

EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
Department of Computing and Mathematics
COURSE OUTLINE FOR

Course No.: MSE580

Title: Software Process Definition and Modeling

Cr Hrs: 3

Lecture Hours: 3

Laboratory Hours: 0

COURSE DESCRIPTION:

This course provides students with the fundamental knowledge for software process definition and modeling. Software process context includes a framework for process definition and modeling, engineering of process, enactment of the processes, and description of the process properties. Other subjects related to process definition covered are process, process step, process element and process script. The course also addresses various representation to process modeling, such as text-based, template-based, and graphical-based. Executable presentations, in the form of process program are studied. Included in the course are process definition and modeling tools such as State Transition Diagrams, Entry-Task-Validation-Exit, Statecharts and Petri-Nets, and automated tools for process representations.

Prerequisite: MSE 500 or Consent of Instructor

GOALS:

Provide students with an understanding of current practices in software process, software process improvements, quality management systems, tools and techniques of quality management, process planning, process definition, process modeling, process improvements, and process measurement.

PERFORMANCE OBJECTIVES:

1. understand the basic principles of Total Quality Management (TQM)
2. analyze a process and identify areas needing improvement.
3. have an understanding of concepts embodied in the Capability Maturity Model (CMM) .
4. understand the software assessment process
5. apply software metrics to process improvements.
6. document a process using a process definition representation.

Department of Computing and Mathematics
COURSE OUTLINE FOR MSE580, Continued

TEXTBOOK:

Managing the Software Process, Humphrey, Watts S., Addison-Wesley, 1990

SUGGESTED SUPPLEMENTAL MATERIALS:

- a. The Capability Maturity model for Software, SEI Publication
- b. Process Definition and modeling Guidebook, SPC Publication
- c. Instructor's handouts and research papers

PREREQUISITE KNOWLEDGE BY TOPIC:

1. MSE 500 or consent of instructor

TOPIC	CLASS HOURS	COURSE OBJECTIVES
1. Introduction	3	<ol style="list-style-type: none"> a. Introduction/Overview b. SEI Overview c. Process concepts
2. Quality	3	<ol style="list-style-type: none"> a. Historical view of quality movement b. Total Quality management overview c. Statistical Process Control
3. Process Definition and Modeling	15	<ol style="list-style-type: none"> a. Process Definition concepts b. Process representation c. Process guide d. Process modeling techniques – Structure Analysis & Design; Entry-Tak Validation-Exit (ETVX) e. State Transition Diagrams (STD) f. Petri nets
4. Software Process Improvement Models	12	<ol style="list-style-type: none"> a. Introduction to CMM b. CMM Key Practices c. Comparison of ISO 9000, SPICE, and CMM d. Software Process Assessment e. Software Process Capability Evaluation
5. Quantitative Process Management	9	<ol style="list-style-type: none"> a. Measures and metrics b. Data collection methods c. Data analysis methods d. Defect tracking systems e. CMM and Metrics

LABORATORY:

None

COMPUTER USAGE:

Occasional use as a learning tool in the classroom.

GRADING SYSTEM:

This course is taught as a workshop. Grade is based on the semester-long term project, term research paper and a final exam.

ESTIMATED CONTENT:

Skills:	50%
Content:	50%