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## Automotive Engineering (International Program)

# 2024



**AUTOMOTIVE ENGINEERING**  
**(INTERNATIONAL PROGRAM)**

**T 22**

# Faculty of Engineering at Sriracha Kasetsart University Sriracha Campus

## Vision

“Shaping Engineering with Expertise and Innovation to  
Serve Society”

### Contact address

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Faculty of engineering at Sriracha

<http://www.eng.src.ku.ac.th/>



Face Book: Faculty of engineering at Sriracha

<https://www.facebook.com/eng.src.ku>



Face Book: AE program

[https://www.facebook.com/  
profile.php?id=100090391150163](https://www.facebook.com/profile.php?id=100090391150163)



Face Book: Student formula

[https://www.facebook.com/  
profile.php?id=100086236242975](https://www.facebook.com/profile.php?id=100086236242975)



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## History of the Faculty of Engineering at Sriracha

The Faculty of Engineering at Sriracha, Kasetsart University Sriracha Campus, was established with the aim of offering educational opportunities and contributing to the development of the economic zone in the Eastern Seaboard. The faculty focuses on the development of personnel in various engineering fields, conducts research, and provides academic services to industries. Initially known as the Faculty of Industrial Technology, it was provisionally approved to be included in the Higher Education Development Plan as a "Community College" in 1996.

- 1996 - Bachelor of Engineering Program in Electrical Engineering and Bachelor of Engineering Program in Industrial Engineering opened for admission.
- 1998 - Bachelor of Engineering Program in Computer Engineering opened for admission.
- 2000 - Approved the change of name from "Faculty of Industrial Technology" to "Faculty of Engineering at Sriracha" by the Kasetsart University Council in the meeting on 20<sup>th</sup> November 2000 to (Announced on 28<sup>th</sup> November 2000)
  - Bachelor of Engineering Program in Mechanical Engineering and Bachelor of Engineering Program in Naval Architecture and Marine Engineering opened for admission.
- 2007 - Transferred the Bachelor of Engineering Program in Bachelor of Engineering Program in Naval Architecture and Marine Engineering to the International Maritime College.
  - Bachelor of Engineering Program in Mechanical Engineering and Production System (Special Program) opened for admission.
- 2009 - Master of Engineering Program in Engineering and Technology Management (Special Program) opened for admission.
- 2011 - Master of Engineering Program in Electrical Engineering opened for admission.
- 2013 - Master of Engineering Program in Mechanical and Design Engineering and Bachelor of Engineering Program in Civil Engineering opened for admission.
- 2014 - Master of Engineering Program in Safety Engineering and Environmental Management (Special Program) opened for admission.
- 2019 - Bachelor of Engineering Program in Robotics and Automation System Engineering (International Program) opened for admission.

2022 - Bachelor of Engineering Program in Digital Manufacturing System Engineering opened for admission. (Replacing the Bachelor of Engineering Program in Mechanical Engineering and Production System (Special Program))

2023 - Bachelor of Engineering Program in Automotive Engineering (International Program) and Bachelor of Engineering Program in Digital and Smart Electronics Engineering opened for admission.

### Offered programs at Faculty of Engineering at Sriracha

Degree	Program	Degree name
Bachelor	1. Mechanical and Design Engineering 2. Mechanical Engineering and Production System (Multi-disciplinary Program) (Closed since 2022) 3. Electrical and Electronics Engineering 4. Industrial and Systems Engineering 5. Computer Engineering and Informatics 6. Civil Engineering 7. Robotics and Automation System Engineering (International Program) 8. Digital Manufacturing System Engineering (Multi-disciplinary Program) 9. Automotive Engineering (International program) 10. Digital and Smart Electronics Engineering (Multi-disciplinary Program)	B.Eng. (Mechanical and Design Engineering) B.Eng. (Mechanical Engineering and Production System) B.Eng. (Electrical and Electronics Engineering) B.Eng. (Industrial and Systems Engineering) B.Eng. (Computer Engineering and Informatics) B.Eng. (Civil Engineering) B.Eng. (Robotics and Automation System Engineering) B.Eng. (Digital Manufacturing System Engineering) B.Eng. (Automotive Engineering) B.Eng. (Digital and Smart Electronics Engineering)
Master	1. Mechanical and Design Engineering 2. Electrical and Electronics Engineering 3. Engineering and Technology Management 4. Safety Engineering and Environmental Management	M.Eng. (Mechanical and Design Engineering) M.Eng. (Electrical and Electronics Engineering) M.Eng. (Engineering and Technology Management) M.Eng. (Safety Engineering and Environmental Management)
Abbreviations: B.Eng. Bachelor of Engineering M.Eng. Master of Engineering		

## List of Professors



Assoc. Prof. Sathaporn Chuepeng  
Lecturer in charge of the AE program  
Department of Mechanical Engineering  
Ph.D. (Manufacturing and Mechanical Engineering)  
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Assoc. Prof. Nattapon Chantarapanich  
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Ph.D.(Biomedical Engineering)  
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Asst. Prof. Sakda Thongchai  
**Academic advisor for students ID66**  
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Asst. Prof. Rodolphe Perrin  
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Asst. Prof. Rattapol Sakornsinn  
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Asst. Prof. Prateep Chaisermtawan  
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## List of Professors



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Asst. Prof. Sutartip Wittayapiyanon  
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M.Eng. (Mechanical Engineering)  
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## List of Professors



Asst. Prof. Attaphon Chaimanatsakun  
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Dr. Karan Sengpanich  
Department of Mechanical Engineering  
Ph.D. (Industrial and Manufacturing  
Engineering)  
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## CURRICULUM INFORMATION

### Bachelor of Engineering Program

#### Automotive Engineering (International program)

Total number of credits required for graduation at least 144 credits

<b>(1) General Education Required Course</b>	<b>at least</b>	<b>30</b>	<b>Credits</b>
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<b>- Wellness</b>	<b>at least</b>	<b>3</b>	<b>credits</b>
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01175xxx Physical Education Activities 1(0-2-1)  
and select at least 2 credits from Wellness courses

<b>- Entrepreneurship</b>	<b>at least</b>	<b>6</b>	<b>credits</b>
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select at least 6 credits from Entrepreneurship courses

<b>- Language and Communication</b>		<b>13</b>	<b>credits</b>
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01358xxx Foreign Languages (1 Language) 9( - - )  
Thai Language 3( - - )  
Information/Computer 1( - - )

<b>- Thai Citizen and Global Citizen</b>	<b>at least</b>	<b>5</b>	<b>credits</b>
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01999111 Knowledge of the Land 2(2-0-4)  
and select at least 3 credits from Thai Citizen and Global Citizen courses

<b>- Aesthetics</b>		<b>3</b>	<b>credits</b>
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select at least 3 credits from Aesthetics courses

<b>(2) Major Required Courses</b>	<b>at least</b>	<b>108</b>	<b>Credits</b>
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<b>2.1) Basic Mathematics and Sciences</b>		<b>30</b>	<b>credits</b>
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<b>2.1.1) Mathematics and Sciences fundamental courses</b>		<b>21</b>	<b>credits</b>
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01403114 Laboratory in Fundamentals of General Chemistry 1(0-3-2)  
01403117 Fundamental of General Chemistry 3(3-0-6)  
01417167 Engineering Mathematics I 3(3-0-6)

01417168	Engineering Mathematics II	3(3-0-6)
01417267	Engineering Mathematics III	3(3-0-6)
01420111	General Physics I	3(3-0-6)
01420113	Laboratory in Physics I	1(0-3-2)
01420114	Laboratory in Physics II	1(0-3-2)

**2.1.2) Engineering fundamental courses** **9 credits**

03608111	Automotive Engineering Drawing	3(2-3-6)
03608221	Automotive Engineering Materials	3(3-0-6)
03608241	Thermodynamics for Automotive Engineering	3(3-0-6)

**2.2) Automotive Engineering** **at least 78 credits**

**2.2.1) Engineering required courses** **66 credits**

03604223	Basic Principles of Engineering Mechanics	3(3-0-6)
03604262	Health Safety and Environment	3(3-0-6)
03604271	Digital Technology in Mechanical Engineering	3(2-3-6)
03604281	Workshop Practice	1(0-3-2)
03604331	Internal Combustion Engines	3(3-0-6)
03604442	Power Plant Engineering	3(3-0-6)
03604471	Robots, Artificial Intelligence, and Internet of Things	3(3-0-6)
03608131	Automotive Technology Exploration	3(3-0-6)
03608222	Mechanics of Automotive Materials	3(3-0-6)
03608232	Vehicle Aerodynamics	3(3-0-6)
03608251	Automotive Electrical System	3(2-3-6)
03608261	Automotive Engineering Laboratory I	1(0-3-2)
03608312	Computer-Aided Design in Automotive Engineering	3(2-3-6)
03608313	Automotive Part Design	3(3-0-6)
03608314	Introduction to Modern Automotive Design	3(2-3-6)
03608323	Modern Automotive Mechanics	3(3-0-6)
03608333	Automotive Dynamic System and Control	3(3-0-6)
03608334	Automotive Engineering Processes	3(3-0-6)
03608342	Automotive Thermal Management System	3(3-0-6)
03608343	Automotive Air Conditioning	3(3-0-6)

03608352	Autonomous Vehicle Control	3(3-0-6)
03608362	Automotive Engineering Laboratory II	1(0-3-2)
03608424	Noise, Vibration and Harshness	3(3-0-6)
03608444	Engineering Management and Economic	3(3-0-6)

**2.2.2) Major Electives** **at least** **12 credits**

**1) Students who participate in the cooperative education program**

(Students should participate in the cooperative education program)

03600490	Cooperative Education	6
03608399	Automotive Engineering Project Preparation	1(0-3-2)
03608499	Automotive Engineering Project	2(0-6-3)

and select from the following **engineering electives courses** at least **3 credits**

**OR**

**2) Students who do not participate in the cooperative education program**

03608399	Automotive Engineering Project Preparation	1(0-3-2)
03608499	Automotive Engineering Project	2(0-6-3)

and select from the following **engineering elective courses** at least **9 credits**

**Engineering elective courses**

03604334	Safety for Motor Vehicle	3(3-0-6)
03604432	Automotive Powertrains	3(3-0-6)
03604433	Automotive Classis	3(3-0-6)
03604437	Lubrication	3(3-0-6)
03608353	Visual Programming for Automotive Engineering	3(2-3-6)
03608445	Batteries for Electric Vehicles	3(3-0-6)

**(3) Free Electives** **at least** **6 Credits**

**(4) Internship** **at least** **240 Hours**

## The meaning of course codes

The 8-digit course codes in the Bachelor of Automotive Engineering Program are explained as the followings:

