



DEFENSE ACQUISITION UNIVERSITY

PQM 301, Advance Production, Quality, and Manufacturing

100820

Course Learning/Performance Objectives followed by its enabling learning objectives on separate lines if specified.

1	<p>Given lecture, lesson materials and classroom discussions students will summarize the guidance, key activities and information required by defense acquisition policy for the initiation, development, production, fielding/deployment, and operational support of a Defense system, to include tailoring and planning for decision criteria that apply at each milestone review</p> <hr/> <p>Explain key activities for each phase and how they may be tailored to meet the various situations of particular programs</p> <hr/> <p>Distinguish mandatory policies and procedures from discretionary practices and explain their impact on tailoring systems milestones, phases and information requirements</p>
2	<p>Given lecture, lesson materials and classroom discussions students will classify Systems Engineering and/or Systems Engineering Process in terms of when it is applied, who applies it and the results of each Systems Engineering Process application. Point out Systems Engineering definitions, terms, and concepts, Integrated Product/Process Development concept; System Engineering application in the systems acquisition life cycle, and the Systems Engineering Process overview</p> <hr/> <p>Describe the inputs and outputs of the Systems Engineering Process for each Milestone decision and Acquisition Lifecycle phase</p> <hr/> <p>Identify and describe the eight Technical Processes within the Systems Engineering "V" model and their respective inputs and outputs</p> <hr/> <p>Identify and describe the eight Technical Management Processes associated with the Systems Engineering "V" model</p> <hr/> <p>Describe the role of the production and quality manager within the Systems Engineering Process</p>
3	<p>Given lecture, lesson materials and classroom discussions students will explain the relationships between yield, cost, cycle time, inventory levels, throughput, capacity and process variability</p> <hr/> <p>Describe the 5 M's and their role in manufacturing system design</p> <hr/> <p>Describe the key planning and execution elements of manufacturing system design including yield, cost, cycle time, inventory levels, throughput, capacity and process variability</p> <hr/> <p>Describe manufacturing as a design constraint, risk driver, and an enabling/critical set of technologies</p>
4	<p>Given lecture, lesson materials and classroom discussions students will analyze and describe Lean practices, tools and concepts</p> <hr/> <p>Describe and analyze the key concepts of the Lean "House" model</p> <hr/> <p>Describe Lean production tools and techniques and their use and benefits within the Acquisition Lifecycle</p> <hr/> <p>Identify the benefits of Lean and their potential use and impact within the Department of Defense</p>
5	<p>Given lecture, lesson materials, classroom discussions and an exercise students will be able to understand and summarize the key principles, and outline the major steps of the process, of value stream mapping</p> <hr/> <p>Explain the overall concepts and purpose of value stream mapping</p> <hr/> <p>Discuss how to select, bound, and assign responsibility for mapping a value stream</p> <hr/> <p>Use standard value stream mapping symbols and methods to create a current state map</p> <hr/> <p>Use a current state Value Stream Map to analyze and describe the production environment and processes with a provided scenario</p> <hr/> <p>Describe how Current State Value Stream Map analysis influences Future State Value Stream Mapping and Continuous Process Improvement activities</p>
6	<p>Given lecture, lesson materials, classroom discussions and an exercise students will summarize the key principles, outline the major steps in the process and explain the impact of Performance Based Acquisition (PBA) on production and quality activities throughout the DoD acquisition life cycle</p> <hr/> <p>Explain the impact and benefits of PBA on the current DoD Acquisition Process</p> <hr/> <p>Describe the characteristics of a well written performance specification</p> <hr/> <p>Identify and describe the role of the production and quality manager in executing PBA</p> <hr/> <p>Describe the role of Systems Engineering in the PBA process</p> <hr/> <p>Evaluate and edit a provided Performance Specification</p>
7	<p>Given lecture, lesson materials, and classroom discussions students will be able to define producibility and associated concepts</p> <hr/> <p>Describe producibility for given product examples</p> <hr/> <p>Define key and critical characteristics</p> <hr/> <p>Describe producibility as a design constraint, risk driver, and manufacturing enabler</p>



