Master of Science Program in Modern Crop Science

Curriculum

Total Credit Requirements: The total number of credits required throughout the program is ≥45 credits.

Plan 1.1: This plan emphasizes research leading to a thesis only, with a total of ≥45 credits. Students are required to enroll in IAT32 6801 Graduate Seminar I and IAT32 6802 Graduate Seminar II, which are non-credit courses.

Plan 1.2: This plan includes coursework and research leading to a thesis. The requirements consist of 2 credits for compulsory courses, ≥15 credits for elective courses, and a thesis of ≥28 credits, totaling ≥45 credits for the entire program.

Curriculum Structure

According to the Graduate Program Standards, B.E. 2565 (2022), the curriculum structure is defined as follows:

Plan 1.1: Research for Thesis: ≥45 credits

Plan 1.2: Coursework and Research for Thesis: Total credits: not less than 45 credits

Compulsory courses: not less than 2 credits

Elective courses: not less than 15 credits

Thesis: not less than 28 credits

Course List

1) Compulsory Courses		Credits (Lecture – Laboratory – Self-study)
IAT32 6801	M.Sc. Seminar 1	1(1–0–2)
IAT32 6802	M.Sc. Seminar 2	1(1–0–2)

2) Electives

2.1) Core Courses and Foundation Courses in Crop Science

IAT32 5601	Experimental Designs and Analysis	3(2–3–4)
IAT32 5602	Research Methods in Crop Science	2(1–3–2)
IAT32 5603	Advanced Crop Science	3(3–0–6)
IAT32 5604	Manuscript Preparation	2(1–3–2)
IAT32 5605	Fundamental Crop Sciences I	3(3–0–6)

IAT32 5606	Fundamental Crop Sciences II	3(3–0–6)
IAT32 5607	Fundamental Crop Sciences Laboratory	2(1–3–6)
IAT32 5608	Crop Technology for All	3(2–3–4)
IAT325609	Modern Technology in Crop Production	2(2–0–4)
IAT32 5610	Crop Production Instruments	2(1–3–4)

2.2) Plant breeding

IAT32 5101 Modern Plant Breeding Techniques	3(2–3–4)
IAT32 6101 Advanced Plant Breeding I	3(3–0–6)
IAT32 6102 Genetic Engineering for Crop Improvement	3(3–0–6)
IAT32 6103 Molecular Plant Breeding	3(3–0–6)
IAT32 6104 Breeding for Plant Pest Resistance	2(2–0–4)
IAT32 6105 Plant Breeding for Abiotic Stress Tolerance	2(2–0–4)
IAT32 6106 Individual Study in Plant Breeding	1(1–0–2)
IAT32 5102 Selected Topics in Plant Breeding I	2(2–0–4)
IAT32 6107 Selected Topics in Plant Breeding II	3(3–0–6)
IAT32 6108 Quantitative Genetics for Plant Breeding	3(3–0–6)

2.3) Plant Physiology

IAT32 6201 Advanced Crop Physiology I	3(2–3–4)
IAT32 6202 Plant Responses and Adaptation to Stress	3(2–3–4)
IAT32 6203 Physiology of Plant Growth and Development	3(3–0–6)
IAT32 6204 Advanced Plant Growth Regulators	3(3–0–6)
IAT32 6205 Molecular Plant Development	2(2–0–4)
IAT32 6206 Applied Methods in Crop Physiology	2(0–6–0)
IAT32 6207 Plant Metabolism	3(3–0–6)
IAT32 6208 Individual Study in Plant Physiology	1(1–0–2)
IAT32 6209 Omics Technology for Modern Crop Production	3(3–0–6)
IAT32 6210 Light and Carbon Dioxide Application in Crop Production	3(2–3–4)
IAT32 6211 Plant–beneficial Microbe Interaction	3(3–0–6)

2.4) Entomology and Plant Pathology

IAT32 5301 Insect Structure and Function	3(3–0–6)

IAT32 5302	Insect Ecology	3(2–3–4)
IAT32 5303	Entomological Technique Practicum	3(2–3–4)
IAT32 6301	Insecticide Toxicology	3(3–0–6)
IAT32 6302	Postharvest Plant Pests Management	3(2–3–4)
IAT32 6303	Advanced Biological Control of Plant Pests	3(2–3–4)
IAT32 6304	Plant Resistance to Plant Pests	3(3–0–6)
IAT32 6305	Insect Transmission of Plant Diseases	3(3–0–6)
IAT32 6306	Individual Study in Entomology	1(1–0–2)
IAT32 6307	Product Development of Bio–Pesticides	3(2–3–4)
IAT32 5304	Plant Pathogens	3(2–3–4)
IAT32 5305	Plant Pathological Techniques	3(2–3–4)
IAT32 5306	Plant Health and Plant Disease Diagnosis	3(2–3–4)
IAT32 6308	Seed Pathology	3(2–3–4)
IAT32 6309	Integrated Plant Health Management	3(2–3–4)
IAT32 6310	International Standard for Safe Crop Production	3(2–3–4)
IAT32 6311	Individual Study in Modern Plant Pathology	1(1–0–2)
IAT32 6312	Digital Technology in Plant Pathology	3(2–3–4)
IAT32 6313	Ag–tech Startup in Plant Pathology	3(2–3–4)

