

# Course – Handbook

## Bachelor

in

## Aviation Engineering – AVE (Faculty of Engineering)

# Aviation Engineering

International University Liaison Indonesian  
IULI-Eco-Campus "The Breeze"  
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Island of Java / Indonesian

[www.iuli.ac.id](http://www.iuli.ac.id)

[www.iuli.ac.id/programs/aviation-engineering-avionics](http://www.iuli.ac.id/programs/aviation-engineering-avionics)

## Description of Aviation Engineering / Avionics Course

Avionics is a young interdisciplinary field of engineering. The word is derived from the words aviation and electronics and includes all electronic systems that are applied in an aircraft. The area includes all technologies used for navigation, communication, security and early warning radar including weather radar, data recording and transfer.

Aviation Engineering is the science of designing, developing, and assembling aircraft. Aviation engineering focus on airspace development, airport design, aircraft navigation technologies, and aerodrome planning.

Recent developments concern the automated management of these multi-systems. The value added part of electronic devices for the operation and increase safety in the air are extremely rising in recent years. There is an increasing demand for engineers, working next to the electrical engineering/electronic training and fundamentals of aviation technology. The course is offered as an international program together with University of Applied Sciences Osnabrueck/Germany.

### Field of activities

Graduates of modern and within the engineering sciences interdisciplinary area / Avionics have excellent views of a well-paid, interesting and varied work. Depending on personal disposition and inclination are a wide variety of career paths open: In the research and development of aerospace, the development department and testing departments of the aviation industry, the airlines maintenance companies, the most medium - sized equipment industry as well as authorities in licensing and air traffic control authorities. Furthermore, many aspects of avionics are transferable to the automotive industry, so that graduates are looking for engineers here.

## Qualification System in Indonesia

### General

IULI's bachelor's study program in Aviation Engineering can be completed after taking a minimum of 155 credit hours (Satuan Kredit Semester / SKS), offered in eight regular semesters.

An academic year at IULI consists of two regular semesters, namely odd and even semester, and optional short semester. The odd regular semester starts in July and ends in December. The even semester starts in January and ends in June. The academic activities within a semester takes 17 weeks,

which consists of 7 weeks first term, 1 week midterm break, 7 weeks second term, and 2 weeks of final exam term.

In a regular semester, 1 SKS of a course is equivalent to 1 hour lecturing, 1 hour structured learning (tutorial, homework, or field trip), and 1 hour independent learning per week. Therefore, a student may enroll for between 20 and 24 SKS in each of semester 1-6. At 7<sup>th</sup> semester, most of student will follow research semester at partner university abroad that may lead to their thesis research. At semester 8, student may choose to continue with industrial internship abroad for 3 to 4 months, or performing academic/industrial project. Further, all of them prepare thesis report at semester 8.

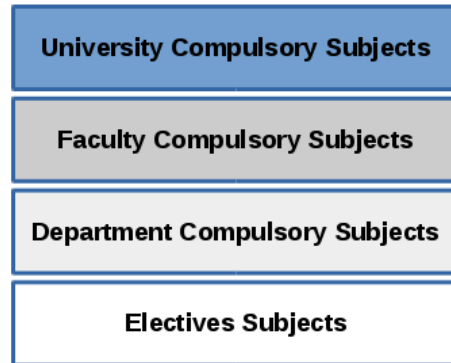
One semester is equivalent to 30 ECTS (European Credit Transfer System) or 1 SKS is approximately equivalent to 1.25 ECTS.

### Scores (Refer to The Academic Regulation, Academic Year 2016-2017)

Grade Letter	Grade Wording	IULI	Indonesian Grade Points (GP)	Germany Grade Point	Grade Description	Student Representation
A	Excellent	86 - 100	4	1	Outstanding performance	10%
B	Good	71 - 85	3.0 - 3.9	2	Performance is considerably higher than the average requirements	25%
C	Satisfactory	56 - 70	2.0 - 2.9	3	Performance meets the average requirements	30%
D	Poor	46 - 55	1.0 – 1.9	4	Performance is poor and likely to lead to failure	25%
F	Fail	< 45	0	5	Performance does not meet the minimum criteria. Considerable further work is required	10%

