Template of Course Specification

Faculty: CIT
Department: CS
Program: B.SE

	I. General information about the course:					
1.	Course Title:	Web-based systems engineering				
2.	Course Code and Number :	SEL02				
3.	Credit Hours: 3	Lecture	Seminar/Tutorial	Practical	Training	Total
		2	2	--	--	3
4.	Study Level and Semester:	Level 3 / Semester 6				
5.	Pre-requisites (if any):	Software Engineering (CS325) Software Process and Modeling (SE322)				
6.	Co-requisites (if any) :	---				
7.	Program in which the course is offered	B.SC(Software Engineering)				
8.	Teaching Language:	English				
9.	Study System :	Semester Based				
10.	Prepared by :	Course Facilitator (wadee alqubati)				
11.	Approval date :					
12.	Approved by:	Department				

II. Course Description:

This Course is designed to covers technical and business aspects, systematic development of Web applications, requirement engineering for Web applications, modeling, Architectures of Web Applications, technology driven design, testing, operation and Maintenance of Web applications and The course explains how Web Engineering differs from software engineering, and the increased importance of user interfaces and human-computer interaction. Students will be exposed to techniques of web development implementation in web tools.

III. Course Aims

This Course aims to:

1. Equip student with principles, concepts, methods, and techniques of the web engineering approach to produce quality web.
2. Equip student with the skills of analysis, develop and implement web Application.
3. Enable student to organize and analysis modeling and design modeling for web applications.
4. Understand the difference between software engineering and web engineering, as well as the inherent difficulty in web engineering.
5. Train student to present effective technical written and oral presentations.
6. Enable student to function effectively as a member of a team engaged in technical work by involve

him/her in the group-based course project.

7. Train student to think critically about ethical and social issues in web engineering.

VI. Course Intended Learning Outcomes (CILOs) :

Knowledge and Understanding:

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

Knowledge and Understanding PILOs	Knowledge and Understanding CILOs
After completing this program, students would be able to:	After completing this course, students would be able to:
A2. Distinguish between selected canonical forms of operating systems and computer hardware, architecture and organization.	**a1**. Explain the concepts of web development, web process models, techniques, process activities of web requirements engineering, testing, and evolution. **a2**. Identify candidate tools and technologies for developing web applications
A3. Understand the use and impact of Information and Communication Technology (ICT) by recognizing the concepts of enterprise information management and networking.	**a3.** Understand the Technologies for Web Applications such as Client/Server Communication on the Web and Document-specific Technologies and Server-side Technologies
A4. Understand the software process life cycles, for small, medium and large software projects, and different approaches of software development, software project management, risk and quality management, and human-computer interaction.	**a4.** Recognize the principal of web process activities in design process, web quality management process, Testing Web Applications, different types of Operation and Maintenance of Web Applications

Intellectual Skills :

Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)

Intellectual Skills PILOs	Intellectual Skills CILOs
After completing this program, students would be able to:	After completing this course, students would be able to:
B1. Determine and analyze criteria, specifications and requirements appropriate to specific computing problems and formulate strategies to solve them.	**b1.** Systematize the principal requirements engineering of Web Applications activities .
B2. Differentiate the various methods of computational thinking, determining their wide relevance and applicability within other domains in everyday life, and being able to employ them in different conditions.	**b2.** Differentiate between Hypertext Modeling, Presentation Modeling and Customization Modeling, and propose the appropriate web engineering methods and techniques for the development of each type of web-based system.
B3. Choose the most appropriate methods and tools including deploying appropriate theory, practices, and tools for the specification, design, implementation, and maintenance as well as the evaluation of computer-based systems.	**b3.** Evaluate and choose between 2-Layer Architectures and N-Layer Architectures. **b4.** Design and implement web architecture in a Data-aspect Architectures and to estimate the cost for the development.
B4. Criticize systems in terms of general quality attributes and possible tradeoffs presented	**b5.** Organize the non-functional requirements, and define the necessary quality attributes

within the given problem.	that have to be considered when design and implementing solution for the given problem.

