



UNIVERSITI TEKNOLOGI MARA

CSC711: ADVANCED SOFTWARE ENGINEERING

Course Name (English)	ADVANCED SOFTWARE ENGINEERING APPROVED
Course Code	CSC711
MQF Credit	3
Course Description	The course aims to develop the depth understanding of the discipline of software engineering by considering the wider systems engineering context in which software plays a role. It aims to examine the principles, concepts and techniques associated with a number of advanced and industrially relevant topics, relating to both the product and processes of software engineering. It seeks to complement this with an account of the associated practical and professional issues in software engineering.
Transferable Skills	The student will be equipped with demonstrateability to identify and articulate self skills, knowledge and understanding confidently and in a variety of contexts related to the selection of appropriate software engineering methodologies, techniques and process models. The students can analyse emerging technologies in software engineering. Besides, they can design software systems that meets user requirements. The students are also able to evaluate software engineering techniques in a large-scale software development project. Lastly, the students can evaluate software engineering artefacts produced in software development project.
Teaching Methodologies	Lectures, Blended Learning, Discussion, Directed Self-learning
CLO	CLO1 Apply appropriate software engineering methodologies in evaluating software systems. CLO2 Synthesize information on current computing technologies that are significant to software engineering application. CLO3 Accommodate teamwork skill in formulating software engineering artifacts.
Pre-Requisite Courses	No course recommendations
Topics	
1. Software Engineering Notions and Concepts 1.1) Introduction to software engineering 1.2) Introduction to software systems 1.3) Managing software development activities 1.4) Software development project planning and scheduling 1.5) Introduction to UML	
2. Requirement Engineering 2.1) Requirements Fundamentals 2.2) Requirements Process 2.3) Requirements Elicitation 2.4) Requirements Analysis 2.5) Requirements Specification 2.6) Requirements Validation 2.7) Requirements Artifact	
3. Software Design and Architecture 3.1) Software Design Fundamentals 3.2) User Interface Design 3.3) Software Structure and Architecture 3.4) Software Design Strategies and Methods 3.5) Distributed System Architecture Design 3.6) Service-oriented Architecture Design 3.7) Component-based Architecture Design 3.8) Key Issues in Software Design	

4. Software Evolution

- 4.1) Software Maintenance Fundamentals
- 4.2) Software Life Cycle and Evolution
- 4.3) Software Evolution Process
- 4.4) Techniques for Software maintenance

5. Special Topics

- 5.1) Software Security Engineering
- 5.2) Agile Development
- 5.3) Pattern-oriented Software Architecture
- 5.4) Software Process Improvement
- 5.5) Mobile Application Development
- 5.6) Software Quality Management
- 5.7) Software Engineering Economics
- 5.8) Current Trends in Software Engineering

Assessment Breakdown	%
Continuous Assessment	100.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	Assignment 1	10%	CLO2
	Assignment	Assignment 2	10%	CLO2
	Case Study	Term Paper	20%	CLO2
	Group Project	Project	20%	CLO3
	Test	Test 1	20%	CLO1
	Test	Test 2	20%	CLO1

Reading List	Recommended Text	Reference Book Resources
	<p>Ian Sommerville 2015, <i>Software Engineering</i>, 10th Ed., 25, Pearson [ISBN: 978013394303]</p>	<ul style="list-style-type: none"> • Pressman, R. S. and Maxim, B. R. 2014, <i>Software Engineering: A Practitioner's Approach</i>, 8th Ed., 39, McGraw Hill New York [ISBN: 978-00780221] • IEEE Computer Society 2014, <i>Guide to the Software Engineering Body of Knowledge (Swebok(r))</i>, 3rd Ed., 15, IEEE Computer Society Products and Services [ISBN: 9780769551661] • Brian Wernham 2012, <i>Agile Project Management for Government</i>, Maitland and Strong [ISBN: 9780957223400] • Brian Wernham 2012, <i>Agile Project Management for Government</i>, Maitland and Strong [ISBN: 9781484208489] • Robert Oshana, Mark Kraeling 2013, <i>Software Engineering for Embedded Systems</i>, 1st Ed., 25, Elsevier Inc United States of America [ISBN: 9780124159174] • Kenneth R. Van Wyk, Mark G. Graff, Diana L. Burley, Dan S. Peters 2014, <i>Enterprise Software Security</i>, Addison-Wesley Professional USA [ISBN: 9780321604118] • Murali Chemuturi 2012, <i>Requirements Engineering and Management for Software Development Projects</i>, Springer Science & Business Media New York [ISBN: 9781461453765] • Len Bass, Paul Clements, Rick Kazman 2012, <i>Software Architecture in Practice</i>, 3rd Edition Ed., Addison-Wesley Professional [ISBN: 0321815734] • Priyadarshi Tripathy, Kshirasagar Naik 2014, <i>Software Evolution and Maintenance</i>, 1st Edition Ed., John Wiley & Sons New Jersey [ISBN: 9780470603413] • Sondra Ashmore, Kristin Runyan 2014, <i>Introduction to Agile Methods</i>, 1st Edition Ed., Pearson Education New Jersey [ISBN: 9780321929563] • Frank F. Tsui, Orlando Karam, Barbara Bernal 2013, <i>Essentials of Software Engineering</i>, 3rd Edition Ed., Jones & Bartlett Publishers USA [ISBN: 9781449691998]
Article/Paper List	This Course does not have any article/paper resources	
Other References	This Course does not have any other resources	