



# Objectives Sheet

## ENG 202 - Applied Systems Engineering in Defense Acquisition

*Course Learning/Performance Objectives followed by enabling learning objectives*

<b>ENG 202.U01.01</b>	<b>Given an overview of the DoD System Engineering (SE) Processes, including Technical Processes and Technical Management Processes, describe how they can be applied to improve the efficiency of DoD acquisition.</b>
ENG 202.U01.01.01	Identify the role of the SE Technical Processes in DoD acquisition as described in DAG Chapter 3.
ENG 202.U01.01.02	Identify the role of the SE Technical Management Processes in DoD acquisition as described in DAG Chapter 3.
<b>ENG 202.U02.01</b>	<b>Relate how the Defense Acquisition Process, the Requirements Generating Process, and the Budget Process are reflected in the DoD 5000 series documents and how they influence DoD Systems Engineering across the acquisition life cycle.</b>
ENG 202.U02.01.01	Identify the role of the major decision support systems ( Defense Acquisition System, JCIDS, and PPBE) and their relationship to Systems Engineering (SE).
ENG 202.U02.01.02	Given current trend data on DoD acquisition cost, schedule and performance, identify how the current SE policies are attempting to reverse the negative trends.
ENG 202.U02.01.03	Identify the characteristics of the acquisition program models as described in the DoDI 5000.02.
ENG 202.U02.01.04	Identify the purpose of the SE activities throughout the acquisition lifecycle as described in DAG Chapter 3.
<b>ENG 202.U02.02</b>	<b>Apply the processes for SE Design, Work Breakdown Structures (WBS), and Earned Value Management (EVM) development in a given DoD acquisition scenario to reduce technical risk.</b>
ENG 202.U02.02.01	Describe the characteristics of effective technical communication.
ENG 202.U02.02.02	Given a Work Breakdown Structure (WBS) exercise, discuss how the WBS can be used to support DoD Risk Management processes.
ENG 202.U02.02.03	Given an acquisition scenario, use the "design" part of the SE Technical Processes to demonstrate how to flow-down a product requirement through the Requirements Analysis and Architectural Design steps .
ENG 202.U02.02.04	Given a manufacturing scenario, explain how DoD Earned Value Management techniques of CPI and SPI are used to evaluate program status.
<b>ENG 202.U03.01</b>	<b>Explain how the acquisition initiatives of Cybersecurity, Modular Open Systems Approach (MOSA), Reliability and Maintainability (R&amp;M), and Should Cost Management can be used to achieve greater efficiency in DoD acquisition.</b>
ENG 202.U03.01.01	Identify the key ideas of Cybersecurity and Reliability and Maintainability (R&M) Initiatives that are applicable to the DoD acquisition community.
ENG 202.U03.01.02	Identify the purpose of "Will Cost and Should Cost" as it relates to SE across the DoD acquisition life cycle.
ENG 202.U03.01.03	Identify how potential cost savings benefits associated with smart application of Modular Open Systems Approach (MOSA) and Data Rights methodologies could be applied in DoD acquisition.
<b>ENG 202.U04.01</b>	<b>Given an acquisition scenario, identify the issues associated with a poorly written Systems Engineering Plan (SEP).</b>
ENG 202.U04.01.01	Given a technical planning scenario, discuss how SE processes can reduce risk.
ENG 202.U04.01.02	Discuss best practices and lessons learned in the development of a Systems Engineering Plan as delineated in the SEP Outline.
ENG 202.U04.01.03	Discuss the DoD policy and processes for developing and maintaining a Systems Engineering Plan.
ENG 202.U04.01.04	Given an acquisition scenario, identify deficiencies in a draft SEP based on guidance provided by the SEP Outline.
ENG 202.U04.01.05	Discuss the impact of insufficient SE technical planning on the outcome of a DoD acquisition program.
ENG 202.U04.01.06	Discuss the areas that can be expected to have major updates to the SEP when transitioning into the next acquisition phase.
ENG 202.U04.01.07	Use systems engineering processes to analyze critical technical information and apply the findings in an impactful briefing format.
<b>ENG 202.U05.01</b>	<b>Apply system requirements and Analysis of Alternatives processes in a Materiel Solution Analysis (MSA) phase exercise with a given set of Defense Acquisition Guide (DAG) SE processes and tools to improve lifecycle efficiency.</b>
ENG 202.U05.01.01	Given an acquisition scenario, relate how the SE processes affect the technical planning and execution involved in the MSA phase.
ENG 202.U05.01.02	Given a MSA phase scenario with technological risks and programmatic cost /schedule constraints, demonstrate how the Initial Capabilities Document and Market Research Reports can impact selection of system alternatives based on capability to meet User requirements.
ENG 202.U05.01.03	Given an acquisition scenario, relate how the DoD SE Technical Review(s) discussed in the DAG for the MSA phase are used to reduce technical risk.
ENG 202.U05.01.04	Identify the Technical Inputs and Outputs for the MSA phase as per the DAG Chapter 3.
ENG 202.U05.01.05	Given an Initial Capabilities Document (ICD), demonstrate how to conduct basic functional analysis/allocation to support the initial architectural design process.
ENG 202.U05.01.06	Determine if a product or product elements meets the definition of a Critical Technology.
ENG 202.U05.01.07	Use systems engineering processes to analyze critical technical information and apply the findings in an impactful briefing format.
<b>ENG 202.U06.01</b>	<b>Apply system requirements processes, technical reviews, and competitive prototyping in a Technology Maturation and Risk Reduction (TMRR) phase exercise with a given set of Defense Acquisition Guide (DAG) SE processes and tools to improve lifecycle efficiency.</b>



