

3. Curriculum and lectures

3.1 Curriculum

3.1.1 Total credits throughout the program **not less than 140 credits**

3.1.2 Curriculum structure

1. General education category **not less than 30 credits**

1.1 Well-being Group *not less than 3 credits*

1.2 Entrepreneurship Group *not less than 6 credits*

1.3 Language and Communication Group *not less than 13 credits*

1.4 Thai and Global Citizenship Group *not less than 5 credits*

1.5 Aesthetics Group *not less than 3 credits*

2. Specific subject category **not less than 104 credits**

2.1 Core subjects 31 credits

- Science subject group 10 credits

- Agriculture subject group 21 credits

2.2 Required specific subjects 67 credits

2.3 Selected Subjects *not less than 6 credits*

3. Elective subjects **not less than 6 credits**

3.1.3 Courses

1. General education category **not less than 30 credits**

1.1 Well-being Group *not less than 3 credits*

01175xxx Physical Education Activities 1(0-2-1)

Addition to choose courses in Well-Being group more *not less than 2 credits*

1.2 Entrepreneurship Group *not less than 6 credits*

Choose to study from courses in Entrepreneurship Group not less than 6 credits

1.3 Language and Communication Group *not less than 13 credits*

01355xxx English 9(- -)

Thai language 3(3-0-6)

Information Technology/Computer Science 1(1-0-2)

1.4 Thai and Global Citizenship Group *not less than 5 credits*

01999111 Knowledge of the Land 2(2-0-4)

02999144 Life Skills for Undergraduate Student 1(1-0-2)

Addition to choose courses in Thai and Global Citizenship Group more

not less than 2 credits

1.5 Aesthetics Group *not less than 3 credits*

Choose to study from courses in Aesthetics Group *not less than 3 credits*

2. Specific subject category **not less than 104 credits**

2.1 Core subjects **31 credits**

- Science subject group **10 credits**

01403111	General Chemistry	3(3-0-6)
01403112	Laboratory in General Chemistry	1(0-3-2)
01422111	Principles of Statistics	3(3-0-6)
01424111	Principles of Biology	3(3-0-6)

- Agriculture subject group **21 credits**

02028321	Fertilizers and Manures	3(3-0-6)
02036211	Agricultural Extension and Technology Transfer	3(3-0-6)
02036221	Animal Science and Technology	3(3-0-6)
02036231	Crop Science and Technology	2(2-0-4)
02036261	Soil Science	3(2-3-6)
02036271	Horticultural Science and Technology	2(2-0-4)
02036299	General Practicum	2(0-10-5)
02036371	Fundamental Agricultural Management	Pest 3(2-2-5)

2.2 Required specific subjects **67 credits**

01417111	Calculus I	3(3-0-6)
01420115	Laboratory in Abridged Physics	1(0-3-2)
01420119	Abridged Physics	3(3-0-6)
02027111	Basic Farm Workshop	1(0-3-2)
02027112	Laboratory of Basic Drawing	1(0-3-2)
02027211	Agricultural Surveying	2(1-3-4)
02027212	Agricultural Machinery Drawing	2(1-3-4)
02027213	Materials and Elementary Mechanics of Materials	3(3-0-6)
02027221	Farm Engines	3(2-3-6)
02027231	Principles of Farmstead Irrigation	3(2-3-6)
02027261	Electric and Electronics for Agriculture	3(2-3-6)
02027262**	Fundamental Agricultural Control System	3(2-3-6)
02027321	Principles of Farm Machinery I	3(2-3-6)
02027322	Principles of Farm Machinery II	3(2-3-6)
02027323	Principles of Farm Machinery III	3(2-3-6)
02027324**	Agricultural Power Transmission	3(2-3-6)
02027361	Computer Programming for Agriculture I	3(2-3-6)
02027362	Computer Programming for Agriculture II	2(1-3-4)

02027399	Basic Specific Practicum in Agricultural Machinery and Mechatronics	1(0-10-5)
02027423	Testing and Evaluation of Agricultural Machinery and Equipment	3(2-3-6)
02027425	Agricultural Machinery and Resources Management	3(3-0-6)
02027441**	Agricultural Production Technology in Environmental Control System	3(2-3-6)
02027451**	Post-harvest Mechanization and Agricultural Production Storage	3(2-3-6)
02027461	Agricultural Mechatronics I	3(2-3-6)
02027491	Research Techniques in Agricultural Machinery and Mechatronics	1(0-3-2)
02027497	Seminar	1
02027498	Special Problems	3
02027499	Specific Practicum in Agricultural Machinery and Mechatronics	1(0-10-5)

2.3 Selected Subjects

not less than 6 credits

Select courses in the field of agricultural machinery and mechatronics or related subjects, not less than 6 credits, from the following sample courses.

02027333	Sprinkler and Drip Irrigation System	3(2-3-6)
02027442**	Planning and Layout for Modern Farm	3(3-0-6)
02027462	Agricultural Mechatronics II	3(2-3-6)
02027463	Automatic Control System for Agricultural Mechatronics	3(3-0-6)
02027496	Selected Topics in Agricultural Machinery and Mechatronics	1-3
02036390	Cooperative Education preparation	1(1-0-2)
02036490	Cooperative Education	6

3. Elective subjects

not less than 6 credits

* *New courses*

** *Updated courses*

Meaning of courses code

The meaning of course code in the Bachelor of Science program in Agricultural Machinery and Mechatronics consists of 8 digits with the following meanings:

Serial number 1-2 (02)	means	Kamphaeng Saen Campus
Serial number 3-5 (027)	means	B.S. (Agricultural Machinery and Mechatronics)
Serial number 6	means	Year level
Serial number 7	means	Subject groups as follows:
0	<i>mean</i>	<i>Non-major subjects</i>
1	<i>mean</i>	<i>Agricultural Machinery and Mechatronics Basics</i>
2	<i>mean</i>	<i>Agricultural Powertrain and Machinery</i>
3	<i>mean</i>	<i>Agricultural Soil and Water Resources Development</i>
4	<i>mean</i>	<i>Agricultural Building and Environment Group</i>
5	<i>mean</i>	<i>Post-Harvest Technology Group</i>
6	<i>mean</i>	<i>Agricultural Computer and Mechatronics Group</i>
9	<i>mean</i>	<i>Research Group Special Topics, Seminars, Special Problems and Internships</i>
Serial number 8	mean	the subject sequence in each group.

3.1.4 Example of study plan

3.1.4.1 Example of a study plan for students who do not choose to study in cooperative education

Year 1, Semester 1

		Number of credits
		(lecture hours - laboratory hours - self-study hours)
01403111	General Chemistry	3(3-0-6)
01403112	Laboratory in General Chemistry	1(0-3-2)
01417111	Calculus I	3(3-0-6)
01420115	Laboratory in Abridged Physics	1(0-2-1)
01420119	Abridged Physics	3(3-0-6)
01999111	Knowledge of the Land	2(2-0-4)
02027112	Laboratory of Basic Drawing	1(0-3-2)
02999144	Life Skills for Undergraduate Student	1(1-0-2)
Total		<u>16(13-8-31)</u>

Year 1, Semester 2

		Number of credits
		(lecture hours - laboratory hours - self-study hours)
01424111	Principles of Biology	3(3-0-6)
02027111	Basic Farm Workshop	1(0-3-2)
02027212	Agricultural Machinery Drawing	2(1-3-4)
02036299	General Practicum	2(0-10-5)
01175xxx	Physical Education Activities	1(0-2-1)
01355xxx	English	3(- -)
	GE: Language and Communication Group	1(- -)
	GE: Well-being Group	2(- -)
	GE: Thai and Global Citizenship Group	2(- -)
Total		<u>17(- -)</u>

