

NALLAMUTHU GOUNDER MAHALINGAM COLLEGE (AUTONOMOUS)-POLLACHI

22	B.Sc. CT	Skill Based Major Elective I: Python Programming Lab	18UCT5S1	2018
23	B.Sc. CT	Elective III: Internet of Things	18UCT624	2018
24	B.Sc. CT	Elective I: Artificial Intelligence	18UCT519	2018
25	B.Sc. CT	Programming Lab VI: Software Testing	18UCT416	2018
26	M.Sc. Chemistry	Inorganic Chemistry -I	18PCY101	2018
27	B.A. English	CORE III: Fiction	19UEL101	2019
28	B.A. English	CORE III : Children's Literature	19UEL408	2019
29	B.A. English	CORE III: Translation Studies and World Literature in Translation	19UEL511	2019
30	B.A. English	CORE III: Computing Skills for Research	19UEL513	2019
31	B.A. English	CORE III : Survey of Literature in English (For cracking UGC NTA NET/SET/JRF/TRB/TET)	19UEL619	2019
32	B.A.Economics	Core III : History of Economic Thought	19UEO407	2019
33	B.A.Economics	Skill Based: Network and Information Security	19UEO5S1	2019
34	B.A.Economics	Skill Based: Cyber Security Ethical Hacking	19UEO5S2	2019
35	B.Sc. Mathematics	Allied I: Mathematical Statistics-I	19UMS1A1	2019
36	B.Sc. Mathematics	Core III: Trigonometry, Vector Calculus and Fourier Series	19UMS203	2019
37	B.Sc. Mathematics	Core IV: Analytical Geometry 2D and 3D	19UMS204	2019
38	B.Sc. Mathematics	Elective I: Programming in C	19UMS5E1	2019
39	B.Sc. Mathematics	SBE: Network and Information Security	19UMS5S1	2019
40	B.Sc. Mathematics	SBE: Cyber security-Ethical Hacking	19UMS5S2	2019
41	B.Sc. Botany	Skill based subjects - Network and Information security.	19UBY5S1	2019
42	B.Sc. Botany	Skill based subjects (Major electives) -Cyber Security- Ethical Hacking.	19UBY5S2	2019
43	B. Sc. Zoology	Core Major Paper-VII - Developmental Biology	19UZY507	2019
44	B. Sc. Zoology	Core Major Paper-X Bioinformatics and Biochemistry	19UZY510	2019
45	B. Sc. Zoology	Skill Based elective (SBE)- Online- Network and Information Security	19UZY5S1	2019
46	B. Sc. Zoology	Skill Based elective (SBE)- Online- Cyber security - Ethical Hacking	19UZY5S2	2019

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24.02.2018 - SATURDAY

Sl. NO	MEMBERS	SIGNATURE
1.	Dr. K. POONKODI (CHAIR PERSON)	K. P. L
2.	Dr. T. SELVARAJU (UNIVERSITY NOMINEE) Associate Professor of Chemistry, Bharathiar University, Coimbatore - 641046	Absent
3.	Dr. S. MANONMANI (SUBJECT EXPERT) Head of the Department, Department of Chemistry, PSG Arts & Science College, Coimbatore - 641014	Manonmani 24/2/18
4.	Ms. S. SIVA SHANMUGAM (INDUSTRIALIST) Director Polyhedron Laboratories (P) Ltd., Ganapathy Nagar, Coimbatore (PO), Tamil Nadu	S. Shanmugam
5.	Ms. DEEPA DEVI (ALUMNI) 2015-2017 Batch, PG Department of Chemistry, NGM College, Pollachi - 642001	S. Deepa Devi
6.	Dr. S. SUNDARYA	Sundarya 24/2/18
7.	Ms. K. VIMALADEVI	K. Vimaladevi 24/2/18
8.	Ms. R. MINI	R. Mini 24/2/18
9.	Ms. M. RUBINI	M. Rubini 24/2/18

IN M.Sc CHEMISTRY

- 10.00 Am

9

MINUTES

The members of board of studies met on 24.2.2018. The syllabi on theory, practical and project were thoroughly discussed. The previous suggestion in the syllabi was incorporated and the corrections were resolved.

The following changes were made.

1. The unit on chemistry of non-transition elements were replaced by Nuclear Chemistry.

2. Industrial expert suggests that a unit on instrumentation and a paper on analytical method development and validation may be included.

3. It is resolved to adopt domain-based MOOC/NPT2L/ SWAYAM/ Open Tutorial Courses and other approved online courses in the final semester as one of the Skill Based Electives, to the interested students with the approval of the authorities.

4. Alumni suggests that more weightage may be given for industrial oriented topics.

1. P. H. (Chair person)

2. Absent

3. ~~G. Ramani~~ 24.02.18

4. ~~S. S. S.~~

5. S. Deepadri

6. Sandhya 24/2/18

7. K. V. S. 24/2/18

8. S. S.

9. M. S. 24/2/18

PG DEPARTMENT OF CHEMISTRY



SYLLABUS

2018-2020 BATCH

FACULTY MEMBERS

Dr. K. POONKODI, M.Sc.,M.Phil.,Ph.D.