1 <sup>st</sup> -2 <sup>nd</sup> digit	refers to	Campus (for example – “03” Sriracha Campus)
3 <sup>rd</sup> -5 <sup>th</sup> digit	refers to	Major (for example – “608” Automotive Engineering)
6 <sup>th</sup> digit	refers to	the Academic year
7 <sup>th</sup> digit	refers to following	
	0	refers to General subjects for nondisciplinary
	1	refers to Engineering Design
	2	refers to Engineering Mechanics
	3	refers to Engineering Vehicle
	4	refers to Energy
	5	refers to Control System
	6	refers to Laboratory
	9	refers to Engineering Project course
8 <sup>th</sup> digit	refers to	Ordering numbers

**COURSE PLAN**  
**for**  
**Cooperative Education Program**  
 Bachelor of Engineering Program  
 Automotive Engineering (International program)

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**1<sup>st</sup> Academic year**

	<b>First Semester</b>	<b>Credits (Lecture-Lab-Self Study)</b>
01417167	Engineering Mathematics I	3(3-0-6)
01420111	General Physics I	3(3-0-6)
01420113	Laboratory in Physics I	1(0-3-2)
01999111	Knowledge of the Land	2(2-0-4)
01358xxx	Foreign Languages	3( - - )
	General Education Course : Wellness	<u>2( - - )</u>
	General Education Course : Aesthetics	3( - - )
	Thai Language	3( - - )
	<b>Total</b>	<b><u>20( - - )</u></b>

	<b>Second Semester</b>	<b>Credits (Lecture-Lab-Self Study)</b>
01417168	Engineering Mathematics II	3(3-0-6)
01420112	General Physics II	3(3-0-6)
01420114	Laboratory in Physics II	1(0-3-2)
03608111	Automotive Engineering Drawing	3(2-3-6)
03608131	Automotive Technology Exploration	3(3-0-6)
	General Education Course : Information/Computer	<u>1( - - )</u>
	General Education Course : Entrepreneurship	3( - - )
	General Education Course : Thai Citizen and Global Citizen	3( - - )
	<b>Total</b>	<b><u>20( - - )</u></b>

## 2<sup>nd</sup> Academic year

First Semester		Credits (Lecture-Lab-Self Study)
01403114	Laboratory in Fundamentals of General Chemistry	1(0-3-2)
01403117	Fundamental of General Chemistry	3(3-0-6)
01417267	Engineering Mathematics III	3(3-0-6)
03604223	Basic Principles of Engineering Mechanics	3(3-0-6)
03604281	Workshop Practice	1(0-3-2)
03608221	Automotive Engineering Materials	3(3-0-6)
03608251	Automotive Electrical System	3(2-3-6)
01358xxx	Foreign Languages	3( - - )
<b>Total</b>		<b><u>20( - - )</u></b>

Second Semester		Credits (Lecture-Lab-Self Study)
03604262	Health Safety and Environment	3(3-0-6)
03604271	Digital Technology in Mechanical Engineering	3(2-3-6)
03608222	Mechanics of Automotive Materials	3(3-0-6)
03608232	Vehicle Aerodynamics	3(3-0-6)
03608241	Thermodynamics for Automotive Engineering	3(3-0-6)
03608261	Automotive Engineering Laboratory I	1(0-3-2)
01175xxx	Physical Education Activities	1(0-2-1)
	General Education Course : Entrepreneurship	3( - - )
<b>Total</b>		<b><u>20( - - )</u></b>

### 3<sup>rd</sup> Academic year

First Semester		Credits (Lecture-Lab-Self Study)
03608312	Computer-Aided Design in Automotive Engineering	3(2-3-6)
03608313	Automotive Part Design	3(3-0-6)
03608323	Modern Automotive Mechanics	3(3-0-6)
03608333	Automotive Dynamic System and Control	3(3-0-6)
03608342	Automotive Thermal Management System	3(3-0-6)
03608362	Automotive Engineering Laboratory I	1(0-3-2)
01358xxx	Foreign Languages	3( - - )
<b>Total</b>		<b><u>19( - - )</u></b>

Second Semester		Credits (Lecture-Lab-Self Study)
03604331	Internal Combustion Engines	3(3-0-6)
03608314	Introduction to Modern Automotive Design	3(2-3-6)
03608334	Automotive Engineering Processes	3(3-0-6)
03608343	Automotive Air Conditioning	3(3-0-6)
03608352	Autonomous Vehicle Control	3(3-0-6)
03608399	Automotive Engineering Project Preparation	1(0-3-2)
	Free Electives	3( - - )
<b>Total</b>		<b><u>19( - - )</u></b>

## 4<sup>th</sup> Academic year

First Semester		Credits (Lecture-Lab-Self Study)
03600490	Co-operative Education	<u>6</u>
<b>Total</b>		<u><b>6</b></u>

Second Semester		Credits (Lecture-Lab-Self Study)
03604442	Power Plant Engineering	3(3-0-6)
03604471	Robots, Artificial Intelligence, and Internet of Things	3(3-0-6)
03608424	Noise, Vibration and Harshness	3(3-0-6)
03608444	Engineering Management and Economic	3(3-0-6)
03608499	Automotive Engineering Project	2(0-6-3)
0360xxxx	Technical Electives	3( - - )
	Free Electives	3( - - )
<b>Total</b>		<u><b>20( - - )</b></u>



Student record form for Bachelor of Engineering Program, Automotive Engineering (International Program), Improved Program Year 2023 (for the cooperative education program )

Faculty of Engineering at Sriracha, Kasetsart University Sriracha Campus

Name ..... Surname ..... Student ID .....

Advisor Asst. Prof. Sakda Thongchai (sakda@eng.src.ku.ac.th)

Academic year	1 (2023)		2 (2024)		3 (2025)		4 (2026)	
	First semester	Second semester	First semester	Second semester	First semester	Second semester	First semester	Second semester
Credit								
Average score								
Total credit								
GPA								
Credit / Semester	20	20	20	20	19	19	6	20
	<div style="display: flex; flex-direction: column; gap: 5px;"> <div><span style="border: 1px solid black; padding: 2px;">3</span> 01417167</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> 01420111</div> <div><span style="border: 1px solid black; padding: 2px;">1</span> 01420113</div> <div><span style="border: 1px solid black; padding: 2px;">2</span> 01999111</div> <div>Foreign Languages I</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> 01358xxx</div> <div>Wellness</div> <div><span style="border: 1px solid black; padding: 2px;">2</span> xxxxxxxx</div> <div>Aesthetics</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> xxxxxxxx</div> <div>Thai Language</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> xxxxxxxx</div> </div>	<div style="display: flex; flex-direction: column; gap: 5px;"> <div><span style="border: 1px solid black; padding: 2px;">3</span> 01417168</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> 01420112</div> <div><span style="border: 1px solid black; padding: 2px;">1</span> 01420114</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> 03608111</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> 03608131</div> <div>Information/Computer</div> <div><span style="border: 1px solid black; padding: 2px;">1</span> xxxxxxxx</div> <div>Entrepreneurship courses</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> xxxxxxxx</div> <div>Thai Citizen and Global Citizen</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> xxxxxxxx</div> </div>	<div style="display: flex; flex-direction: column; gap: 5px;"> <div><span style="border: 1px solid black; padding: 2px;">1</span> 01403114</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> 01403117</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> 01417267</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> 03604223</div> <div><span style="border: 1px solid black; padding: 2px;">1</span> 03604281</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> 03608221</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> 3608251</div> <div>Foreign Languages II</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> 01358xxx</div> </div>	<div style="display: flex; flex-direction: column; gap: 5px;"> <div><span style="border: 1px solid black; padding: 2px;">3</span> 03604262</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> 03604271</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> 03608222</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> 03608232</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> 03608241</div> <div><span style="border: 1px solid black; padding: 2px;">1</span> 03608261</div> <div>Physical Education Activities</div> <div><span style="border: 1px solid black; padding: 2px;">1</span> 01175xxx</div> <div>Entrepreneurship</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> xxxxxxxx</div> </div>	<div style="display: flex; flex-direction: column; gap: 5px;"> <div><span style="border: 1px solid black; padding: 2px;">3</span> 3608312</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> 3608313</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> 3608323</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> 3608333</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> 3608342</div> <div><span style="border: 1px solid black; padding: 2px;">1</span> 3608362</div> <div>Foreign Languages III</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> 01358xxx</div> </div>	<div style="display: flex; flex-direction: column; gap: 5px;"> <div><span style="border: 1px solid black; padding: 2px;">3</span> 03604331</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> 03608314</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> 03608334</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> 03608343</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> 03608352</div> <div><span style="border: 1px solid black; padding: 2px;">1</span> 03608399</div> <div>Free Electives</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> xxxxxxxx</div> </div>	<div style="display: flex; flex-direction: column; gap: 5px;"> <div><span style="border: 1px solid black; padding: 2px;">6</span> 03600490</div> </div>	<div style="display: flex; flex-direction: column; gap: 5px;"> <div><span style="border: 1px solid black; padding: 2px;">3</span> 03604442</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> 03604471</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> 03608424</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> 3608444</div> <div><span style="border: 1px solid black; padding: 2px;">2</span> 3608499</div> <div>Engineering elective courses</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> 0360xxxx</div> <div>Free Electives</div> <div><span style="border: 1px solid black; padding: 2px;">3</span> xxxxxxxx</div> </div>

**COURSE PLAN**  
**for**  
**Non-cooperative Education Program**  
 Bachelor of Engineering Program  
 Automotive Engineering (International program)

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**1<sup>st</sup> Academic year**

	<b>First Semester</b>	<b>Credits (Lecture-Lab-Self Study)</b>
01417167	Engineering Mathematics I	3(3-0-6)
01420111	General Physics I	3(3-0-6)
01420113	Laboratory in Physics I	1(0-3-2)
01999111	Knowledge of the Land	2(2-0-4)
01358xxx	Foreign Languages	3( - - )
	General Education Course : Wellness	<u>2( - - )</u>
	General Education Course : Aesthetics	3( - - )
	Thai Language	3( - - )
	<b>Total</b>	<b><u>20( - - )</u></b>

	<b>Second Semester</b>	<b>Credits (Lecture-Lab-Self Study)</b>
01417168	Engineering Mathematics II	3(3-0-6)
01420112	General Physics II	3(3-0-6)
01420114	Laboratory in Physics II	1(0-3-2)
03608111	Automotive Engineering Drawing	3(2-3-6)
03608131	Automotive Technology Exploration	3(3-0-6)
	General Education Course : Information/Computer	<u>1( - - )</u>
	General Education Course : Entrepreneurship	3( - - )
	General Education Course : Thai Citizen and Global Citizen	3( - - )
	<b>Total</b>	<b><u>20( - - )</u></b>

