Required Courses for Mechanical Engineering Degree – 2019-20

This program is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org

Undergraduate Advisors:

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For **advising hours**, please visit:
http://mae.ucdavis.edu/undergraduate-advising/

Note: Curriculum and course offerings are subject to change. You must fulfill the degree requirements stated in the catalog of the year you graduate or the year immediately prior.

Communication, Writing and General Education Requirements

Lower Division Composition (4 units)

Select ONE of the following courses:

	UWP 1, 1Y or 1V	Introduction to Academic Literacies
	ENL 3	Introduction to Literature
	COM 1	Major Works-Ancient World
	COM 2	Major Works-Med. & Early Mod. World
	COM 3	Major Works-Modern World
	COM 4	Major Works-Contemporary World
	NAS 5	Intro. to Native American Studies

Upper Division Composition (0 or 4 units)

Select ONE of the following courses:

	UWP 101	Advanced Composition
	UWP 102E	Writing in the Disciplines: Engineering
	UWP 104A	Writing in the Professions: Business Writing
	UWP 104E	Writing in the Professions: Science
	UWP 104T	Writing in the Professions: Technical Writing

Alternatively, you may satisfy the upper division English requirement by passing the **Upper Division Composition Exam.**

Lower and upper division composition courses require a grade of C- or better to fulfill the requirement.

Communication (4 units)

Select ONE of the following courses:

	CMN 1	Intro. to Public Speaking
	CMN 3	Group Communication
	ENG 3	Intro. to Engineering Design

Note: CMN 3V and CMN 3Y do not satisfy the communication requirement.

General Education Requirement

This requirement will vary depending on the year you entered UC Davis. Please refer to your specific GE requirement.

Lower Division Mathematics, Physical Sciences, and Engineering Requirements

Mathematics and Physical Science (47 units)

	Course Number	Description	Units	Qtr Offered				Prerequisites
	MAT 21A	Calculus	4	F	W	S	SSI/II	Satisfactory score on math placement exam
	MAT 21B	Calculus	4	F	W	S	SSI/II	C- or better in: MAT 21A or 21AH
	MAT 21C	Calculus	4	F	W	S	SSI/II	C- or better in: MAT 21B or 21BH
	MAT 21D	Vector Analysis	4	F	W	S	SSI/II	C- or better in: MAT 21C or 21CH
	MAT 22A	Linear Algebra	3	F	W	S	SSI/II	C- or better in: MAT 21C or 21CH. ENG 6 or MAT 22AL†
	MAT 22B	Differential Equations	3	F	W	S	SSI/II	C- or better in: MAT 22A
	PHY 9A *(L)*	Classical Physics	5	F		S	SSI	MAT 21B
	PHY 9B *(L)*	Classical Physics	5	F	W		SSI	PHY 9A, MAT 21C, MAT 21D†
	PHY 9C *(L)*	Classical Physics	5		W	S	SSII	PHY 9B, MAT 21D, MAT 22A†
	CHE 2A or 2AH *(L)*	General Chemistry	5	F	W		SSI	Qualifying score on Chemistry Placement Exam
	CHE 2B or 2BH *(L)*	General Chemistry	5		W	S	SSII	C- or better in CHE 2A or 2AH

Engineering (23 units)

	ENG 4 *(L)*	Engineering Graphics in Design	3	F	W			
	ENG 6 or EME 5 *(L)* ±	Engr Prob Solving / Engr Applic.	4	F	W	S	SSII	ENG 6: C- or better in MAT 21A & MAT 21B† or EME 5: MAT 21A†
	ENG 17	Circuits I	4	F	W	S	SSI	C- or better recommended in: MAT 21C
	ENG 35	Statics	4	F	W	S	SSII	C- or better in: PHY 9A and MAT 21D†
	ENG 45 or 45Y *(L)*	Properties of Materials	4	F	W	S		C- or better in: MAT 21C and CHE 2A, PHY 9A
	EME 50 *(L)*	Manufacturing Processes	4	F	W		SSII	C- or better in: ENG 4 and PHY 9A

†*may be taken concurrently* *(L) Course has a lab component* ± *not offered during 2019-2020 school year*

YOU ARE RESPONSIBLE FOR ENSURING THAT ALL REQUIREMENTS FOR GRADUATION ARE COMPLETE

Mechanical Engineering – 2019-20

Upper Division Engineering, Design, Applied Mathematics and Elective Requirements

Engineering core requirements (46 units)

	Course Number	Description	Units	Qtr Offered				Prerequisites
	ENG 100 *(L)*	Electronic Circuits and Systems	3	F	W	S	SSII	ENG 17 (C- or better *recommended)*
	ENG 102	Dynamics	4	F	W	S	SSI	C- or better in: ENG 35 and MAT 22B
	ENG 103	Fluid Mechanics	4	F	W	S	SSI	C- or better in: ENG 35, MAT 22B and PHY 9B
	ENG 104	Mechanics of Materials	4	F	W	S	SSI	C- or better in: ENG 35 and MAT 22B
	ENG 105	Thermodynamics	4	F	W	S	SSI	C- or better in: MAT 22B and PHY 9B
	ENG 190	Professional Responsibilities	3		W	S		Upper division standing
	EME 106	Thermo-Fluid Dynamics	4	F	W	S		C- or better in: ENG 103 and 105
	EME 108 *(L)*	Measurement Systems	4	F	W	S		C- or better in: ENG 100 and 102; ENG 104 *recommended*
	EME 109 *(L)*	Experimental Methods for Thermal Fluids	4	F	W	S	SSI	C- or better in: EME 106
	EME 150A	Mechanical Design	4	F		S		C- or better in: ENG 45 or 45Y, 104 and EME 50†
	EME 165	Fundamentals of Heat Transfer	4	F		S	SSII	C- or better in: ENG 6 or EME 5 or ECS 30, ENG 103 and ENG 105
	EME 172	Automatic Control of Engineering Systems	4	F	W	S	SSII	C- or better in: ENG 100 and ENG 102

