

## Course Description

Introduction to Creative Design			
Yr. : 1	Sem. : 2	Course Code:	GC0002
This course is aim to cultivate the basic design ability through considering actual limited factors of industry standard, economical efficiency, environment, morals, confidence to guide creative solution method of engineering problem.			
Analytical Chemistry			
Yr. : 2	Sem. : 1	Course Code:	GC4001
Studies on fundamental concepts and theories of qualitative and quantitative analyses in chemistry.			
Organic Chemistry1			
Yr. : 2	Sem. : 1	Course Code:	GC4002
General and systematic study of organic compounds, their structures, the mechanisms of their reactions, and the ways they are synthesized in nature and in the laboratory			
Physical Chemistry1			
Yr. : 2	Sem. : 1	Course Code:	GC4003
This course deals with the basic principles related to the chemical composition and structure of substances. It has been pursued from two levels, the macroscopic and the molecular. This course deals with the macroscopic view of the basic principles.			
Introduction to Applied Chemistry			
Yr. : 2	Sem. : 1	Course Code:	GC4005
Introduction to various fields in everyday life related to applied chemistry			
Introduction to Life Engineering			
Yr. : 2	Sem. : 1	Course Code:	GC4006
Every organism is composed of chemical compounds and do maintaining life by performing chemical reactions. This lecture provides the overall understanding of life phenomena in the aspect of chemistry and chemical engineering.			
Applied Chemistry Lab.1			
Yr. : 3	Sem. : 1	Course Code:	GC4007
Introduction to the laboratory experiment of organic synthesis, inorganic synthesis, analytical experiment, materials preparation, and biochemistry including the applications of various types of experimental technique and interdisciplinary topics.			
Physical Chemistry2			
Yr. : 2	Sem. : 2	Course Code:	GC4008
This course deals with the basic principles related to the chemical composition and structure of substances. It has been pursued from two levels, the macroscopic and the molecular. This course			

deals with the molecular view of the basic principles.			
Organic Chemistry2			
Yr. : 2	Sem. : 2	Course Code:	GC4009
General and systematic study of organic compounds, their structures, the mechanisms of their reactions, and the ways they are synthesized in nature and in the laboratory			
Material Engineering 1			
Yr. : 2	Sem. : 2	Course Code:	GC4010
This course provides fundamental understanding about chemical and physical properties of various materials such as ceramic, metal, semiconductor, and so on. The goal of this course is to instruct students on how to utilize chemical & physical properties of materials for various engineering applications.			
Physical Chemistry Lab.			
Yr. : 2	Sem. : 2	Course Code:	GC4011
This course deals with the experimental data measurement and data evaluation describing fundamental concepts of physical chemistry course.			
Analytical Chemistry2			
Yr. : 2	Sem. : 2	Course Code:	GC4012
Studies on fundamental concepts and theories of qualitative and quantitative analyses in chemistry.			
Applied Chemistry Lab.1			
Yr. : 3	Sem. : 1	Course Code:	GC4007
Introduction to the laboratory experiment of organic synthesis, inorganic synthesis, analytical experiment, materials preparation, and biochemistry including the applications of various types of experimental technique and interdisciplinary topics.			
Biochemistry1			
Yr. : 3	Sem. : 1	Course Code:	GC4013
Biochemistry 1 deals with biomolecules that consist of living organisms. This course helps to understand the metabolic processes occurring <i>in vivo</i> on the basis of chemical reaction mechanisms. This course is basic subject of BT-related academic fields.			
Inorganic Chemistry			
Yr. : 3	Sem. : 1	Course Code:	GC4014
The subjects needed to understand the chemical bonds of inorganic compounds, theory, molecular symmetry and covers theory, compounds of the composition, structure, reactivity and reaction mechanism analysis argues against.			
Applied Chemistry Lab.2			
Yr. : 3	Sem. : 1	Course Code:	GC4015

Introduction to the laboratory experiment of organic synthesis, inorganic synthesis, analytical experiment, materials preparation, and biochemistry including the applications of various types of experimental technique and interdisciplinary topics.			
Identification of Organic Compounds			
Yr. : 3	Sem. : 1	Course Code:	GC4016
Basic theory of spectral techniques for infrared and ultraviolet/visible spectroscopy, NMR, and mass spectrometry with emphasis on spectral interpretation skills needed for the elucidation of structure, conformation, and dynamics in organic chemistry.			
Material Engineering 2			
Yr. : 3	Sem. : 1	Course Code:	GC4017
Material Engineering 2 is the extended course of the material chemistry 1. This course will explain how bulk mechanical, optical, magnetic and conducting properties of materials can be related to factors such as electronic structure, crystallinity, and molecular structure.			
Electrochemistry			
Yr. : 3	Sem. : 1	Course Code:	GC4018
The course deals with the fundamental concepts of electrochemistry based on thermodynamics and kinetics, and the principles on transformation and storage of electrochemical energy			
Structure Chemistry			
Yr. : 3	Sem. : 1	Course Code:	GC4019
This course deals with the theoretical principles and applications related to the chemical structures.			
Instrumental Analysis			
Yr. : 3	Sem. : 1	Course Code:	GC4025
Introduction to modern instrumental methods of chemical analysis, including chromatography, spectroscopy, surface analysis and thermal analysis.			
Biochemistry2			
Yr. : 3	Sem. : 2	Course Code:	GC4021
Biochemistry 2 deals with biomolecules that consist of living organisms. This course helps to understand the metabolic processes occurring <i>in vivo</i> on the basis of chemical reaction mechanisms. This course is basic subject of BT-related academic fields.			
Macromolecular Chemistry			
Yr. : 3	Sem. : 2	Course Code:	GC4022
Emphasizes general concepts and fundamental principles of polymer chemistry including polymer synthesis, analysis, properties and applications.			
Applied Inorganic Chemistry			
Yr. : 3	Sem. : 2	Course Code:	GC4023
This course is a continuation of SN3051 (Inorganic Chemistry), and deals with inorganic chemistry for coordination complexes and organometallic compounds.			

Spectroscopy			
Yr. : 3	Sem. : 2	Course Code:	GC4026
This course deals with the experimental principles and applications related to the photochemical processes.			
Solid Chemistry			
Yr. : 4	Sem. : 1	Course Code:	GC4027
This course explores the basic principles of solid state chemistry. It deals with crystal structures, electronic properties, chemical bonding, band theory, and so on. It also investigates characterization methods to clear various crystal structures.			
Capstone Design in Applied Chemistry			
Yr. : 4	Sem. : 1	Course Code:	GC4036
Design and presentation of creative ideas related to applied chemistry.			
Chemistry in Energy Materials			
Yr. : 4	Sem. : 1	Course Code:	GC4029
Introduction to the knowledge and applications related to energy storage and transfer technology using chemical materials			
Frontiers of Applied Chemistry			
Yr. : 4	Sem. : 1	Course Code:	GC4030
This course explores the frontier fields in applied chemistry			
Advanced Study in Applied Chemistry			
Yr. : 4	Sem. : 2	Course Code:	GC4037
Recent hot topics are introduced in the field of applied chemistry. Students learn the principles of research and develop the communication skills through presentation supports and discussions.			
Nanochemistry			
Yr. : 4	Sem. : 2	Course Code:	GC4032
Nanotechnology is rapidly expanding fields of science playing an integral part in development of most modern technologies. This course introduces the concepts necessary to explain chemical & physical properties of materials used for nanotechnology.			
Supramolecular Chemistry			
Yr. : 4	Sem. : 2	Course Code:	GC4033
Study on molecular recognition and self-assembly for supramolecules with understanding non-covalent interactions			
Enzyme Chemistry			
Yr. : 4	Sem. : 2	Course Code:	GC4034
Students learn about the enzymatic chemistry. This course helps students to general understand the various kinds of enzymes, characters of enzymes, reaction mechanisms and kinetics, relationship between function and structures, enzyme purification, and future possibilities of enzymes.			

Project Research in Applied Chemistry			
Yr. : 4	Sem. : 2	Course Code:	GC4038
Design and presentation of creative ideas related to applied chemistry.			