FATIMACOLLEGE (AUTONOMOUS)

Re-Accredited with "A++"(CGPA 3.61) Grade by
NAAC (Cycle-IV)
Maryland, Madurai- 625 018, Tamil Nadu, India

NAME OF THE DEPARTMENT: CHEMISTRY

NAME OF THE PROGRAMME : M.Sc.

PROGRAMMECODE : PSCH

ACADEMICYEAR : 2022-2023

Fatima College (Autonomous) Madurai-18

The Minutes of the Board of Studies
Department of Chemistry
To be implemented from 2022-2023 onwards
Convened on 21.3.2022. Convened at 2 p.m
Venue : R3

External Members

S.No.	Name	Designation
1	Dr.S. Murugesan Professor, Dept. of Inorg. Chem. SOC, MKU, Madurai-21	University Nominee 21/3/22
2.	Dr. S. Abraham John Prof. of Chemistry GRI (Deemed to be University) Gandhigram Dindigul	Subject Expert 21/3/22
3.	Dr. A. Mary Imelda Jayaseeli Associate Professor & Head Jeyaraj Annapackiam College for Women Periyakulam	Subject Expert 21/3/2022
4.	Mr. S. Manikandan Senior Research Associate Par Pharma, R&D. Dept. Chengalpattu	Industrialist (Absent)
5.	Miss. B. Shobana Research Scholar, Research Dept. of Chemistry, Thiagarajar college, Madurai	Alumna. 21/03/22

6	Dr. N. Malathi	Dean of Academic Affairs
7.	Dr. S. Sukumari	Staff Member
8.	Dr. A. Rajeswari	Staff Member
9.	Dr. B. Vinosha	Staff Member
10	Dr. B. Suganthana	Staff Member
11	Dr. Sr. Arul Mary	Staff Member
12.	Dr. V. Arul Deepa	Staff Member
13	Mrs. R.M. Nagalakshmi	Staff Member
14.	Dr. M. Priyadharsani	Staff Member
15	Dr. K.M. Subimol	Staff Member
16	Dr. P. Sylvia Reeta	Staff Member

1. Action Taken Report For 2021-2022 - For M.Sc Chemistry

S.No	Common suggestion offered in the Previous Board	Action Taken for the Academic Year 2021-22
1.	21PGC2SL1 - Research methodology - Plagiarism can be added in unit V	Included in unit V
2.	In EDC paper - Instead of fertilizer Oil Analysis can be included	Fertilizers is removed & Oil unit is included as unit V

Change of Course Title

S.No	Old Course Code	New Course Code	Old Course Title	New Course Title	Need for Change
-	-	-	-	NIL	-

New Courses Introduced

For B.Sc.

S.No	Course Code	Course Title	Relevance to				Scope for			Need for
			L	R	N	G	EMP	ENTRE	SD	Introduction
1.	21C2SL A1	Household Products Marketing		R			EMP	ENTRE		To make Learners Entrepreneurs

Internal Members.

1. Dr. N. Malathi Dean of Academic Affairs. Staff Member - Dept of Chemistry

N. Malathi
24/03/2022

S.NO.	Name	
1.	Dr. B. Medona [Head of the Dept.]	B. Medona.
2	Dr. S. Sukumari	S.
3.	Dr. A. Rajeswari	
4	Dr. B. Vinosha	
5.	Dr. B. Sugantharaj	
6	Dr. Sr. Arul Mary	
7	Dr. V. Arul Deepa	
8.	Mrs. R.M. Nagalakshmi	
9.	Dr. M. Priyadharsini	
10.	Dr. K.M. Subimol	
11.	Dr. P. Silviya Reeka.	

Members Present.

1.	Dr. B. Medona	Head of the Department
2.	Dr. S. Murugesan, Professor, Dept of Inorganic Chemistry, SOC, MKU	University Nominee
3	Dr. S. Abraham John, Professor, Dept of Chemistry, GRI, Dindigul	Subject Expert
4	Dr. A. Mary Imelda Jayaseeli, Head & Associate Prof. of Chemistry JAC, Periyakulam	Subject Expert
5	Miss. B Shobana Research Scholar, Research Dept of Chemistry Thiagarajar College, Madurai	Alumna.