Dr. V. PRABHU, M.Sc., Ph.D.

Ms. K. VIMALADEVI, M.Sc.,M.Phil.,

Ms. R. MINI, M.Sc.,M.Phil.,

Ms. M.ANUSUYA, M.Sc., M.Phil., (Ph.D)



NGM COLLEGE (Autonomous)

Affiliated to Bharathiar University

Re-Accredited with 'A' grade by NAAC & ISO 9001:2008 certified

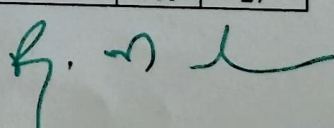
90, Palghat road, Pollachi- 642001, Coimbatore (Dist)

Phone: 04259-234868. 234870 Fax: 04259-234869

Website: www.ngmc.org

SCHEME OF EXAMINATION

I SEMESTER								
Part	Course Code	Title of the Paper	Duration in hours per week	Examination				Credits
				Hours	CIA	ESE	Total	
III	18PCY101	Inorganic Chemistry -I	5	3	25	75	100	5
III	18PCY102	Organic Chemistry -I	5	3	25	75	100	5
III	18PCY103	Physical Chemistry -I	5	3	25	75	100	5
III	18PCY207	Inorganic Chemistry Practical-I	5	6	--	--	--	--
III	18PCY208	Organic Chemistry Practical-I	5	6	--	--	--	--
III	18PCY209	Physical Chemistry Practical -I	5	6	--	--	--	--
							300	15
II SEMESTER								
Part	Course Code	Title of the Paper	Duration in hours per week	Examination				Credits
				Hours	CIA	ESE	Total	
III	18PCY204	Inorganic Chemistry-II	5	3	25	75	100	5
III	18PCY205	Organic Chemistry-II	5	3	25	75	100	5
III	18PCY206	Physical Chemistry-II	5	3	25	75	100	5
IV	18PCY2N1/ 18PCY2N2	Non-Major Elective: Chemistry in day today life / Chemistry in context	1	3	--	100	100	2
III	18PCY207	Inorganic Chemistry Practical - I	5	6	40	60	100	3
III	18PCY208	Organic Chemistry Practical -I	5	6	40	60	100	3
III	18PCY209	Physical Chemistry Practical -I	4	6	40	60	100	4
							700	27


Dr. R. MANICKA CHEZIAN M.Sc., M.S., Ph.D.,
 PRINCIPAL i/c
 Nallamuthu Gounder Mahalingam College
 Pollachi - 642 001, Coimbatore District.



III SEMESTER

Part	Course Code	Title of the Paper	Duration in hours per week	Examination				Credits
				Hours	CIA	ESE	Total	
III	18PCY310	Organic Chemistry -III	5	3	25	75	100	5
III	18PCY3E1	Major Elective-I- Spectroscopy	5	3	25	75	100	5
III	18PCY311	Physical Chemistry - III	5	3	25	75	100	5
III	18PCY3E2	Major Elective -II-Green, Nanochemistry and Cyber Security	3	3	25	75	100	3
III	18PCY414	Inorganic Chemistry Practical -II	3	6	--	--	--	--
III	18PCY415	Organic Chemistry Practical -II	3	6	--	--	--	--
III	18PCY416	Physical Chemistry Practical -II	4	6	--	--	--	--
IV	18PCY417	Project Work	2	6	--	--	--	--
							400	18

IV SEMESTER

Part	Course Code	Title of the Paper	Duration in hours per week	Examination				Credits
				Hours	CIA	ESE	Total	
III	18PCY412	Inorganic Chemistry -III	5	3	25	75	100	4
III	18PCY4E3	Major Elective-III – Applied electrochemistry	5	3	25	75	100	3
III	18PCY413	Physical methods in chemistry	5	3	25	75	100	5
III	18PCY414	Inorganic Chemistry Practical -II	4	6	40	60	100	3
III	18PCY415	Organic Chemistry Practical -II	4	6	40	60	100	3
III	18PCY416	Physical Chemistry Practical -II	4	6	40	60	100	4
IV	18PCY417	Project Work & viva voce	3	6	40	160	200	8
							800	30
							2200	90

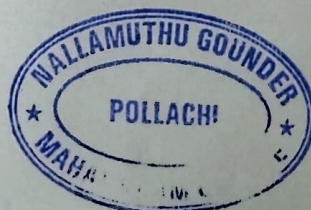
TOTAL MARKS

Dr. R. MANICKA CHEZIAN M.Sc., M.S., Ph.D.

PRINCIPAL i/c

Nallamuthu Gounder Mahalingam College

Pollachi, Tamil Nadu - 686 001



Programme code:	M.Sc.	Programme Title :	Master of Chemistry	
Course Code:	18PCY101	Inorganic Chemistry -I	Batch :	2018-2020
			Semester	I
Hrs/Week:	5	Total Hrs: 65	Credits:	5

Course Objective

- To have knowledge about the principles of solid state chemistry, acid base concepts and inorganic chains, rings and clusters.
- To introduce principles of nuclear model, modes of decay and detection, measurement of radio activity, nuclear reactors and applications.