Year 2, Semester 1

		Number of credits
		(lecture hours - laboratory hours - self-study hours)
02027211	Agricultural Surveying	2(1-3-4)
02027221	Farm Engines	3(2-3-6)
02027261	Electric and Electronics for Agriculture	3(2-3-6)
02036221	Animal Science and Technology	3(3-0-6)
02036261	Soil Science	3(2-3-6)
02036271	Horticultural Science and Technology	2(2-0-4)
	GE: Entrepreneurship Group	3(- -)
Total		<u>19(- -)</u>

Year 2, Semester 2

		Number of credits
		(lecture hours - laboratory hours - self-study hours)
02027213	Materials and Elementary Mechanics of Materials	3(3-0-6)
02027262	Fundamental Agricultural Control System	3(2-3-6)
02027321	Principles of Farm Machinery I	3(2-3-6)
02036231	Crop Science and Technology	2(2-0-4)
01355xxx	English	3(- -)
	GE: Aesthetics Group	3(- -)
Total		<u>17(- -)</u>

Year 3, Semester 1**Number of credits***(lecture hours - laboratory hours - self-study hours)*

01422111	Principles of Statistics	3(3-0-6)
02027231	Principles of Farmstead Irrigation	3(2-3-6)
02027322	Principles of Farm Machinery II	3(2-3-6)
02027361	Computer Programming for Agriculture I	3(2-3-6)
02036211	Agricultural Extension and Technology Transfer	3(3-0-6)
02036371	Fundamental Agricultural Pest Management	3(2-2-5)
01355xxx	English	3(- -)
Total		<u>21(- -)</u>

Year 3, Semester 2**Number of credits***(lecture hours - laboratory hours - self-study hours)*

02027323	Principles of Farm Machinery III	3(2-3-6)
02027324	Agricultural Power Transmission	3(2-3-6)
02027362	Computer Programming for Agriculture II	2(1-3-4)
02027399	Basic Specific Practicum in Agricultural Machinery and Mechatronics	1(0-10-5)
02027441	Agricultural Production Technology in Environmental Control System	3(2-3-6)
	GE: Entrepreneurship Group	3(- -)
	Elective subjects	3(- -)
Total		<u>18(- -)</u>

Year 4, Semester 1**Number of credits***(lecture hours - laboratory hours - self-study hours)*

02027423	Testing and Evaluation of Agricultural Machinery and Equipment	3(2-3-6)
02027451	Post-harvest Mechanization and Agricultural Production Storage	3(2-3-6)
02027461	Agricultural Mechatronics I	3(2-3-6)
02027491	Research Techniques in Agricultural Machinery and Mechatronics	1(0-3-2)
02027499	Specific Practicum in Agricultural Machinery and Mechatronic	1(0-10-5)
02028321	Fertilizers and Manures	3(3-0-6)
	Specific subject: Selected Subjects	3(- -)
Total		<u>17(- -)</u>

Year 4, Semester 2**Number of credits***(lecture hours - laboratory hours - self-study hours)*

02027425	Agricultural Machinery and Resources Management	3(3-0-6)
02027497	Seminar	1
02027498	Special Problems	3
	GE: Language and Communication Group (Thai language)	3(- -)
	Specific subject: Selected Subjects	3(- -)
	Elective subjects	3(- -)
Total		<u>16(- -)</u>

3.1.4.2 Example of a study plan for students who choose to study in cooperative education

Year 1, Semester 1

		Number of credits
		<i>(lecture hours - laboratory hours - self-study hours)</i>
01403111	General Chemistry	3(3-0-6)
01403112	Laboratory in General Chemistry	1(0-3-2)
01417111	Calculus I	3(3-0-6)
01420115	Laboratory in Abridged Physics	1(0-2-1)
01420119	Abridged Physics	3(3-0-6)
01999111	Knowledge of the Land	2(2-0-4)
02027112	Laboratory of Basic Drawing	1(0-3-2)
02999144	Life Skills for Undergraduate Student	1(1-0-2)
Total		<u>16(- -)</u>

Year 1, Semester 2

		Number of credits
		<i>(lecture hours - laboratory hours - self-study hours)</i>
01424111	Principles of Biology	3(3-0-6)
02027111	Basic Farm Workshop	1(0-3-2)
02027212	Agricultural Machinery Drawing	2(1-3-4)
02036299	General Practicum	2(0-10-5)
01175xxx	Physical Education Activities	1(0-2-1)
01355xxx	English	3(- -)
	GE: Language and Communication Group	1(- -)
	GE: Well-being Group	2(- -)
	GE: Thai and Global Citizenship Group	2(- -)
Total		<u>17(- -)</u>

Year 2, Semester 1

		Number of credits
		<i>(lecture hours - laboratory hours - self-study hours)</i>
02027211	Agricultural Surveying	2(1-3-4)
02027221	Farm Engines	3(2-3-6)
02027261	Electric and Electronics for Agriculture	3(2-3-6)
02036221	Animal Science and Technology	3(3-0-6)
02036261	Soil Science	3(2-3-6)
02036271	Horticultural Science and Technology	2(2-0-4)
	GE: Entrepreneurship Group	3(- -)
Total		<u>19(- -)</u>

Year 2, Semester 2

		Number of credits
		<i>(lecture hours - laboratory hours - self-study hours)</i>
02027213	Materials and Elementary Mechanics of Materials	3(3-0-6)
02027262	Fundamental Agricultural Control System	3(2-3-6)
02027321	Principles of Farm Machinery I	3(2-3-6)
02036211	Agricultural Extension and Technology Transfer	3(3-0-6)
02036231	Crop Science and Technology	2(2-0-4)
01355xxx	English	3(- -)
	GE: Aesthetics Group	3(- -)
Total		<u>20(- -)</u>

Year 3, Semester 1**Number of credits***(lecture hours - laboratory hours - self-study hours)*

02027231	Principles of Farmstead Irrigation	3(2-3-6)
02027322	Principles of Farm Machinery II	3(2-3-6)
02027361	Computer Programming for Agriculture I	3(2-3-6)
02027451	Post-harvest Mechanization and Agricultural Production Storage	3(2-3-6)
02027461	Agricultural Mechatronics I	3(2-3-6)
02027491	Research Techniques in Agricultural Machinery and Mechatronics	1(0-3-2)
02036371	Fundamental Agricultural Pest Management	3(2-2-5)
01355xxx	English	3(- -)

Total**22(- -)****Year 3, Semester 2****Number of credits***(lecture hours - laboratory hours - self-study hours)*

02027323	Principles of Farm Machinery III	3(2-3-6)
02027324	Agricultural Power Transmission	3(2-3-6)
02027362	Computer Programming for Agriculture II	2(1-3-4)
02027399	Basic Specific Practicum in Agricultural Machinery and Mechatronics	1(0-10-5)
02027423	Testing and Evaluation of Agricultural Machinery and Equipment	3(2-3-6)
02027441	Agricultural Production Technology in Environmental Control System	3(2-3-6)
	GE: Entrepreneurship Group	3(- -)
	Specific subject: Selected Subjects	3(- -)

Total**21(- -)****Year 4, Semester 1****Number of credits***(lecture hours - laboratory hours - self-study hours)*

01422111	Principles of Statistics	3(3-0-6)
02027425	Agricultural Machinery and Resources Management	3(3-0-6)
02027497	Seminar	1
02027498	Special Problems	3
02027499	Specific Practicum in Agricultural Machinery and Mechatronic	1(0-10-5)
02028321	Fertilizers and Manures	3(3-0-6)
	GE: Language and Communication Group (Thai language)	3(- -)
	Specific subject: Selected Subjects	3(- -)

Total**17(- -)****Year 4, Semester 2****Number of credits***(lecture hours - laboratory hours - self-study hours)*

02036490	Cooperative Education	6
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Total**6**