## 2<sup>nd</sup> Academic year

First Semester		Credits (Lecture-Lab-Self Study)
01403114	Laboratory in Fundamentals of General Chemistry	1(0-3-2)
01403117	Fundamental of General Chemistry	3(3-0-6)
01417267	Engineering Mathematics III	3(3-0-6)
03604223	Basic Principles of Engineering Mechanics	3(3-0-6)
03604281	Workshop Practice	1(0-3-2)
03608221	Automotive Engineering Materials	3(3-0-6)
03608251	Automotive Electrical System	3(2-3-6)
01358xxx	Foreign Languages	3( - - )
<b>Total</b>		<b><u>20( - - )</u></b>

Second Semester		Credits (Lecture-Lab-Self Study)
03604262	Health Safety and Environment	3(3-0-6)
03604271	Digital Technology in Mechanical Engineering	3(2-3-6)
03608222	Mechanics of Automotive Materials	3(3-0-6)
03608232	Vehicle Aerodynamics	3(3-0-6)
03608241	Thermodynamics for Automotive Engineering	3(3-0-6)
03608261	Automotive Engineering Laboratory I	1(0-3-2)
01175xxx	Physical Education Activities	1(0-2-1)
	General Education Course : Entrepreneurship	3( - - )
<b>Total</b>		<b><u>20( - - )</u></b>

### 3<sup>rd</sup> Academic year

First Semester		Credits (Lecture-Lab-Self Study)
03608312	Computer-Aided Design in Automotive Engineering	3(2-3-6)
03608313	Automotive Part Design	3(3-0-6)
03608323	Modern Automotive Mechanics	3(3-0-6)
03608333	Automotive Dynamic System and Control	3(3-0-6)
03608342	Automotive Thermal Management System	3(3-0-6)
03608362	Automotive Engineering Laboratory I	1(0-3-2)
01358xxx	Foreign Languages	3( - - )
<b>Total</b>		<b><u>19( - - )</u></b>

Second Semester		Credits (Lecture-Lab-Self Study)
03604331	Internal Combustion Engines	3(3-0-6)
03608314	Introduction to Modern Automotive Design	3(2-3-6)
03608334	Automotive Engineering Processes	3(3-0-6)
03608343	Automotive Air Conditioning	3(3-0-6)
03608352	Autonomous Vehicle Control	3(3-0-6)
03608399	Automotive Engineering Project Preparation	1(0-3-2)
	Free Electives	3( - - )
<b>Total</b>		<b><u>19( - - )</u></b>

#### 4<sup>th</sup> Academic year

First Semester		Credits (Lecture-Lab-Self Study)
0360xxxx	Technical Electives	3( - - )
0360xxxx	Technical Electives	3( - - )
<b>Total</b>		<b><u>6( - - )</u></b>

Second Semester		Credits (Lecture-Lab-Self Study)
03604442	Power Plant Engineering	3(3-0-6)
03604471	Robots, Artificial Intelligence, and Internet of Things	3(3-0-6)
03608424	Noise, Vibration and Harshness	3(3-0-6)
03608444	Engineering Management and Economic	3(3-0-6)
03608499	Automotive Engineering Project	2(0-6-3)
0360xxxx	Technical Electives	3( - - )
<b>Total</b>		<b><u>17( - - )</u></b>

Student record form for Bachelor of Engineering Program, Automotive Engineering (International Program), Improved Program Year 2023 (for the non-cooperative education program )

Faculty of Engineering at Sriracha, Kasetsart University Sriracha Campus

Name ..... Surname ..... Student ID .....

Advisor Asst. Prof. Sakda Thongchai (sakda@eng.src.ku.ac.th)