Course Outcomes (CO)

K1	CO1	To remember the introduction to crystal systems, acids and bases and nuclear chemistry.
K2	CO2	To understand the electrical properties of solid state, to comprehend different concepts of acids and bases, To deduce the apprehend radioactive and counter techniques
K3	CO3	To implement the applications of non-aqueous solvents in reactions.
K4	CO4	To analyze coordination number, radius ratio and structure of ionic crystals. To evaluate n/p ratio, binding energy and Q-value of nuclear reactions.

Unit-1

Solid state

13Hrs

Close packing of spheres - packing efficiency - hexagonal close packed (hcp) and cubic close packed (ccp) structures - coordination number - tetrahedral and octahedral holes - limiting radius ratio rule. Study of structures of rutile, fluorite, antiferite, zinc blende, wurtzite, perovskite, ilmenite and spinels.

Metallic state - *free electron theory* and band theory - point defects in solids - Schottky and Frenkel defects - dislocations. Electrical properties of solids - insulators - intrinsic semiconductors - impurity semiconductors (n and P type) - super conductivity - Meissner effect - BCS (cooper pair) theory.

Unit-2

Modern concepts of Acids and bases

13Hrs

Arrhenius concept - Bronsted-Lowry concept - levelling solvents - solvent system concept- Lux-flood concept - Cady-Elsey concept - Lewis concept - Usanovich concept - HSAB principle - Pearson concept – Theories of Hardness and Softness – Acid and base strength of HSAB, limitations and applications of HSAB.

Non aqueous solvents – Levelling effect of the solvent - classification of solvents, characteristic properties of ionizing solvents - liquid ammonia, liquid HF, liquid N_2O_4 , liquid SO_2 and oxyhalide solvents.

Unit-3

13Hrs

Chains – catenation, heterocatenation, isopolyanions, heteropolyanions (explanation with examples).

Cages – Structure and bonding of phosphorous compounds, boranes, carboranes and metallocene carboranes.

Metal clusters - Structure and bonding of dinuclear, trinuclear, tetra nuclear and hexa nuclear clusters - polyatomic zintl anions and cations - Chevrel phases - fullerenes and their applications.

Rings - borazines - phosphonitrilic compounds- sulphur - nitrogen ring compounds (S_4N_4).

Unit-4

Nuclear Chemistry

13Hrs

Stability of nuclei - packing fraction - even - odd nature of nucleons - n/p ratio - nuclear potential - binding energy and exchange forces - shell model and liquid drop model. Radioactive decay and equilibrium.

Nuclear Reactions

Q – value, coulombic barrier – nuclear cross section – different types of nuclear reactions projectile capture – particle emission, spallation, fission and fusion – Product distributions – theories of fission, use of fission products, fissile and fertile isotopes- U-238, U-235, Pu-239, Th-232 – Stellar energy.

Unit-5

13Hrs

Radio Isotopes: Applications – isotopes as tracers – neutron activation analysis and isotopic dilution analysis – uses in structure and mechanistic studies – carbon dating - Hot-atom chemistry-Safety measures- Disposal of nuclear waste.

Radioactive techniques - tracer technique, neutron activation analysis, Particle acceleration.

Counting techniques - linear accelerator - cyclotron and synchrotron - betatron - G.M counter - proportional and scintillation counters.

**Italicized texts are for self study*

Power point Presentations, Group discussions, Seminar, Quiz, Assignment, Experience Discussion, Brain storming activity and Case study.

Power Point Presentation: Solid state

Seminar: Concepts of acids and bases

Assignment: Applications of Radio isotopes.

Books for Study:

1. B. R. Puri, L. R. Sharma and Madan S. Pathania (2006). Principles of Inorganic Chemistry. 41st edition. Vishal Publishing Co.
2. Gurdeep Raj. (2014). *Advanced Inorganic Chemistry*. 12th Edition. Geol Publishing House
3. Madan. R.D. (2011). *Advanced Inorganic Chemistry*. 3rd Edition. S. Chand & company, New Delhi.
4. Arnikar, H.J. (2000). *Essentials of Nuclear Chemistry*. 4th Edition. New Age International

Books for Reference:

1. Keith F. Purcell, John. C. Kotz. (1980). *Inorganic chemistry*, Holt- Saunders International Editions
2. James E. Huheey. (1997). *Inorganic chemistry Principles of structure and reactivity*, 4th Edition. Pearson India Limited.
3. F. A. Cotton and G. Wilkinson. (2014). *Advanced Inorganic Chemistry*. 6th edition. Wiley & Sons.

Mapping

PSO CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	S	M	H	S
CO2	H	M	H	S	H
CO3	M	S	S	M	M
CO4	M	H	H	M	H

S-Strong; H-High; M-Medium; L-Low

Course Designed by	Verified by HoD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: R.Mini	Name:Dr.K.Poonkodi	Name:Dr.M.Durairaju	Name:Dr.Muthukumaran
Signature:	Signature:	Signature:	Signature: