Expected Course Offerings by Semester
INFORMATION SYSTEMS ENGINEERING

The schedule below is based on historical patterns and expected scheduling. The semester and location in which a course may be offered **is subject to change** due to instructor availability, student demand, and the need to provide an appropriate balance of subjects and course levels in all semesters.

Course Offering Modalities		
In-Person (IP) [**01** = Homewood Campus] [**31** = Applied Physics Lab]	**Virtual-Live (VL)** [**01VL** = Synchronous at Homewood] [**3VL** = Synchronous at APL] [**8VL** = Synchronous Online]	**Online (O)** [**81** = Asynchronous Online]

Prerequisite Courses

Course #	Course Name	Pre-Req*	Summer	Fall	Spring
605.201	Introduction to Programming Using Java **OR**		O/VL	O/VL	O/VL
605.206	Introduction to Programming Using Python		O	O	O
605.203	Discrete Mathematics			O/VL	O

Foundation Courses

Course #	Course Name	Pre-Req*	Summer	Fall	Spring
635.601	Foundations of Information Systems Engineering			O	O
635.627	Foundations of Intelligent Systems		N/A	N/A	N/A
635.631	Foundations of Data Analytics	N/A	N/A	N/A	N/A

Technical Management Track
For a general Technical Management Track (no focus area), three (3) courses from any of the focus areas listed below

Hone your talents to become a technical manager of information systems programs. You will develop technical depth to grasp the complexities of modern information systems and you will acquire skills to manage their development lifecycles. There are two focus areas:

Program Management Focus Area
At Least Three (3) from List Below - At Least Two (2) from 635.xxx

Course #	Course Name	Pre-Req*	Summer	Fall	Spring
635.674	Generative AI for Entrepreneurs			VL	
635.775	Cyber Operations, Risk, and Compliance		O/VL	O/VL	O/VL
635.782	Ethics in Intelligent Systems		VL	VL	VL
635.792	Entrepreneurship, Innovation and Corporate Success			VL	
635.622	Applied Decision Science		N/A	N/A	N/A
595.660	Planning and Managing Projects		O/VL	O/VL	O/VL
605.607	Agile Software Development Methods	605.601		O	O
605.608	Software Project Management		O	O	O
605.708	Tools and Techniques of Software Project Management				O/VL
645.667	Management of Systems Projects	*Admission into the Systems Engineering program****	O/VL	O/VL	O/VL
645.742	Management of Complex Systems	645.769 *or* 655.769 *or* instructor and advisor approval	O	O	O

Enterprise Engineering Focus Area
At Least Three (3) from List Below - At Least Two (2) from 635.xxx

Course #	Course Name	Pre-Req*	Summer	Fall	Spring
635.601	Foundations of Information Systems Engineering			O	O
635.603	AI/ML Ops		O	O	O
635.782	Ethics in Intelligent Systems		VL	VL	VL
635.672	Privacy Engineering		N/A	N/A	N/A
635.775	Cyber Operations, Risk, and Compliance		O/VL	O/VL	O/VL
605.607	Agile Software Development Methods	605.601		O	O
605.609	DevOps and Secure Software Development		O	O	O
605.616	Multiprocessor Architecture & Programming				O
605.701	Software Systems Engineering	605.202; (1) software eng. course beyond 605.601		O	
605.702	Cloud-native Architecture and Microservices	605.601; 605.704	N/A	N/A	N/A
605.705	Software Safety	605.202		O/VL	
605.716	Modeling and Simulation of Complex Systems				O/VL
605.729	Formal Methods				O/VL
605.786	Enterprise System Design and Implementation				O
605.789	Service API Design and Development	605.644; 605.681	N/A	N/A	N/A
645.753	Enterprise Systems Engineering	645.769 *or* instructor and advisor approval	O	O	O
645.757	Foundations of Modeling and Simulation in Systems Engineering	645.662 *or* 655.662		O	O
645.761	Systems Architecting	645.769 *or* 655.769 *or* instructor and advisor approval	O	O	O
645.764	Software Systems Engineering	645.662 *or* 655.662; 645.667 *or* 655.667; *or* instructor and advisor approval	O/VL	O/VL	O/VL
645.767	System Conceptual Design	645.764 *or* instructor and advisor approval	O/VL	O/VL	O/VL
645.768	System Design & Integration	645.767 *or* instructor and advisor approval	O/VL	O/VL	O/VL
645.769	System Test & Evaluation	645.768 *or* instructor and advisor approval	O/VL	O/VL	O/VL
695.741	Information Assurance Analysis	695.601	O	O	O
695.791	Information Assurance Architectures and Technologies	605.202; 695.601; 605.671 *or* 635.611	N/A	N/A	N/A

See catalog of complete list and description of prerequisites.
(*indicates a suggested, non-requisite course)

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Data Architect Track	For a general Data Architect Track (no focus area), three (3) courses from any of the focus areas listed below

Develop your skills to become a lead data architect who ensures that insights produced by advanced information systems are accurate and defensible. There are two focus areas:

Data Analytics Focus Area		*At Least Three (3) from List Below - At Least Two (2) from 635.xxx*			
Course #	**Course Name**	**Pre-Req***	**Summer**	**Fall**	**Spring**
635.631	Foundations of Data Analytics		O	O	O
635.632	Engineering Data Intensive Systems		N/A	N/A	N/A
635.683	E-Business: Models, Architecture, Technologies, and Infrastructure			O	O/VL
635.782	Ethics in Intelligent Systems		VL	VL	VL
605.631	Statistical Methods for Computer Science			O	O
605.632	Graph Analytics				O
605.635	Cloud Computing	605.202		O	O
605.649	Introduction to Machine Learning	605.202; 605.621 *or* 685.621 *or* 705.621	O	O/VL	O
605.662	Data Visualization			O	O
605.746	Advanced Machine Learning	605.649	O		O
625.692	Probabilistic Graph Models				O
625.695	Time Series Analysis		O		
625.721	Probability and Stochastic Process I		O	O	
625.722	Probability and Stochastic Process II				O
625.725	Theory of Statistics I		O	O	
625.726	Theory of Statistics II	605.202; 605.682			O
625.740	Data Mining			O	
625.741	Game Theory			O	
685.648	Data Science		O	O	O

Data Engineering Focus Area		*At Least Three (3) from List Below - At Least Two (2) from 635.xxx*			
Course #	**Course Name**	**Pre-Req***	**Summer**	**Fall**	**Spring**
635.631	Foundations of Data Analytics		O	O	O
635.632	Engineering Data Intensive Systems	635.601		VL	
635.683	E-Business: Models, Architecture, Technologies, and Infrastructure			O	O/VL
605.616	Multiprocessor Architecture & Programming				
605.621	Foundations of Algorithms	605.202	O/VL	O/VL	O/VL
605.641	Principles of Database Systems	605.202	O	O	O
605.643	Linked Data and the Semantic Web	605.202	O		
605.644	XML Design Paradigms	605.681	O	O	
605.649	Introduction to Machine Learning	605.202; 605.621 *or* 685.621 *or* 705.621	O	O/VL	O
605.741	Large-Scale Database Systems	605.202; 605.641	O	O	O
605.744	Information Retrieval	605.202		O	
605.788	Big Data Processing Using Hadoop	605.202; 605.681		O	O
685.652	Data Engineering Principles and Practice		VL	VL	VL

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Intelligent Systems Design Track	For a general Intelligent Systems Design Track (no focus area), three (3) courses from any of the focus areas listed below

Develop your skills to drive the design and development of multi-faceted and agile intelligent systems that utilize innovative technologies and techniques. There are three focus areas:

Intelligent Systems Engineering Focus Area	*At Least Three (3) from List Below - At Least Two (2) from 635.xxx*				
Course #	**Course Name**	**Pre-Req***	**Summer**	**Fall**	**Spring**
635.603	AI/ML Ops		O	O	O
635.627	Foundations of Intelligent Systems		N/A	N/A	N/A
635.661	Principles of Human Computer Interaction			O	
635.683	E-Business: Models, Architecture, Technologies, and Infrastructure			O	O/VL
635.782	Ethics in Intelligent Systems		VL	VL	VL
525.645	Modern Navigation Systems			O	O
525.661	UAV Systems and Control			O	O
525.733	Deep Learning for Computer Vision				O
525.786	Human Robot Interaction				IP
535.782	Haptic Applications		O		
585.783	Introduction to Brain-Computer Interfaces		O		
605.641	Introduction to Robotics		O	O	O
605.645	Artificial Intelligence		O	O	O
605.649	Introduction to Machine Learning	605.202; 605.621 *or* 685.621 *or* 705.621	O	O/VL	O
685.621	Algorithms for Data Science		O	O	O
695.634	Intelligent Vehicles: Cybersecurity for Connected and Autonomous Vehicles			O	

Human Centered Engineering Focus Area	*At Least Three (3) from List Below - At Least Two (2) from 635.xxx*				
Course #	**Course Name**	**Pre-Req***	**Summer**	**Fall**	**Spring**
635.661	Principles of Human Computer Interaction			O	
635.682	Website Development				O
635.691	Haptic Interface Design		N/A	N/A	N/A
635.782	Ethics in Intelligent Systems		VL	VL	VL
525.747	Speech Processing				VL
525.786	Human Robotics Interaction				VL
535.782	Haptic Applications			O	
605.646	Natural Language Processing			O/IP	
605.662	Data Visualization		O	O	O
645.650	Foundations of Human Systems Engineering			O	O
645.651	Integrating Humans and Technology			O	O
645.755	Methods in Human-System Performance Measurement and Analysis				O

Internet of Things Focus Area	*At Least Three (3) from List Below - At Least Two (2) from 635.xxx*

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(*indicates a suggested, non-requisite course)