Academic year	1 (2023)		2 (2024)		3 (2025)		4 (2026)	
	First semester	Second semester	First semester	Second semester	First semester	Second semester	First semester	Second semester
Credit								
Average score								
Total credit								
GPA								
Credit / Semester	20	20	20	20	19	19	6	20
	<div style="display: flex; flex-direction: column; gap: 5px;"> <div><input type="text" value="3 01417167"/></div> <div><input type="text" value="3 01420111"/></div> <div><input type="text" value="1 01420113"/></div> <div><input type="text" value="2 01999111"/></div> <div>Foreign Languages I</div> <div><input type="text" value="3 01358xxx"/></div> <div>Wellness</div> <div><input type="text" value="2 xxxxxxxx"/></div> <div>Aesthetics</div> <div><input type="text" value="3 xxxxxxxx"/></div> <div>Thai Language</div> <div><input type="text" value="3 xxxxxxxx"/></div> </div>	<div style="display: flex; flex-direction: column; gap: 5px;"> <div><input type="text" value="3 01417168"/></div> <div><input type="text" value="3 01420112"/></div> <div><input type="text" value="1 01420114"/></div> <div><input type="text" value="3 03608111"/></div> <div><input type="text" value="3 03608131"/></div> <div>Information/Computer</div> <div><input type="text" value="1 xxxxxxxx"/></div> <div>Entrepreneurship courses</div> <div><input type="text" value="3 xxxxxxxx"/></div> <div>Thai Citizen and Global Citizen</div> <div><input type="text" value="3 xxxxxxxx"/></div> </div>	<div style="display: flex; flex-direction: column; gap: 5px;"> <div><input type="text" value="1 01403114"/></div> <div><input type="text" value="3 01403117"/></div> <div><input type="text" value="3 01417267"/></div> <div><input type="text" value="3 03604223"/></div> <div><input type="text" value="1 03604281"/></div> <div><input type="text" value="3 03608221"/></div> <div><input type="text" value="3 3608251"/></div> <div>Foreign Languages II</div> <div><input type="text" value="3 01358xxx"/></div> </div>	<div style="display: flex; flex-direction: column; gap: 5px;"> <div><input type="text" value="3 03604262"/></div> <div><input type="text" value="3 03604271"/></div> <div><input type="text" value="3 03608222"/></div> <div><input type="text" value="3 03608232"/></div> <div><input type="text" value="3 03608241"/></div> <div>Physical Education Activities</div> <div><input type="text" value="1 03608261"/></div> <div><input type="text" value="1 01175xxx"/></div> <div>Entrepreneurship</div> <div><input type="text" value="3 xxxxxxxx"/></div> </div>	<div style="display: flex; flex-direction: column; gap: 5px;"> <div><input type="text" value="3 3608312"/></div> <div><input type="text" value="3 3608313"/></div> <div><input type="text" value="3 3608323"/></div> <div><input type="text" value="3 3608333"/></div> <div><input type="text" value="3 3608342"/></div> <div><input type="text" value="1 3608362"/></div> <div>Foreign Languages III</div> <div><input type="text" value="3 01358xxx"/></div> </div>	<div style="display: flex; flex-direction: column; gap: 5px;"> <div><input type="text" value="3 03604331"/></div> <div><input type="text" value="3 03608314"/></div> <div><input type="text" value="3 03608334"/></div> <div><input type="text" value="3 03608343"/></div> <div><input type="text" value="3 03608352"/></div> <div><input type="text" value="1 03608399"/></div> <div>Free Electives</div> <div><input type="text" value="3 xxxxxxxx"/></div> </div>	<div style="display: flex; flex-direction: column; gap: 5px;"> <div>Engineering elective courses</div> <div><input type="text" value="3 0360xxxx"/></div> <div>Engineering elective courses</div> <div><input type="text" value="3 0360xxxx"/></div> <div>Free Electives</div> <div><input type="text" value="3 xxxxxxxx"/></div> </div>	<div style="display: flex; flex-direction: column; gap: 5px;"> <div><input type="text" value="3 03604442"/></div> <div><input type="text" value="3 03604471"/></div> <div><input type="text" value="3 03608424"/></div> <div><input type="text" value="3 03608444"/></div> <div><input type="text" value="2 03608499"/></div> <div>Engineering elective courses</div> <div><input type="text" value="3 0360xxxx"/></div> </div>

## Course Description

### Automotive Engineering Program Courses

03608111	Automotive Engineering Drawing	3(2-3-6)
	Applied geometric constructions. Orthographic projection. Isometric drawing. Oblique drawing. Sectional view. Computer-aided-design in two dimensions for automotive engineering. Geometric dimensioning and tolerancing. Surface texture and fit. Thread and spring drawing.	
03608131	Automotive Technology Exploration	3(3-0-6)
	History of automotive. Terminology and unit of measurement in automotive. Category of automotive. Engines. Basic principles of automotive powertrain and chassis. Cooling and lubricant systems. Exhaust systems. Safety systems. Comfort systems. Auxiliary systems. Future trends of automotive. Automotive laws.	
03608221	Automotive Engineering Materials	3(3-0-6)
	Materials structure for automotive engineering. Engineering ceramics. Engineering polymers. Engineering metals. Lightweight materials. Mechanical properties. Stress. Strain. Creep. Fatigue. Fracture. Physical properties. Oxidation reaction. Corrosion. Role of automotive material and application.	
03608222	Mechanics of Automotive Materials	3(3-0-6)
	Forces and stresses in automotive structures. Stresses and strains relationship. Stresses in beams. Shear force and bending moment diagrams. Deflection of beams. Torsion. Buckling of columns. Deformation analysis of automotive structures. Mohr's circle and combined stresses. Automotive Material failure criterion.	

03608232	<p>Vehicle Aerodynamics</p> <p>Characteristic flows around vehicles. Nature and stakes of aerodynamics loads on vehicles. Fluid properties. Flow classification. Kinematics. Fundamental equations of fluid flows. Integral forms of conservation laws. Dimensional analysis. Boundary layer and flow separation. Aerodynamic forces and moments. Streamlined and Bluff Body aerodynamics.</p>	3(3-0-6)
03608241	<p>Thermodynamics for Automotive Engineering</p> <p>State change of substance. Basic heat transfer. First and second law of thermodynamics. Entropy analysis. Gaseous-working fluid power cycle. Rankin cycle. Combined power cycle. Ideal gas mixture. Psychrometric chart. Combustion for vehicles.</p>	3(3-0-6)
03608251	<p>Automotive Electrical System</p> <p>Basic principles of electronics and power electrical engineering. Analog and digital signals. Controller area network. CAN bus. Lighting system. Starting and charging systems. Electrical engine, transmission, and hydraulic systems. Safety in automotive electrical system. Battery and energy storage of hybrid cars.</p>	3(2-3-6)
03608261	<p>Automotive Engineering Laboratory I</p> <p>Pre-requisite : 03608221 or concurrent study or 03608241 or concurrent study</p> <p>Experimental works in engineering mechanics, automotive engineering materials, mechanics of automotive materials, thermodynamics for automotive engineering, occupational health, safety and environment, and vehicle aerodynamics.</p>	1(0-3-2)
03608312	<p>Computer-Aided Design in Automotive Engineering</p> <p>Computer-aided design in three dimensions. Curve and surface designs. Geometrical model. Bill of materials. Reverse engineering. Physical problem simulation related to automotive engineering. Automotive part design and analysis.</p>	3(2-3-6)



