Fareast International University

Faculty of Science

Dept. of Chemistry

Syllabus for:
Master of Science in Chemistry

Degree Title:
Master of Science (M.Sc.) in Chemistry

Program Title: Master of Science in Chemistry

Chemistry is an incredibly fascinating field of study. Because it is so fundamental to our world, chemistry plays a role in everyone's lives and touches almost every aspect of our existence in some way. Chemistry is essential for meeting our basic needs. Chemical technologies enrich our quality of life in numerous ways by providing new solutions to problems in health, materials, and energy usage. Thus, studying chemistry is useful in preparing us for the real world.

Vision:

The Chemistry Department of Fareast International University envisions that it will be recognized by institutions of higher learning for excellence in teaching, mentorship of students, and in research in chemistry. The department will continue to offer the highest quality undergraduate (B.Sc.) and graduate (M.Sc.) curriculum. The department will continue to cooperate effectively with other departments to offer interdisciplinary programs in biochemistry, Pharmacy, Engineering, Medicinal, education, and environmental science, and to offer challenging and appropriate courses to support majors in biology, biochemistry, chemical engineering and physics. The department will offer excellent and fascinating introductory courses which will both instruct and stimulate students in all of the university's programs, including the areas of engineering studies, Medicine, allied health and the chemistry minor, as well as the department's major programs.

Mission;

We provide a high-quality education experience that will prepare graduates to assume leadership positions within chemical and other associated industries. We foster and encourage the pursuit of new knowledge and innovative study in chemical sciences. We teach in modern classrooms and carry out lab in state-of-the-art laboratory facilities. We provide leadership to the chemical profession through teaching, and service.

Education Mission:

The Chemistry Department is committed to helping each student achieve his/her personal academic potential by creating an environment that promotes

- frequent interactions between faculty and students,
- independent thought, collegial exchange of ideas and high ethical standards,
- development of innovative instructional techniques,
- use of modern educational technology in lecture and laboratory courses, and
- Increased opportunities and greater participation by under-represented minorities.

Community Service Mission:

The Chemistry Department is committed to enhancing the public welfare and economic development of the kingdom through

- outreach programs to chemistry students and educators
- participation and leadership in professional organizations, and
- development of strategic partnerships with other departments, academic institutions and chemical industry.

Objectives:

1. Graduating national provisionally qualified Personal who are necessary for the service of the community and the government plans and programs of development, education and industry within the Kingdom.
2. Conducting academic and industrial scientific research necessary for the improvement the quality of live for the people of the Kingdome and the region.
3. Contributing to the improvement of the public at the scientific cultural awareness via the academic conferences and workshops.
4. Providing the technical services in field of chemistry to both public and private sectors.
5. Encouraging the attempts of translation to Arabic scientific publications.

Admission Requirements:

Students entering the master of Science in Chemistry program for a M.Sc. in Chemistry degree, must have completed SSC and HSC with Science or equivalent level of education such as O'Level (Five subjects including Physics, Chemistry and Mathematics) and A'Level (with three major subjects -Physics, Chemistry & Mathematics) and B.Sc. honors in Chemistry and must have good grades.

- The students with S.S.C. and H.S.C. background must have at least 2nd Division in both the exams separately.
- The students with S.S.C. and H.S.C. under CGPA system must have at least a minimum CGPA of 3.00 in both the exams separately.
- The students with 0-Level and A-Level must have an average grade of B.
- The students having B.Sc. in Chemistry with 3 years honors/B.Sc.(pass) (2 or 3 years) Degree must have at least a 2nd Division and students having B.Sc. in Chemistry with 4 years honors must have at least a 3 rd Division or CGPA of 3.00.

If an applicant doesn't meet these requirements, she/he will not be accepted for Admission. Admission counselors should be consulted for an evaluation of the grades.

Credit Hours for Theory &Laboratory:

One credit means 1 hour lecture time in a week for theory course and 3 hours for a Laboratory course. The following table shows typical credits for a theory &Laboratory course:

Type of Courses	Credit Hour	Class Duration in a Week
Theory	3	3 Hours
Laboratory	2	6 Hours

Duration of the Degree Program:

M.Sc. in Chemistry is 2-semester program. (Duration of a semester is 6 months)

Program Structure

Master of Science in Chemistry will be 58 credits for a student having B. Sc. (Pass) with two/ three year's experiences. Those students will be required to declare his/her 18 open Credits after completion of 30 credit hours including the foundation courses. Without completing his/her foundation courses, a student will not be eligible for M.Sc. degree. But a student having B. Sc. with four years experiences have to take only 18 credits per semester. A student (non-thesis) has to take total 9 credits laboratory courses from three branches.

