream, liquid, gel – ingredients; conditioner – types – ingredients.

Dental care

Tooth pastes – ingredients – mouth wash.

Unit III Make up

Base – foundation – types – ingredients; lipstick, eyeliner, mascara, eyeshadow, concealers, rouge.

Unit IV Perfumes

Classification - Natural – plant origin – parts of the plant used, chief constituents; animal origin – amber gries from whale, civetone from civet cat, musk from musk deer; synthetic – classification emphasizing characteristics –esters – alcohols – aldehydes – ketones.

Unit V Beauty treatments

Facials - types – advantages – disadvantages; face masks – types; bleach - types – advantages– disadvantages; shaping the brows; eyelash tinting; perming– types; hair colouring and dyeing; permanent waving – hair straightening; wax– types – waxing; pedicure, manicure - advantages – disadvantages.

Recommended Text.

Thankamma Jacob, (1997) Foods, drugs and cosmetics – A consumer guide, Macmillan publication, London.

Reference Books.

1. Wilkinson J B E and Moore R J, (1997) Harry's cosmeticology, 7thed., Chemical Publishers, London.
2. George Howard, (1987) Principles and practice of perfumes and cosmetics, Stanley Therones, Chettenham

Website and e-learning source

1. http://www.khake.com/page75.html
2. Net.foxsm/list/284

COURSE OUTCOMES

CO	Upon completion of the course, the students will be able to:	PSOs Addressed	Cognitive Level
CO-1	Know about the composition of various skin care products	1,2,4,5	K1
CO-2	Understand chemical aspects and applications of hair care and dental care products.	1,2,3,4,5	K2
CO-3	Apply principles of makeup and application techniques to achieve desired profiles.	1,2,3,5	K3
CO-4	Analyze the role of perfume in fashion, identity and social rituals.	1,2,3,5	K4
CO-5	Assess the effectiveness and safety of various beauty treatments.	1,3,5,6	K5

K1-Remembering; K2 – Understanding; K3 - Applying; K4 - Analyzing; K5 – Evaluating; K6 – Creating

RELATIONSHIP MATRIX

Semester	Course Code	Title of the Course	Hours	Credits
II	24UNCH21	COSMETICS AND PERSONAL GROOMING	30	2

Course Outcomes (COs)	Programme Outcomes (POs)						Programme Specific Outcomes (PSOs)				
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO-1	3	2		2	2		3			2	2
CO-2	3	2	3	2	2		3		2	2	2
CO-3	3	2	3		2		3	2	2		2
CO-4	3	2	3		2		3	2	2		2
CO-5	3		3		2	2	3		2		2

STRONG (3), MEDIUM (2) and LOW (1)

Prepared by
Name: Dr. P. JESLIN KANAGA INBA

Checked by: Dr.A.Syed Mohamed
Head of the Department

Semester – II	Value Education-I		24USVE2A			
SEC-III			L	T	P	C
Hrs./Week: 2	Hrs./Semester : 30	Marks :50	2	-	-	2

General Objective: To make students inculcate moral values, leading to faith and righteous action in their life.

Unit – I: Islam – Meaning – Importance – A complete Religion – The religion accepted by God – Five Pillars of Islam – Kalima – Prayers – Fasting – Zakat – Haj.

Iman – Monotheism – Angels – Books – Prophets – Dooms Day – Life after death – Heaven and Hell.

Unit – II: Quran – The Book of Allah – Wahi – Revelation to Prophet Muhammad(sal) – Compilation – Preservance – Structure – Content – Purpose – Source of Islamic Law– SuraFathiha, Kafirun, Iqlas, Falakh and Nas.

Unit – III: Hadith – Siha Sitha – Buhari – Muslim – Tirmithi – Abu Dawood – Nasai – Ibn Maja – Collection of Hadith – Meaning of 40 Hadith.

Unit – IV: Life History of Prophet Muhammad (sal) – AiamulJahiliya – Prophet's Childhood and Marriage – Prophethood – Life at Mecca – Life at Medinah – Farewell Address – Seal of Prophethood.

Unit – V: Good character – Etiquettes – Halal and Haram – Duties towards Allah – Duties towards fellow beings – MasnoonDuas.

Textbooks:

Publication of SadakathullahAppa College

Reference Books:

1. V.A. Moahmed Ashrof – Islamic Dimensions – Reflection and Review on Quranic Themes.
2. The Presidency of Islamic Researchers – Revised & Edited – The Holy Quran.
3. M. Manzoor Nomani – Islamic Faith & Practice.
4. Ali Nadawi, Abul Hasan– Muhammad Rasulullah., Muassasathus Sahafawa Nashr Publication Lucknow, India,1999.
5. K. Ali – A Study of Islamic History.
6. Abdul Rahuman Abdulla
   h – Islamic Dress code for Women.
7. Dr. Munir Ahamed Mughal – Code For Believers.
8. Abdul Malik Mujahid – Gems and Jewels.

Semester – II	Value Education-II		24USVE2B			
SEC-III			L	T	P	C
Hrs./Week: 2	Hrs./Semester : 30	Marks :50	2	-	-	2

UNIT I

Individual Morality – Objective of Moral life – Living in accordance with the code of Morality – the goodness of Morality – Morality and *Thirukural*- The need for faith.

UNIT II

Adherence to higher code of Morality – Fear of God – Good Moral Values – Duty to Parents – Teacher, respecting elders – Moral Etiquettes – Right-minded Principle – High Principles for Proper conduct.

UNIT III

Inculcating good attitudes – Open mindedness – Morale – analysing the pros and cons of good and bad – Service to others – Mind Power, tolerance, respecting others, showing love to others, patience – tranquility – Modesty, kindness and forgiveness.

UNIT IV

Quotations and moral Stories expressing Good characters of Great personalities – Life History of Great people: Mahatma Gandhi, Abraham Lincoln, Dr. A.P.J. Abdul Kalam.

UNIT V

Truth, the importance of uprightness, integrity, friendship – Health awareness on Alcohol and drug abuse – inculcating reading habit – reading good books – Hygiene – Dowry – Corruption.

Textbooks:

Publication of Sadakathullah Appa College.