2022

INGENIERIA MECANICA

2022

We know what we do. We do it well. We can prove it!

1ST YEAR

Course Code	Course Title	Pre and/or Co-Requisites	Cds
QUIM3131	Gen. Chemistry I	**Co-Req:** QUIM 3133 & (MATE 3171 or MATE 3005)	3
QUIM3133	Gen. Chemistry Lab I	**Co-Req:** QUIM 3131 & (MATE 3171 or MATE 3005)	1
~INGL_____	Note: There are 3 sequences to complete the English requirements. Read details at the bottom.		3
^ESPA3101 or ESPA 3131	Basic Spanish I or Academic Literacy I		3
*INME3809	Creative Design I **Note:** If you are a transfer student, read details at the bottom regarding this course.		3
**SOHU	Elective course in Humanities, Social Sciences, and Creative Arts or ECON 3021.		3
			16

Course Code	Course Title	Pre and/or Co-Requisites	Cds
MATE3031	Calculus I	MATE 3172 or MATE 3005	4
INGE 3016	Algorithms & Comp. Prog.	MATE 3172 or MATE 3005	3
~INGL_____	Note: There are 3 sequences to complete the English requirements. Read details at the bottom.		3
EDFI _____			1
^ESPA3102 or ESPA 3132	Basic Spanish II or Academic Literacy II	ESPA3101 or ESPA3131	3
**FILO ____	****Must be an ETHIC course from the list provided at the bottom of this document.****		3
			17

2ND YEAR

Course Code	Course Title	Pre and/or Co-Requisites	Cds
MATE 3032	Calculus II	MATE 3031	4
FISI 3171	Physics I	MATE 3031	4
FISI 3173	Physics Lab I	**Co-Req:** FISI 3171	1
~INGL_____	Note: There are 3 sequences to complete the English requirements. Read details at the bottom.		3
INGE 3031	Eng. Mechanics Statics	MATE 3031	3
			15

Course Code	Course Title	Pre and/or Co-Requisites	Cds
MATE 3063	Calculus III	MATE 3032	3
FISI 3172	Physics II	FISI 3171	4
FISI 3174	Physics Lab II	FISI 3173 **Co-Req:** FISI 3172	1
~INGL_____	Note: There are 3 sequences to complete the English requirements. Read details at the bottom.		3
INGE 3032	Eng. Mech. Dynamics	INGE 3031 & FISI 3171	3
INME 4108	Materials Science & Eng.	QUIM 3131 + 3133 & FISI 3171	3
			17

3RD YEAR

Course Code	Course Title	Pre and/or Co-Requisites	Cds
MATE 4009	Ordinary Diff. Equations	MATE 3063	3
INME 4109	Materials Science & Eng.Lab.	INME 4108	1
INME 4001	Thermodynamics I	QUIM 3131 + 3133 & FISI 3172 + 3174	3
INGE 4019	Int. to Mechanics of Materials	INGE 3031 & MATE 3063	4
INME 4005	Mechanism Design	INGE 3032 & INGE 3016	3
INEL 3105	Electrical Systems Analysis I	MATE 3032 & INGE 3016 **Co-Req:** FISI 3172 & MATE 3063	3
			17

Course Code	Course Title	Pre and/or Co-Requisites	Cds
INGE 4015	Fluid Mechanics	INGE 3032 & MATE 3063	3
INME 4011	Design of Machine Elements I	(INGE 4019 or INGE 4012) & (INME 4107 or INME 4108)	3
INME 4002	Thermodynamics II	INME 4001	3
INEL 4201	Electronics I	INEL 3105 & FISI 3172	3
INME 4055	Manufacturing Processes	INME 4107 or INME 4108	3
			15

4TH YEAR

Course Code	Course Title	Pre and/or Co-Requisites	Cds
INME 4210	System Dynamics and Controls I	MATE 4009, (INEL 3105 or INEL 4075), INGE 3016, INME 4005 & INME 4001	3
INME 4012	Design of Machine Elements II	INME 4011	3
INME 4015	Heat Transfer	MATE 4009, INGE 3016, (INME 4001 or INME 4045) & (INGE 4015 or INGE 4010)	3
INGE 4016	Fluid Mechanics Lab	**Co-Req:** INGE 4015	1
INME 4056	Manuf. Processes Lab	INME 3809 or INGE 3809 or INGE 3011 **Co-Req:** INME 4055	1
ININ 4010	Probability and Statistics for Engineers	MATE 3032 & INGE 3016	3
			14

Course Code	Course Title	Pre and/or Co-Requisites	Cds
INME 4003	Design Thermal Fluid Syst.	INME 4001 & INME 4015	3
INME 4220	System Dynamics and Controls II	INME 4210	3
>INME ____	**Professional Elect.** Must be in an Engineering course from a pre-defined INME Computational elective list. (See list of options on Page 2)		3
INME 4237	Mechatronics Lab.	ININ 4010, INME 4210 & (INEL 4201 or INEL 4076)	2
FREE ELECT.			3
EDFI ____			1
			15