03608313	Automotive Part Design	3(3-0-6)
	Material properties. Material failure theory. Stress and strain concentration. Safety factor. Automotive part design. Connecting design engineering. Wedges. Splices. Fly wheels. Clutches. Brakes. Bearings. Belts. Chains. Sprockets. Design for manufacturing and assembly. Reverse engineering case studies on automotive parts.	
03608314	Introduction to Modern Automotive Design	3(2-3-6)
	Modern automotive development. Automotive design and development process. Automotive packaging requirements, constraints and concepts. Design of major system and components in the automotive. Appearance concept and style. Body structure. Lightweight structure. Passenger compartment design. Power trains for engine, electric and motor power. Automotive system design project.	
03608323	Modern Automotive Mechanics	3(3-0-6)
	Traction power. Resistance forces of motion. Acceleration. Gear ratio. Gear system. Hybrid transmission. Engine performance. Vehicle stability on horizontal and inclined planes. Equations of vehicle motion. Dynamics stability. Brake deceleration.	
03608333	Automotive Dynamic System and Control	3(3-0-6)
	Classifications of dynamic systems. Mechanical, electrical, fluid, and thermal systems modeling. Standard models for dynamic systems. Numerical simulation of dynamic systems. Analytical solution of linear dynamic systems. System analysis using Laplace transforms. Analyses of frequency and time responses. Feedback control. Steering control. Adaptive cruise control. Electronic stability control. Active and passive automotive suspension systems.	

03608334	Automotive Engineering Processes	3(3-0-6)
	Automotive manufacturing industry. Materials in automotive engineering. Metal casting. Stamping and metal forming process. Automotive joining. Automotive Painting. Final assembly. Computer aided design. Ecology in automotive process. Automotive manufacturing process. Machine layout strategies in the automotive manufacturing process. Planning and production control. Quality control of automotive manufacturing processes. Production support systems.	
03608342	Automotive Thermal Management System	3(3-0-6)
	Conduction. Forced and free convection. Thermal radiation. Industrial and automotive heat exchangers. Boiling and condensation. Engine heat transfer. Design of workable systems. Equation fitting. Modeling and simulation of thermal equipment in automotive. Optimization techniques and applications in automotive.	
03608343	Automotive Air Conditioning	3(3-0-6)
	Basic knowledge of refrigeration. Refrigeration cycles. Coefficient of performance. Air properties. Basic knowledge of the automotive air conditioning. Calculation of cooling load of air conditioning systems in vehicles. Automotive air conditioning system components. Compressor. Condenser. Evaporator. Refrigerants and their properties. Air conditioning controls in the internal combustion engine vehicles and in the electric vehicles. Environmental impact from the automotive air conditioning.	
03608352	Autonomous Vehicle Control	3(3-0-6)
	Background in developing self-driving vehicles. Roles of control in autonomous systems. System architecture and hybrid system modeling. Principles of autonomous vehicle control systems. Actuators. Sensors. Hardware and software architectures of autonomous vehicle systems. Algorithm for decision making of autonomous vehicles. Perception and prediction of environments. Control and planning of the autonomous vehicles. Safety practices of autonomous vehicles on roads.	

03608353	Visual Programming for Automotive Engineering Visual programming. Algorithm design. Collaborative hardware and software. Big data management and analysis. Data processing. Digital signal processing. CAN bus technology. Communications via the CAN bus protocol and OBD2.	3(2-3-6)
03608362	Automotive Engineering Laboratory II Pre-requisite: 03608313 or concurrent study or 03608323 or concurrent study Experimental works in modern automotive mechanics, automotive part design, automotive thermal management system, internal combustion engine, automotive air conditioning and autonomous vehicle control.	1(0-3-2)
03608399	Automotive Engineering Project Preparation Preparation of project proposal. Literature review and progress report.	1(0-3-2)
03608424	Noise, Vibration and Harshness Fundamentals of sound and vibration. Free and forced vibration. Multi-degree-of-freedom damped system. Natural frequency and mode shape. Powertrain and engine vibration. Vibration of suspension system. Human response to vehicle vibration. Control of vehicle vibration. Vibration measurement and analysis. Sources and analysis of vehicle noise.	3(3-0-6)
03608444	Engineering Management and Economics Basics of capitalism. Demand and supply analysis. Project definition. Project management and environment. Investment appraisal. Stakeholder management. Project-success criteria. Organization structures. Project life cycles. Work Breakdown Structures. Estimating. Risk management. Quality management. Cash-flow forecasting. Cost control. Business case study.	3(3-0-6)

03608445	Batteries for Electric Vehicles Basic principle of electrochemical. Types of vehicle batteries. Battery parameters. Lithium-ion batteries. Battery pack and battery management system for vehicles. Battery charging in electrical vehicles.	3(3-0-6)
03608499	Automotive Engineering Project Pre-requisite: 03608399 Projects of practical interest in various fields of automotive engineering.	2(0-6-3)

