



**THE OHIO STATE UNIVERSITY**  
COLLEGE OF ENGINEERING

# Software Engineering Techniques

## CSE 5231

**Credit Hours:**

2.00

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**Course Levels:**

Undergraduate (1000-5000 level)

Graduate (5000-8000 level)

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**Course Components:**

Lecture

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**Course Description:**

Software engineering issues, techniques, methodologies and technologies; software lifecycle activities: requirements analysis, architecture, design, testing, deployment, maintenance; project management; enterprise software systems; frameworks.

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**Prerequisites and Co-requisites:**

Prereq: 3901 or 3902 or 3903 (560).

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**Course Goals / Objectives:**

- Be competent with structured and agile software engineering frameworks; specifically structured and agile software engineering methodologies for requirements identification, analysis, architecture, design, testing, deployment and project management
  - Be familiar with the characterization of enterprise software systems
  - Be familiar with frameworks for analyzing the business context of enterprise IT systems, the concept of Business-IT alignment and related issues, and Enterprise Architecture
  - Be exposed to the trends impacting enterprise systems
  - Be exposed to the need for frameworks for software engineering
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### **Course Topics:**

- Characteristics of enterprise softw. sys.: scale, heterogeneity, distribution, federation by nature, lack of complete knowledge; organizational challenges; external drivers.
- Understanding the business and the relationship between the business and information technology - business strategy, business-IT alignment and enterprise architecture.
- Software engineering process – broadly characterized as structured or agile processes. Scenario-driven, Incremental and iterative development. Introduction to work-products and work-product-oriented development. Agile principles.
- Requirements gathering. Structured and agile requirements work-products.
- Analysis – domain, problem and solution analysis. Exposure to UML. Structured and agile analysis work-products. CRC-card based analysis.
- Architecting softw. intensive sys: Designing, evaluating architectures; non-functional requirements & quality attributes in arch. Quality-driven design. Structured & agile architecture work-products.
- Software project management: Structured and Agile project planning and management, linear and parametric software estimation, Risk planning. Software configuration management. Agile boot camp – LEGO-based workshop on Agile development.
- Software design: Responsibility-driven design concepts, application of responsibility-driven design in design patterns and enterprise technology frameworks, designing applications using enterprise technology frameworks.
- Testing: Testing methodologies for enterprise systems. Testing in agile methodologies.
- Deployment, Maintenance and Management: IT Infrastructure Library (ITIL) practices for infrastructure management.
- Case studies in software engineering

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### **Designation:**

Elective