For M. Sc.

S.No	Course Code	Course Title	Relevance to				Scope for			Need for Introduction
			L	R	N	G	EMP	EMRE	SD	
1.	21PGC2 SL1	Research Methodology				G	EMP		SD	offered to the advanced Learners
2.	21C1EDC / 21C2EDC	Analysis of Soil, Water Food, Cosmetics And oil.			N		EMP		SD	As per the Recommendation of course Teachers

Revised Courses -

S.No	Course code	Course Title	No. & Title of units Revised	% of Revision	Need for Revision	Relevance to				Scope for		
						L	R	N	G	EMP	ENTRE	SD
-	-	-	NIL	-	-	-	-	-	-	-	-	-

2. updation of Open Educational Resources in the list of references of each course.

S.No	Course Code	Course Title	Details of updation
-	-	-	NIL

3 Revision of Courses.

FOR B.SC.

S.No	Course code	Course Title	No. & Title of units Revised with the Revised Content	% of Revision	Need for Revision	Relevance to				Scope for		
						L	R	N	G	EMP	ENTRE	SD
1.	19C4 SB2	NEW TITLE "Dyes and Pigments" Old Title Natural & Synthetic Dyes	Unit-IV g-Pigments Title Instead of Structure of Dyes. Revised content - Anthocyanin, Flavones Phthalocyanin, Carotenoids & Chlorophyll	20%	As per the Recommendation of Course Teacher			N		EMP		
2.	19C5CC 16	NEW TITLE "Conventional & Green Synthesis OLD TITLE Green chemistry Practicals [Lab Course]	Under Greener methods of Preparation of organic compounds - Preparation of Aspirin using MW, use of greener Nitrating & Brominating Mixture are used for Nitration & Bromination - Included. Under Conventional methods - Three New Experiments to be included.	50%	To include Experiments in the revised Lab course, To increase the use of Microwave radiation & Greener Reagents				G	EMP		SD

For M.Sc.

S.No	Course Code	Course Title	No. & Title of units revised with the Revised content	% of Revision	Relevance to L	R	N	G	Scope for Emp	Entre	SD
1.	19PG4 CI7	Physical Chemistry - IV	Unit I, II & III Title - to be changed as Rotational & Vibrational Spectroscopy, Electronic Spectroscopy & Spin Resonance & Mossbauer spectroscopy with minor Revisions in unit I, II & V In unit III - NMR Spectroscopy - Frequency, Instrumentation & Comparison of NMR with ESR are Included.	15%				G	Emp	Entre	
2.	19PG4 CE3	Analytical Chemistry	Unit I Title for - Error Analysis Unit II - Chromatography Unit V - Computers in Chemistry with minor Changes in Content. Unit III - DTA to be Included.	10%				G	Emp	Entre	SD
3.	19PG1C5	New Title Organic Qualitative Analysis & Preparation - I Old Title Organic Qualitative Analysis	Spectral Analysis of the Synthesized Compounds Using IR and UV are included.	10%			N		Emp		SD
4.	19PG2C10	New Title Organic Estimation & Preparation - II Old Title. Organic * Estimation & Preparation - II *Quantitative Analysis	Under Estimation - Estimation of Phenol & Aniline are Included instead of Estmn. Of Glucose by Eynon-Lane Method. Under preparation - Spectral Analysis of the Synthesized Compounds using UV & IR are included.	20%			N		Emp		SD

4 New Courses Introduced - For B.Sc.

S.No	Course code	Course Title	Relevance to L	R	N	G	Scope for Emp	Entre	SD	Need for Introduction
1.	22N4SLC4	Textile Colouration			N		Emp	Entre		To make Learners Entrepreneur

For M.Sc

S.No	Course code	Course Title	Relevance to				Scope for			Need for Introduction
			L	R	N	G	EMP	ENTRE	SD	
1.	22PGC4SL3	Batteries and its Application			N		EMP	ENTRE		To increase Employability & Entrepreneurship.