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ENG 202.U06.01.01	Given an acquisition scenario, Rrelate how the SE processes affect the technical execution and planning involved in the TMRR phase.
ENG 202.U06.01.02	Given a TMRR phase scenario with user requirements delineated in the Draft CDD and with programmatic cost /schedule constraints, demonstrate how prototyping can be used to assess maturity of high risk technologies.
ENG 202.U06.01.03	Given an acquisition scenario, Rrelate how the DoD SE Technical Review(s) discussed in the DAG for the TMRR phase are used to reduce technical risk.
ENG 202.U06.01.04	Identify the Technical Inputs and Outputs for the TMRR phase as per the DAG Chapter 3.
ENG 202.U06.01.05	Identify the information that is provided by the Capabilities Development Document and System Specification.
ENG 202.U06.01.06	Identify the characteristics of a well-formulated requirement.
ENG 202.U06.01.07	Given a TMRR phase scenario and a matrix, use the matrix to flow requirements from the draft CDD to the Program Specification, and identify which requirements are well-formulated and traceable.
ENG 202.U06.01.08	Identify the purpose of DoD competitive prototype testing and the verification methods that can be used to ensure the product meets the specification requirement.
ENG 202.U06.01.09	Relate the technical specifications and the technical reviews associated with the establishment of the Configuration Management Baseline.
ENG 202.U06.01.10	Recognize the uses and cautions of using Technical Readiness Levels (TRLs) to indicate progress.
ENG 202.U06.01.11	Use systems engineering processes to analyze critical technical information and apply the findings in an impactful briefing format.
<b>ENG 202.U07.01</b>	<b>Given DoD technical risk management problem solving scenarios, provide rationale for the selection of a best solution in accordance with DoD 5000 series documents, DAG, and DoD Risk, Issue, and Opportunity Management Guide for Defense Acquisition Programs.</b>
ENG 202.U07.01.01	Given a risk management scenario, demonstrate the use of the DoD Risk Management process steps.
ENG 202.U07.01.02	Given a risk management and problem solving scenario with Likelihood and Consequence Tables , demonstrate use of the Risk Reporting Matrix.
ENG 202.U07.01.03	Given a risk management and problem solving scenario (issue), defend the best option to address the issue.
ENG 202.U07.01.04	Given a risk management and problem solving scenario (issue), determine specific implications of potential Design Considerations.
ENG 202.U07.01.05	Use systems engineering processes to analyze critical technical information and apply the findings in an impactful briefing format.
<b>ENG 202.U08.01</b>	<b>Apply system requirements, technical reviews/audit processes, and the use of developmental testing in an Engineering and Manufacturing Development (EMD) phase exercise with a given set of Defense Acquisition Guide (DAG) SE processes and tools to improve lifecycle efficiency.</b>
ENG 202.U08.01.01	Given an acquisition scenario, relate how the SE processes affect the technical execution and planning involved in the EMD phase.
ENG 202.U08.01.02	Given an EMD phase scenario, demonstrate how requirements changes in the CDD impact system/subsystem design trades to optimize capability of meeting User requirements within programmatic cost/schedule constraints.
ENG 202.U08.01.03	Given an acquisition scenario, Rrelate how the DoD SE Technical Review(s), Audits, and/or Program Assessments, discussed in the DAG for the EMD phase, are used to reduce technical risk.
ENG 202.U08.01.04	Identify the Technical Inputs and Outputs of the EMD phase as per the DAG Chapter 3.
ENG 202.U08.01.05	Discuss how DoD Configuration Management processes support management of the physical configuration throughout the acquisition lifecycle.
ENG 202.U08.01.06	Given an EMD phase scenario, assess planned versus actual system performance over time based on Technical Performance Measure (TPM) data provided.
ENG 202.U08.01.07	Use systems engineering processes to analyze critical technical information and apply the findings in an impactful briefing format.
<b>ENG 202.U09.01</b>	<b>Apply system requirements, configuration management, and urgent capability acquisition processes in a Production and Deployment (PD) phase exercise with a given set of Defense Acquisition Guide (DAG) SE processes and tools to improve lifecycle efficiency.</b>
ENG 202.U09.01.01	Given an acquisition scenario, relate how the SE processes affect the technical execution and planning involved in the P &D phase.
ENG 202.U09.01.02	Given an acquisition scenario, relate how the DoD SE Technical Review(s) and Audits discussed in the DAG Chapter 3 for the P&D phase are used to reduce technical risk.
ENG 202.U09.01.03	Identify the Technical Inputs and Outputs of the PD phase as per DAG Chapter 3.
ENG 202.U09.01.04	Given a JUON requirement, develop an acquisition strategy that meets User's needs and is in accordance with the appropriate DoDI 5000.02 Program Model.
ENG 202.U09.01.05	Given a Configuration Management exercise, identify how risk planning could have been used to mitigate the issues and/or risks highlighted in the program office scenario .
ENG 202.U09.01.06	Recognize the uses and cautions of using Manufacturing Readiness Levels (MRLs) to indicate progress.
ENG 202.U09.01.07	Identify basic principles of Lean, Six Sigma, and Theory of Constraints Manufacturing concepts.



