



MECHANICAL ENGINEERING DEPARTMENT

University of Puerto Rico at Mayagüez

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



Undergraduate Program Curriculum

1ST YEAR	Course Code	Course Title	Pre and/or Co-Requisites	Cds
	QUIM3131	General Chemistry I	Co-Req: (MATE 3171 or MATE 3005) & QUIM 3133	3
	QUIM3133	General Chemistry Lab I	Co-Req: (MATE 3171 or MATE 3005) & QUIM 3131	1
	~INGL_____	Note: There are 3 sequences to complete the English requirements. Read details at the bottom.		3
	^ESPA3101	Basic Spanish I		3
	**INGE3809	Creative Design I	Note: For transfer students only, INGE 3011 is equivalent to INGE 3809 if certain conditions are met. Read details at the bottom.	3
***SOHU	Socio-humanistic elective. Scan the QR code at the bottom of second page to see the options available.			3

Course Code	Course Title	Pre and/or Co-Requisites	Cds
*MATE3031	Calculus I	MATE 3005 or 3172	4
QUIM3132	General Chemistry II	(QUIM 3131 & 3133) or QUIM 3001 Co-Req: QUIM 3134	3
QUIM3134	General Chemistry Lab II	QUIM 3133 or QUIM 3001 Co-Req: QUIM 3132	1
~INGL_____	Note: There are 3 sequences to complete the English requirements. Read details at the bottom.		3
^ESPA3102	Basic Spanish II	ESPA 3101	3
**INME3810	Creative Design II	INGE 3809 Note: Transfer students, read details at the bottom.	2

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	Engineering Mechanics Statics	MATE 3031	3	

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	Engineering Mechanics Dynamics	INGE 3031 & FISI 3171	3
EDFI _____	Physical Education Elective		1

3RD YEAR	Course Code	Course Title	Pre and/or Co-Requisites	Cdts
	MATE 4009	Ordinary Differential Equations	MATE 3063	3
	INGE 3016	Algorithms and Computer Programming	MATE 3005 or MATE 3172	3
	INME 4001	Thermodynamics I	(QUIM 3131 & 3133) & (FISI 3172 & 3174)	3
	INGE 4019	Introduction to Mechanics of Materials	INGE 3031 & MATE 3063	4
***SOHU	Socio-humanistic elective. Scan the QR code at the bottom of second page to see the options available.			3

Course Code	Course Title	Pre and/or Co-Requisites	Cdts
INGE 4015	Fluid Mechanics	INGE 3032 & MATE 3063	3
INME 4005	Mechanism Design	INGE 3032 & INGE 3016	3
INME 4002	Thermodynamics II	INME 4001	3
INEL 4075	Fundamentals of Electrical Engineering	FISI 3172 & MATE 3063	3
INME 4107	Material Science & Eng.	QUIM 3132 + 3134 & FISI 3171	4

4TH YEAR	Course Code	Course Title	Pre and/or Co-Requisites	Cds
	INME 4210	System Dynamics	MATE 4009, INEL 4075, INGE 3016, INME 4005 & INME 4001	3
	INEL 4076	Fundamentals of Electronics	INEL 4075	3
	INME 4011	Design of Machine Elements I	INME 4107 & INGE 4019	3
	INME 4015	Heat Transfer	MATE 4009, INGE 3016, INME 4001 & (INGE 4010 or 4015)	3
	INGE 4016	Fluid Mechanics Lab	Co-Req: INGE 4015	1
ECON 3021	Microeconomics		3	

Course Code	Course Title	Pre and/or Co-Requisites	Cds	
ININ 4007	Industrial Organization and Management	MATE 3063 & ECON 3021	3	
INME 4055	Manufacturing Processes	INME 4107	3	
INME 4056	Manufacturing Processes Lab	Co-Req: INME 4055	1	
INME 4012	Design of Machine Elements II	INME 4011	3	
FREE ELECT.			3	
***SOHU	Socio-humanistic elective. Scan the QR code at the bottom of second page to see the options available.			3

5TH YEAR	Course Code	Course Title	Pre and/or Co-Requisites	Cds
	INME 4235	Mechatronics Lab	INME 4210, INME 4011, INME 4002 & INEL 4076 Co-Req: INME 4015 & INME 4012	2
	>INME_____	Professional DESIGN Elect. (See list of options on Page 2)		3
	>INME_____	Professional DESIGN Elect. (See list of options on Page 2)		3
	FREE ELECT.			3
	FREE ELECT.			3
***SOHU	Socio-humanistic elective. Scan the QR code at the bottom of second page to see the options available.			3

Course Code	Course Title	Pre and/or Co-Requisites	Cds
INME 4236	Thermal Science Lab	INME 4235	2
INME 4057	Engineering Design (Capstone)	INME 4002, INME 4012 & INME 4015	4
>INME_____	Prof. Design/Technical Elect. (See list of options on Page 2)		3
>INME_____	Prof. Design/Technical Elect. (See list of options on Page 2)		3
FREE ELECT.			3
EDFI _____	Physical Education Elective		1

TOTAL CREDITS: 159 CREDITS

* Refer to information related to Advanced Placement in English, Spanish and Mathematics since it changes every summer.

