INSTITUTE	**FACULTY OF SCIENCE**
PROGRAM	**MASTER OF SCIENCE (CHEMISTRY)**
SEMESTER	**4**
COURSE TITLE	**RESEARCH METHODOLOGY**
COURSE CODE	**02CY0551**
COURSE CREDITS	**2**

Objective:

1 To study the fundamentals of research methodology
2 To study the applications of research methodology in diverse areas of science.
3 To study the applications of research methodology in diverse areas of chemical science, by literature survey and citation.
4 To study the fundamentals of research methodology and its application in diverse areas of science.
5 To study the fundamentals of research methodology and its application in diverse areas of science

Course Outcomes: After completion of this course, student will be able to:

1 Design research experiment according to the literature survey
2 Understand various aspects of research
3 Analyze the data using different methods
4 Develop presentation skills (poster, seminar, publication), engage in research in the field of chemistry

Pre-requisite of course: Understanding of various aspects of research

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
2	0	0	0	0	0	25	25

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Contents : Unit	Topics	Contact Hours
1	**Research and Research Advanced** asic fundamentals for research, steps involved during research incl. laboratory skills, Literature survey (review, journals, conferences, books, magazines) and their quality and authenticity, effective searches, find relevant papers related to area of research, capture critical information (via graphical abstract, table of contents), understand and identify the novel concept incorporated in the literature, distinguishing your work from others work and acknowledging such references, Plagiarism, Ethical guidelines while conducting research and its publication. Presentation (Main message of presentation, highlight review points, structure of presentation, key components of an oral presentation, show support material, feedback on oral presentation, prepare a set of questions).	
2	**Problems and its solution** Identify key areas in your field, Formulate the Problem Statement, Conduct experimental/theoritical study for the problem, interpret available data after such experiments, tabulate, understand and explain in form of research outcome.	
Total Hours		

Textbook :

1 Introducing research methodology: A beginner's guide to doing a research project, Flick, Sage, 2015

References:

1 Research methodology: Methods and techniques, Research methodology: Methods and techniques, Kothari, C. R. , New Age International, 2004

2 Research methodology, Research methodology, Panneerselvam, PHI Learning Pvt. Ltd., 2014

Suggested Theory Distribution:

The suggested theory distribution as per Bloom’s taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember / Knowledge	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Higher order Thinking / Creative**
10.00	20.00	25.00	25.00	10.00	10.00

Instructional Method:

1 The course delivery method will depend upon the requirement of content and need of students.

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Instructional Method:

2 The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

3 The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.

4 Viva-voce examination will be conducted at the end of semester for evaluation of performance of students.

5 Students will use supplementary resources such as online videos, NPTEL videos, e-courses.

Supplementary Resources:

1 https://www.intechopen.com/online-first/research-design-and-methodology

2 https://www.youtube.com/watch?v=EVcPmmfK1Do

3 https://swayam.gov.in/nd2_cec20_hs17/preview

4 http://edutechwiki.unige.ch/en/Research_methodology_resources

5 https://www.slideshare.net/annakittystefen/research-methodology-methodsandtechniquesbycrkothari

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