

KING SAUD UNIVERSITY
COLLEGE OF ENGINEERING
MECHANICAL ENGINEERING DEPARTMENT

Table 1 SUMMARY OF B.SC. DEGREE REQUIREMENTS IN MECHANICAL ENGINEERING

Requirements	Cr. Hr.	Description
Common First Year	32	General Chemistry (4) Differential Calculus (3) Introduction to Statistics (3) English (12) Writing Skills (2) University Skills (3) IT Skills (3) Entrepreneurship (1) Health and Fitness (1)
University	8	Islamic Studies: Compulsory (2) Complementary (6)
College	51	Common (40) Additional (9) free course (2)
Department	74	Core (54) Graduation Project (4) Electric Circuits (3) Electives (12) Practical training (1, NP) Research Project (0, NP)
Total	165	

Table 2 Common First Year (32 credit hours).

Level 1			
Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisite
ENGS 100	English language	6(6,9,0)	
MATH 101	Differential Calculus	3(3,1,0)	
ENT 101	Entrepreneurship	1(1,0,0)	
CHEM 101	General Chemistry	4(3,0,2)	
ARAB 100	Writing Skills	2(2,0,0)	
Total		16	

Level 2			
Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisite
ENGS 110	English	6(6,9,0)	
CUR 101	University Skills	3(3,0,0)	
CT 101	IT skills	3(0,0,6)	
STAT 101	Introduction to Statistics	3(2,2,0)	
EPH 101	Health & fitness	1(1,1,0)	
Total		16	

(X, Y, L) X = Lectures; Y = Tutorials; L = Lab.

Table 3 UNIVERSITY REQUIREMENTS (TOTAL 8 CREDIT HOURS)

TABLE 3-A: COMPULSORY COURSE (2 CREDIT HOURS)

Course Code	Course Title	Cr. Hr.	Nature
IC 107	Ethics of the Profession	2	Compulsory
Total		2	

Approved by: Chairman: Dean:

TABLE 3-B: OPTIONAL COURSES
(The student must choose 3 courses (6 hours) from the list below)

Course Code	Course Title	Cr. Hr.	Nature
IC 100	Studies in Prophet Biography	2	Optional
IC 101	Origins of Islamic Culture	2	Optional
IC 102	Family in Islam	2	Optional
IC 103	The Economic System in Islam	2	Optional
IC 104	The Political System in Islam	2	Optional
IC 105	Human Rights	2	Optional
IC 106	Medical Jurisprudence	2	Optional
IC 108	Contemporary Issues	2	Optional
IC 109	Role of Women in Development	2	Optional
Total		6	

Table 4 COLLEGE REQUIREMENTS (51 CREDIT HOURS)

Table 4-A COLLEGE COMPULSORY COURSES (40 CREDIT HOURS)

Course Code	Course Title	Cr. hr. (X,Y,L)	Pre-requisites
MATH 106	Integral Calculus	3 (3,2,0)	MATH 101
MATH 107	Vectors and Matrices	3 (3,2,0)	MATH 101
MATH 203	Differential & Integral Calculus	3 (3,2,0)	MATH 106; MATH 107
MATH 204	Differential Equations	3 (3,2,0)	MATH 203
PHYS 103	General Physics (1)	4 (3,0,2)	
PHYS 104	General Physics (2)	4 (3,0,2)	PHYS 103
ENGL 109	Language & Communication	2 (2,1,0)	
ENGL 110	Technical Writing	2 (2,1,0)	ENGL 109
GE 201	Statics	3 (3,1,0)	MATH 106; MATH 107
GE 104	Basics of Engineering Drawing	3 (2,0,2)	
GE 106	Introduction to Engineering Design	3 (2,1,2)	GE 104
GE 203	Engineering and Environment	2 (2,0,0)	CHEM 101; MATH 101
GE 402	Engineering Projects Management	3 (3,1,0)	
GE 403	Engineering Economy	2 (2,1,0)	
Total		40	

(X, Y, L) X = Lectures; Y = Tutorials; L = Lab.

Table 4-B COLLEGE ADDITIONAL COURSES FOR ME PROGRAM (9 CREDIT HOURS)

Course Code	Course Title	Cr. hr. (X,Y,L)	Pre-requisites
GE 211	Computer Programming using C++	3 (2,0,2)	
MATH 254	Numerical Methods	3 (3,2,0)	MATH 107
GE 202	Dynamics	3 (3,1,0)	GE 201, PHYS 103
Total		9	

(X, Y, L) X = Lectures; Y = Tutorials; L = Lab.

Table 4-C COLLEGE FREE COURSE (2 CREDIT HOURS)

Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisites
xxxxxx	Free elective course	2	
Total		2	

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Table 5 MECHANICAL ENGINEERING REQUIREMENTS**TABLE 5-A CORE COURSES (54 CREDIT HOURS)**

No.	Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisites
1	ME 201	Geometric Modeling in Engineering	2(1,0,2)	GE 104
2	ME 254	Materials Engineering	4(3,1,2)	CHEM 101, PHYS 104
3	ME 304	Mechanical Engineering Design (1)	3(3,1,0)	ME 352, ME 201
4	ME 305	Mechanical Engineering Design (2)	4(3,1,2*)	GE 106, ME 304
5	ME 312	Manufacturing Processes (1)	3(2,1,2)	ME 254 , ME 352
6	ME 313	Manufacturing Processes (2)	3(2,1,2)	ME 312
7	ME 321	Mechanical Measurements	2(1,1,2)	STAT 101, ME 384
8	ME 322	Mechanical Engineering Lab (1)	2(1,0,2)	ME 321, ME378
9	ME 323	Mechanical Engineering Lab (2)	2(1,0,2)	ME 321, ME 365
10	ME 352	Mechanics of Materials	3(3,1,0)	GE 201
11	ME 363	Mechanics of Machinery	3(3,1,0)	GE 202
12	ME 365	Dynamics of Mechanical Systems	3(3,1,0)	GE 202, MATH 204
13	ME 366	Automatic Control	3(3,1,0)	ME 365
14	ME 371	Thermodynamics (1)	3(3,1,0)	PHYS 104
15	ME 377	Thermodynamics (2)	3(3,1,0)	ME 371
16	ME 378	Heat Transfer	4(4,1,0)	ME 384
17	ME 379	Thermal-Fluid Systems	3(3,1,0)	ME377, ME 378
18	ME 384	Fluid Mechanics	4(4,1,0)	ME 371, MATH 204
Total			54	

(X, Y, L) X = Lectures; Y = Tutorials; L = Lab. NP= No grade (Pass or Fail); * Studio

Table 5-B SENIOR DESIGN PROJECTS (4 CREDIT HOURS)

Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisites
ME 496	Graduation Project (1)	2(2,0,0)	Completion of 129 cr. Hr. + completion of levels 1-7
ME 497	Graduation Project (2)	2(2,0,0)	ME 496
Total		4	

(X, Y, L) X = Lectures; Y = Tutorials; L = Lab.

Table 5-C Electrical Engineering Course

Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisites
EE 308	Electrical Circuits and Machines	3(3,1,0)	PHYS 104
Total		3	

(X, Y, L) X = Lectures; Y = Tutorials; L = Lab.

Table 5-D ELECTIVE COURSES (12 CREDIT HOURS)

(Each student is required to take 12 cr. hr. from the list of Mechanical elective courses-Table 5-E)

Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisites
ME 4**	Elective (1)	3	
ME 4**	Elective (2)	3	
ME 4**	Elective (3)	3	
ME 4**	Elective (4)	3	

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Total	12
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Table 5-E LIST OF MECHANICAL ELECTIVE COURSES

(Each student is required to take 12 cr. hr. from the following list of ME elective courses)