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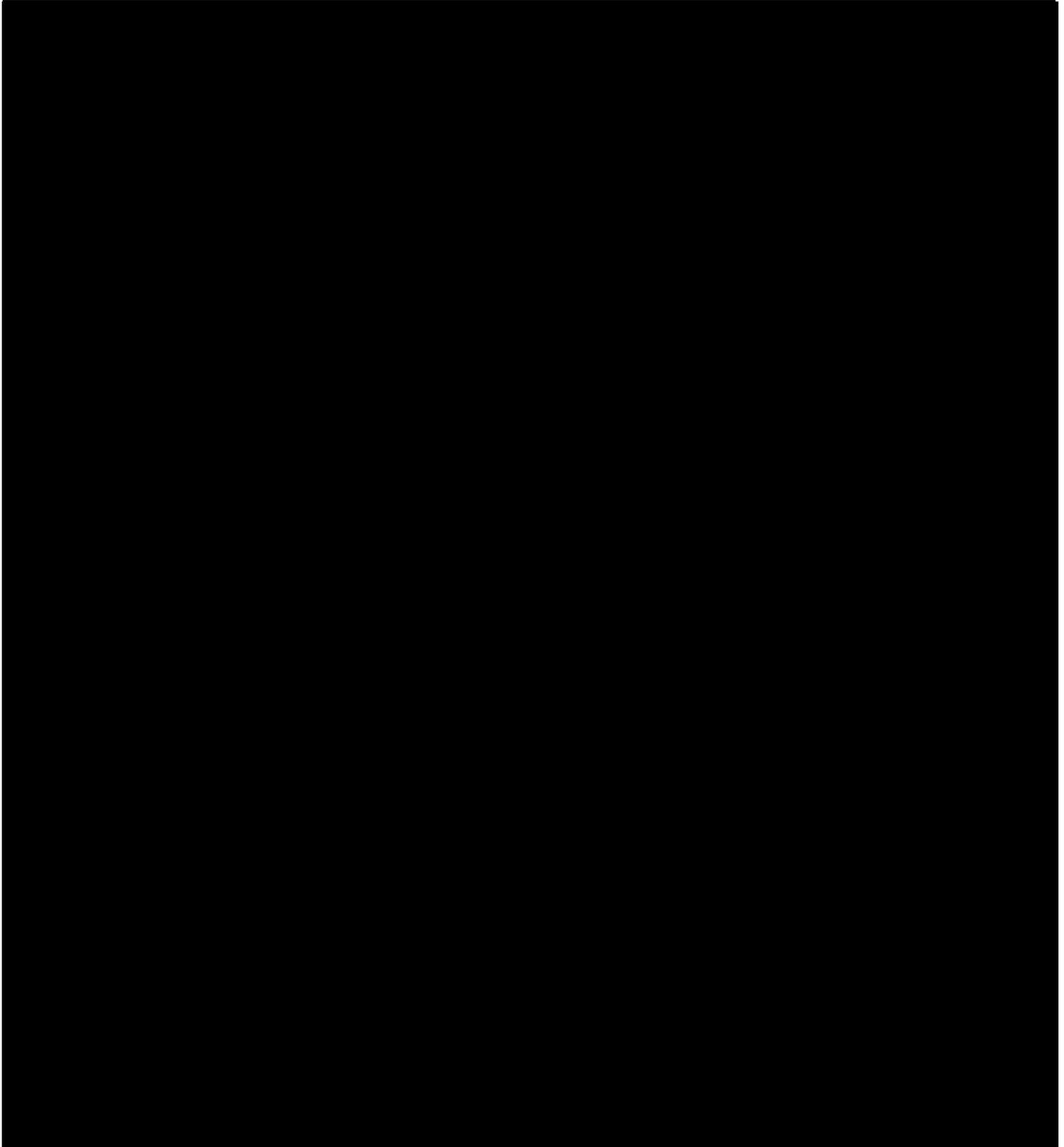
8	<p>Given lecture, lesson materials, classroom discussions and an exercise students will be able to demonstrate the relationship of customer requirements to engineering activities using Quality Function Deployment (QFD)</p> <p>Demonstrate the steps necessary to construct a Phase I Product Planning Matrix (aka House of Quality) of the Quality Function Deployment (QFD) process</p> <p>Develop the Requirements Matrix (House of Quality) for an assigned product</p> <p>Explain how QFD could be used to support the Systems Engineering process throughout the Acquisition Lifecycle</p>
9	<p>Given a case scenario and lecture materials students will evaluate correct application of Lean Concepts</p> <p>Identify root cause(s) for production problems and defects</p> <p>Describe systematic and shop floor level actions required to eliminate problems and defects</p> <p>Define and describe key concepts of the Lean model</p>
10	<p>Given lecture and class discussions students will identify and describe elements of an Advanced Quality System and their impact on the acquisition of DoD products and services</p> <p>Compare and contrast the different definitions of quality and how they apply to the acquisition of DoD products and services</p> <p>Identify the elements of the Cost of Quality Model</p> <p>Distinguish the difference between internal and external failure cost in the Cost of Quality Model</p> <p>Differentiate between a basic quality system and an advanced quality system</p>
11	<p>Given lecture and class discussion, students will be able to identify and assess basic supply chain design and operations issues for both contractor and defense industrial facility supply chains with particular emphasis on inbound logistics</p> <p>Identify basic supply chain design factors and their importance</p> <p>Identify and assess basic supply chain operational issues, problems and risks</p> <p>Describe supplier selection criteria</p> <p>Identify supplier Key Performance Indicators</p> <p>Identify the role of information technologies in supply chain design and operations</p> <p>Describe the effects of information distortion, forecasting challenges and human nature on supply chain performance</p> <p>Describe the importance of velocity, visibility and variability reduction in supply chain management</p>
