

1. Name of the program

Master of Science Program in Biochemistry (M.Sc. Biochemistry),
(International program)

2. Program overview

2.1 Objective of the program

To produce graduate students who are well-informed in biochemistry, covering a range from molecules to cells and including the chemical processes and reactions that occur in living organisms, they must possess relevant knowledge of cutting-edge technology and information literacy, along with strong analytical thinking, problem-solving, and digital skills applicable to biochemical practice and research. Additionally, they must be able to explore, connect, and apply new insights in biochemistry or related fields to promote ethical biochemical research and communicate biochemical knowledge for the benefit of society in ways that align with the modern world.

2.2 Program learning outcome

PLO1: Possess a comprehensive understanding of essential principles, theories, and practices in biochemistry necessary for applying new knowledge in the field or related sciences and linking new ideas to discover and develop innovative concepts relevant to biochemistry.

PLO2: Exhibit academic proficiency in learning, inquiry, analytical thinking, problem-solving, and digital literacy to generate applicable knowledge in the field of biochemistry or related sciences. Demonstrate effective communication skills in English to convey the implications of biochemical reasoning and research clearly.

PLO3: Demonstrate ethics, honesty, and adherence to the law

PLO4: Exhibit discipline, social responsibility, and technological as well as information literacy applicable to biochemistry or associated scientific fields.

2.3 Career path

Many alumni work as teachers, lecturers, researchers, scientists, technical specialists, and sales representatives. They also manage enterprises that utilize their biochemistry expertise in the fields of medicine, pharmacy, health and beauty, agriculture, biofuels, and bioinformatics.

3. Program structure, study plan, and graduation requirements

3.1 Program structure

	Plan 1 Type A 1	Plan 1 Type A 2
Required courses	2 (non-credit)	15 credits
Elective courses (**)	- credits	5 credits
Thesis	36 credits	16 credits
Total credits	36 credits	36 credits

3.2 Study plan

First Year, 1 st Semester		Number of Credits Plan 1	
Course no.	Course title	Type A 1	Type A 2
SC 857 701	Biochemistry for M.Sc. Study I	-	3(3-0-6)
SC 857 713	Biochemical Techniques for M.Sc. Study I	-	1(1-0-2)
SC 857 714	Laboratory in Biochemical Techniques for M.Sc. Study I	-	2(0-6-3)
SC 857 891	Seminar in Biochemistry for M.Sc. Study I	1 (non-credit)	-
SC 857 898	Thesis	9	-
xx xxx xxx*	Elective courses	-	3
Total credits		10	9
Cumulative credits		9	9

First Year, 2 nd Semester		Number of Credits Plan 1	
Course no.	Course title	Type A 1	Type A 2
SC 857 702	Biochemistry for M.Sc. Study II	-	3(3-0-6)
SC 857 715	Biochemical Techniques for M.Sc. Study II	-	2(2-0-4)
SC 857 716	Laboratory in Biochemical Techniques for M.Sc. Study II	-	2(0-6-3)
SC 857 891	Seminar in Biochemistry for M.Sc. Study I	-	1(1-0-2)
SC 857 892	Seminar in Biochemistry for M.Sc. Study II	1 (non-credit)	-
SC 857 898	Thesis	9	-
xx xxx xxx*	Elective courses	-	2
Total credits		10	10
Cumulative credits		18	19

Second Year, 1 st Semester		Number of Credits Plan 1	
Course no.	Course title	Type A 1	Type A 2
SC 857 892	Seminar in Biochemistry for M.Sc. Study II	-	1(1-0-2)
SC 857 898	Thesis	9	-
SC 857 899	Thesis	-	8
Total credits		9	9
Cumulative credits		27	28

Second Year, 2 nd Semester		Number of Credits Plan A 1	
Course no.	Course Title	Type A 1	Type A 2
SC 857 898	Thesis	9	-
SC 857 899	Thesis	-	8
Total credits		9	8
Cumulative credits		36	36