No.	Code & Number	Course Title	Credit Hours (X,Y,L)	Pre-Requisites
1	ME 402	Finite Element Method	3(2,0,2)	ME 304
2	ME 404	Computer-Aided Design	3(3,0,0)	ME 305
3	ME 405	Conceptual Design	3(3,0,0)	ME 304
4	ME 406	Design Optimization	3(3,0,0)	ME 304, ME 378
5	ME 408	Friction, Wear and Lubrication	3(3,0,0)	ME 304
6	ME 409	Materials Selection in Design	3(3,0,0)	ME 304
7	ME 411	Modern Manufacturing Processes	3(3,0,0)	ME 312
8	ME 412	Metal Forming and Metal Cutting Analysis	3(3,0,0)	ME 312
9	ME 413	Manufacturing Systems	3(3,0,0)	ME 313
10	ME 414	CNC Machines	3(2,0,2)	ME 313
11	ME 415	Introduction to Railway Engineering	3(3,0,0)	ME 305, ME 313
12	ME 431	Aerodynamics	3(3,0,0)	ME 384
13	ME 432	Introduction to Flight Mechanics	3(3,0,0)	ME 384
14	ME 433	Introduction to Aeroelasticity	3(3,0,0)	ME 384, ME 304
15	ME 443	Principles of Refrigeration	3(2,0,2)	ME 377
16	ME 444	Air Conditioning	3(3,0,0)	ME 378
17	ME 451	Mechanical Behavior of Materials	3(3,0,0)	ME 304
18	ME 452	Physical Metallurgy	3(3,0,0)	ME 254
19	ME 453	Intermediate Mechanics of Materials	3(3,0,0)	ME 304
20	ME 454	Aircraft Structures	3(3,0,0)	ME 304
21	ME 455	Automotive Structures	3(3,0,0)	ME 304
22	ME 456	Introduction to Composite Materials	3(3,0,0)	ME 304
23	ME 460	Railway Systems Engineering	3(3,0,0)	ME 365
24	ME 462	Mechanical Vibrations	3(3,0,0)	GE 202
25	ME 465	Mechatronics	3(2,0,2)	GE 202
26	ME 466	Rotating Machinery	3(3,0,0)	ME 365
27	ME 467	Introduction to Robotics	3(3,0,0)	ME 363
28	ME 468	Mechanisms and Linkage Design	3(3,0,0)	ME 363
29	ME 469	Automotive Engineering	3(3,0,0)	ME 365
30	ME 472	Power Plants	3(3,0,0)	ME 377
31	ME 473	Introduction to Combustion	3(3,0,0)	ME 377
32	ME 474	Internal Combustion Engines	3(2,0,2)	ME 377
33	ME 475	Energy Efficiency	3(3,0,0)	ME 371
34	ME 476	Solar Energy	3(3,0,0)	ME 378
35	ME 477	Energy Conversion Systems	3(3,0,0)	ME 378
36	ME 478	Design of Energy Systems	3(3,0,0)	ME 378
37	ME 479	Water Desalination	3(3,0,0)	ME 378
38	ME 481	Introduction to Computational Fluid Dynamics	3(2,0,2)	ME 384
39	ME 482	Gas Dynamics	3(3,0,0)	ME 384
40	ME 483	Introduction to Propulsion	3(3,0,0)	ME 384
41	ME 485	Fluid Machinery	3(3,0,0)	ME 384
42	ME 487	Air Pollution Control	3(3,0,0)	ME 384
43	ME 493	Selected Topics in Mechanical Engineering (1)	3(3,0,0)	Completion of 129 Cr.Hr
44	ME 494	Selected Topics in Mechanical Engineering (2)	3(3,0,0)	Completion of 129 Cr. Hr

(X, Y, L) X = Lectures; Y = Tutorials; L = Lab; NP=No grade (Pass or Fail)

Approved by: Chairman: Dean:

Table 5-F PRACTICAL TRAINING REQUIREMENT (COMPULSORY; 1 NP)

Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisites
ME 999	Practical Training	1 (NP)	Successful Completion of 110 credit hours
Total		1	

NP= No grade (Pass or Fail)

Table 5-G ELECTIVE COURSE WITHOUT CREDIT HOURS (NP)*(This is an optional elective course with no credit hours; not required for the B.S. degree in ME)*

Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisites
ME 998	Research Project	0 (NP)	Successful completion of 129 cr. hr.

Table 6 RECOMMENDED SEMESTER PLAN - MECHANICAL ENGINEERING PROGRAM*

Level 1			
Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisite
ENGS 100	English language	6(6,9,0)	
MATH 101	Differential Calculus	3(3,1,0)	
ENT 101	Entrepreneurship	1(1,0,0)	
CHEM 101	General Chemistry	4(3,0,2)	
ARAB 100	Writing Skills	2(2,0,0)	
Total		16	

Level 2			
Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisite
ENGS 110	English	6(6,9,0)	
CUR 101	University Skills	3(3,0,0)	
CT 101	IT skills	3(0,0,6)	
STAT 101	Introduction to Statistics	3(2,2,0)	
EPH 101	Health & fitness	1(1,1,0)	
Total		16	