Professional and Practical Skills	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Professional and Practical Skills PILOs	**Professional and Practical Skills CILOs**
After completing this program, students would be able to:	After completing this course, students would be able to:
C1. Apply fundamental concepts of computer science, software engineering, human-computer interaction, science and mathematics in the modeling and design of computer systems.	**c1.** apply the techniques in web architectural units, component model based on Hypertext; **c2.** apply the Technology-aware Design methods to develop Web Application, **c3.** apply the web CASE tools and graphical models to represent **c4.** use the diagram types in the Unified Modeling Language (UML) .
C2. Develop a wide range of software through all stages of their life cycle, namely problem analysis, requirements specification, design, construction; verification and evolution using appropriate methods and tools.	
C3. Operate computing equipment and software systems effectively and efficiently.	
C4. Evaluate software process and artifacts in terms of software quality and models.	

Transferable (General) Skills :	
Alignment of CILOs (Course Intended Learning Outcomes) to PILOs (Program Intended Learning Outcomes)	
Transferable (General) Skills PILOs	**Transferable (General) Skills CILOs**
After completing this program, students would be able to:	After completing this course, students would be able to:
D1. Communication skills: Make succinct presentations to a range of audiences about technical problems and their solutions. This may involve face-to-face, written communication or electronic communication.	**d1.** communicate effectively well-informed and well-reasoned positions on these issues, verbally (oral analysis) and in writing (project report) by applying critical thinking reasoning skills.
D4. Self-management skills: Manage one's own learning and development, including time management and organizational skills.	**d2.** Write project - technical report and present projects/assignments
D5. Professional development skills: Keep abreast of current developments in the discipline to continue one's own professional development.	**d3.** use the techniques, skills, and modern engineering tools necessary for engineering practice

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VI. Alignment of CILOs to Teaching and Assessment Strategies

First: Alignment of Knowledge and Understanding CILOs

Knowledge and Understanding CILOs	Teaching Strategies	Assessment Strategies
a1. Explain the concepts of web development, web process models, techniques, process activities of web requirements engineering, testing, and evolution.	**Lectures** **Group Discussions** **Lab sessions** **Brain Storming**	**Written Exam** **Observation** **Report/Screen shots** **Viva/Direct Questions** **Quiz**
a2. Identify candidate tools and technologies for developing web applications		
a3. Understand the Technologies for Web Applications such as Client/Server Communication on the Web and Document-specific Technologies and Server-side Technologies		
a4. Recognize the principal of web process activities in design process, web quality management process, Testing Web Applications, different types of Operation and Maintenance of Web Applications		

Second: Alignment of Intellectual Skills CILOs

Intellectual Skills CILOs	Teaching Strategies	Assessment Strategies
b1. Systematize the principal requirements engineering of Web Applications activities .	**Lectures**	**Written test** **Quizzes**
b2. Differentiate between Hypertext Modeling, Presentation Modeling and Customization Modeling, and propose the appropriate web engineering methods and techniques for the development of each type of web-based system.	**Lab sessions** **Case study** **Assignment**	**Lab technical report** **Report**
b3. Evaluate and choose between 2-Layer Architectures and N-Layer Architectures		

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b4. Design and implement web architecture in a Data-aspect Architectures and to estimate the cost for the development.		
b5. Organize the non-functional requirements, and define the necessary quality attributes that have to be considered when design and implementing solution for the given problem.		

Third: Alignment of Professional and Practical Skills CILOs		
Professional and Practical Skills CILOs	**Teaching Strategies**	**Assessment Strategies**
c1. apply the techniques in web architectural units, component model based on Hypertext;	**Lab sessions**	**Technical Report** **Worksheets**
c2. apply the Technology-aware Design methods to develop Web Application,	**Homework**	**Report + Presentation**
c3. apply the web CASE tools and graphical models to represent	**Group Discussions**	**Observations**
c4. use the diagram types in the Unified Modeling Language (UML)		

Fourth: Alignment of Transferable (General) Skills CILOs		
Transferable (General) Skills CILOs	**Teaching Strategies**	**Assessment Strategies**
d1. communicate effectively well-informed and well-reasoned positions on these issues, verbally (oral analysis) and in writing (project report) by applying critical thinking reasoning skills.	**Grouping** **Tips** **Notes** **Case Study**	**Presentation** **Observation** **Report**
d2. Write project - technical report and present projects/assignments		
d3. use the techniques, skills, and modern engineering tools necessary for engineering practice		