Senior Design Experience - Select ONE of the following courses (8 units)

	EME 185A/B *(L)*	Mechanical Systems Design Project	4/4		(W/S)			C- or better in: EME 50, EME 150A and EME 165† ; ENG 3, CMN 1 or 3 *recommended*; Upper Division Composition *recommended*
	EAE 130A/B	Aircraft Performance and Design	4/4		(W/S)			C- or better in: EAE 127 and EAE 129†

Applied Mathematics - Select ONE of the following courses (4 units)

	ECH 140	Math Methods in Biochem and Chem Eng	4	F			SSI	MAT 22B; ENG 6 or ECH 60
	ECI 114	Probabilistic Systems Analysis	4		W	S	SSII	C- or better in: MAT 21C
	ECS 130 ±	Scientific Computation	4					MAT 22A; ENG 6 or ECS 32A or ECS 36A or ECS 10 or ECS 30
	EME 115	Intro to Numerical Analysis	4	F				C- or better in: ENG 6 or EME 5 or ECS 30 & MAT 21A-22B & PHY 9A-9C
	EME 151∞	Statistical Methods in Design & Manufacturing	4		W			C- or better in: EME 150A
	ENG 180	Engineering Analysis	4	F				C- or better in: ENG 6 or EME 5 or ECS 30 & MAT 21D & 22B
	MAT 118A	Partial Differential Equations: Elem Methods	4	F				MAT 21D, MAT 22A, MAT 22B
	MAT 128A	Numerical Analysis	4	F			SSII	MAT 21C; ENG 6 or EME 5 or ECS 32A or ECS 30
	MAT 128B	Numerical Analysis in Solution of Equations	4		W			MAT 22A; ENG 6 or EME 5 or ECS 32A or ECS 30
	STA 130A	Brief Math Statistics	4	F			SSI	C- or better in: MAT 21C, STA 13 or STA 13Y or STA 32 or STA 100
	STA 131A	Introduction to Probability Theory	4	F		S		C- or better in: MAT 21C and MAT 22A or MAT 27A; MAT 21D strongly recommended

System Dynamics / Mechanical Design Elective - Select ONE of the following courses (4 units):

	EME 121 *(L)*	Engineering Applications of Dynamics	4				S	C- or better in: ENG 6 or EME 5 or ECS 30 & ENG 102
	EME 139 *(L)*	Stability of Flexible Dynamic Systems	4				S	C- or better in: ENG 102 and ENG 103
	EME 150B	Mechanical Design	4		W		S	C- or better in EME 150A
	EME 154 *(L)*	Mechatronics	4				S	C- or better in: ENG 100 and 102 and EME 50
	EME 171 *(L)*	Simulation & Design of Mechatronic Systems	4	F	W			C- or better in: ENG 100 and ENG 102
	ENG 122	Intro to Mechanical Vibrations	4		W			C- or better in: ENG 6 or EME 5 or ECS 30 & ENG 102; MATLAB programming

Restricted Electives - Select TWO of the following courses (8 units):

	EAE 129	Stability & Control of Aerospace Vehicles	4		W			C- or better in ENG 102
	EAE 130A/B**	Aircraft Performance & Design	4/4		W	S		C- or better in: EAE 127 and EAE 129†
	EAE 138	Aircraft Propulsion	4		W			C- or better in EME 106
	EAE 140	Rocket Propulsion	4	F				C- or better in: EME 106
	EAE 141	Space Systems Design	4				S	C- or better in: ENG 102 and EME 106
	EAE 142	Orbital Mechanics	4		W			C- or better in ENG 102
	EME 121** *(L)*	Engineering Applications of Dynamics	4				S	C- or better in: ENG 6 or EME 5 or ECS 30 & ENG 102
	EME 134 *(L)*	Vehicle Stability	4				S	C- or better in ENG 102
	EME 139** *(L)*	Stability of Flexible Dynamic Systems	4				S	C- or better in: ENG 102 and ENG 103
	EME 150B**	Mechanical Design	4		W	S		C- or better in EME 150A
	EME 151**∞	Statistical Methods in Design & Manufacturing	4		W			C- or better in EME 150A
	EME 152	Computer-Aided Mechanism Design	4	F				C- or better in: ENG 6 or EME 5 or ECS 30 & ENG 102
	EME 154** *(L)*	Mechatronics	4				S	C- or better in: ENG 100 and 102 and EME 50
	EME 161∞	Combustion and the Environment	4		W			C- or better in EME 106
	EME 163 *(L)* ±	Internal Combustion Engines	4					C- or better in: EME 106 and EME 50
	EME 164 ±	Introduction to HVAC	4					C- or better in EME 106 and 165
	EME 171** *(L)*	Simulation & Design of Mechatronic Systems	4	F	W			C- or better in: ENG 100 and ENG 102
	EMS 180	Materials in Engineering Design	4	F			S	C- or better in ENG 45
	EMS 182 *(L)*	Failure Analysis	4	F				C- or better in ENG 45; EMS 174 (*recommended*)
	ENG 122**	Intro to Mechanical Vibrations	4		W			C- or better in: ENG 6 or EME 5 or ECS 30 & ENG 102; MATLAB programming
	ENG 188	Science & Technology of Sustainable Power Gen	4				S	PHY 9C

*** If not used to satisfy other requirements* †*may be taken concurrently* ± *not offered during 2019-20 school year (L) Course has a lab component* ∞*Tentative offering*

Total units for Mechanical Engineering Degree: 152 *(Does not include units for GE requirement)*

8/12/19