



Degree Level Bachelor's Grad.Dip. Master's Higher Grad.Dip. Doctoral

Mahidol University International College

TQF2 Bachelor of Science Program in Chemistry (International Program)

Science Division

1. Curriculum Name (Thai) หลักสูตรวิทยาศาสตรบัณฑิต สาขาวิชาเคมี (หลักสูตรนานาชาติ) (English) Bachelor of Science Program in Chemistry (International Program)	
2. Degree Title (Thai) วิทยาศาสตรบัณฑิต (เคมี) (English) Bachelor of Science (Chemistry)	
Program Overview	
Curriculum Type/model	Bachelor's Degree (International program), Academic Program
Number of Credits	No less than 184 credits
Duration	Four-year program
Program Status and Schedule of Program Start Dates	Revised program 2018 Program start: Trimester I Academic Year 2018
Degree Offered	One degree of one major
Institution Offering Degree (collaboration with other institutions)	Mahidol University
Organization Certifying the Standards of the Program	-
Specific Data of the Program	
Purpose / Goals / Objectives	Goals: To produce graduates with Chemistry skills and work ethics suitable up to and beyond as specified in Thai Qualification Framework (TQF) 1. Objectives: To produce graduates who are able to: 1) Work for local and global employment in the chemical industry or related areas, or pursue higher degree in Chemistry or in allied fields, such as medicine, dentistry, pharmacy, chemical and petrochemical engineering, environmental areas. 2) Think critically and solve problem that relate to chemical and other scientific applications, and understand the underlying theoretical principles governing the chemical behavior at the atomic,



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	<p>molecular and macroscopic levels;</p> <p>3) Conduct experiments or do researches with laboratory skills, that include preparative techniques, methods for disposing and handling toxic compounds and wastes, and usage of modern instrumentations and the interpretative handling of data.</p> <p>4) Design and conduct research scientifically and ethically to solve problem in real-life situations.</p>
<p>Distinctive Features</p>	<p>A chemistry international program, emphasizing research, analytical-thinking and problem solving, has the following distinctive features:</p> <ol style="list-style-type: none"> 1) Two tracks: Chemistry and Cosmetic Science 2) After the second year, students can choose to stay in Chemistry track or specialize into Cosmetic track 3) In the first two years and half, both tracks share common courses and therefore students in Cosmetic Science track have the same expertise in general chemistry, organic chemistry, physical chemistry I, inorganic Chemistry I, analytical chemistry and spectroscopy as the Chemistry track students 4) The new chemistry curriculum places greater emphasis on computer programming expertise and students of both tracks are required to learning basic computer programming and data analysis and visualization 5) Through electives and their choices, students in cosmetic science track can acquire more knowledge in other chemistry discipline such as physical, inorganic, organic and computational chemistry. Chemistry track students can diversify into cosmetic science, biological, biochemical, physical sciences.
<p>Academic System</p>	<p>Trimester system</p>
<p>Advancement Path of the Graduates</p>	
<p>Career Opportunities</p>	<p>Graduates of the international bachelor chemistry program can find employment in</p>



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	<ol style="list-style-type: none"> 1) Quality control or quality assurance positions or as a research scientist in local and multinational chemical, petrochemical, pharmaceutical and cosmetic science manufacturing and related industries 2) Research assistant in private sector and governmental services department. 3) Customer relations and as technical-support in sales and marketing team for local and international chemical, petrochemical, pharmaceutical and cosmetic science related companies 4) Entrepreneurship in applied chemical and cosmetic industries. 5) Establishing regional office for multinational science-related companies.
<p>Further Study after graduation</p>	<p>Graduates of the international bachelor chemistry program can study M.Sc., M.A. or Ph.D. abroad or in Thailand in chemistry, chemical engineering, petroleum, material, pharmaceutical, cosmetic science fields and related fields including innovation management and MBA abroad or in Thailand.</p>
<p>Educational Management System</p>	
<p>Program Philosophy</p>	<p>Graduates will be world citizens who expertly apply knowledge and skills in chemistry for the benefit of mankind and the betterment of global society. In concert with Thailand 4.0 vision, the chemistry program produces graduates with lifelong learning habits through Mahidol University's constructivist learning philosophy and MUIC's liberal arts philosophy.</p>
<p>Strategy/ Practice in teaching and learning</p>	<p>Our philosophy is implemented via strong liberal arts requirements and supportive student-faculty interactions, and achieved via interactive lectures, laboratory practicals, individual and group discussions and assignments and active research projects with emphasis on student's demonstration of ideas, logical reasoning,</p>