5 Introduction of Purely Skill Embedded Certificate Value added Course

S.No	Course Code	Course Title	MOU with Industry/ Organisation	Skills Sharpened	Course outcome
1.	22PGVACC1	Certificate course on Instrumentation in IR	-	Analytical Skill & Employability	To produce Analytical chemist.
2.	22PGVACC2	Certificate Course on Instrumentation in UV	-		
3.	22PGVACC3	Certificate course on Electrochemical Techniques	-		

6 Approval of Ph.D. Course work Syllabus - NIL

7 Rubrics for Internship/Project - NA

Details of Proposed MOU - Planned to have MOU with Materials Research Centre(MRC) Coimbatore.

Other Suggestions	Commendations
1. No need to have External Exam for Self Learning courses.	1. OUR UG & PG Syllabus is Very Good but too heavy.
2. In 19PG4CM - Unit I - Absorption & Emission LASER, EMR Interaction, Einstein Coefficient Can be deleted.	

B. Medona. Dr. B. Medona Head of the Department

21/3/22 Dr. S. Murugesan University Nominee

21/3/22 Dr. S. Abraham John. Subject Expert

21/3/2022 Dr. A. Mary Imelda Jayaseeli Subject Expert

21/03/2022 Ms. B. Shobana Alumna

Name of	Signature
Dean of Academic affairs Dr. N. Malathi	21/03/2
Staff Members	
Dr. S. Sukumari	S.
Dr. A. Rajeswari	
Dr. B. Vinosha	
Dr. B. Sugarthana	
Dr. Sr. Arul Mary	
Dr. V. Arul Deepa	
Mrs. R.M. Nagalakshmi	
Dr. M. Priyadharsani	
Dr. K.M. Subimol	
Dr. P. Sylvia Reeta	

VISION OF THE DEPARTMENT

To transform the students entrusted in our hands into competent chemists.

MISSION OF THE DEPARTMENT

- To transfer the knowledge of chemistry with values to create globally competent chemist.
- To promote scientific enquiry and inculcate research.
- To inculcate in students the skills of problem solving.
- To create in them the awareness about ecological concerns.
- To train to adopt cost effective and eco-friendly green chemistry methodologies.

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

After five years,

PEO1	Our graduates will be academic, digital and information literates, creative, inquisitive, innovative and committed researchers who would be desirous for the "more" in all aspects
PEO2	They will be efficient individual and team performers who would deliver excellent professional service exhibiting progress, flexibility, transparency, accountability and in taking up initiatives in their professional work
PEO3	The graduates will be effective managers of all sorts of reallife and professional circumstances, making ethical decisions, pursuing excellence within the time framework and demonstrating apt leadership skills.

PEO4	They will engage locally and globally evincing social and environmental stewardship demonstrating civic responsibilities and employing right skills at the right moment.

GRADUATE ATTRIBUTES (GA)

Fatima College empowers her women graduates holistically. A Fatimite achieves all-round empowerment by acquiring Social, Professional and Ethical competencies. A graduate would sustain and nurture the following attributes:

I. SOCIAL COMPETENCE	
GA1	Deep disciplinary expertise with a wide range of academic and digital literacy
GA2	Hone creativity, passion for innovation and aspire excellence
GA3	Enthusiasm towards emancipation and empowerment of humanity
GA4	Potentials of being independent
GA5	Intellectual competence and inquisitiveness with problem solving abilities be fitting the field of research.
GA6	Effectiveness in different forms of communications to be employed in personal and professional environments through varied platforms.
GA7	Communicative competence with civic, professional and cyber dignity and decorum.
GA8	Integrity respecting the diversity and pluralism in societies, cultures and religions.

