

COMP9322 – Software Service Design and Engineering

Created: 30 Apr 2017

Proposal Last Updated: 02 May 2017

Offering Details:

Key Details and Contacts

Key Course Details

Course Name (Official)	Software Service Design and Engineering		
Standard Name (SIMS)	Software Service Design & Eng		
Course Code	COMP9322		
Units of Credit (UOC)	6		
Career	Hybrid		
Course Offerings	Offering Number	Career	Course Code
	1	PG	COMP9322
	2	UG	COMP9322
Level	3		
First semester and year the revised changes will take effect	2018 Semester 1		

Contact Details

Proposal Proponent	Name	Email	Role
	Boualem Benatallah	boualem@cse.unsw.edu.au	Professor, School of Computer Science and Engineering
Proposal Author(s)	Name	Email	Role
	Fethi Rabhi	f.rabhi@unsw.edu.au	Professor, School of Computer Science and Engineering
	Hye-Young Paik	hpaik@unsw.edu.au	Senior Lecturer, School of Computer Science and Engineering
Proposal Contact	Name	Email	Role
	Hye-Young Paik	hpaik@unsw.edu.au	Senior Lecturer, School of Computer Science and Engineering
Optional Additional Endorsers	Not specified		
Academic Unit responsible for course	School of Computer Science and Engineering		
Parent Academic Unit	Faculty of Engineering		

Proposal Concept

Summary of Proposal

Summary of Proposal	In this revision, we aim to modernise some of the topics covered and change the course title to reflect the revised content better. We removed topics on RPC/XML-based service concepts, service composition frameworks and XML processing, and introduce some new concepts in the Service Oriented Architectures namely micro services and their associated design patterns and service compositions in the Cloud. We strengthen the existing topics on Web API design to include API security and management. Also, to complement the revision of COMP9321, we added topics on Web semantic data modelling and standards.
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Justification for proposal

Justification for Proposal	<p>The area of service oriented applications has seen a rapid development in recent years. To keep up with the recent development in the area, and prepare the students with the relevant set of skills for the area, we need to shape the topics of the course to reflect more modern service orientation concepts such as micro services, Web API management methodology.</p> <p>The proposed revision still maintains the core philosophy of the course: service orientation for software development. But it allows us to expose the students to new technologies such as cloud platforms, semantic data standards, and up-to-date API design/testing/management methodology and tools.</p>
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Attachments

Attach documentation to this proposal	None attached
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Learning and Teaching

Learning & Teaching development and support

Are there Learning & Teaching space requirements for the course beyond those that can be accommodated by CATS spaces?

No

Have you discussed with the Learning Centre and Learning and Teaching what language and/or academic skills development resources and/or which teaching and learning strategies might be suited to this course?

No

Are many students in this course at a key transition point where their academic skills are likely to need development, e.g. from one kind of educational institution or type of program to another or into education after a significant break?

No

Consultation

Internal consultation

Internal Consultation

Consultants

None specified

Details

Discussed within the service oriented computing group and other relevant academic in CSE.

Attachments

None specified

External consultation

External Consultation

Consultants

None specified

Details

Prof. Fabio Casati (University of Trento, Italy) provided input to the revised curriculum based on his expertise and experience in teaching similar courses.

Attachments

None specified

Interested Parties

Not specified

Related Proposals

Related Proposals

Code	Proposal Name	Type	Date	Status
COMP9321	Data Services Programming	Course Revision (HY)	Apr 2017	Submitted

Endorsements and Comments

Endorsement history

No endorsements have been recorded for this proposal (yet).

Comments

No comments posted

Administration:

Key Course Details

Key Admin Details

Course Name (Official)	Software Service Design and Engineering
Student System ID	00056741
Can course be taken as General Education elective?	No
Field of Education	020305 – Systems Analysis and Design

Course Review

Next course review date	July 01, 2022
Provide details of any particular factors that need to be considered at that review.	Making sure that the technologies used in the course and lab/assignment activities are up-to-date.

Delivery and Attendance

Campus administering the Course	Sydney
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Teaching Shares by School/Faculty	School	Teaching Share (%)
	School of Computer Science and Engineering	100
	Total Share	100

Semesters the course is offered		Summer Semester	Semester 1	Semester 2
	2017	No	No	No
	2018	No	Yes	Yes
	2019	No	Yes	Yes
	2020	No	Yes	Yes

Teaching mode and contact hours	Standard Offering Mode
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Standard offering contact hours per week	Learning Activity	Hours/Week
	Lecture	3
	Tutorial/Laboratory	0
	Tutorial	0
	Laboratory	0
	Web-based Online Learning Activity	2
	Clinical/Fieldwork	0
	Distance Learning	0
	Seminar	0
	Studio	0
	Meeting/Consultation	0
Total Hours per week	5	

Primary delivery mode	Classroom
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Secondary delivery modes	Online
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Additional information about the delivery modes for this course	This course will mainly be delivered through a mix of face-to-face lectures, online videos, self-guided online lab activities and online forum (Q/A).
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Staff

Staff associated with course

Course Convenor	Name	Email	Role
	Boualem Benatallah	boualem@cse.unsw.edu.au	Professor, School of Computer Science and Engineering
	Fethi Rabhi	f.rabhi@unsw.edu.au	Professor, School of Computer Science and Engineering
	Hye-Young Paik	hpaik@unsw.edu.au	Senior Lecturer, School of Computer Science and Engineering

Administrative Contact	Name	Email	Role
	Hye-Young Paik	hpaik@unsw.edu.au	Senior Lecturer, School of Computer Science and Engineering

Supplementary Information:

