

**Course Title**  
**M.Sc. in Biotechnology (International Program)**

**Academic Institution:** Faculty of Agro-Industry, Prince of Songkla University

**Program Title:** Master of Science (Biotechnology) or M.Sc. (Biotechnology) (International Program)

**Program learning outcome (PLO)**

PLO1 Demonstrate a good manner and academic ethics

PLO2 Apply the knowledge in food biotechnology, bioenergy, and environmental biotechnology for the development of agro-industry in the south of Thailand

PLO3 Use information technology for searching the up-to-date technology, innovation, and current global situation

PLO 4 Develop the idea for entrepreneurship in biotechnology

PLO 5 Prepare effectively for academic communication in English

**Philosophy of the Program**

This program would provide students with the knowledge and skills in research to apply the new knowledge in food biotechnology, bioenergy, and environmental biotechnology for the sustainable development of agro-industry in the south of Thailand. This program also employ the progressivism learning with ethics and morality.

**PSU's educational philosophy (<http://webagro.psu.ac.th>)**

PSU's educational philosophy is managed by

- Progressivism using learning process with the students as the “center of attention” and the basis of “Outcome Based Education” such as active learning, problem-based learning, project-based learning, service learning
- PSU aims to provide students with a lifelong learning approach
- PSU believes that these principles can be met and aided by Prince of Songkla Mahidon Adulyadej's motto “Our soul is for the benefit of mankind”

**Program structure:**

Course	Plan A1 (Research only)	Plan A2 (Research with course works)
Compulsory	-	12
Elective	-	6
Thesis	36	18
Total	<b>36</b>	<b>36</b>

**Study plan**

Academic year	Semester	Plan A1	Plan A2
1	1	853-836 Thesis 9 credits	853-521 Biotechnology 4 credits 853-524 Res. Techniques in Biotech 3 credits 853-xxx Elective course 3 credits 853-818 Thesis 2 credits
		<b>Total 9 credits</b>	<b>Total 12 credits</b>
	2	853-836 Thesis 9 credits	853-522 Entrepreneurship in Biotech 3 credits 853-xxx Elective course 3 credits 853-596 Seminar 1 1 credit 853-818 Thesis 5 credits
		<b>Total 9 credits</b>	<b>Total 12 credits</b>
2	1	853-836 Thesis 9 credits	853-597 Seminar 2 1 credit 853-818 Thesis 6 credits
		<b>Total 9 credits</b>	<b>Total 7 credits</b>
	2	853-836 Thesis 9 credits	853-818 Thesis 5 credits
		<b>Total 9 credits</b>	<b>Total 5 credits</b>
<b>Total</b>		<b>36 credits</b>	<b>Total 36 credits</b>

**Elective courses 6 credits**

853-525 Cell Metabolism	3 (3-0-6) credits
853-531 Enzyme Technology	3 (3-0-6) credits
853-532 Traditional Fermented Foods	3 (3-0-6) credits
853-533 Yeast Technology	3 (3-0-6) credits
853-534 Algal Technology	3 (3-0-6) credits
853-541 Waste Utilization and Treatment in Agro-Industry	3 (3-0-6) credits
853-542 Advanced Environmental Biotechnology	3 (3-0-6) credits
853-543 Biodegradation and Bioremediation	3 (3-0-6) credits
853-544 Agricultural Microorganisms and Applications	3 (3-0-6) credits
853-551 Bioenergy Technology	3 (3-0-6) credits
853-561 Food Biotechnology	3 (3-0-6) credits
853-562 Advanced Food Microbiology	3 (3-0-6) credits
853-571 Genetic Engineering Technology	3 (3-0-6) credits
853-572 Metabolic Engineering	3 (3-0-6) credits
853-573 Molecular Biotechnology	3 (3-0-6) credits
853-581 Advanced Bioprocess Engineering	3 (3-0-6) credits
853-582 Bioreactor Design	3 (3-0-6) credits
853-583 Measurement and Process Control in Agro- and Bioindustry	3 (3-0-6) credits
853-584 Bioprocess Modeling and Control	3 (3-0-6) credits
853-585 Downstream Processing in Biotechnology	3 (3-0-6) credits

**Modules for current students, non-degree student (for upskill-reskill and academic credit bank)**

853-501 Module : Environmental Biotechnology	6((4)-6-8)
853-502 Module : Industrial Biotechnology	6((4)-6-8)
859-599 Research Methodology	1-3((x)-x-x)
Module 1: Research Methodology- Research as Scientific Approach	1((1)-0-2)
Module 2: Research Methodology-Statistics for Research	1((0)-2-1)
Module 3: Research Methodology-Experimental Design	2((1)-2-3)

**Duration:** 2 years**Graduation Requirements**

1. Meet the English performance following the regulation issued by Graduate School
2. Fulfill the program requirements with a GPA of at least 3.00 (except Plan A1)
3. Satisfy the proposal examination and thesis with grade S or X
4. Plan A1 publish the academic article from thesis or a part of thesis in a journal which has a peer review at least 1 articles
5. Plan A2 publish the academic article from thesis or a part of thesis in a journal or proceeding which has a peer review at least 1 articles