GA9	All–inclusive skill sets to interpret, analyse and solve social and environmental issues in diverse environments.
GA10	Self awareness that would enable them to recognize their uniqueness through continuous self-assessment in order to face and make changes building on their strengths and improving their weaknesses.
GA11	Finesse to co-operate exhibiting team-spirit while working in groups to achieve goals
GA12	Dexterity in self-management to control their selves in attaining the kind of life that they dream for.
GA13	Resilience to rise up instantly from their intimidating set backs.
GA14	Virtuosity to use their personal and intellectualautonomy inbeinglife-long learners
GA15	Digital learning and research attributes.
GA16	Cyber security competence reflecting compassion,careandconcerntowardsthemarginal ised
GA17	Rectitude to use digital technology reflecting civic and social responsibilities in local, national and global scenario.
II. PROFESSIONAL COMPETENCE	
GA18	Optimism, flexibility and diligence that would make them professionally competent
GA19	Prowess to be successful entrepreuners and become employees of trans-national societies
GA 20	Excellence in Local and Global Job Markets.
GA21	Effectiveness in Time Management.
GA 22	Efficiency in taking up Initiatives.

GA 23	Eagerness to deliver excellent service.
GA 24	Managerial Skills to Identify, Commend and tap Potentials.
III. ETHICALCOMPETENCE	
GA25	Integrity and be disciplined in bringing stability leading a systematic life promoting good human behaviour to build better society.
GA 26	Honesty in words and deeds.
GA27	Transparency revealing one's own character as well as self-esteem to lead a genuine and authentic life.
GA 28	Social and Environmental Stewardship
GA 29	Readiness to make ethical decisions consistently from the galore of conflicting choices paying heed to their conscience.
GA 30	Right life skills at the right moment.

PROGRAMME OUTCOMES (PO)

On completion of M.Sc Programme,The learners will be able to

PO1	Apply acquired scientific knowledge to solve major and complex issues in the society/industry.
PO2	Attain research skills to solve complex cultural, societal and environmental issues

PO3	Employ latest and updated tools and technologies to solve complex issues.
PO4	Demonstrate Professional Ethics that foster Community, Nation and Environment Building Initiatives.

PROGRAMME SPECIFIC OUTCOMES (PSO)

On completion of M.Sc. Chemistry programme, the learners would be able to

PSO1	Equip with an in-depth knowledge of varied fields namely Organic Chemistry, Inorganic Chemistry ,Physical and nanochemistry.
PSO2	Train in problem solving procedures enables to interpret the experimental data into structures and mechanisms.
PSO3	Provides a tremendous exposure and cultivates analytical and synthesising measures necessary to takeup project work in reputed institutions.
PSO4	Programme renders diversified thinking thereby promotes creative skills.
PSO5	To solve the problems that cause a negative impact on surroundings to pursue salient steps to safeguard environment.
PSO6	Application-oriented input sharpens the skill to undertake CSIR-NET exam.
PSO7	Knowledge with practical dimensions becomes adriving power to undertake research in different areas at a global level.

PSO8	Multi-layered input enables to avail opportunities at chemical, pharmaceutical industries.
PSO9	Becomes a contributing force and development agent in society.

FATIMA COLLEGE (AUTONOMOUS),

Affiliated to Madurai Kamaraj University
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Mary Land, Madurai - 625018, Tamil Nadu

DEPARTMENT OF CHEMISTRY

For those who joined in June 2019 onwards
(For the academic year 2022-2023)

PROGRAMME CODE :PSCH

COURSE CODE	COURSE TITLE	HRS / WK	CREDIT	CIA Mks	ESE Mks	TOT. MKs
SEMESTER – I						
19PG1C1	**INORGANIC CHEMISTRY-I** (Basic concepts, covalent and ionic bonding, solid state and crystallography, and Nuclear chemistry)	6	4	40	60	100
19PG1C2	**ORGANIC CHEMISTRY-I** (Reaction mechanism and stereochemistry)	6	4	40	60	100
19PG1C3	**PHYSICAL CHEMISTRY-I** (Applied electro chemistry & Statistical thermodynamics)	6	4	40	60	100
19PG1C4	**INORGANIC QUALITATIVE ANALYSIS**	4	2	40	60	100
19PG1C5	**ORGANIC QUALITATIVE ANALYSIS & PREPARATION-I**	4	2	40	60	100
21C1EDC	**ANALYSIS OF SOIL, WATER, FOOD, COSMETICS AND OIL**	3	3	40	60	100
	LIBRARY	1	-	-	-	-
Total		**30**				