## Course Contents, Progress and Organisation

### Program Structure (Four Years)



### University Compulsory Subjects (in SKS) – Based on Curriculum 2017-2018

	Subjects	Abr.	1	2	3	4	5	6	7	8	Total
1	English	ENGL	2	2	2	2	1	1			10
2	Fundamentals of Computer Technology	FCOM	2								2
3	E-Commerce	ECOM						2			2
4	Environment Sciences	ENVI			2						2
5	Innovation & Product Development	PROD					2				2
6	Statistics & Probability	MATH				2					2
7	Research	RESC							6		6
8	Research Methodology	RESC						2			2
9	Ethics and Religious Philosophy	GENR					2				2
10	Civics	GENR				2					2
11	Indonesian Language & Culture	GENR						2			2
12	Pancasila	GENR		2							2
13	Oral Final Study Examination (OFSE)	OFSE						0			0
14	Elective : Internship / Project	INSP								3	3
15	Thesis / Thesis Defense	THES								6	6
	<b>Total</b>		<b>4</b>	<b>4</b>	<b>4</b>	<b>6</b>	<b>5</b>	<b>7</b>	<b>6</b>	<b>9</b>	<b>45</b>

### Faculty Compulsory Subjects (in SKS)

	Subjects	Abr.	1	2	3	4	5	6	7	8	Total
1	Applied Chemistry & Material Science	ACMS	3								3
2	Calculus & Linear Algebra	MATH	3	3							6
3	Physics & Laboratory	PHYS	4	4							8
4	Algorithm, Programming & Data Structure	PROG	3	3							6
5	Technical Drawing	TDRW	3								3
6	Manufacturing Processes & Systems	MFGS		2							2
7	Applied Mathematics	MATH			3						3
8	Elective in Engineering Science	EENG				2					2
9	Engineering Economy	EECO					2				2
10	Engineering Management	EMGT						2			2
	<b>Total</b>		<b>16</b>	<b>12</b>	<b>5</b>	<b>2</b>	<b>2</b>	<b>2</b>			<b>37</b>

### Department Compulsory Subjects (in SKS)

	Subjects	Abr.	1	2	3	4	5	6	7	8	Total
1	Introduction to Aviation Engineering	IAVE	1								1
2	Industrial Electronics & Laboratory	IELE	3	3							6
3	Statics & Mechanics of Materials	MECH		4							4
4	Machine Elements	MELM			3						3
5	Basic Aviation Engineering Practical Training	BAVE			2						2
6	Introduction to Operation Research	OPRS			3						3
7	Computer Aided Design (CAD)	CADD			3						3
8	Thermo-Fluid Science	THFL			2	2					4
9	Kinematics & Dynamics of Machines	MECH				3					3
10	Flight Dynamics	ACRF				2					2
11	Aircraft Propulsion	ACRF				3					3
12	Aviation Airworthiness, Safety & Regulations	ASFR			2						4
13	Aerodynamics	AERO				2	2				4
14	Aircraft Performance	ACRF					2				2
15	Aircraft Systems & Components	ACRF					2	2			2
16	Flight Control	FLGT					2	2			3

17	Aviation Engineering System Design	PROJ					3	3			6
18	Human Factor in Aviation	HFAV						2			3
19	Electives					3	6	6			3
<b>Total</b>			<b>4</b>	<b>7</b>	<b>15</b>	<b>15</b>	<b>17</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>73</b>

\*) Elective 1, 2, 3, 5, and 5 can be selected from Department Elective 1,2,3 and 4 subjects

\*) choose only one subject from each department electives

### Department Elective 1 Subjects (in SKS)

	Subjects	Abr.	SKS
1	Airframe System	ACRF	3
2	Sensor & Instrumentation Technology	SENS	3
3	Flight Navigation	ACRF	3

### Department Elective 2 Subjects (in SKS)

	Subjects	Abr.	SKS
1	Aircraft Maintenance Engineering	ACRF	3
2	Micro-controller Systems & Interface	ELEC-	3
3	Airport System	ACRF	3
4	Private Pilot Operation	ACRF	3

### Department Elective 3 Subjects (in SKS)

	Subjects	Abr.	SKS
1	Aircraft Material & Manufacturing	MFGS	3
2	Cockpit Instruments	ACRF	3
3	Airline Operations	ACRF	3

### Department Elective 4 Subjects (in SKS)

	Subjects	Abr.	SKS
1	Structural Dynamics & Vibration	MECH	3
2	RF Circuits & Antennas	ELEC	3
3	Air Traffic Control Systems	ACRF	3
4	Flight Psychology	FPSY	3

### Department Elective 5 Subjects (in SKS)

	Subjects	Abr.	SKS
1	Hydraulics & Pneumatics Systems	MECH	3
2	Aircraft Communication & Navigation	ACRF	3
3	Air Transport Market Analysis	ATMA	3
4	Flight Technique Analysis	FTAN	3

### Extra Curricular Subjects (in SKS)

	Subjects	Abr.	1	2	3	4	5	6	7	8	Total
1	German Language 1 *)	GERM	2	2	2	2	2	2			12
2	German Language 2 **)	GERM	2	2							4
3	Mandarin Language	MAND	2	2	2	2	2		2		12
4	Business Arabic	ARAB	2	2	2	2	2		2		12

\*) Mandatory for internship in Germany

\*\*\*) Presemester Course (Final Exam in Germany)



## Study Plan (Four Year Program)

### First Year (Freshman)

	Code	Subject	SKS Le/Ex/La		Code	Subject	SKS Le/Ex/La
	Semester 1				Semester 2		
1.1	ENGL-1110	English 1	2/0/0	2.1	ENGL-1120	English 2	2/0/0
1.2	FCOM-1000	Fundamentals of Computer Technology	2/0/0	2.2	GENR-1000	Pancasila	2/0/0
1.3	CHEM-1800	Applied Chemistry & Material Science	3/0/0	2.3	MATH-1120	Calculus & Linear Algebra 2	3/0/0
1.4	MATH-1110	Calculus & Linear Algebra 1	3/0/0	2.4	PHYS-1120	Physics 2 & Laboratory	3/0/1
1.5	PHYS-1110	Physics 1 & Laboratory	3/0/1	2.5	PROG-1120	Algorithm, Programming & Data Structure 2	3/0/0
1.6	PROG-1110	Algorithm, Programming & Data Structure 1	3/1/0	2.6	MFG-1100	Manufacturing Processes & Systems	2/0/0
1.7	TRDW-1000	Technical Drawing	2/0/0	2.7	IELE-1120	Industrial Electronics 2 + Lab	2/0/1
1.8	IINE-1000	Introduction to Aviation Engineering	1/0/0	2.8	MECH-1200	Statics & Mechaics of Materials	4/0/0
1.9	IELE-1110	Industrial Electronics 1 + Lab	2/0/1	2.9	GERM-1020*	German Language & Culture 2	2/0/0
1.10	GERM-1010*	German Language & Culture 1	2/0/0				
		<b>Total</b>	<b>23/1/2</b>			<b>Total</b>	<b>23/0/2</b>

## Second Year (Sophomore)

	Code	Subject	SKS Le/Ex/La		Code	Subject	SKS Le/Ex/La
	Semester 3				Semester 4		
3.1	ENGL-2130	English 3	2/0/0	4.1	ENGL-2140	English 4	2/0/0
3.2	ENVI-2000	Environmental Science	2/0/0	4.2	MATH-2500	Statistics & Probability	2/0/0
3.3	MATH-2200	Applied Mathematics	3/0/0	4.3	GENR-2300	Civics	2/0/0
3.4	MELM-2100	Machine Elements	3/0/0	4.4	EENG-2500	Elective in Engineering Science	2/0/0
3.5	CADD-	Computer Aided Design (CAD)	3/0/0	4.5	THFL-2020	Thermo-Fluid Science 2	2/0/0
3.6	BAVE-2000	Basic Aviation Engineering Practical Training	2/0/0	4.6	MECH-2300	Kinematics & Dynamics of Machines	3/0/0
3.7	THFL-2010	Thermo-Fluid Science 1	2/0/0	4.7	ACRF-2100	Flight Dynamics	2/0/0
3.8	OPRS-2000	Introduction to Operation Research	3/0/0	4.8	ACRF-2200	Aircraft Propulsion	3/0/0
3.9	ASFR-2000	Aviation Airworthiness, Safety & Regulations	2/0/0	4.9	AERO-2010	Aerodynamics 1	2/0/0
3.10	GERM-2030*	German Language & Culture 3	2/0/0	4.10		Elective 1	3/0/0
				4.11	GERM-2040*	German Language & Culture 4	2/0/0
		<b>Total</b>	<b>24/0/0</b>			<b>Total</b>	<b>25/0/0</b>

\*Extra Curricular Subject

### Third Year (Junior)

	Code	Subject	SKS Le/Ex/La		Code	Subject	SKS Le/Ex/La
	Semester 5				Semester 6		
5.1	ENGL-3150	English 5	1/0/0	6.1	ENGL-3160	English 6	1/0/0
5.2	PROD-3000	Innovation & Product Development	2/0/0	6.2	ECOM-3000	E-Commerce	2/0/0
5.3	GENR-3100	Ethics & Religious Philosophy	2/0/0	6.3	RESC-3010	Research Methodology	2/0/0
5.4	EECO-3000	Engineering Economy	2/0/0	6.4	EMGT-3000	Engineering Management	2/0/0
5.5	AERO-3020	Aerodynamics 2	2/0/0	6.5	GENR-3200	Indonesian Language & Culture	2/0/0
5.6	ARCF-3300	Aircraft Performance	2/0/0	6.6	ARCF-3420	Aircraft Systems & Components 2	2/0/1
5.7	ARCF-3410	Aircraft Systems & Components 1	2/0/0	6.7	ARCF-3520	Flight Control 2	2/0/0
5.8	PROJ-3010	Aviation Engineering Systems Design 1	2/0/1	6.8	HFAV-3000	Human Factor in Aviation	2/0/0
5.9		Elective 2	3/0/0	6.9		Elective 4	3/0/0
5.10		Elective 3	3/0/0	6.10		Elective 5	3/0/0
5.11	GERM-3050*	German Language & Culture 5	2/0/0	6.11	GERM-3060*	German Language & Culture 6	2/0/0
5.12	ARCF-3510	Flight Control 1	2/0/0	6.12	PROJ-3020	Aviation Engineering Systems Design 2	2/0/1
				6.13	OFSE-3000	Oral Final Study Exam	0/0/0
		<b>Total</b>	<b>25/0/1</b>			<b>Total</b>	<b>25/0/1</b>

## Specialization / Aviation Engineering Elective Subjects

	Code	Subject	SKS Le/Ex/La		Code	Subject	SKS Le/Ex/La
Elective 1				Elective 2			
E1.1	ARCF-3700	Airframe Systems	3/0/0	E2.1	ARCF-3600	Aircraft Maintenance Engineering	3/0/0
E1.2	SENS-2100	Sensor & Instrumentation Technology	3/0/0	E2.2	ELEC-2300	Micro-controller Systems & Inteface	3/0/0
E1.3	ARCF-3810	Flight Navigation	3/0/0	E2.3	ARCF-3500	Airport Systems	3/0/0
E1.4			2/1/0	E2.4	ARCF-3820	Private Pilot Operations	3/0/0
Elective 3				Elective 4			
E3.1	MFGS-3900	Aircraft Material & Manufacturing	2/1/0	E4.1	MECH-3900	Structural Dynamics & Vibration	3/0/0
E3.2	ARCF-3830	Cockpit Instruments	3/0/0	E4.2	ELEC-3900	RF Circuits & Antennas	2/1/0
E3.3	ARCF-	Airline Operations	2/1/0	E4.3	ARCF-3840	Air Traffic Control Systems	2/1/0
E3.4			3/0/0	E4.4	FPSY-3000	Flight Physiology	2/0/1
Elective 5							
E5.1	MECH-3900	Hydraulics & Pneumatics Systems	3/0/0				
E5.2	ANAV-3000	Aircraft Communication & Navigation	3/0/0				
E5.3	ATMA-3000	Air Transport Market Analysis	3/0/0				
E5.4	FTAN-3000	Flight Technique Analysis	3/0/0				

## Fourth Year (Senior)

	Code	Subject	SKS Le/Ex/La		Code	Subject	SKS Le/Ex/La
Semester 7				Semester 8			
7.1	RESC-4020	Research (in Germany)	0/0/6	8.1	INTR-4000	Elective : Internship / Project	0/0/3
				8.2	THES-4010	Thesis	0/0/6
		<b>Total</b>	<b>0/0/6</b>			<b>Total</b>	<b>0/0/9</b>