

COURSE SYLLABUS

1. **Course Number** 2300251
2. **Course Credit** 3 (3-0-6)
3. **Course Title** Concepts and Issues in Biotechnology
4. **Faculty/Department** Faculty of Science, Bachelor of Science in Biotechnology (International Program)
5. **Semester** First semester
6. **Academic Year** 2021
7. **Instructors**
Professor Tanapat Palaga, Ph.D.
Associate Professor Naraporn Somboonna, Ph.D. (Coordinator)
Associate Professor Ekawan Luepromchai, Ph.D.
Associate Professor Suchada Chanprateep Napathorn, Dr.Eng.
Associate Professor Duanghathai Pentrakoon, Ph.D.
Associate Professor Supaart Sirikantaramas, Ph.D.
Associate Professor Chadchawan Chaisuekul, Ph.D.
Assistant Professor Juthamas Chaiwanon, Ph.D.
Assistant Professor Chonchanok Muangnapoh, Ph.D.
Assistant Professor Noppadon Kitana, Ph.D.
Assistant Professor Sittiporn Pattaradilokrat, Ph.D.
Supawin Watcharamul, Ph.D.
Wacharaporn Tiyasatkulkovit, D.V.M., Ph.D.
Panupong Thammachoti, Ph.D.
Vorrapon Chaikeeratisak, Ph.D.
Sarn Settachaimongkon, Ph.D.
8. **Conditions/ Prerequisite** -
9. **Course Status** Compulsory course
10. **Academic Program** Bachelor of Science in Biotechnology (International Program)
11. **Course Level** Bachelor's degree
12. **Course Hours/Week** Lecture 3 hrs./ week (Monday 09.00–10.00/ Friday 09.00–11.00)
13. **Course Description**

Basic approaches to biotechnology research and development that leads to applications in various areas including microbial biotechnology, plant biotechnology, animal biotechnology, environmental biotechnology, biotechnology in industry, bioinformatics, intellectual property, and other current topics.

14. Course outline

14.1 Course Objectives

- (i) To be able to describe basic approaches in research and development of biotechnology.
- (ii) To be able to explain and give examples of biotechnology applications in various fields.

14.2 Course schedule

Week	Date	Topic	Instructor
1	Monday, Aug 9, 2021 1 hour (09.00-10.00)	Concepts and basic approaches in biotechnology	Vorrapon Chaikeratisak, Ph.D.
	Friday, Aug 13, 2021 1 hour (09.00-11.00)	Concepts and basic approaches in biotechnology	Vorrapon Chaikeratisak, Ph.D.
2	Monday, Aug 16, 2021 1 hour (09.00-10.00)	Concepts and basic approaches in biotechnology	Vorrapon Chaikeratisak, Ph.D.
	Friday, Aug 20, 2021 1 hour (09.00-10.00)	Concepts and basic approaches in biotechnology	Vorrapon Chaikeratisak, Ph.D.
	Friday, Aug 20, 2021 1 hour (10.00-11.00)	Applications in microbial biotechnology	Prof. Tanapat Palaga, Ph.D.
3	Monday, Aug 23, 2021 1 hour (09.00-10.00)	Applications in microbial biotechnology	Assoc. Prof. Ekawan Luepromchai, Ph.D.
	Friday, Aug 27, 2021 1 hour (09.00-10.00)	Applications in microbial biotechnology	Assoc. Prof. Naraporn Somboonna, Ph.D.
	Friday, Aug 27, 2021 1 hour (10.00-11.00)	Applications in microbial biotechnology	Assoc. Prof. Suchada C. Napathorn, Dr.Eng.
4	Monday, Aug 30, 2021 1 hour (09.00-10.00)	Applications in microbial biotechnology	Assist. Prof. Chonchanok Muangnapoh, Ph.D.
	Friday, Sept 3, 2021 2 hours (09.00-11.00)	Applications in plant biotechnology	Assist. Prof. Juthamas Chaiwanon, Ph.D.
5	Monday, Sept 6, 2021 1 hour (09.00-10.00)	Applications in plant biotechnology	Assist. Prof. Juthamas Chaiwanon, Ph.D.
	Friday, Sept 10, 2021 2 hours (09.00-11.00)	Applications in plant biotechnology	Assist. Prof. Juthamas Chaiwanon, Ph.D.
6	Monday, Sept 13, 2021 1 hour (09.00-10.00)	Applications in animal biotechnology	Assist. Prof. Noppadon Kitana, Ph.D.
	Friday, Sept 17, 2021 1 hour (09.00-10.00)	Applications in animal biotechnology	Panupong Thammachoti, Ph.D.
	Friday, Sept 17, 2021 1 hour (10.00-11.00)	Applications in animal biotechnology	Assoc. Prof. Chadchawan Chaisuekul, Ph.D.