			19			
SEMESTER – II						
19PG2C6	**INORGANIC CHEMISTRY-II** (Advanced coordination chemistry)	6	4	40	60	100
19PG2C7	**ORGANIC CHEMISTRY-II** (Elimination and addition reactions, organic spectroscopy and conformational analysis)	6	4	40	60	100
19PG2C8	**PHYSICAL CHEMISTRY-II** (Chemical kinetics and Quantum mechanics)	6	4	40	60	100
19PG2C9	**INORGANIC QUANTITATIVE ANALYSIS& PREPARATION -II**	4	2	40	60	100
19PG2C10	**ORGANIC QUANTITATIVE ANALYSIS**	4	2	40	60	100
21C2EDC	**ANALYSIS OF SOIL, WATER, FOOD, COSMETICS AND OIL**	3	3	40	60	100
	LIBRARY	1		-	-	-
Total		**30**	**19**			
SEMESTER - III						
19PG3SIC1	**INTERNSHIP/SUMMER PROJECT***	-	3	50	50	100
19PG3C11	**ORGANIC CHEMISTRY-III** (Spectroscopy and Pericyclicreactions)	6	5	40	60	100
19PG3C12	**PHYSICAL CHEMISTRY-III** (Group Theory, Surface Chemistry and Macromolecules)	6	5	40	60	100
19PG3C13	**GREEN CHEMISTRY**	6	5	40	60	100
19PG3CE1 / 19PG3CE2	**MATERIAL CHEMISTRY / BIO ORGANIC CHEMISTRY**	4	4	40	60	100
19PG3C14	**PHYSICAL CHEMISTRY**	6	4	40	60	100

	PRACTICALS-I (Electrical Experiments-I)					
	LIBRARY	2				
Total		**30**	**26**			
SEMESTER - IV						
19PG4C15	**INORGANIC CHEMISTRY-III** (Organometallics & Bio-inorganic chemistry)	6	5	40	60	100
19PG4C16	**ORGANIC CHEMISTRY-1V** (Retrosynthesis, Reactions and Reagents, Natural Products)	6	5	40	60	100
19PG4C17	**PHYSICAL CHEMISTRY-IV** (Spectroscopy, Kinetic Theory of gases, Photochemistry And Radiation chemistry)	6	5	40	60	100
19PG4CE3 / 19PG4CE 4	**ANALYTICAL CHEMISTRY / CHEMICAL ENGINEERING**	4	4	40	60	100
19PG4C18	**PHYSICAL CHEMISTRY PRACTICALS-II** (Non-electrical experiments)	6	4	40	60	100
19PG4CPR	**PROJECT*& VIVA VOCE**	-	3	40	60	100
	LIBRARY	2				
Total		**30**	**26**			
	Total	**120**	**90**			

OFF-CLASS PROGRAMME

ADD-ON COURSES

Course Code	Courses	Hrs.	Credits	Semester in which the course is offered	CIA Mks	ESE Mks	Total Marks
	SOFT SKILLS	40	4	I	40	60	100
	COMPUTER APPLICATIONS	40	4	II	40	60	100
	MOOC COURSES (Department Specific Courses) * Students can opt other than the listed course from UGC-SWAYAM /UGC /CEC	-	Minimum 2 Credits	-	-	-	
	COMPREHENSIVE VIVA (Question bank to be prepared for all the papers by the respective courseteachers)	-	2	IV	-	-	100
	READING CULTURE	15 / Semester	1	I-IV	-	-	-
	TOTAL		13 +				