Resources

Student Resources

Prescribed Resources

1.	Written lecture notes	Other
Resource Type	lecture notes	
Additional Details	Lecture notes are provided for each topic (weekly)	
2.	Written lab notes	Other
Resource Type	lab notes	
Additional Details	Lab notes for the practical weekly activities	
3.	COMP9322 Course Homepage	Website
URL	http://www.cse.unsw.edu.au/~cs9322	
Publisher	School of Computer Science and Engineering	
Additional Details	Course homepage (updated every session)	

Recommended Resources

None specified

Experience and Assumed Knowledge

Industrial Experience Component

Industrial Experience Component

Not specified

Assumed Knowledge

Assumed Knowledge

Not specified

Academic Structure:

Academic Structure

Prerequisites

Prerequisite courses	Not specified
Prerequisite programs	Not specified
Prerequisite streams	Not specified
Prerequisite conditions	Undergrad: COMP1531, COMP2041 Postgrad: COMP9021,COMP9311

Exclusions

Excluded Courses	Not specified
Excluded Programs	Not specified
Excluded Streams	Not specified

Equivalent

Equivalent courses	Not specified
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Assessment

Assessment

Grading Basis	Standard UNSW grades (e.g. HD, DN, CR, PS, FL)
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Assessment items and their relationship to Course Learning Outcomes

Assessment Title	Assessment Type	Weight (%)
1 Programming Assignments	Assignment	50%
Assessment Description:	There will be two programming assignments tackling a non-trivial problem. This will assess the student's ability to apply the learned theory of service design and semantic technologies in a practical scenario. The assignment will be marked against a clearly specified marking criteria.	
2 Final Exam	Examination	40%
Assessment Description:	A formal written exam at the end of the course.	
3 Quizzes	Test	10%
Assessment Description:	Online quizzes on the topics relating to the lab activities, lecture content.	
Total Weight		100%

Programming Assignments

- Apply Web service composition techniques in a concrete setting.
- Be competent in designing, managing, documenting, testing and securing Web-based APIs.
- Apply semantic application modelling and implementation technologies in a concrete setting.

Final Exam

- Describe different architectural design approaches and their role in engineering software as a service.
- Understand techniques for semantic modelling of simple and complex structures, as well as their associated technical standards and technologies.
- Be competent in designing, managing, documenting, testing and securing Web-based APIs.

Quizzes

- Describe different architectural design approaches and their role in engineering software as a service.
- Apply Web service composition techniques in a concrete setting.
- Be competent in designing, managing, documenting, testing and securing Web-based APIs.
- Understand techniques for semantic modelling of simple and complex structures, as well as their associated technical standards and technologies.
- Apply semantic application modelling and implementation technologies in a concrete setting.

Curriculum Mapping

Course Learning Outcomes

Specify the learning outcomes that students should achieve upon successful completion of this course

- 1 Describe different architectural design approaches and their role in engineering software as a service.
- 2 Apply Web service composition techniques in a concrete setting.
- 3 Be competent in designing, managing, documenting, testing and securing Web-based APIs.
- 4 Understand techniques for semantic modelling of simple and complex structures, as well as their associated technical standards and technologies.
- 5 Apply semantic application modelling and implementation technologies in a concrete setting.

Teaching strategies and Rationale

Teaching Strategies and Rationale

The course is designed to encourage the students to learn by doing. We provide timely feedback for learning via small, step-by-step weekly practical activities and tests that gradually build up knowledge and practical skills.

Through face-to-face lectures and online videos, we introduce concepts and theory with practical examples. In lab work, we introduce the technologies and techniques for the assignments. The assignments allow students to solve significant problems.

Course Aims

Course Aims

Students will appreciate the importance of the Service Oriented Architecture (SOA) as a way to design and implement interoperable, scalable, distributed enterprise applications. In particular, the course exposes the students to the software service as a service notion, including the microservices variants and their associated design patterns, composing services, and design, implementation and management methodology of Web-based APIs. In addition, this course will strengthen students' data modeling expertise, covering topics on semantic modelling of both simple and complex structures, and its usage in business analysis. This will also describe the technical standards and technologies that support semantic data modelling. After completing this course, students will:

- Describe different architectural design approaches and their role in engineering software.
- Apply Web composition techniques in a concrete setting.
- Be competent in designing, managing, documenting, testing and securing APIs.
- Understand techniques for semantic modelling of simple and complex structures, as well as their associated technical standards and technologies.

Publications and Marketing:

Publications

Course Description

Description of course that can be used in online publications (e.g. Handbook website, Faculty websites or other online catalogue systems)

The notion of “software as a service” plays a critical role in building distributed, scalable application platforms. This course arms students with the knowledge and expertise to design and engineer services using modern Web technologies. Based on the Service Oriented Architecture (SOA) principles, students will be exposed to various design and implementation methodologies, including microservices and their associated design patterns, API design and managemen. In addition, this course will strengthen students’ data modeling expertise, covering topics on semantic modelling of both simple and complex structures, and its usage in business analysis. This will also describe the technical standards and technologies that support semantic data modelling. After completing this course, students will be able to (i) describe different architectural design approaches and their role in engineering software. (ii) apply Web composition techniques in a concrete setting, (iii) be competent in designing, managing, documenting, testing and securing APIs, (iv) understand techniques for semantic modelling of simple and complex structures, as well as their associated technical standards and technologies.

Key Search Terms

List key search terms that might be used to search for this course (e.g. via the Handbook or Google searches).

Service oriented architectures
Software architecture
Semantic data models
Semantic data analysis
Software services
Microservices
API management
API programming