VII. Course topics and sub-topics (theoretical and practical) with contact hours and alignment to CILOs

Topics/Units of Course Contents					
First: Theoretical Aspects					
No.	**Course Topics/Units**	**Sub-topics**	**No. of Weeks**	**Contact Hours**	**CILOs**
1	Introduction to Web Engineering	1- Motivation 2- Categories of Web Applications 3- Characteristics of Web Applications	1	2	a1, a2
2	Requirements Engineering for Web Applications	1- Fundamentals 2- RE Specifics in Web Engineering 3- Principles for RE of Web Applications 4- Adapting RE Methods to Web Application Development	2	4	a2,c1,c2
3	Modeling Web Applications	1- Modeling Specifics in Web Engineering 2- Modeling Requirements 3- Content Modeling 4- Hypertext Modeling 5- Presentation Modeling 6- Customization Modeling 7- Methods and Tools	2	4	a2,b3,b4, c2,c3,
4	Web Application Architectures	1- Specifics of Web Application Architectures 2- Components of a Generic Web Application Architecture 3- Layered Architectures 4- Data-aspect Architectures	1	2	a2,b1,c2,c3
	MID TERM EXAM				
6	Web Application Design	1- Web Design from an Evolutionary Perspective 2- Presentation Design 3- Interaction Design 4- Functional Design	2	4	a2,c2,c3
7	Technologies for Web Applications	1- Client/Server Communication on the Web 2- Document-specific Technologies 3- Server-side Technologies	2	4	a2,c2,c3
8	Testing Web Applications	1- Test Specifics in Web Engineering 2- Test Approaches 3- Test Scheme 4- Test Methods and Techniques	1	2	a1,b2,b1,,c1, c4
9	Operation and Maintenance of Web Applications	1- Challenges Following the Launch of a Web Application 2- Promoting a Web Application 3- Content Management 4- Usage Analysis	1	2	a1,b2,b1,,c1, c4
	FINAL EXAM				

Total number of weeks and hours	12	24

Second: Practical/Tutorial/Clinical Aspects				
Write up practical/tutorial/clinical topics				
No.	Practical/Tutorial/Clinical topics	No. of Weeks	Contact Hours	CILOs
1	Project List	1	2	c2, c3
2	Tutorial - Context	2	4	b1, c3
3	Tutorial - Conceptual Architecture	1	2	b2, c3
4	Project Deliverable I	1	2	b2, c3
5	Tutorial - Architecture Styles	1	2	b3, c3
6	Tutorial - web Connector	1	2	b2,b1,,c1,c4
7	Project Deliverable II	1	2	b2,b1,,c1,c4
8	Tutorial - Architecture Analysis	1	2	c1, c2, c3
9	Project Deliverable II - template	1	2	c2, c3
10	Project Deliverable III	2	4	c2, c3
Total number of weeks and hours		12	24	

I. Teaching Strategies
Lectures
Group Discussions
Case study
Assignment
Homework

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II. Tasks and Assignments :

No.	Task/Assignment	CILOs	Week due	Mark
1	Assignment 1		10	5 %
2	Assignment 2		12	10 %

III. Learning Assessment:

No.	Assessment Tasks	Week due	Mark	Proportion of Final Assessment	Aligned CILOs
1	Assignments+ Project + Reports	12	25	25%	c1, c2, c3, d1
2	Quiz 1 & Quiz 2	4 & 9	5	5%	a1, a2
3	Mid term exam	7	20	20%	b1, b2, b3
4	Final Exam	14	50	50%	All course ILO's
Total			100	100%	

IV. Learning Resources :

(Author, (Year), Book Title, Edition, Publisher, Country of publishing)

Textbooks-not more than 2

1. Gerti Kapel, Birgitt Prol, Siegried Reich, and Werner Retschitzeggar,(2006), Web Engineering: The Discipline of Systematic Development of Web Applications; John Wiley.