- **EXTRA CREDIT COURSE**

- **Lab Courses:**
  - A range of 10-15 experiments persemester
- **SummerInternship:**

- Duration-1 month (2nd Week of May to 2nd week of June-before collegereopens)

- **Project:**
  - Offclass
  - Evaluation components-Report writing + Viva Voce (Internal marks-50) + External marks50

- **EDC:**

  Syllabus should be offered for two different batches of students from other than the parent department inSem-I &Sem-II

SELF LEARNING COURSE : OFFERED BY DEPARTMENT OF CHEMISTRY

COURSE CODE	Course TITLE	Hrs.	Credits	Semesterinwhichthecourseisoffered	CIA Mks	ESE Mks	TotalMarks
21PG2SLC	RESEARCH METHODOLOGY	-	2	II	40	60	100
22PG4SLCP	BATTERIES AND ITSAPPLICATIONS	-	2	1V	40	60	100

FATIMA COLLEGE (AUTONOMOUS) MADURAI-18

M.Sc.Chemistry- IV SEMESTER

Batteries and its applications – Self Learning

(For those who joined in June- 2022 onwards)

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
PSCH	22PG4SLCP	Batteries and its applications	Self Learning	-	2

Objective: This course gives a detailed study of electrochemistry and Batteries

COURSE OBJECTIVES

This course helps the students to study about all concepts related to electrochemical series, batteries and applications of batteries.

Course Outcomes (COs)

After the completion of the course the students will be able to

CO1	Use Nernst equation to calculate the electrode potential and emf of electrochemical cells.
CO2	Understand the various sources of information about electrochemical series.
CO3	Illustrate types of batteries
CO4	Understand lithium batteries
CO5	Analyse clean energy

Units

Unit I

Galvanic cells and EMF – electrode reactions – electrode potentials and cell reactions – representations of electrodes – sign conventions.

Unit II

Electrochemical series– measurements of EMF- Construction of electrochemical cells – Applications.

Unit III

Types of Batteries (Primary and secondary Batteries)

Unit IV

Lithium Ion Batteries , Advantages and disadvantages- How Li-Ion Battery Works?

Unit V

Clean Energy Institute - Super capacitor battery, Charging and Working.

References

Text Book:

1. The principles of Physical chemistry by Puri, Sharma and Pathania.

Reference Book:

1. Introduction to Electrochemistry By Samuel Glasstone

PSO

PSO 1	Equip with an in-depth knowledge of varied fields namely Organic Chemistry, Inorganic Chemistry, Physical and nanochemistry.
PSO 2	Train in problem solving procedures enables to interpret the experimental data into structures and mechanisms.
PSO 3	Provides a tremendous exposure and cultivates analytical and synthesising measures necessary to take up project work in reputed institutions.
PSO 4	Programme renders diversified thinking thereby promotes creative skills.
PSO 5	to solve the problems that cause a negative impact on surroundings to pursue salient steps to safeguard environment
PSO 6	Application-oriented input sharpens the skill to undertake CSIR-NET exam.
PSO 7	Knowledge with practical dimensions becomes a driving power to undertake research in different areas at a global level.
PSO 8	Multi-layered input enables to avail opportunities at chemical, pharmaceutical industries.
PSO 9	Becomes a contributing force and development agent in society.

Mapping of C0s with PSOs

CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8	PSO 9
CO1	1	2	3	3	1	1	3	2	1
CO2	2	1	1	3	1	1	3	2	1
CO3	1	2	1	3	1	1	3	2	1
CO4	3	3	3	3	1	1	3	2	1
CO5	1	3	3	3	1	1	3	2	1

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	3	2	1
CO2	3	3	2	1
CO3	3	3	2	1
CO4	3	3	2	1
CO5	3	3	2	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -1

COURSE DESIGNER:

1. **Dr.S.Sukumari**

Forwarded By

S-Tedona.

HOD'S Signature