5TH YEAR

Course Code	Course Title	Pre and/or Co-Requisites	Cds
INME 4238	Thermal Science Lab.	INME 4237 & INME 4002 **Co-Req:** INME 4003	2
**SOHU	Elective course in Humanities, Social Sciences, and Creative Arts.		3
>INME ____	**Professional Elect.** (See list of options on Page 2)		3
ININ 4015	Engineering Economic Analysis	MATE 3032	3
FREE ELECT.			3
			14

Course Code	Course Title	Pre and/or Co-Requisites	Cds
INME 4157	Eng. Design	INME 4056, INME 4012, INME 4003, INME 4220 & ININ 4015 **Co-Req:** INME 4238	4
FREE ELECT.			3
FREE ELECT.			3
			10

TOTAL CREDITS: 150 CREDITS

~Students admitted to the **Basic English Sequence**, must take 12 credits in: INGL 3101, 3102, 3201, and INGL 3209 (Communication in Science).

~Students admitted to the **Intermediate English Sequence**, must take 12 credits in: INGL 3103, 3104 **plus** INGL 3236 (Technical Communication) **OR** INGL 3250 (Public Speaking) **plus** 3 credits in English electives from a list. See the Counselor for details.

~Students that approved the **Advanced** Placement Test known as "Prueba de Nivel Avanzado or PNA" with 4 or higher in the English part, are accredited with 6 credits in English and **MUST** only approve: INGL 3211 & 3212 Students with a score of 3 on the Advanced Placement Examination will be placed in INGL 3103 (Intermediate English).

^For Spanish, students that approved the Advanced Placement Test known as "Prueba de Nivel Avanzado or PNA" with 4 or higher, are accredited with 6 credits in Spanish and DO NOT NEED to approve any more credits in Spanish. Students with a score of 3 on the Advanced Placement Examination or students that did not took that test, will be placed and must approve ESPA 3101 and 3102 (Basic Spanish I & II) or ESPA 3131 and ESPA 3132 (Academic Literacy I&II) to complete the Spanish requirements of this curriculum.

***IMPORTANT INFORMATION FOR TRANSFER STUDENTS OR STUDENTS JOINING THIS CURRICULUM:** (1) If you are a transfer student or an INME student that joined this curriculum, and took INGE 3011 (2 crs.) plus INME 5997 (3 crs.), these courses will be counted for INGE 3809 plus the one-credit INME Design Elective to cover a deficiency in the number of credits. (2) If you are a transfer student **BUT** took INGE 3011 (2 crs.) plus INME 3810 (2 crs.), you will need to enroll in a one-credit INME course to cover a deficiency in the number of credits and to develop parametric modeling skills using advanced 3D CAD software. **IMPORTANT:** (1) If you took INGE 3809 plus INME 3810, INME 3810 will be counted as a Free Elective. (2) If you took QUIM 3132 and QUIM 3134, these courses will be counted as a Free Electives. (3) If you took ECON 3021, this course will be counted as an elective course in SOHU. Always ask your counselor.

** Three (3) of the nine (9) credits in socio-humanistics must be from the following list of ETHIC courses: ADMI 3009, or FILO 3155, 3156, 3185, 4025, 4026, 4027, 4045, 4046,4160 or SOCI 3007, 3010, 4027, 4157 or 5015. These courses do not have any prerequisites.The other six (6) of the nine (9) credits in Socio-Humanistic Electives must be selected from the list of the approved courses provided for engineering students which is available at the College of Engineering's Academic Affairs Office website or by scanning the QR code on Page 2.

>In order to obtain the BSME, it is required that students take 6 credits in Professional Electives, from which **a MINIMUM of 3 credits must be in INME Computational Electives.** See page 2 for more information and course alternatives. Always ask your counselor.

For more information, please contact ME's Academic Advisors
Mrs. Yolanda Pérez (yolanda.perez4@upr.edu)
Ms. Denisse Negrón (denisse.negron2@upr.edu)

uprm.edu/inme

Department of Mechanical Engineering

I N M E

University of Puerto Rico at Mayagüez

1913-2013: 100 Years of Excellence in Mechanical Engineering Education.