Essential References-not less than 4

1. H. M. Deitel, P. J. Deitel, and A. B. Goldberg, (2008),Internet and World Wide Web How to Program,

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4th Edition , Pearson Education Inc .
2. H. M. Deitel, et al.,(2001), XML How to Program, First Edition, Pearson Education Inc.
3. R. Pressman, Web Engineering: A Practitioner's Approach, McGraw-Hill Higher Education, 2008.
4. Roger S. Pressman,(2005), Sixth Edition, Software Engineering, a Practitioner's Approach, McGraw-Hill.
5. Ralph Moseley,(2006), "Developing Web Applications"; John Wiley.
6. Adam Nathan,(2007), Windows Presentation Foundation Unleashed (WPF) , SAMS.
7. Tobias Ratshciller and Till Gerken,(2000), Web Application Development with PHP 4.0, Sams.

Electronic Materials and Web Sites

http://highered.mcgraw-hill.com/sites/0073523291/
http://eu.wiley.com/WileyCDA/WileyTitle/productCd-0470015543,descCd-tableOfContents.html
http://www.web-engineering.at/eng/

V. Course Policies (To be determined by Faculty Deanship):

Based on university regulations, the following aspects should be figured out:

1.	(Class Attendance) :
2.	(Tardy) :
3.	(Exam Attendance/Punctuality) :
4.	(Assignments & Projects) :
5.	(Cheating) :
6.	(Plagiarism) :
7.	(Other policies) :

Template of Course Syllabus

Faculty : TIC
Department: SE
Program : B.SE

I. General information about the course instructor :							
Name	(Facilitator)	**Office Hours (3 Hours Weekly)**					
Location & phone number	USTY	**Sat**	**Sun**	**Mon**	**Tue**	**Wed**	**Thu**
Email							

II. General information about the course:						
1.	**Course Title :**	Web-based systems engineering				
2.	**Course Code and Number :**	SEL02				
3.	**Credit Hours :**	**Credit Hours**				**Total**
		Theoretical	**Seminar/Tutorial**	**Practical**	**Training**	
		2	2	--	--	3
4.	**Study Level and Semester:**	Level 3 / Semester 6				
5.	**Pre-requisites (if any):**	**Software Engineering (CS325)** **Software Process and Modeling (SE322)**				
6.	**Co-requisites (if any):**	---				
7.	**Program in which the course is offered:**	B.SC(Software Engineering)				
8.	**Teaching Language:**	English				
9.	**Instruction location:**	N/A				

I. Course Description

This Course is designed to covers technical and business aspects, systematic development of Web applications, requirement engineering for Web applications, modeling, Architectures of Web Applications, technology driven design, testing, operation and Maintenance of Web applications and The course explains how Web Engineering differs from software engineering, detailing the rapid prototyping and agile development methods mandated by short lead times, emphasis on interactivity and multimedia, and the increased importance of user interfaces and human-computer interaction. Students will be exposed to techniques of web development implementation in web tools.

II. Course Aims:

This course aims to:

1. Equip student with principles, concepts, methods, and techniques of the web engineering approach to produce quality web.
2. Equip student with the skills of analysis, develop and implement web Application.
3. Enable student to organize and analysis modeling and design modeling for web applications.
4. Understand the difference between software engineering and web engineering, as well as the inherent difficulty in web engineering.
5. Train student to present effective technical written and oral presentations.
6. Enable student to function effectively as a member of a team engaged in technical work by involve him/her in the group-based course project.

III. Course Intended Learning Outcomes (CILOs) :

1. a1. Explain the concepts of web development, web process models, techniques, process activities of web requirements engineering, testing, and evolution.
2. a2. Identify candidate tools and technologies for developing web applications
3. a3. Understand the Technologies for Web Applications such as Client/Server Communication on the Web and Document-specific Technologies and Server-side Technologies
4. a4. Recognize the principal of web process activities in design process, web quality management process, Testing Web Applications, different types of Operation and Maintenance of Web Applications
5. b1. Systematize the principal requirements engineering of Web Applications activities .
6. b2. Differentiate between Hypertext Modeling, Presentation Modeling and Customization Modeling, and propose the appropriate web engineering methods and techniques for the development of each type of web-based system.
7. b3. Evaluate and choose between 2-Layer Architectures and N-Layer Architectures.
8. b4. Design and implement web architecture in a Data-aspect Architectures and to estimate the cost for the development.
9. b5. Organize the non-functional requirements, and define the necessary quality attributes that have to be considered when design and implementing solution for the given problem.
10. c1. apply the techniques in web architectural units, component model based on Hypertext;
11. c2. apply the Technology-aware Design methods to develop Web Application.
12. c3. apply the web CASE tools and graphical models to represent.
13. c4. use the diagram types in the Unified Modeling Language (UML) .
14. d1. communicate effectively well-informed and well-reasoned positions on these issues, verbally (oral analysis) and in writing (project report) by applying critical thinking reasoning skills.
15. d2. Write project - technical report and present projects/assignments
16. d3. use the techniques, skills, and modern engineering tools necessary for engineering practice