### Automotive Engineering Program Extracurricular Courses

01403114	Laboratory in Fundamentals of General Chemistry Pre-requisite: 01403117 Laboratory in Fundamentals of General Chemistry.	1(0-3-2)
01403117	Fundamentals of General Chemistry Atomic structure, periodic table and periodic properties, chemical bonds, stoichiometry, gases, liquids, solids, solutions, chemical kinetics, chemical equilibria, acids and bases, ionic equilibria, representative elements, metals, nonmetals and metalloids, transition metals.	3(3-0-6)
01417167	Engineering Mathematics I Limits and continuity of functions, derivatives and applications, differentials, integration and applications, polar coordinates, improper integrals, sequences and series, mathematical induction.	3(3-0-6)
01417168	Engineering Mathematics II Pre-requisite: 01417167 Vector and solid analytic geometry, calculus of multivariables functions, calculus of vector – valued functions.	3(3-0-6)

01417267	Engineering Mathematics III Pre-requisite: 01417168  First order linear differential equations, linear differential equations with constant coefficients, Laplace transforms and inverse transforms, power series solutions, system of linear differential equations.	3(3-0-6)
01420111	General Physics I  Mechanics, harmonic motion, waves, fluid mechanics, thermodynamics.	3(3-0-6)
01420112	General Physics II Pre-requisite: 01420111  Electromagnetism, electromagnetic waves, optics, introduction to modern physics and nuclear physics.	3(3-0-6)
01420113	Laboratory in Physics I Pre-requisite: 01420111 or concurrent study or 01420117 or concurrent study  Laboratory for General Physics I or Basic Physics I.	1(0-3-2)
01420114	Laboratory in Physics II Pre-requisite: 01420113 and 01420112 or concurrent study or 01420118 or concurrent study  Laboratory for General Physics II or Basic Physics II.	1(0-3-2)
03600490	Co-operative Education  On the job training as a temporary employee according to the assigned project including report and presentation.	6
03604223	Basic Principles of Engineering Mechanics Pre-requisite: 01417167  Force systems and resultant. Equilibrium. Dry friction. Application of equilibrium equations to structures and machines. Fluid statics. Kinematics	3(3-0-6)

and kinetics of particles and rigid bodies. Newton's laws of motion. Principles of work and energy. Impulse and momentum.

03604262	Health Safety and Environment	3(3-0-6)
	Concepts of occupational health, safety and environment. Safety at work. Cause and nature of accidents and incidents. Application of engineering techniques in prevention and control of accidents and incidents. Prevention of hazardous working condition. Production process and machinery. Causes and types of fire. Fire alarm and fire protection systems. Life safety from fire. Standards and laws on occupational health. Safety and environment. Water and air pollution. Industrial waste management.	
03604271	Digital Technology in Mechanical Engineering	3(2-3-6)
	High-level language programming. Computer arithmetic and error analysis. Numerical methods for linear and nonlinear equations. Numerical methods for data management and analytics. Computing tools for big data analytics. Data Interpretation. Introduction to image processing for machine vision.	
03604281	Workshop Practice	1(0-3-2)
	Practice in work-piece measuring. Gas and arc welding. Metal sheet w Lathe works. Safety in workshop.	
03604331	Internal Combustion Engines	3(3-0-6)
	Pre-requisite: 03604341 or 03604202	
	Fundamentals of internal combustion engine. Spark-ignition and compression-ignition engines. Fuels and combustion. Ignition systems. Ideal fuel-air cycle. Supercharging and scavenging. Performance and testing. Lubrication. Engine design and operating parameters.	

03604334	<p>Safety for Motor Vehicle</p> <p>Pre-requisite: 03604223</p> <p>Mechanical characteristics of pneumatic tires. Hydroplaning of pneumatic tires. Force distribution during acceleration and braking. Performance of vehicles. Energy and thermal requirement of brakes. Turning performance. Directional and stability control. Vehicle collision. Crash protection and energy absorption.</p>	3(3-0-6)
03604432	<p>Automotive Powertrains</p> <p>Automotive powertrains components. Fuel system. Ignition system. Lubricating system. Cooling system. Principles of automotive powertrains. Modern technology of engine control system.</p>	3(3-0-6)
03604433	<p>Automotive Chassis</p> <p>Automotive chassis components. Transmission system. Braking system. Suspension system. Steering system. Wheels and tires. Frame. Principles of automotive chassis. Modern technology of automotive chassis.</p>	3(3-0-6)
03604437	<p>Lubrication</p> <p>Pre-requisite: 03604242</p> <p>Viscosity. Lubricant. Journal bearing. Trust bearing. Reynolds equation. Hydrostatic lubrication. Hydrodynamic lubrication. Elastohydrodynamic lubrication.</p>	3(3-0-6)
03604442	<p>Power Plant Engineering</p> <p>Pre-requisite: 03604341 or 03604202</p> <p>Energy conversion principles and availability concept. Fuels and combustion analysis. Component study of steam, gas turbine and internal combustion engine power plants. Combined cycle and cogeneration. Hydro power plant. Nuclear power plant. Control and instrument. Power plant economics and environmental impacts.</p>	3(3-0-6)

03604471 Robots, Artificial Intelligence, and Internet of Things 3(3-0-6)

Overview of robotic systems. Industrial robot operations and programming. Task modeling and simulation. Operations of mobile robots and applications. Basic principles and applications of artificial intelligence. Basic artificial intelligence programming. Basic principles and applications of IoT. Communication Setup for IoT Systems.





# Kasetsart University

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An aerial photograph of a paved road with a white motorcycle parked on the side. The motorcycle is red and black. The road curves to the right, and the background shows a dry, brownish landscape.

**KU** ENGINEERING AT SRIRACHA  
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