14.2 Course schedule (continued)

Week	Date	Topic	Instructor
7	Monday, Sept 20, 2021 1 hour (09.00-10.00)	Applications in animal biotechnology	Wacharaporn Tiyasatkulkovit, D.V.M., Ph.D.
	Friday, Sept 24, 2021 2 hour (09.00-11.00)	No class: Mahidol Day (Additional special holiday)	
Sept 27 – Oct 1, 2021 Mid-term Examination			
8	Monday, Oct 4, 2021 1 hour (09.00-10.00)	Applications in animal biotechnology	Assist. Prof. Sittiporn Pattaradilokrat, Ph.D.
	Friday, Oct 8, 2021 2 hours (09.00-11.00)	No class: Commencement Day	
9	Monday, Oct 11, 2021 1 hour (09.00-10.00)	Applications in environmental biotechnology	Supawin Watcharamul, Ph.D.
	Friday, Oct 15, 2021 2 hours (09.00-11.00)	Applications in environmental biotechnology	Supawin Watcharamul, Ph.D.
10	Monday, Oct 18, 2021 1 hour (09.00-10.00)	Applications in environmental biotechnology	Supawin Watcharamul, Ph.D.
	Friday, Oct 22, 2021 2 hours (09.00-11.00)	No class: Substitution Day for Chulalongkorn Day	
11	Monday, Oct 25, 2021 1 hour (09.00-10.00)	Applications in environmental biotechnology	Supawin Watcharamul, Ph.D.
	Friday, Oct 29, 2021 2 hours (09.00-11.00)	Applications in food biotechnology	Sarn Settachaimongkon, Ph.D.
12	Monday, Nov 1, 2021 1 hour (09.00-10.00)	Applications in food biotechnology	Sarn Settachaimongkon, Ph.D.
	Friday, Nov 5, 2021 2 hours (09.00-11.00)	Applications in food biotechnology	Sarn Settachaimongkon, Ph.D.
13	Monday, Nov 8, 2021 1 hour (09.00-10.00)	Applications in bioinformatics	Assoc. Prof. Supaart Sirikantaramas, Ph.D.
	Friday, Nov 12, 2021 2 hours (09.00-11.00)	Applications in bioinformatics	Assoc. Prof. Supaart Sirikantaramas, Ph.D.

14.2 Course schedule (continued)

Week	Date (Time 09.00–10.00)	Topic	Instructor
14	Monday, Nov 15, 2021 1 hour (09.00-10.00)	Applications in bioinformatics	Assoc. Prof. Supaart Sirikantaramas, Ph.D.
	Friday, Nov 19, 2021 1 hour (09.00-10.00)	Applications in bioinformatics	Assoc. Prof. Supaart Sirikantaramas, Ph.D.
	Friday, Nov 19, 2021 1 hour (10.00-11.00)	No Class	
15	Monday, Nov 22, 2021 1 hour (09.00-10.00)	Biotechnology management	Assoc. Prof. Duanghathai Pentrakoon, Ph.D.
	Monday, Nov 22, 2021 2 hour (13.00-15.00)*	Biotechnology management	Assoc. Prof. Duanghathai Pentrakoon, Ph.D.
	Friday, Nov 26, 2021 1 hour (09.00-10.00)	Intellectual property	Guest Speaker
Nov 29 – Dec 14, 2021 Final Examination			

Remark: *Special class

Lecture time and place Monday 09.00–10.00/ Friday 09.00–11.00

Microsoft Teams: 2300251 CON ISSUES BIOTECH.Group

14.4 Instruction type Lecture, group discussion, assignment, presentation

14.5 Instruction tools Books, review papers, research articles, laboratory manual, lecture handout, computer aided teaching materials

14.6 Course evaluation

Topics	Points (%)
1. Concepts and basic approaches in biotechnology	12.5
2. Applications in microbial biotechnology	12.5
3. Applications in plant biotechnology	12.5
4. Applications in animal biotechnology	12.5
5. Applications in environmental biotechnology	12.5
6. Applications in food biotechnology	12.5
7. Applications in bioinformatics	12.5
8. Biotechnology management and intellectual property	12.5
Total	100

Norm-referenced assessment, student must achieve more than 80% to get “A” and not less than 60% to pass the course.

15. Suggested reading materials

15.1 William JT, Michael AP. 2018. Introduction to Biotechnology. 4th edition. London: Pearson. 448 pp.

15.2 Gupta V, Sengupta M, Prakash J, Tripathy BC. 2017. Basic and Applied Aspects of Biotechnology. Singapore: Springer. 392 pp.

15.3 Buchholz K, Collins J. 2010. Concepts in Biotechnology: History, Science and Business. Germany: Wiley. 498 pp.

15.4 Other related documents according to instructor's recommendation

16. Teaching evaluation

16.1 CU teaching evaluation system: CU-CAS (www.cas.chula.ac.th/cas/)

16.2 Revise and update topics and case studies according to students' feedbacks