UNIVERSIDAD ANA G. MÉNDEZ UAGM

Bachillerato en Ciencias en Ingeniería de Computadoras
Bachelor of Science in Computer Engineering
131 créditos

Academic Division: Engineering, Design & Architecture **Department:** Engineering **Effective:** August 2021

SECUENCIAL CURRICULAR

Primer Año

Primer Semestre				Segundo Semestre			
Curso	Créditos	Aprobado	En curso	Curso	Créditos	Aprobado	En curso
ENGS 152*	3			CHEM 203+	4		
HIGS 201	3			ENGI 122	3		
MATH 152+*	4			ENGS 153	3		
SCGS 200	3			MATH 221+	4		
SPGS 152*	3			SPGS 250	3		
Total	**16**			**Total**	**17**		

Segundo Año

Primer Semestre				Segundo Semestre			
Curso	Créditos	Aprobado	En curso	Curso	Créditos	Aprobado	En curso
CPEN 358	3			COMP 315	3		
CPEN 358L	1			COMP 315L	1		
ENGI 223	3			ELEN 301	3		
INGS 201	3			ELEN 302	1		
MATH 222+	4			HUGS 101	3		
PHSC 215+	4			MATH 395	3		
				SOGS 201	3		
Total	**18**			**Total**	**17**		

Tercer Año

Primer Semestre				Segundo Semestre			
Curso	Créditos	Aprobado	En curso	Curso	Créditos	Aprobado	En curso
COMP 311	3			COMP 411	3		
CPEN 452	3			CPEN 425	3		
CPEN 455	3			ELEN 312	3		
ELEN 330	3			ELEN 313	1		
ELEN 332	1			ELEN 360	3		
SOGS 202	3			ENGI 398	3		
Total	**16**			**Total**	**16**		

Cuarto Año

Primer Semestre				Segundo Semestre			
Curso	Créditos	Aprobado	En curso	Curso	Créditos	Aprobado	En curso
CPEN 410	3			CPEN 444	3		
CPEN 481	3			CPEN 492	3		
CPEN 491	3			ELEN 447	1		
ELEN 442	3			HUGS 102	3		
Guided Elective I	3			Guided Elective II	3		
				Guided Elective III	3		
Total	**15**			**Total**	**16**		

Notas importantes:

1. *Todo estudiante será matriculado de acuerdo a los resultados de la prueba de ubicación o resultados del *College Board*.
2. + Curso incluye laboratorio
3. Las competencias desarrolladas en los cursos requeridos de primer año MATH 152 y CHEM 203 sustituyen y exceden las competencias básicas de MAGS 120 y SCGS 200, respectivamente.
4. Los estudiantes de nuevo ingreso, sin previa experiencia universitaria, se les requiere el Seminario de Inducción y Liderazgo Estudiantil (SIGS 100) y se le ofrecerá la semana previa al inicio de clases. Los estudiantes de matrícula tardía, deberán completar este seminario durante el semestre académico.
5. Sujeto a cambios.

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CONTENIDO CURRICULAR

Componente de Educación General - 37 créditos

Cursos	Créditos	Título	Prerrequisito
ENGS 152*	3	Fundamentos de comunicación oral, lectura y redacción I	
ENGS 153	3	Fundamentos de comunicación oral, lectura y redacción II	ENGS 152*
HIGS 201	3	Puerto Rico historia y cultura	
HUGS 101	3	Cultura mundial I	
HUGS 102	3	Cultura mundial II	HUGS 101
INGS 201	3	Introducción a las destrezas de información, investigación y redacción	
SOGS 201	3	El ser humano y la conciencia social	
SOGS 202	3	Estado-gobierno y el ser humano	SOGS 201
SPGS 152*	3	Fundamentos de lectura y escritura	
SPGS 250	3	Técnicas de escritura	SPGS 152
SCGS 200	3	Ciencias, tecnología y sociedad	
MATH 152+*	4	Pre-Calculus II	