IV. Course Contents

Theoretical Aspect:

No.	Course Units	Sub-topics	Week due	Contact Hours
1.	Unit-1	1. Introduction to Web Engineering 2. Requirements Engineering for Web Applications 3. Modeling Web Applications	Week 5	10
2.	Unit-2	4. Web Application Architectures 5. Web Application Design 6. Technologies for Web Applications	Week 10	10
3.	Unit-3	7. Testing Web Applications	Week 11	2
4.	Unit-4	8. Operation and Maintenance of Web Applications	Week 12	2
Total number of weeks and hours			12	24

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Second: Practical/Tutorial/Clinical Aspects :			
Write up practical/tutorial/clinical topics			
No.	**Practical/Tutorial/Clinical topics**	**No. of Weeks**	**Contact Hours**
1.	Project List	1	2
2.	Tutorial - Context	2	4
3.	Tutorial - Conceptual Architecture	1	2
4.	Project Deliverable I	1	2
5.	Tutorial - Architecture Styles	1	2
6.	Tutorial - web Connector	1	2
7.	Project Deliverable II	1	2
8.	Tutorial - Architecture Analysis	1	2
9.	Project Deliverable II - template	1	2
10.	Project Deliverable III	2	4
Total number of weeks and hours		**12**	**24**

V. Teaching Strategies

1. Lectures
2. Group Discussions
3. Case study
4. Assignment
5. Homework
6. Brain Storming

VI. Tasks and Assignments

No.	Task/Assignment	Week due	Mark
1.	Assignment 1 + report	WEEK 12	10
2.	Assignment 2 + report	WEEK 14	15

VII. Learning Assessment:

No.	Assessment Tasks	Assessment day & date	Mark	Weight
1	Quiz 1	WEEK 3	5	5%
2	Quiz 2	WEEK 5		
3	Mid term exam	WEEK 7	20	20%
4	Assignment	WEEK 9	10	10%
6	Project Deliverable	WEEK 12	15	15%
7	Reports	WEEK 12		
8	Final Exam	WEEK 14	50	50%
	Total			

VIII. Learning Resources

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1. Gerti Kapel, Birgitt Prol, Siegried Reich, and Werner Retschitzeggar,(2006), Web Engineering: The Discipline of Systematic Development of Web Applications; John Wiley.

SECNEREFER

1. H. M. Deitel, P. J. Deitel, and A. B. Goldberg, (2008),Internet and World Wide Web How to Program, 4th Edition , Pearson Education Inc .
2. H. M. Deitel, et al.,(2001), XML How to Program, First Edition, Pearson Education Inc.
3. R. Pressman, Web Engineering: A Practitioner's Approach, McGraw-Hill Higher Education, 2008.
4. Roger S. Pressman,(2005), Sixth Edition, Software Engineering, a Practitioner's Approach, McGraw-Hill.
5. Ralph Moseley,(2006), "Developing Web Applications"; John Wiley.
6. Adam Nathan,(2007), Windows Presentation Foundation Unleashed (WPF) , SAMS.

Tobias Ratshciller and Till Gerken,(2000), Web Application Development with PHP 4.0, Sams.

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http://highered.mcgraw-hill.com/sites/0073523291/
http://eu.wiley.com/WileyCDA/WileyTitle/productCd-0470015543,descCd-tableOfContents.html
http://www.web-engineering.at/eng/

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IX. Course Policies (To be determined by Faculty Deanship)	
1.	**Class Attendance :**
2.	**Tardy :**
3.	**Exam Attendance/Punctuality:**
4.	**Assignments & Projects:**
5.	**Cheating:**
6.	**Plagiarism:**
7.	**Other policies:**