~Students admitted to the **Basic English Sequence**, must take: INGL 3101, 3102, 3201, and 3202 or INGL 3209 (Science Communication) or INGL 3289 (Conversational Engl).

~Students admitted to the **Intermediate English Sequence**, must take: INGL 3103, 3104 plus 6 credits in english electives from a list. See the Department's Counselor for details.

~Students that approved the **Advanced Placement Test** 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 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 in ESPA 3101 (Basic Span).

***IMPORTANT INFORMATION FOR TRANSFER STUDENTS:** If you are a transfer student and took INGE 3011 (2 crs.) plus INME 5997 (3 crs.), these courses will be counted for INGE 3809 and INME 3810, respectively. In the other hand, 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. In total, you need to have 5 credits of Creative Design or its equivalents. Always ask your counselor.

*** The 12 credits in Socio-Humanistic Electives must be selected from the list of the approved courses provided for engineering students which is available at the Counselor's Office and online at the College of Engineering's Academic Affairs Office website or by scanning the QR code at the bottom of the second page.

>In order to obtain the BSME, it is required that students take 12 credits in Professional Electives, from which a **MINIMUM of 6 credits should be in Design Electives** and the other 6 credits to be chosen between the Technical Electives or more courses from the Design alternatives.

<Pre-Calculus courses are not part of the curriculum and cannot be used as Free Electives.

For more information, please contact ME's Academic Advisors

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uprm.edu/inme



DESIGN ELECTIVE COURSES (A MINIMUM OF 6 CREDITS should be taken in Design Electives)

COURSE CODE	COURSE TITLE	PRE-REQUISITES	CDS.
INME 4003	Design of Thermal and Fluid Systems	INME 4001 & INME 4015	3
INME 4027	Energy Installation Engineering	INME 4002 & INME 4015	3
INME 4035	Refrigeration and Air Conditioning	INME 4002 & INME 4015	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 4220	System Dynamics and Controls II	INME 4210	3
INME 4540	Introduction to Ground Vehicle Dynamics	INGE 3016 OR CIIC 3015 & INGE 3032 OR 3035 OR DIR	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 5010	Design Thinking	30 or more credits approved	3
INME 5106	Nuclear Power Plant Engineering	FISI 3172 & MATE 4009 OR 4145	3
INME 5107	Radiological Safety and Radioactive Waste Management	FISI 3172 & MATE 4009 OR 4145	3
INME 5510	Introduction to Finite Element Modeling	INGE 3016 & INME 4011	3
INME 5520	Introduction to Computational Fluid Dynamics	INME 4015	3
INME 5530	Introduction to Multibody Dynamics Modeling	INME 4005	3
INME 5707	Gas Turbine System Operation	INME4002 OR 4045, INGE3016 & INME4707 or DIR	3
INME 5717	Aircraft Structural Analysis and Design	INME 4717 & INGE 4019 OR 4012	3
INME 5995	Special Projects: Minibaja; Fórmula; RUMAir; Solar Car; Moonbuggy; DART; PACE; DRACO; Loxodon; Vex; RUMblebots; HPVC; RoboBoat; RUMarino; UAV's, among others	DIR	1-6
INME 6XXX	These topics: BioMEMS; Design of Microfluidic Systems; Principles of Electronic Packaging; Engineering Design, Classical & Computational Dynamics, among other topics	DIR	1-6

TECHNICAL ELECTIVE COURSES (A MAXIMUM OF 6 CREDITS in technical electives are allowed.)

COURSE 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 4037	Internal Combustion Engines	INME 4015	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 4850	Introduction to Robotics	INME4011	3
INME 5005	Lubrication	DIR	3
INME 5007	Solar Energy Application	INME4015 or INQU4001	3
INME 5008	Corrosion	INME4107	3
INME 5018	Materials Failure Analysis	INME4012 & INME4107 or	3
INME 5025	Metals Fatigue	INME4107 or DIR	3
INME 5105	Fundamentals of Nuclear Science and Engineering	FISI 3172 & MATE 4009 OR 4145	3
INME 5996	Special Projects: Minibaja; Fórmula; RUMAir; Solar Car; Moonbuggy; DART; PACE; DRACO; Loxodon; Vex; RUMblebots; HPVC; RoboBoat; RUMarino; UAV's, among others	DIR	1-6
INME 6XXX	These topics: Biomaterials; Biomedical Engineering; Fracture Mechanics; Continuum Mechanics; Finite Element Analysis, among other topics	DIR	1-6

OTHER ELECTIVE COURSES (The type of elective will depend on the topic and/or your final report.)

COOPS, INTERNSHIPS & UNDERGRADUATE RESEARCH					
INME 4039	Mechanical Eng. Practice (Mostly Technical/Free)	3	INME 4998	Undergraduate Research (Mostly Technical/Free)	1-6
INME 4995	Eng. Practice for Coop Students (Mostly Free)	0-9	INME 5015	Selected Topics (Depends on topic)	1-6

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SCAN THE QR CODES FOR MORE INFORMATION

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



To see the list of the elective courses in SOHU, scan this QR code:



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