Componente Medular - 34 créditos

Cursos	Créditos	Título	Prerrequisito
CHEM 203*	4	General Chemistry I	MATH 151 or higher
COMP 311	3	Discrete Mathematics for Engineers	ENGI 223
COMP 411	3	Numerical Methods with Programming	COMP 311
ENGI 122	3	Introduction to Computer Programming	MATH 152
ENGI 223	3	Intermediate Programming	ENGI 122/MATH 221
ENGI 398	3	Engineering Mathematics	MATH 222/ENGI 122
MATH 221	4	Calculus I	MATH 152
MATH 222	4	Calculus II	MATH 221
MATH 395	3	Differential Equations	MATH 222
PHSC 215	4	Physics for Engineering I	MATH 221

**This course supersedes the General Education requirement set by the institution.*

Componente de Concentración - 51 créditos

Cursos	Créditos	Título	Prerrequisito
COMP 315	3	Analysis and Design of Data Structures and Algorithms	ENGI 223
COMP 315L	1	Analysis and Design of Data Structures and Algorithms Laboratory	ENGI 223
CPEN 358	3	Object Oriented Programming	ENGI 223
CPEN 358L	1	Object Oriented Programming Laboratory	ENGI 223
CPEN 410	3	Mobile Web and Internet Programming	CPEN 455
CPEN 425	3	Software Engineering	CPEN 455
CPEN 444	3	Computer Architecture and Organization	ELEN 312
CPEN 452	3	Operating Systems	COMP 315
CPEN 455	3	Introduction to Databases	COMP 135, CPEN 358
CPEN 481	3	Telecommunication Networks and Security	ELEN 312
CPEN 491	3	Senior Design Project I	CPEN 425, ELEN 330
CPEN 492	3	Senior Design Project II	CPEN 452, CPEN 491, ELEN 442, las semester status
ELEN 301	3	Electrical Networks I	PHSC 215
ELEN 302	1	Electrical Networks I Laboratory	PHSC 215
ELEN 312	3	Digital Logic Design I	ELEN 301, ENGI 122
ELEN 313	1	Digital Logic Design I Laboratory	ELEN 302, ENGI 122
ELEN 330	3	Electronics I	ELEN 301, ELEN 302
ELEN 332	1	Electronics I Laboratory	ELEN 302
ELEN 360	3	Random Signals and Systems	MATH 222, ELEN 301
ELEN 442	3	Microprocessors I	ELEN 312
ELEN 447	1	Microprocessors Laboratory	ELEN 313

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Electivas Dirigidas - 9 créditos

