

ICCH 357	Special Practice in Chemistry C	1
Prerequisites: ICCH 103 Integrated Laboratory in Chemistry The frontier laboratory techniques in inorganic chemistry, applied chemistry or multidisciplinary chemistry		
ICCH 358	Special Practice in Chemistry D	1
Prerequisites: ICCH 103 Integrated Laboratory in Chemistry The frontier laboratory techniques in organic chemistry, applied chemistry or multidisciplinary chemistry		
ICCH 359	Special Practice in Chemistry E	1
Prerequisites: ICCH 103 Integrated Laboratory in Chemistry The frontier laboratory techniques in physical chemistry, applied chemistry or multidisciplinary chemistry		
ICCH 402	Undergraduate Thesis	6
Prerequisites: lecturer permission A research project in chemistry under the supervision of an advisor. The course is designed for the chemistry major to be acquainted with the techniques, management and the implementation of a research project.		
ICCH 403	Field Study A	1
Prerequisites: ICCH 100 Chemistry and Careers and ICCH 102 General Chemistry II Field study on commercial operations in chemistry-related organizations		
ICCH 404	Field Study B	1
Prerequisites: ICCH 100 Chemistry and Careers and ICCH 102 General Chemistry II Field study on fundamental research or public service in chemistry-related organizations		
ICCH 407	Internship	8
Prerequisites: lecturer permission Practicing chemistry-related work in one trimester as an actual employee, accomplishing the work report and/or work presentation under the supervision of the work supervisor and/or academic supervisor		
ICCH 408	Summer Internship	2
Prerequisites: lecturer permission		

Practicing chemistry-related work in one month (4 weeks) as an actual employee, accomplishing the work report and/or work presentation under the supervision of the work supervisor and/or academic supervisor		
ICCH 451	Advanced Organic Chemistry	2
Prerequisites: ICCH 222 Organic Chemistry II Advanced concepts of organic chemistry with physical chemistry and mechanistic approaches and employing prior knowledge of organic chemistry to understand in detail advanced topics: stereochemistry; kinetics and equilibria thermodynamics; conformation and reactivity; molecular orbital theory and pericyclic reactions		
ICCH 452	Materials Science	2
Prerequisites: ICCH 102 General Chemistry II Fundamental concepts of material science and engineering; structure, energetics, and bonding as well as principles of nuclear materials		
ICCH 453	Computational Chemistry	2
Prerequisites: ICCH 102 General Chemistry II and ICMA 106 Calculus I Introduction to molecular modeling methods to study geometries, properties and reactivities of compounds; molecular mechanics, ab-initio methods, and density functional theory		
ICCH 454	Biophysical Chemistry	2
Prerequisites: ICCH 231 Biochemistry Introduction to theory underlying biophysical methods; practical applications to contemporary research problems; fluorescence spectroscopy; single molecule methods		
ICCH 455	Advanced Inorganic Chemistry	2
Prerequisites: ICCH 391 Inorganic Chemistry A The chemistry of the transition element and the role of the organometallic chemistry and catalysis		
ICCH 456	Chemistry Innovation and Entrepreneurship	2
Prerequisites: ICCH 100 Chemistry and Careers and ICCH 102 General Chemistry II Case studies of chemistry-based startups; fundamentals of intellectual property and patents; market analysis for opportunities; ideation; prototyping and product development; business models; scaling up; pitching and presenting chemistry innovations; hands-on projects		

ICCH 457	Advanced Analytical Chemistry	2
Prerequisites: ICCH 261 Analytical Chemistry and Instrumental Analysis In-depth theories and practical knowledge on modern analytical techniques; novel techniques development and applications on various samples		
ICCH 458	Bioinorganic Chemistry	2
Prerequisites: ICCH 391 Inorganic Chemistry A Application of inorganic chemistry in biological systems; functions and chemistry of metals in biological systems		
ICCH 459	Supramolecular Chemistry	2
Prerequisites: ICCH 222 Organic Chemistry II Fundamental principles of supramolecular chemistry; synthesis and characterization of supramolecular assemblies		
ICCH 460	Petroleum and Petrochemical Industry	2
Prerequisites: ICCH 222 Organic Chemistry II Introduction to the science, technology and business aspects of extracting, refining, and utilizing petroleum and petrochemicals; environmental and societal implications of petroleum extractions; applications of petrochemical in various industries; challenges and opportunities facing the petroleum and petrochemical industry		