2.5 Soil Science

IAT32 5401	Mineral Plant Nutrients	3(2–3–4)
IAT32 5402	Soil and Plant Analysis	3(2–3–4)
IAT32 5403	Fertilizer Technology	3(3–0–6)
IAT32 6401	Soil Microbiology	3(2–3–4)
IAT32 6402	Soil Chemistry	3(3–0–6)
IAT32 6403	Soil Physics	3(3–0–6)
IAT32 6404	Soil and Plant Relationships	3(3–0–6)
IAT32 6405	Individual Study in Soil Science	1(1–0–2)

2.6) Postharvest Technology and Seed Technology

IAT32 5501	Postharvest Technology of Horticultural Crops	3(2–3–4)
IAT32 5502	Postharvest Technology of Flowers	3(2–3–4)
IAT32 5503	Postharvest Technology of Field Crops	3(3–0–6)
IAT32 5504	Postharvest Handling Systems of Fresh Produce	3(3–0–6)
IAT32 6501	Postharvest Technology Instrumentation	1(0–3–0)
IAT32 6502	Postharvest Physiology and Changes of Fresh Produce	3(3–0–6)
IAT32 6503	Individual Study in Postharvest Technology	1(1–0–2)
IAT32 6504	Packaging for Agricultural Products	3(3–0–6)
IAT32 6505	Minimally Processed Fruits and Vegetables	3(2–1–3)
IAT32 5505	High Quality Seed Production	3(3–0–6)
IAT32 6506	Seed Physiology	3(3–0–6)
IAT32 6507	Advanced Seed Business	3(3–0–6)
IAT32 6508	Individual Study in Modern Seed Technology	1(1–0–2)

2.7) Crop Science Relating Subjects

IAT32 6601	Sustainability Trends in the Crop Innovation	3(2–3–4)
IAT32 6602	Crop Simulation Modeling	3(2–3–4)
IAT32 6603	Advanced Statistics for Experimental Research	3(3–0–6)
IAT32 6604	Perspectives in Crop Science Strategies	1(1–0–2)
IAT32 6605	Research Topic in Crop Science	1(1–0–2)
IAT32 6606	Plant Factory for Management of Culture Solution	3(2–3–4)
IAT32 6607	Urban Indoor Cultivation of High Value Crops	3(2–3–4)
IAT32 6608	Design Thinking for Crop Technology and Innovation	3(2–3–4)
IAT32 6609	Application of SAS Package for Statistical Analysis in Plant Science Research	2(1–3–4)
IAT32 6610	Advance Statistical Analysis in Plant Science Research by SAS Package	2(1–3–2)

2.8) Innovative and Entrepreneur in Crop Production

IAT32 5701	Entrepreneurship and Innovation	2(2–0–4)
IAT32 5702	Opportunity and Feasibility Analysis	2(2–0–4)
IAT32 5703	Intellectual Property Strategies	2(2–0–4)
IAT32 6701	Agripreneur in Crop Science	3(0–9–0)
IAT32 6702	Sustainable Cropping Systems for Thailand	3(3–0–6)
IAT32 6703	Agricultural Extension and Technology Adoption	3(3–0–6)
IAT32 6704	Value Chain Development for High–Value Crops	3(3–0–6)
IAT32 6705	Smart Farming Systems Design	3(3–0–6)
IAT32 6706	Crop Product Innovation	3(3–0–6)
IAT32 6707	Innovative and Sustainable Crop Industry and Business	3(3–0–6)
IAT32 6708	Climate Change Adaption in Crop Production	3(3–0–6)
IAT32 6709	Crop–tech Startup Accelerator	3(3–0–6)
IAT32 6710	Crop–tech Startup–Venture Capital and Scaling Growth	3(3–0–6)
IAT32 6711	Crop–tech Business Models for Sustainable Change	3(3–0–6)
IAT32 6712	Cross–Cultural Agriculture	3(0–9–0)
IAT32 6713	Practicing Transdisciplinary Collaboration	3(0–9–9)

2.9) Special problem and Co–operative Education

IAT32 6803	Graduate Special Problems	3(0–9–9)
IAT32 6804	Graduate Co–operative Education	8(0–0–0)

3) Thesis

IAT32 6902	M.Sc. Thesis Scheme 1.2	$\geq$ 28 Credits

Study plan for Scheme 1.1

Year of Enrollment	Trimester 1	credits	Trimester 2	credits	Trimester 3	credits
1	AT32 6901 M.Sc. Thesis Scheme 1.1		AT32 6901 M.Sc. Thesis Scheme 1.1		AT32 6901 M.Sc. Thesis Scheme 1.1	
	Total	**7**	**Total**	7	**Total**	7
2	AT32 6901 M.Sc. Thesis Scheme 1.1		AT32 6901 M.Sc. Thesis Scheme 1.1		AT32 6901 M.Sc. Thesis Scheme 1.1	
	Total	7	**Total**	7	**Total**	10

45 credits

Study Plan for Scheme 1.2

Year of Enrollment	Trimester 1	credits	Trimester 2	credits	Trimester 3	credits
1	IAT32 XXXX Electives	6	IAT32 6801 M.Sc.Seminar I IAT32 XXXX Electives IAT32 6902 M.Sc. Thesis Scheme 1.2	1 6 3 	IAT32 XXXX Electives IAT32 6902 M.Sc. Thesis Scheme 1.2	3 3
	Total	**6**	**Total**	10	**Total**	6
2	IAT32 6902 M.Sc. Thesis Scheme 1.2	6	IAT32 6902 M.Sc. Thesis Scheme 1.2	 10	IAT32 6801 M.Sc.Seminar II IAT32 6902 M.Sc. Thesis Scheme 1.2	1 6
	Total	6	**Total**	10	**Total**	7

45 credits