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ENG 202.U09.01.08	Given a production scenario, conduct SE analysis to determine potential root causes for manufacturing issues.
ENG 202.U09.01.09	Use systems engineering processes to analyze critical technical information and apply the findings in an impactful briefing format.
<b>ENG 202.U10.01</b>	<b>Apply system requirements, technical assessment/planning, and the application of the System Safety Matrix in an Operations and Support (OS) phase exercise with a given set of Defense Acquisition Guide (DAG) SE processes and tools to improve lifecycle efficiency.</b>
ENG 202.U10.01.01	Given an acquisition scenario, relate how the SE processes affect the technical execution and planning involved in the O &S phase.
ENG 202.U10.01.02	Given an acquisition scenario, relate how the DoD SE Technical Review(s) discussed in the DAG Chapter 3 for the O&S phase are used to reduce technical risk.
ENG 202.U10.01.03	Identify the Technical Inputs and Outputs of the O&S phase as per the DAG Chapter 3.
ENG 202.U10.01.04	Given an O&S phase scenario, illustrate the DoD preferred steps for system disposal and identify typical hazardous materials that could be encountered.
ENG 202.U10.01.05	Given an O&S phase scenario, interpret the User's Product Deficiency Sheets to develop a prioritized correction plan that considers technical risks, funding priorities, and implementation schedule.
ENG 202.U10.01.06	Given a specific risk, classify the risk IAW either using the DoD Risk Management Guide or MIL-STD-882E as appropriate.
ENG 202.U10.01.07	Given an O&S phase scenario, illustrate the types of funds and modification strategies available to correct deficiencies, and insert capability improvements to fielded systems.
ENG 202.U10.01.08	Use systems engineering processes to analyze critical technical information and apply the findings in an impactful briefing format.