*** Elective courses**

SC 857 722	Integrated Biochemistry for M.Sc. Study	3(3-0-6)
SC 857 724	Advanced Genetic Engineering in Prokaryotic Cells for M.Sc. Study	2(2-0-4)
SC 857 731	PCR Technology for M.Sc. Study	2(2-0-4)
SC 857 733	Protein Structure and Function for M.Sc. Study	2(2-0-4)
SC 857 735	Biochemistry and Biology of Cancer for M.Sc. Study	3(3-0-6)
SC 857 737	Analysis and Presentation of Biological Science Articles for M.Sc. Study	2(2-0-4)
SC 857 738	Computational Biochemistry of Protein for M.Sc. Study	3(3-0-6)
SC 857 894	Research Skill in Biochemistry for M.Sc. Study	2(0-6-3)

Note: Students may enroll in other courses offered by the graduate programs at Khon Kaen University with the approval of the program director, major advisor, or program administrative committee.

3.3 Graduation requirements

3.3.1 Plan A 1: Students pass 36 credits for a thesis and two seminars (no credit).

Plan A 2: Students pass at least 20 credits for coursework and 16 credits for thesis with a cumulative GPA of at least 3.00.

3.3.2 Students pass the English Proficiency Examination provided by the Graduate School at Khon Kaen University, or an equivalent exam.

3.3.3 Students pass the oral thesis proposal and defense examinations according to the rules and regulations of the Graduate School, Khon Kaen University.

3.3.4 Plan A 1: Students obtain at least one publication, or a manuscript accepted as a journal article in a national/international peer-reviewed journal, according to the Graduate School, Khon Kaen University regulations.

Plan A 2: Students obtain at least one publication, or a manuscript accepted for publication as a journal article or a conference proceeding in a national/international peer-reviewed journal, according to the Graduate School, Khon Kaen University regulations.

4. Admission requirements

4.1 Plan A 1: Applicants must hold a bachelor's degree in biochemistry or a related field with a GPA of at least 3.25 or hold a bachelor's degree in science or a related field with a GPA of at least 3.50

Plan A 2: Applicants must hold a bachelor's degree in biochemistry or a related field with a GPA of at least 2.50 or have working experience in a biochemistry-related job for more than 1 year

4.2 Applicants must have a TOEFL score of at least 470 (Paper-based or Institutional Testing Program), 150 (Computer-based), or 52 (Internet-based); an IELTS score of at least 5.0; a TU-GET score of at least 500; a CU-TEP score of at least 60; or a KKU-AELT level of at least 3 for reading and writing. The application must be submitted online via the Graduate School, Khon Kaen University website (<https://gs.kku.ac.th/home/index.php/main-english.html>).

4.3 The entrance examinations include 1) the Graduate School's English Proficiency Test and 2) the Program's Entering Committee, which conducts interviews in English covering general knowledge in biochemistry, biology, and chemistry. Applicants who have the required English proficiency score, as mentioned above, will proceed directly to the interview process.

4.4 Applicants may receive an exception to any of the requirements above if permission is granted by the Administrative Program Committee in concurrence with the Graduate School.

5. **Program length**

Minimum 2 years, Maximum 5 years

6. **Fees**

- Application fee/subject area 40 USD
- Tuition fee/semester 840 USD
- Overseas student fee 500 USD
- Comprehensive examination 30 USD
- Thesis defense 45 USD

7. **Research groups**

- Protein and Enzymology
- Food and Nutritional Biochemistry
- Plant Biochemistry
- Cancer Biology
- Biosensor and Nanotechnology

8. **Scholarship**

- The department offers two partial scholarships for a highly qualified student each year. This scholarship covers tuition fees for two semesters. Additionally, three to five research assistant scholarships from research groups in the department are also available each year.

9. **Contact**

Associate Professor Dr. Gulsiri Senawong, Program Director

Department of Biochemistry, Faculty of Science, Khon Kaen University

Khon Kaen 40002 THAILAND

Email: gulsiri@kku.ac.th