Level 3			
Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisite
IC 1xx	Optional IC course	2(2,0,0)	
PHYS 103	General Physics (1)	4(3,0,2)	
MATH 106	Integral Calculus	3(3,2,0)	MATH 101
MATH 107	Vectors & Matrices	3(3,2,0)	MATH 101
ENGL 109	Language & Communication	2(2,1,0)	
GE 104	Basics of Engineering Drawing	3(2,0,2)	
Total		17	

Level 4			
Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisite
PHYS 104	General Physics (2)	4(3,0,2)	PHYS 103
ENGL 110	Technical Writing	2(2,1,0)	ENGL 109
MATH 203	Differential and Integral Calculus	3(3,2,0)	MATH 106 MATH 107
GE 106	Introduction to Engineering Design	3(2,1,2)	GE 104
GE 201	Statics	3(3,1,0)	MATH 106 MATH 107
GE 203	Engineering and Environment	2(2,0,0)	CHEM 101 MATH 101
Total		17	

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Level 5			
Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisite
MATH 204	Differential Equations	3(3,2,0)	MATH 203
GE 202	Dynamics	3(3,1,0)	GE 201 PHYS 103
GE 211	Computer Programming using C++	3(2,0,2)	
ME 371	Thermodynamics (1)	3(3,1,0)	PHYS 104
ME 254	Materials Engineering	4(3,1,2)	CHEM 101 PHYS 104
ME 201	Geometric Modeling in Engineering	2(1,0,3)	GE 104
Total		18	

Level 6			
Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisite
MATH 254	Numerical Methods	3(3,2,0)	MATH 107
ME 352	Mechanics of Materials	3(3,1,0)	GE 201
ME 384	Fluid Mechanics	4(4,1,0)	ME 371 MATH 204
IC 107	Ethics of the Profession	2(2,0,0)	
ME 377	Thermodynamics (2)	3(3,1,0)	ME 371
ME 363	Mechanics of Machinery	3(3,1,0)	GE 202
Total		18	

Level 7			
Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisite
ME 312	Manufacturing Processes (1)	3(2,1,2)	ME 254 ME 352
ME 304	Mechanical Engineering Design (1)	3(3,1,0)	ME 352 ME 201
ME 378	Heat Transfer	4(4,1,0)	ME 384
EE 308	Electrical Circuits and Machines	3(3,1,0)	PHYS 104
ME 321	Mechanical Measurements	2(1,1,2)	ME 384 STAT 101
	Free Course	2	
Total		17	

Level 8			
Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisite
ME 313	Manufacturing Processes (2)	3(2,1,2)	ME 312
ME 305	Mechanical Engineering Design (2)	4(3,1,2*)	GE 106 ME 304
ME 322	Mechanical Engineering Lab (1)	2(1,0,2)	ME 321 ME 378
ME 365	Dynamics of Mechanical Systems	3(3,1,0)	GE 202 MATH 204
ME 379	Thermal-fluid Systems	3(3,1,0)	ME 377 ME 378
IC 1xx	Optional IC course	2(2,0,0)	
Total		17	

Level 9			
Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisite
ME 323	Mechanical Engineering Lab (2)	2(1,0,2)	ME 321 ME 365
GE 403	Engineering Economy	2(2,1,0)	
ME 366	Automatic Control	3(3,1,0)	ME 365
ME 4xx	Elective (1)	3	
ME 4xx	Elective (2)	3	
ME 496	Graduation Project (1)	2(2,0,0)	Completion of 129 cr. Hr. + completion of levels 1-7
Total		15	

Level 10			
Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisite
IC 1xx	Optional IC course	2(2,0,0)	
GE 402	Engineering Projects Management	3(3,1,0)	
ME 4xx	Elective (3)	3	
ME 4xx	Elective (4)	3	
ME 497	Graduation Project (2)	2(2,0,0)	ME 496
ME 999	Practical Training	1(NP)	Completion of 110 credits
ME 998	Research Project	0 (NP)	Completion of 129 credits
Total		14	

NP: No grade (Pass or Fail)
 (X, Y, L) X = Lectures; Y = Tutorials; L = Lab. * Studio

Approved by: Chairman: Dean: