Curriculum of Bachelor of Mechanical Engineering
Udayana University (UNUD)

Brief Description

Bachelor of Mechanical Engineering, Engineering Faculty at Udayana University is designed to be completed within four academic years with the completed minimum number of course credits of 144 credits. One academic year is divided into two semesters such as odd semester that is started in August and ended in January, and an even semester that is started in February and ended in July.

Curriculum structure

The curriculum of Bachelor of Mechanical Engineering was organized into two components (compulsory and elective courses) with five subject areas as follow:

Component	Subject areas	No. of Credits
Compulsory	- Mathematics and Natural Sciences	30 credits
	- Engineering Science and Technology	50 credits
	- Information Technology and Technology	5 credits
	- The field of Engineering Design and Problem-based Experiments	36 credits
	- The General Education field covering morals, ethics, social culture, environment and management	17 credits
Elective	The elective courses that are supporting the final project (The field of Engineering Design and Problem-based Experiments)	6 credits
Total number of credits: 144 credits		

The study load

The total study load of the bachelor program in Mechanical Engineering at Udayana University is 144 credits with compulsory courses of 138 credits and elective courses of 6 credits. The students are allowed to take elective courses of more than 6 credits. In the first two semesters (Semester 1 and 2), the first-year students are required to take the study load according to the credit package offered in semesters 1 and 2. In the following semester (the next six semesters), the study load that students can take is determined based on the Semester Achievement Index (Index Prestasi Semester, IPS)/GPA achieved in the previous semester as follows:

IPS	Maximum study load
IPS > 3,50	24 credits
3,00 < IPS ≤ 3,50	22 credits
2,75 ≤ IPS ≤ 3,00	20 credits
2,50 ≤ IPS < 2,75	18 credits
2,00 ≤ IPS < 2,50	16 credits
< 2,00	12 credits

Some courses (the higher-level courses) have prerequisite courses. The prerequisite courses must have been completed with a minimum required grade of D before the student may take the higher-level courses. The students are also allowed to take courses in the advanced semester as long as they have completed a course's prerequisites.

The Bachelor Final Project

The bachelor final project is a compulsory subject with 4 credits. This project takes place at the end of the fourth year of the bachelor's degree programs. Students must individually undertake original work in the form of research or design projects under the guidance of two supervisors. The aim of the project is to enable students to comprehensively demonstrate the knowledge and skill acquired during their degree programs.

The Courses Distribution

Compulsory courses in Bachelor of Mechanical Engineering

Year 1

First Semester			
No	**Code**	**Courses**	**Credits**
1	MPK 101	Religion	2
2	MPK 102	Pancasila	2
3	MKK 303	Algebra	3
4	MKK 105	The Basic Principle of Physics 1	3
5	MKK 107	The Basic of Chemistry	2
6	MPK 105	Introduction to Mechanical Engineering	2
7	MKK 110	Engineering Drawing	2
8	MKK 112	Materials Engineering Sciences	2
9	MPK 104	Citizenship	2
		No. of credits	**20**

Second Semester			
No	**Code**	**Courses**	**Credits**
1	MBB 202	Communication Skills	2
2	MPB 203	Entrepreneurship	2
3	MKK 101	Calculus 1	3
4	MKK 206	The Basic Principle of Physics 2	3
5	MKK 213	Metallurgy	2
6	MKK 214	Statics of Structures	2
7	MKK 208	Statistics	2
8	MKK 211	Drawing Machines	2
9	MPK 703	Indonesian	2
		No. of credits	**20**

Year 2

Third Semester			
No	**Code**	**Courses**	**Credits**
1	MKK 429	Electrical Power Engineering	2
2	MKK 309	Numerical Method	2
3	MKK 317	Thermodynamics 1	2
4	MKK 316	Material Selection and Process	2
5	MKK 202	Calculus 2	3
6	MKK 315	Mechanics of Material	2
7	MKK 319	Manufacturing Production Process 1	2
8	MKK 333	Machine Element 1	2
9	MKB 307	Practicum of Physics	1
10	MKB 306	Practicum of Metallurgy	1
		No. of credits	**19**

Fourth Semester			
No	**Code**	**Courses**	**Credits**
1	MKK 404	Engineering Mathematics	3
2	MKK 321	Heat Transfer 1	2
3	MKK 420	Manufacturing Production Process 2	3
4	MKK 418	Thermodynamics 2	2
5	MKK 423	Fluid Mechanics 1	2
6	MKK 427	Kinematics	2
7	MKK 434	Machine Element 2	2
8	MPB 402	Quality Control	2
9	MKB 504	Practicum of Electric Power Engineering	1
		No. of credits	**19**

Year 3

Fifth Semester			
No	**Code**	**Courses**	**Credits**
1	MKK 524	Fluid Mechanics 2	2
2	MKK 525	Fuels, Lubricants and Combustion Technology	3
3	MKK 526	Energy Conversion Machines	3
4	MKK 528	Dynamics	3
5	MKK 422	Heat Transfer 2	2
6	MPB 506	Machine Maintenance Management Techniques	2
7	MKB 505	Practicum of Manufacturing Production Process	1
8	MPB 201	Industrial Metrology	2
9	MKB 501	Machine Element Design	2
		No. of credits	**20**

Sixth Semester			
No	**Code**	**Courses**	**Credits**
1	MKB 608	Research Methods	2
2	MKK 631	Automatic Control	2
3	MKK 632	Engineering Economics	2
4	MPB 604	Practical Work and Internship	2
5	MKB 6010	Optimization and Design	3
6	MBB 701	Industrial Management	2
7	MKB 6012	Refrigeration	3
8	MKB 703	Practicum of Basic Phenomena	1
9	MKK 530	Mechanical Vibration	2
		No. of credits	**19**

Year 4

Seventh Semester			
No	**Code**	**Courses**	**Credits**
1	MBB 703	Community Service Program	3
2	MKK 735	Mechatronics	3
3	MKB 702	Practicum of Engineering Skill	2
4	MKB 6011	Material Failure Analysis	3
5	MKB 6013	Pumps and Compressors	3
6	MKB 709	Proposal Seminar	1
7	MPB 505	Ergonomics Engineering	2
		No. of credits	**17**

Eighth Semester			
No	**Code**	**Courses**	**Credits**
1	MKB 808	Degree Final Project/Capstone Design Project	4
2	MKB …..	Elective Course 1	2
3	MKB …..	Elective Course 2	2
4	MKB …..	Elective Course 3	2
		No. of credits	**10**

Elective courses in Bachelor of Mechanical Engineering

No	Code	Courses	Credits
1	MKB 7122	Vehicle Construction and Stability	2
2	MKB 7132	Design and Process Optimization	2
3	MKB 7142	Robotics	2
4	MKB 7152	Finite Element Method	2
5	MKB 7162	Lifting and Heavy Duty Equipment	2
6	MKB 7172	Reliability Theory	2
7	MKB 7182	Experimental Stress Analysis	2
8	MKB 7192	Fracture Analysis	2
9	MKB 7202	Polymers and Composites	2
10	MKB 7212	Metal Alloys Industry	2
11	MKB 7222	Corrosion	2
12	MKB 7232	Coating Technique	2
13	MKB 7242	Metal Forming Techniques	2
14	MKB 7252	Operational Research	2
15	MKB 7262	Machining Process	2
16	MKB 7272	CAD/CAM	2

17	MKB 7282	Welding Technology	2
18	MKB 7292	Mold and Casting Technology	2
19	MKB 7302	Manufacturing System	2
20	MKB 7121	Solar Energy	2
21	MKB 7131	Wind Energy	2
22	MKB 7141	Geothermal Energy	2
23	MKB 7151	Biogas Energy	2
24	MKB 7161	Mechanics of Fluidization	2
25	MKB 7171	Drying Technique	2
26	MKB 7181	Steam Boiler	2
27	MKB 7191	Aerodynamics	2
28	MKB 7201	Hydraulics and Pneumatics	2
29	MKB 7211	Internal Combustion Engine	2
30	MKB 7221	Gas Turbine	2
31	MKB 7231	Energy Management and Optimization	2
32	MKB 7241	Piping Systems	2
33	MKB 7251	Computational Fluid Mechanic	2
34	MKB 7261	Ship Propulsion System	2
35	MKB 7271	Special Topic for Energy Conversion	2
36	MKB 7281	Water and Waste Treatment Systems	2
37	MKB 7291	Utility Systems in Buildings	2
38	MKB 7312	Motor Vehicle Technology	2
39	MKB 7332	Automotive Chassis and Power Transmission System	2
40	MKB 7342	Motor Vehicle Engineering and Innovation	2
41	MKB 7352	Vehicle Battery Cooling Technology	2
42	MKB 7362	Energy Storage Technology	2
43	MKB 7303	Lifts and Elevators	2
44	MKB 7303	Building Electrical System	2
45	MKB 7303	Fire Suppression System	2
46	MKB 7303	Seal Systems and Technologies	2
47	MKB 7303	Fuel Cell	2
48	MKB 7303	Tribology	2
49	MKB 7303	Materials and Processes	2
50	MKB 7303	Heat and Fluid Flow	2
51	MKB 7303	Production Management Systems	2