Global Learning Semesters
Course Syllabus
Course: COMP-618 Software Engineering
Department: Computer Science
Host Institution: Intercollege, Nicosia, Cyprus

Course Summary

Course Code	Course Title	Recommended Credit Hours
COMP-618	Software Engineering	4
Semester Offered	**Contact Hours**	**Prerequisites**
Please contact us	42-45	Students are expected to have undergraduate knowledge of Software Engineering.
Department	**Level of Course**	**Language of Instruction**
Computer Science	Upper Division	English

Course Description

This course aims to further develop graduate students understanding of the discipline of software engineering and enable them to design and implement reliable and robust large-scale software according to specification. It presents an in-depth treatment of software engineering topics, concepts and methods required for the development of large software systems. It complements these with methods and techniques for planning and managing software development projects. It promotes the use of software engineering tools for software design, implementation and testing. It emphasizes the need of teamwork in the software engineering industry exemplified by required group projects. After completing the course, students will be able to understand the issues affecting the organization, planning and control of software systems development; be able to establish and run software development projects; read and understand advanced professional and technical literature on software engineering topics and work productively in industrial software projects.

Prerequisites

Students are expected to have undergraduate knowledge of Software Engineering.

Topic Areas

- Software Life Cycle. Planning and management activities. Analysis, design, implementation, testing, maintenance and enhancement of software systems. Deliverables and reviews. Alternative life cycle models.

- System Architecture and Design. Computer Systems and Networks. Interfaces and Protocols. Distributed Computing. Operational Procedures. Object Oriented Design: A UML Primer

- Project Management. Techniques for planning, costing, estimating and scheduling projects, Team organisation and management, leadership and communications, process monitoring.

- Quality Assurance. Reviews and inspections, metrics, standards, tests and certification. Total Quality Management. Risk Management in Software Engineering. Costs and benefits.

- Configuration Management. Configuration items. Status accounting. derivation and traceability. Change control and releases. Standards.

- Software Testing. Testing objectives, methods, test planning, test case design. Validation and verification. Integration testing, systems and acceptance testing. Alpha and beta site testing. Reliability. Performance Evaluation. Usability Engineering.

- Legal Aspects of Software Engineering. Jurisdiction (International, E.U., national). Intellectual Property (copyright, patent, trademark). Contracts. Privacy. Non-Disclosure Agreements. Ethical Issues. Practical Advice.
- People ware. Maslaw's Hierarchy of needs. Team work organization. Team formation and ask allocation. Administrative and technical challenges

Course Assessment

Students will be assessed through group projects and presentation, a midterm and a final exam. The percentages contributing to the final grade are as follows:

Group Project and Presentation: 40%
Midterm Exam: 20%
Final Exam: 40%

Group Project and Presentation: A term project conducted by a team of students that involves development activities (requirements elicitation, analysis, system design, object design, implementation and testing) and managing software activities (software communication management, project management and software life cycle).

Some examples:

1) Design and develop a query navigation system for the town of {Nicosia or Limassol or Larnaca, etc). The project may involve distributed objects as middleware technology for communication among the nodes, WaveLAN networks and cellular phone modems.
2) Design and develop an emergency management system for coordinating units working on an accident site. The project may involve distributed objects as middleware technology for managing all communication among the nodes, WaveLAN networks and cellular phone modems.

3) To design and develop a JavaCard-based application to enable users to select a combination of smart card applications and dynamically store them in a smart card.

Midterm exam: It will contain the material covered up to the time of the midterm.

Final Examination: This examination will be comprehensive and it will include all the material covered throughout the semester

Readings and Resources

Required Textbooks
- Pressman, R. Software Engineering: A Practitioner's Approach with E-source on CD-ROM, 5th Edition, McGraw Hill, 2001, ISBN 0072496681. (Required).
- Pfleeger, S. L. Software Engineering: Theory and Practice, 2nd Edition, Prentice Hall, 2001.
- Schwalbe, K. Information Technology Project Management, 2nd Edition, Course Technology, 2001, ISBN 0619035285 (Required).
- Sommerville, I. Software Engineering, 6th Edition, Addison Wesley, 2000.
- Brooks, F. P. Jr., The Mythical Man Month, Essays on Software Engineering, Anniversary Edition, 2nd Edition, Addison-Wesley, 2000.
- Jacky, J., The Way of Z: Practical Programming with Formal Methods, Cambridge University Press, 1997.
- Kapor, M., A Software Design Manifesto, Dr. Dobbs Journal, 2001. http://hci.stanford.edu/bds/1-kapor.html
- Booch, G., Jacobson, I., Rumbaugh, J. and Rumbaugh, J., The Unified Modeling Language. Addison-Wesley, 1999.