1. **Program title:** Doctor of Philosophy Program in Biotechnology
2. **Awarding institution:** King Mongkut's University of Technology Thonburi
3. **Teaching Institution:** School of Bioresources and Technology

   King Mongkut's University of Technology Thonburi Bangkhunthian
4. **Mode of study**: Full Time
5. **Language of study:** English
6. **Admission Criteria:**

Plan	Eligible Applicants
Plan 2.1 (For Bachelor's Degree Holder)	1. Completed Bachelor's degree in Sciences or Engineering or other equivalent programs with honors or 2. Have research experiences and/or publications approved by the program committee to be a candidate Ph.D. student or 3. Studying in Master's degree and obtain a cumulative grade point average not less than 3.50
Plan 2.2 (For Master's Degree Holder)	1. Complete Master's degree in Science or Engineering or other equivalent programs with a cumulative grade point average not less than 3.50 or 2. Have some research experiences or academic background approved by the program committee to be a candidate Ph.D. student.
Note : All applicants must submit standardized English Proficiency Test Score at the level indicated in the announcement on the KMUTT English Language Requirement for Doctoral Degree.	

7. **Program objective:**

   This program aims to offer advanced training appropriate for careers as academics, researchers, entrepreneurs, etc. in the fields of biotechnology. Students will gain comprehensive knowledge and competence in their specific research area as well as general knowledge in molecular biology, bioinformatics and system biology, bioprocess engineering, nanobiotechnology and other related fields through coursework, laboratory-based research, in-house seminars, and national and international conferences participation, etc.

8. Program Learning Outcomes:

Program Learning Outcomes		Teaching and Learning Methods
PLO1 : Students have ability to bring about new knowledge and/or innovations in biotechnology by being able to;		
Sub PLO1A	Explain the principles of advanced biotechnology and related fields.	Lecture-based teaching that provides principle and applications aspects, seminar, tutorial, self-directed study and peer review sessions
Sub PLO1B	Systematically apply the principles and concepts of multidisciplinary research to identify research problems and conduct research to find solutions.	Directed independent learning activities, project-based and problem-based learning, special research project, thesis
Sub PLO1C	Choose proper mathematical/ statistical/ computer tools together with the related information for effective analysis of research results.	Lecture-based teaching using a range of tools to solve 'real' and 'theoretical' case-studies and problem-based learning scenarios.
Sub PLO1D	Create new knowledge or innovations in biotechnology	Research proposal, experimental works, project presentation and report.
PLO 2 : Students have ability to communicate and exchange academic issues/finding/solution effectively in both oral and written presentations by being able		
Sub PLO2A	Communicate effectively in English to present ideas orally and in writing.	Seminar, group discussion, thesis progress report and defense, conference participations, manuscript writing, thesis writing
Sub PLO2B	Articulate an extended reasoned argument for technical and scientific information.	Seminar, group discussion and problem-solving assignments, thesis presentation and defense, conference participations
PLO 3: Students realize the value of continuous self-improvement and strive to achieve high quality work.		Guided, self-directed and student-centered learning, with increasing independence of approach, thought and process.
PLO 4: Students have ability to work in teams with both Thais and foreigners in either leadership or partner roles.		Laboratory works, group assignments
PLO 5: Students demonstrate an understanding of, and commitment to, research ethics or code of practice.		Training, workshop, role model, individual assignment and individual research projects

9. Program structures

Plan	Electives	Seminar (1 credit)	Thesis	Total
Plan 2.1	25	3	48	76
Plan 2.2	10	2	36	48

10. Contract Address:

Biotechnology Program,

School of Bioresources and Technology,

King Mongkut's University of Technology Thonburi,

49 Soi Thian Thale 25, Bang Khun Thian Chai Thale Road, Tha Kham,

Bangkhunthian, Bangkok, 10150

(https://biotech.kmutt.ac.th/)

The University Council granted programme permission at Meeting No.258 Date 3 Month February B.E 2021

(**Date created:** 11/1/2021)