

APPLIED SYSTEMS ENGINEERING (ASE)

ASE 6001. Fundamentals of Modern Systems Engineering. 3 Credit Hours.

Explore a wide range of modern systems engineering principles and development methodologies. Address requirements engineering, systems definition, design and analysis, implementation, operation, and technical management.

ASE 6002. Systems Design and Analysis. 3 Credit Hours.

Introduce emerging techniques for systems and systems-of-systems analysis including IPPD, DOE, Taguchi methods, response surface equations, multi-attribute decision making, and concept feasibility assessment.

ASE 6003. Modeling and Simulation for Systems Engineers. 3 Credit Hours.

Introduction to modeling and simulation for systems engineers. Topics include problem formulation, conceptual modeling, simulation methodologies, verification and validation, DOE, simulation execution, and output analysis.

ASE 6004. Leading Systems Engineering Teams. 3 Credit Hours.

Systems engineering processes provide a model for successfully managing complex systems. Learn to apply management and development techniques used for successful commercial and government programs.

ASE 6005. Advanced Topics in Systems Engineering: Systems Modeling with SysML. 3 Credit Hours.

This core elective introduces SysML as a system modeling and design tool, with example applications, guidelines for application, and student projects on implementations in practice.

ASE 6006. Systems Engineering Laboratory. 3 Credit Hours.

Application of working knowledge of systems engineering techniques applied to a "case study" in an applicable domain.

ASE 6101. Vehicle Systems Analysis and Synthesis. 3 Credit Hours.

Vehicle Preliminary Design involves design iteration with disciplinary physics-based methods and tools. Includes geometry and databases from conceptual design, six DOF modeling, analysis, and synthesized baseline.

ASE 6102. System of Systems and Architecture. 3 Credit Hours.

Develop a broader understanding of the interdependencies and interoperability issues, interfaces, and processes for creating and defining Systems Architecture for complex systems.

ASE 6103. Complex System Lifecycle and Integration. 3 Credit Hours.

System preliminary design must address product and process design throughout system lifecycle from integration through manufacturing to phase-out along with interfaces to other emerging systems.

ASE 6104. Complex System Design and Integration (Capstone). 3 Credit Hours.

Student teams apply methods and techniques taught throughout the program to conduct complex system Conceptual Design based on requirements provided in a Request for Proposal.

ASE 6111. Sensor Systems Analysis and Synthesis. 3 Credit Hours.

Defines, classifies, and examines technology used in stand-alone sensor systems. Centers on system-engineering trades useful in designing systems of sensors and systems of systems.

ASE 6121. Information Systems Analysis and Synthesis. 3 Credit Hours.

Tools and approaches for analysis and synthesis of enterprise information systems. Topics include user-centered requirement, scenario-based design, UML, network/communications, iterative prototyping, and enterprise support.

ASE 6131. Analysis and Synthesis: Human Systems Integration. 3 Credit Hours.

Human Systems Integration Analysis and Synthesis, a PMASE complex systems elective, ensures human-related technical issues are properly addressed during system definition, design, development, and implementation.

ASE 8801. Special Topics. 1 Credit Hour.

Topics of current interest in Applied Systems Engineering.

ASE 8803. Special Topics. 3 Credit Hours.

Topics of current interest in Applied Systems Engineering.

ASE 8901. Special Problems. 1-21 Credit Hours.