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	<p>problem-analysis and problem-solving and applying the solution to the problem.</p>
<p>Strategy/Practice for Evaluating Learning Outcomes of Students</p>	<p>Different methods of formative and summative evaluation are used such as written and oral examination, practical test, oral presentation, individual or group class participation and project-based research learning. Rubrics based on the objectives of the course are used to score the students' achievement. Students receive grades according to the criteria stated in Mahidol University's regulations on undergraduate studies as well as MUIC's regulations and/or announcements.</p>
<p>Program Competency</p>	
<p>Generic Competences</p>	<p>Critical thinking and Analysis:</p> <ul style="list-style-type: none"> a) Capable of analytical and critical thinking and asking pertinent questions in order to formulate lines of enquiry that drive problem solving b) Assess contradictory or relevant information, scientific observations and problems creatively and with logical and systematic reasoning c) Critical reading of scientific literature d) Able to comprehend and follow technical information <p>Creativity:</p> <ul style="list-style-type: none"> a) Able to create original, novel research or work that will further enhance existing knowledge <p>Communication:</p> <ul style="list-style-type: none"> a) Communicate orally in concise and grammatically correct English b) Write concisely and correctly in English c) Use appropriate presentation tools and visual aids in a cohesive and organized manner <p>Collaboration:</p> <ul style="list-style-type: none"> a) Collaborate professionally with members of the team



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	<p>b) Time management</p> <p>ICT:</p> <ul style="list-style-type: none">a) IT and programming skillsb) Information management skillsc) Using presentation programs to deliver oral presentationd) Receive, reflect on and respond to different information types (e.g. textual, numerical, graphical) <p>Ethics:</p> <ul style="list-style-type: none">a) Demonstrate moral and appropriate behaviorb) Responsible conduct including awareness of plagiarismc) Awareness of current local and global issuesd) Accountabilitye) Risk assessment, prevention and mitigation
Subject-specific Competences	<ul style="list-style-type: none">a) Possess knowledge in analytical chemistry, organic chemistry, inorganic chemistry, biochemistry, physical chemistry/chemical physics, material science, computational chemistry and computer programming, and be able to apply them effectively to solve problems in chemistryb) To be able to practice and conduct experiments in analytical chemistry, organic chemistry, inorganic chemistry, biochemistry, physical chemistry/chemical physics, material science, computational chemistry and programming, and possess proper skills in handling instrumentations of these disciplines and adhere to standard laboratory safety practices, and chemical handling, including proper use of PPEsc) Recognize ethical issues related to chemistry, and apply accepted ethical standards to resolve issues, including confidentiality of data



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Learning Outcomes of Graduates	
Program Learning Outcomes	<p>At the end of the program, successful students will be able to:</p> <ol style="list-style-type: none">3. Apply knowledge in both basic and applied chemistry and related scientific disciplines to systematically solve problems involving chemistry in academia and industry.4. Retrieve and appraise scientific literature critically and integrate information for problem solving and scientific research.3. Communicate concepts of chemistry and other sciences using effective excellent English in both written and oral forms to present ideas or solutions purposefully to both the scientific community and the public both locally and globally.4. Demonstrate moral and appropriate conduct as a collaborative scientist with integrity, professionalism and ethics.5. Apply the principles of chemical safety practices for health and the environment in accordance with OSHA and MU standards.6. Apply laboratory techniques and instrumentations in chemistry and other sciences to experiment, verify theory or formulate meaningful original solutions to novel situations, as part of theoretical discussion, experimentation, analysis, or research.