Cursos	Créditos	Título	Prerrequisito
ELEN xxx or ENGI xxx	3	Any ELEN or ENGI course from the BS in Electrical Engineering	As required by the Electric Engineering Program
CPEN 456	3	Database Management Systems	CPEN 455
CPEN 457	3	Programming Languages	COMP 315
CPEN 458	3	Introduction to Computers	CPEN 452
CPEN 459	3	Artificial Intelligence	ENGI 223
CPEN 478	3	Distributed Systems	CPEN 444, CPEN 452
CPEN 488	3	Advanced Computer Architectures	CPEN 444
CPEN 497	3	Special Topics	ECE Head's permission
ECEN 400	3	Survey of Electrical and Computer Engineering Topics	Next to last semester status
ENGY 103	1	Electrical Energy: Basic Concepts	
ENGY 203	1	Fundamentals of Electrical Energy Systems	Co-req. ENGY 103
ENGY 303	1	Energy and Electrical Power Systems	Co-req. ENGY 203
CPEN 502	3	Advanced Analysis & Design of Algorithms	COMP 315 or instructor consent
CPEN 503	3	Computer and Network Security	CPEN 481 or instructor consent
CPEN 504	3	Advanced Computer Architectures	CPEN 444 or instructor consent
CPEN 505	3	Database Management Systems	CPEN 455 or instructor consent
CPEN 511	3	Distributed Systems	CPEN 444, CPEN 452 or instructor consent
CPEN 520	3	Numerical Optimization	COMP 411 or instructor consent
CPEN 550	3	Operating Systems Programming	CPEN 452 or instructor consent
CPEN 552	1	Computer Graphics	ENGI 223 or instructor consent
CPEN 640	3	Embedded Systems	ELEN 442 or instructor consent
ELEN 502	3	Advanced Linear Systems	ELEN 415 or instructor consent
ELEN 503	3	Solid State Electronics	ELEN 431 or instructor consent
ELEN 505	3	Probability and Random Processes	ELEN 360 or instructor consent
ELEN 510	3	Advanced Power System Analysis	ELEN 480 or instructor consent
ELEN 511	3	Power System Dynamics and Control	ELEN 480 or instructor consent
ELEN 520	3	Digital Control Systems	ELEN 415 or instructor consent
ELEN 550	3	Digital Filters	ELEN 415 or instructor consent
Non-Departmental and Non-Engineering Electives			
ENGI 210	3	Engineering Economy	Co-req. MATH 221
ENTR 360	3	Entrepreneurship	Dean's permission
ENTR 401	3	Identification and Evaluation of Entrepreneurial Opportunities	Dean's permission
IMEN 341	3	Accounting and Finance for Engineers	Co-req. MATH 221
IMEN 406	3	Operations Research	MATH 350 or IME Head's permission
TCOM 503	3	Introduction to TCP/IP	
TCOM 513	3	IT Project Management	
TCOM 521	3	Networking Fundamentals	
Cybersecurity Option (select a minimum of 9 credits from this list if pursuing this option; select all courses to earn a Certificate in Cybersecurity)			
CYBR 501	3	Network Security I	Fourth year status
CYBR 502	3	Computer Security I	Fourth year status
CYBR 521*	3	Network Security II	CYBR 501
CYBR 522*	3	Computer Security II	CYBR 502
CYBR 600	3	Cyber Forensics	CYBR 502
**If pursuing the Certificate in Cybersecurity, CYBR 521 and CYBR 522 can only be taken after obtaining a BS degree*			

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Cursos	Créditos	Título	Prerrequisito
Quality Assurance and Experimental Design Option (Select a minimum of 9 credits from this list if pursuing this option; select all courses to earn a minor)			
IMEN 205*	3	Principles of Engineering Management	MATH 152
IMEN 395	3	Inferential Statistics for Engineers	IMEN 390 or ELEN 360
IMEN 402	3	Work Measurement	IMEN 390 or ELEN 360
IMEN 405	3	Statistical Quality Control	IMEN 390, IMEN 395 Co-req.
IMEN 416	3	Design of Industrial Experiments	IMEN 395
**Accepted only if upgrading to a minor*			
Engineering Management Option (select a minimum of 9 credits from this list if pursuing this option. These courses count toward the MS degree in Engineering Management			
IMEN 510	3	Engineering Management	Fourth year status
IMEN 551*	3	Advanced Engineering Project Management*	Fourth year status
IMEN 610	3	Statistics for Decision Modeling	Fourth year status
IMEN 620	3	Advanced Enterprise Continuous Improvement	Fourth year status
IMEN 630	3	Supply Chain Management for Engineers	Fourth year status
IMEN 635	3	Logistics Methods and Strategies	Fourth year status
IMEN 640	3	Design and Operation of Logistics Networks	IMEN 635
IMEN 645	3	Analytics for Decision Making	IMEN 610
**TCOM 513 information Technology Project Management may be used as a substitute for IMEN 551*			
Entrepreneurship and Innovation Minor (including ELEN 492, select from the list below until a minimum of 12 credits is completed)			
INNO 300	3	Sustainable Innovation or ENTR 360	Third year status
INNO 303	3	Product Development, Prototyping and Idea Validation or ENTR 401	INNO 300
INNO 400	0	Startup Internship	School's permission
MANA 204	3	Business Law or IMEN 341	
**Students pursuing the minor in Entrepreneurship and Innovation must take at least one course of the minor sequence outside the School of Engineering as an elective course*			

EVALUACIÓN ACADÉMICA PRELIMINAR DISCUTIDA CON EL ESTUDIANTE.
LA MISMA PUEDE ESTAR SUJETO A CAMBIOS

Total de créditos:
_____ Aprobados
_____ Por aprobar

Firma del estudiante: _____ Fecha: _____

Firma del Consejero Académico: _____
Fecha: _____