Course Identification Plan

For identification of a course in the program, the following code plan has been adapted: A 7-8 characters identification code will be used. First 3-4 characters will be alphabetic characters (e.g., CHE or CHEL for example) and last three characters will be numeric.

Group-A: General Group (Non-thesis)

1st Year 1st Semester

The courses and distribution of marks are as follows:

	Titles	Units	Credits	Marks
	Advanced Chemical Kinetics and Catalysis	1.0	3	100
	Organic Reaction Mechanism	1.0	3	100
	Medicinal and Pharmaceutical Chemistry	1.0	3	100
	Advanced Coordination Chemistry and Group Theory	1.0	3	100
	Selected Instrumental Methods of Chemical Analysis	1.0	3	100
	Physical Chemistry Laboratory (Lab-IV)	1.0	3	100
Total Credit Courses		6.0	18	600

1st Year 2st Semester

The courses and distribution of marks are as follows:

	Titles	Units	Credits	Marks
	Advanced Polymer Chemistry	1.0	3	100
	Advance Organic Spectroscopy	1.0	3	100
	Advanced Crystallography and Materials Science	1.0	3	100
	Organic Chemistry Laboratory (Lab-V)	1.0	3	100
	Inorganic Chemistry Lab (Lab-VI)	1.0	3	100
	Viva-voce	1.0	3	100
Total Credit Courses		6.0	18	600

Group-B: Thesis Group

1st Year 1st Semester

The courses and distribution of marks are as follows:

	Titles	Units	Credits	Marks
	Chemical Kinetics and Catalysis	1.0	3	100
	Organic Reaction Mechanism	1.0	3	100
	Medicinal and Pharmaceutical Chemistry	1.0	3	100
	Advanced Coordination Chemistry and Group theory	1.0	3	100
	Selected Instrumental Methods of Chemical Analysis	1.0	3	100
	Research Proposal and Presentation	1.0	3	100
Total Credit Courses		6.0	18	600

1st Year 2st Semester

Courses for Physical Chemistry section

	Titles	Units	Credits	Marks
	Advanced Polymer Chemistry	1.0	3	100
Optional Courses	**Three theory courses :** Three theory courses will have to be registered suggested by the department. It must be two from Physical Chemistry section and one from any section.			
CHE		1.0	3	100
CHE		1.0	3	100
CHE		1.0	3	100
	Thesis	1.0	3	100
	Viva-voce	1.0	3	100
Total Credit Courses		6.0	18	600

Courses for Organic Chemistry Section

Course Code	Titles	Units	Credits	Marks
	Advance Organic Spectroscopy	1.0	3	100
Optional Courses	**Three theory courses :** Three theory courses will have to be registered suggested by the department. It must be two from Organic Chemistry section and one from any section.			
CHE		1.0	3	100
CHE		1.0	3	100
CHE		1.0	3	100
	Thesis	1.0	3	100
	Viva-voce	1.0	3	100
Total Credit Courses		6.0	18	600

Courses for Inorganic and Analytical Chemistry section

Course Code	Titles	Units	Credits	Marks
	Advanced Crystallography and Materials Science	1.0	3	100
Optional Courses	**Three theory courses :** Three theory courses will have to be registered suggested by the department. It must be two from Inorganic and Analytical Chemistry section and one from any section.			
CHE		1.0	3	100
CHE		1.0	3	100
CHE		1.0	3	100
	Thesis	1.0	3	100
	Viva-voce	1.0	3	100
Total Credit Courses		6.0	18	600

Optional Courses for Thesis Group (M.Sc. in Chemistry)

Branch	Course Title	Credit
Physical Chemistry	Photochemistry and Electrochemistry	3
	Biophysical Chemistry	3
	Chemistry of the atmospheric Environment	3
	Electrochemical Techniques	3
Organic Chemistry	Stereochemistry	3
	Chromatographic and other Separation technique	3
	Pollutants in the Environment	3
	Chemistry of Natural Products	3
Inorganic and Analytical Chemistry	Advance Nuclear and Radiochemistry	3
	Electroanalytical Chemistry	3
	Advanced Organometallic Chemistry	3
	Sustainable energy and Green Chemistry	3