12	<p>Given lecture, lesson materials and class discussion students will describe Information Technology theories and laws and their impact on the acquisition of DoD products and services</p> <p>Define Moore's, Guilder's, Metcalf's and Coases' laws/theories</p> <p>Examine the implications of Lovejoy's Model for manufacturing and the design of supply chains</p> <p>Describe the impact of Moore's, Guilder's, Metcalf's and Coases' laws/theories and the Lovejoy model on DoD Supply Chain Management operations and strategies</p>
13	<p>Given student lecture, and classroom discussion will explain how Environmental, Safety and Occupational Health (ESOH) considerations are incorporated into the Systems Engineering Process and Acquisition Lifecycle</p> <p>Describe the six major ESOH considerations contained in the Defense Acquisition Guidebook (section 2)</p> <p>Explain the aspects of programmatic evaluation of ESOH considerations as documented by the Program Manager</p> <p>Identify and discuss methods, tools and techniques used to manage and mitigate ESOH risks</p>
14	<p>Given a case scenario and lecture materials students will evaluate correct application of Supply Chain Management Concepts</p> <p>Explain key aspects of Supply Chain Management strategies</p> <p>Describe the elements of a Virtually Integrated Supply Chain</p> <p>Evaluate the benefits of Virtual Integration</p> <p>Describe the challenges associated with applying Virtual Integration to Ford/DoD</p>
15	<p>Given lecture, lesson materials and class discussion students will describe key elements of Activity Based Costing and its impact on the acquisition of DoD products and services</p> <p>Define basic cost accounting concepts</p> <p>Compare and contrast traditional cost indirect cost accounting with Activity Based Costing</p>



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	Describe the benefits of the effective use of Design of Experiments
23	Given lecture, lesson materials and class discussion students will recognize applications of computer modeling and simulation technologies available, their advantages and disadvantages and impact on production and quality activities throughout the DoD acquisition life cycle
	----- Identify the applications of computer modeling and simulation technologies available for the factory floor
	----- Identify the advantages and disadvantages of computer modeling and simulation technologies in factory floor applications