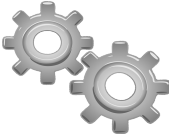




MECHANICAL ENGINEERING DEPARTMENT

University of Puerto Rico at Mayagüez

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



Undergraduate Program Curriculum

1ST YEAR	Course Code and Title		Pre and 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, INGE 3011 is equivalent to INGE 3809. Read details at the bottom.	3
	***SOHU			3

Course Code and Title		Pre and 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: Do not take 3810 if you took INGE 3011. Read details at the bottom.	2

2ND YEAR	Course Code and Title		Pre and 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

Course Code and Title		Pre and 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. Mechanics Dynamics	INGE 3031 & FISI 3171	3
EDFI _____			1

3RD YEAR	Course Code and Title		Pre and 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 3132 & 3134) & (FISI 3172 & 3174)	3
	INGE 4019	Int. to Mechanics of Materials	INGE 3031 & MATE 3063	4
	***SOHU			3

Course Code and Title		Pre and Co-Requisites	Cdts
INGE 4015	Fluid Mechanics	INGE 3032 & MATE 3063	3
INME 4005	Mechanism Design	INGE 3032 & INME 3810 (or the equivalent of INME 3810 for transfer students)	3
INME 4002	Thermodynamics II	INME 4001	3
INEL 4075	Fund. of Electrical Eng.	FISI 3172 & MATE 3063	3
INME 4107	Material Science & Eng.	QUIM 3132 + 3134 & FISI 3171	4

4TH YEAR	Course Code and Title		Pre and Co-Requisites	Cds
	INME 4210	System Dynamics	MATE 4009, INEL 4075, (INGE 4010 or 4015) & INGE 4019 Co-Req: INME 4015	3
	INEL 4076	Fundamentals of Electronics	INEL 4075	3
	INME 4011	Design of Mach. Elements I	INGE 4019, INME 4005 & INME 4107	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 and Title		Pre and Co-Requisites	Cds
ININ 4007	Industrial Org. and Management	MATE 3063 & ECON 3021	3
INME 4055	Manufacturing Processes	INME 4107	3
INME 4056	Manuf. Processes Lab	Co-Req: INME 4055	1
INME 4012	Design of Mach. Elem. II	INME 4011 & INME 4107	3
FREE ELECT.			3
***SOHU			3

5TH YEAR	Course Code and Title		Pre and 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			3

Course Code and Title		Pre and Co-Requisites	Cds
INME 4236	Thermal Science Lab	INME 4235	2
INME 4057	Eng. Design	INME 4002, INME 4012, INME 4015 & INME 4107	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 _____			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 English).

~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 Spanish).

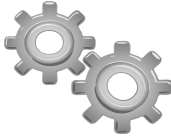
**The course INGE 3011 will be counted for INGE 3809 for tranfering students ONLY. These transfer students MUST enroll in an INME 599X course to be counted for INME 3810. They should not enroll in INME 3810 after INGE 3011, but if they do, they will need to enroll later on in a one-credit INME Design Elective to cover a deficiency in the number of credits.

Regular INME students should not enroll in INGE 3011 in order to be counted as INGE 3809.

*** 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.

>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.



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

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	3
INME 4709	Aircraft Performance	INGE 3032 OR 3035 & MATE 4009 & INGE 3016	3
INME 4717	Design and Analysis of Aircraft Structures	INGE 3032 OR 3035 & MATE 4009 & INGE 3016	3
INME 4810	Design and Automation Techniques	INME 4055	3
INME 5717	Advanced Design of Aircraft Structures	INME 4717 & INGE 4019 OR 4012	3
INME 599X	SAE Projects (Minibaja, Fórmula, RUMAir, Solar Car), Moonbuggy; Dart; PACE; Vex RUMblebots; Human Powered Vehicle (HPV); RoboBoat; RUMarino; UAV's, and more!	DIR	1-6
INME 5015	These topics: BioMEMS; Design of Microfluidic Systems; Principles of Electronic Packaging; Vehicle Design; User Centered Design (UCD); Engineering Design; Design Thinking, and more!	DIR	1-6

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

CODE	COURSE TITLE	PRE-REQUISITES	CDS.
INME 4006	Machinery Dynamics	MATE 4009 & INME 4005	3
INME 4009	Automatic Controls	INME 4210	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 4028	Fluid Machinery	INGE 4010 OR 4015 & INME 4002	3
INME 4037	Internal Combustion Engines	INME 4015	3
INME 4046	Fundamentals of Vibration	INGE 3032 Co-Req: MATE 4009	3
INME 4705	Applied Aerodynamics	INGE 4010 (or 4015 + 4016), INGE3016 & MATE 4009	3
INME 4707	Thermodynamics and Gas Turbine 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 or DIR	3
INME 5008	Corrosion	INME4107 or DIR	3
INME 5015	These topics: Biomaterials/Biomedical Engineering/Introduction to Plastics/Nuclear Engineering/Computational Fluid Dynamics/Most research projects and coops	DIR	1-6
INME 5018	Materials Failure Analysis	INME4012 & INME4107 or DIR	3
INME 5025	Metals Fatigue	INME4107 or DIR	3
INME 5707	Gas Turbine Operating System	INME4002 OR 4045, INGE3016 & INME4707 or DIR	3

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 5995	Special Problems	1-6
INME 4995	Eng. Practice for Coop Students (Mostly Technical/Free)	0-9	INME 5996	Special Problems II	1-6
INME 4998	Undergraduate Research (Mostly Technical/Free)	1-6	INME 5997	Selected Topics II	1-6
INME 5015	Selected Topics in Mech. Engineering	1-6	INTD 4995	Institutional Coop Plan (Mostly Technical/Free)	0-9

****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.



MINOR IN AEROSPACE ENGINEERING



The Minor in Aerospace Engineering (MAE) provides a competitive and multidisciplinary education that aims to provide knowledge in space, aeronautic, and astronautics fields engaging students through real theoretical, computational and/or experimental aerospace engineering problems. You complete this minor along with your engineering degree. To apply for this minor, go visit the ME's Academic Advisor for more information.

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

*Students must take INME 4707 before INME 5707. However, since INME 4707 is not part of the course sequence of our Aerospace Minor, it can be used as a TECHNICAL elective.