COMPUTATIONAL ELECTIVE COURSES (Select a MINIMUM OF 3 CREDITS from this list)

CODE	COURSE TITLE	PRE-REQUISITES	CDS.
INME 5510	Introduction to Finite Element Modeling	INME 4011 & INGE 3016	3
INME 5520	Introduction to Computational Fluid Dynamics	INME 4015	3
INME 5530	Introduction to Multibody Dynamics Modeling (MBD)	INME 4005	3

PROFESSIONAL ELECTIVE COURSES (Select a MAXIMUM OF 3 CREDITS from this list)

CODE	COURSE TITLE	PRE-REQUISITES	CDS.
INME 4006	Machinery Dynamics	MATE 4009 & INME 4005	3
INME 4018	Energy Conversion	INME 4002, INME 4015 & INEL 4076	3
INME 4019	Energy Management and Audit	INME 4001 OR INQU 4011	3
INME 4027	Energy Installation Engineering	INME 4002 & INME 4015	3
INME 4035	Refrigeration and Air Conditioning	INME 4002 & INME 4015	3
INME 4037	Internal Combustion Engines	INME 4015	3
INME 4039	Mechanical Eng. Practice **(Used for research internships)**	DIR	3
INME 4058	Computer Aided Design	INME 4012 & INME 4015	3
INME 4065	Product Design	DIR (and interview with the professor in charge)	3
INME 4705	Applied Aerodynamics	INGE 4010 (or 4015 + 4016), INGE3016 & MATE 4009	3
INME 4707	Gas Turbine Thermodynamics and Propulsion	INME4002 OR 4045, INGE 4010 (or 4015 + 4016), INGE3016 & MATE 4009 **Co-Req:** INME4002	3
INME 4709	Aircraft Performance	INGE 3032 OR 3035 & MATE 4009 & INGE 3016	3
INME 4717	Introduction to Aircraft Structural Analysis	INGE 3032 OR 3035 & MATE 4009 & INGE 3016	3
INME 4810	Design and Automation Techniques	INME 4055	3
INME 4850	Introduction to Robotics	INME4011	3
INME 4995	Eng. Practice for Coop Students **(Free elective if taken once)**	DIR	0-9
INME 4998	Undergraduate Research	DIR	1-6
INME 5005	Lubrication	DIR	3
INME 5007	Solar Energy Application	INME4015 or INQU4001	3
INME 5008	Corrosion	INME4107	3
INME 5010	Design Thinking	30 or more credits approved	3
INME 5015	Selected Topics in Mechanical Engineering	DIR	3
INME 5018	Materials Failure Analysis	INME4012 & INME4107	3
INME 5025	Metals Fatigue	INME4107	3
INME 5707	Gas Turbine System Operation	INME4002 OR 4045, INGE3016 & INME4707	3
INME 5717	Aircraft Structural Analysis and Design	INME 4717 & INGE 4019 OR 4012	3
INME 5995 / INME 5996	Special Projects Minibaja, Fórmula, RUMAir, Solar Car), Moonbuggy; Dart; PACE; Vex RUMblebots; Human Powered Vehicle (HPV); RoboBoat; RUMarino; UAV's, among others	DIR	1-6
INME 6XXX	*These topics:* Advanced Thermo; Biomaterials; BioMEMS; Biomedical Engineering; Continuum Mechanics; Design of Microfluidic Systems; Engineering Design; Finite Element Analysis; Fracture Mechanics; Nuclear Engineering; Principles of Electronic Packaging; Vibrations, among others	DIR	1-6

****In order to obtain the BSME, it is required that students take 6 credits in Professional Electives, from which a **MINIMUM** of 3 credits must be in Computational Electives. INME 4995 can be used as a Professional Elective if taken at least twice (one of these terms during semester period).****

MINOR IN AEROSPACE ENGINEERING

The Minor in Aerospace Engineering provides a competitive and multidisciplinary education that aims to provide knowledge in space, aeronautic, and astronautics fields engaging students through theoretical, computational and/or experimental aerospace engineering problems. You complete this minor along with your engineering degree.

Warning: If you are planning to complete this minor, these courses can be used as Professional Electives. If you are interested in certain courses only, you	Course Code	Course	COURSE OFFERING SEASON: Fall	COURSE OFFERING SEASON: Spring
	INME 4705	**Applied Aerodynamics** Pre-reqs: INGE 4015 + INGE 4016, INGE 3016 & MATE 4009	X	
	INME 4709	**Aircraft Performance** Pre-reqs: INGE 3032, INGE 3016 & MATE 4009		X
	INME 4717	**Introduction to Aircraft Structural Analysis** Pre-reqs: INGE 3032, INGE 3016 & MATE 4009	X	
	INME 5717	**Aircraft Structural Analysis and Design** Pre-reqs: INME 4717, INGE 4019 or 4012		X
	*INME 5707	**Gas Turbine System Operation** Pre-reqs: INME 4002 or 4045, INGE 3016 & INME 4707		X

👉👉👉Students **MUST TAKE INME 4707 before INME 5707, since it is a prerequisite of INME 5707.**

To download a PDF version of this curriculum, scan this QR code:

To see the list of the elective courses in SOHU,

For contact information about our Student's Associations and/or Special Projects, scan this QR

For more information, please contact ME's Academic Advisors
Mrs. Yolanda Pérez (yolanda.perez4@upr.edu)
Ms. Denisse Negrón (denisse.negron2@upr.edu)

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