

# DEPARTMENT OF CHEMISTRY

School of Natural Sciences



## Minor in Chemistry

### **About the Department:**

Chemistry education at SNU provides a link between the fundamental principles governing the nature of the universe and the science of life, and spans traditional as well as a variety of inter-disciplinary areas. Chemistry, often referred as the central science, as it plays a vital role in nearly every other scientific field. At the undergraduate level, we offer B.Sc. (Research) in Chemistry. One can also combine a Minor in Chemistry with a Major in any other discipline at SNU and vice versa. University-wide elective courses in the curriculum allow students unprecedented freedom to explore subjects outside their chosen major; in some depth. This flexible and broad curriculum prepares students not just for a career in chemistry upon graduation, but for a leadership role in the world as well.

Chemistry forms the link between the fundamental principles governing the nature of the universe and the science of life. Chemistry education at SNU provides focus on a variety of inter-disciplinary areas, spanning different scientific disciplines, e.g. Materials Science, Bioinformatics, Environmental Sciences, or Chemical Biology, as well as non-traditional areas in the arts and humanities.

A Chemistry Minor provides a broad background in chemical principles, that can serve as a stepping stone to further in-depth study in related areas that build upon this background. The Chemistry Minor curriculum at SNU is divided into two stages: introductory general chemistry, and foundation courses providing breadth across sub-disciplines. Since chemistry is an experimental science, substantial laboratory work is an integral part of almost all our Chemistry courses.

**Introductory or General Chemistry:** The introductory general chemistry courses provide a common grounding in basic chemical concepts for students with diverse backgrounds, develop basic mathematical and laboratory skills, and prepare students for the foundation courses, allowing for a period for consolidation of chemical concepts, mathematical and laboratory skills. For students pursuing a Chemistry Minor, the introductory chemistry courses provide preparation for the foundation course work, ensuring that students know basic chemical concepts such as stoichiometry, states of matter, atomic structure, molecular structure and bonding, thermodynamics, equilibria, and kinetics. Students also need to be competent in basic laboratory skills such as safe practices, keeping a notebook, use of electronic balances and volumetric glassware, preparation of solutions, chemical measurements using pH.

**Foundation Courses:** Foundation courses provide breadth and lay the groundwork for more in-depth course work. Elective in-depth courses in areas of the student's interests build upon these foundations and develop critical thinking and problem-solving skills.

**Laboratory Experience:** The chemistry laboratory experience at SNU includes synthesis of molecules; measurement of chemical properties, structures, and phenomena; hands-on experience with modern analytical instrumentation; and computational data analysis and modelling. All laboratory programs are conducted in a safe environment that includes adherence to national and state regulations regarding hazardous waste management and laboratory safety, including facilities for chemical waste disposal, safety information and reference materials, and personal protective equipment available to all students and faculty.

The chemistry laboratories at SNU are equipped with functioning fume hoods, safety showers, eyewashes, first aid kits, and readily available fire extinguishers. Students are trained in modern chemical safety, to understand responsible disposal techniques, understand and comply with safety regulations, understand and use material safety data sheets (MSDS), recognize and minimize potential chemical and physical hazards in the laboratory, and know how to handle laboratory emergencies effectively.

**Problem-Solving Skills:** As part of the SNU experience, students will be expected to develop the ability to define problems, develop testable hypotheses, design and execute experiments, analyze data using statistical methods, and draw appropriate conclusions. The Chemistry Minor curriculum provides ample opportunities for developing both written and oral communication skills, as well as team skills. Our instructional programs incorporate team experiences in classroom and laboratory components of the chemistry curriculum.

**Elective Courses:** Elective courses provide you a choice to earn the credits in your specific area of interest. Students at SNU may earn a Minor in Chemistry upon successfully completing the following courses. Students are requested to announce their interest to pursue minor in Chemistry to the Registrar office, when requested.

<b>Minor credit requirement (27 credits)</b>			
<b>Category A: Compulsory courses (Introductory)</b>			
<b>Course Code</b>	<b>Course Title</b>	<b>Credits</b>	<b>Total</b>
CHY111 (3:1:1)	Chemical Principles	5	12
CHY211 (3:0:1)	Chemical Equilibrium	4	
CHY214 (2:0:1)	Physical Methods in Chemistry	3	
<b>Category B: Any three courses (Foundation)</b>			
<b>Course Code</b>	<b>Course Title</b>	<b>Credits</b>	<b>Total</b>
CHY122 (2:1:1)	Basic Organic Chemistry I	4	12
CHY144 (3:0:1)	Inorganic Chemistry I	4	
CHY222(2:1:1)	Chemistry of Carbonyl Compounds	4	
CHY242(3:0:1)	Coordination Chemistry	4	
CHY221(3:0:1)	Basic Organic Chemistry-II	4	
CHY245(3:0:1)	Inorganic Chemistry-II	4	
CHY311 (3:0:1)	Chemical Binding	4	
CHY313(3:1:0)	Molecular Spectroscopy	4	
A course from "category B" cannot count towards both Major and Minor requirements. For example, Biotechnology students cannot count CHY122 towards the Minor degree as it is a compulsory course in their Major.			
<b>Category C: Any course</b>			
<b>Course Code</b>	<b>Course Title</b>	<b>Credits</b>	<b>Total</b>
Core/electives	any (category)	3	3