

H-Form ISE 452

Course Information:	
Code and Title:	ISE 452 Special Topics in Systems Engineering
Prerequisites:	Completing 139 credits
Co requisite (if any)	
Credit Hours: 3	Lecture Hrs. (45), Tutorial Hrs. (0), Lab (15) Total Credits (60)
College/ Department:	College of Engineering/Industrial and Systems Engineering

Course Description:
This class provides both theoretical and practical knowledge needed for conceptualizing, designing, supporting, and evaluating today's and tomorrow's systems. The application of systems engineering principles to the design, development, and solution of complex systems are explored. A familiarity of System Engineering development trends and understanding of inter-relationships among System Engineering artifacts are emphasized. This course will foster a base for System Engineers to become critical thinkers, problem solvers and to develop a wide variety of system analysis skills.

Course Objectives:
This course enables students by introducing them to the critical aspects of Systems Engineering that support design processes, architecture concepts, operations concepts, systems integration, and life-cycle support concepts. Moreover, it familiarizes students with Object-Oriented Modelling, providing them with a comprehensive understanding of the four phases of the system development life cycle: planning, analysis, design, and implementation. The curriculum goes further to equip students with the knowledge and skills to utilize the Joint Application Development method for effective problem definition. Emphasis is placed on the significance of clearly defining and utilizing system requirements as a crucial element in solving complex problems.

Course Learning Outcomes		
		PLO
Knowledge Understanding		
1.1	Explain Systems Engineering support of design processes, architecture concepts, Engineering Requirements, system Verification, Validation, and life-cycle support concepts.	K1
1.2	Identify the importance of systems thinking and basic concepts of object-oriented modeling	K1
1.3	Define the use of Joint Application Development method for problem definition	K4
Skills		
2.1	Examine modern engineering problems and trends by employing Visio/ Lucidchart to connect engineering theories with real applications.	S2
2.2	Apply Structural and Behavioral SysMI/UML models to produce Systems Engineering design solution	S3
Values		
3.1	Participate effectively in a team to formulate a real-life problem model and suggest the solution by applying lessons of Special Topics in Systems Engineering	V1

Textbook:			
Title:	The Engineering Design of Systems		
Author(s):	Dennis M. Buede		
Publisher:	John Wiley & Sons	Year and Edition:	2 nd 2009
Other Useful Resources:	Systems Engineering Analysis and Design by Joseph S. Valacich & Joey NASA Systems Engineering Handbook International Council on Systems Engineering (INCOSE) Systems Engineering Handbook		

