

CEN 4010 Principles of Software Engineering

Credits: 3 credits

Text book, title, author, and year: *Ian Sommerville, Software Engineering, ISBN: 9780137035151, Pearson, 9th Edition, 2011*

- a. **Supplemental materials:** none.

Specific course information

- a. **Catalog description:** An introduction to the basic principles and practices of software engineering. Emphasis will be placed on programming language support for software engineering principles, especially techniques for data abstraction, code reusability and "programming in the large". Other topics include software life-cycle models; general design, Implementation, and testing issues; specification and design methodologies; and model-based approaches to software design. Students will complete a team project involving written and oral presentations.
- b. **Prerequisites:** COP 3530 or COP 3510
- c. **Required, elective, or selected elective:** Required

Specific goals for the course

- a. **Specific outcomes of instruction:** By the end of the course students will be able to: (i) define the computing requirements of a detailed description of a problem solution; (ii) conduct research and gather information; (iii) plan a project with tools and to maintain a log book of activities; (iv) use appropriate documentation, modeling, design, and debugging tools; (v) validates each step of development with appropriate verification techniques;(vi) work and contribution to a team project; (vii) understand the need for professional ethics codes; (viii) communicate effectively with a range of audiences; (ix) An ability to use current techniques, skills, and tools necessary for computing practice; (x) An ability to apply design and development principles in the construction of software systems of varying complexity.

Brief list of topics to be covered:

- a. Scope of Software Engineering
- b. Software Life-Cycle Models
- c. Software Processes
- d. Agile Software Development
- e. Requirement Engineering
- f. System Modeling
- g. Architectural Design
- h. Design and Implementation
- i. Distributed Software Engineering
- j. Project Management
- k. Project Planning
- l. Service-Oriented Software Engineering
- m. Dependability and Security