004195 - Advanced Client/Server Architectures

Course Guides

Number	Status	Career	Campus	School
COSC1174	Draft	Postgraduate	City Campus	Comp Sci & Info Technology
COSC1175	Draft	Undergraduate	City Campus	Comp Sci & Info Technology

Master Course Record

These are the master course fields. Some fields only exist in Course Guides; the data below should be viewed in context of the Course Guides (listed in the table above). Fields below will be inherited by Course Guides unless overridden by content in individual course guides. This Master Course Record needs to be Approved in order for the approved Course guides to be made available on the RMIT web site.

A. Course Identification

- **Course Name:** Advanced Client/Server Architectures
- **Credit Points:** 12
- **Teacher guided hours (per semester):** 52
- **Learner directed hours (per semester):** 104
- **Duration:** 1 semester
- **Course Co-Ordinator:**
  Associate Professor Zahir Tari
- **Contact Details:**
  Associate Professor Zahir Tari
  Room 10.7.01
  Phone: 9925-3782
  URL of the course: http://www.cs.rmit.edu.au/~zahirt/Teaching/cosc1174
  Consultation hours: TBA.

  Pre-requisite Courses:
  COSC 1197 - Foundations of Distributed Computing and COSC 1288/1290 - Java for C Programmers.

  Co-requisite Courses: None

B. Course Description

What is this course about?

This course covers theoretical and technical aspects of advanced distributed systems, such as CORBA and Web Services. Specifically, this course covers the core elements of such advanced systems, including the underlying communication protocols (e.g. IIOP and SOAP). Several core technical issues, such as performance (through caching and load balancing), and security, are also covered in depth for CORBA and SOAP systems. Finally, this course also covers issues and solutions related to the design and the implementation of large-scale distributed heterogeneous applications. JacORB and SOAP implementations are used to illustrate the implementation of different concepts related to CORBA and SOAP.

C. Objectives / Learning Outcomes

What can I expect to learn by studying this course?

On completion of this course, students should be able to: - understand the different basic concepts related to client server technology;
- understand advanced client server architectures;
- understand the underlying principles of distributed object systems
- understand the underlying concepts related to XML-based systems such as Web Services
- understand the major issues and solutions provided by distributed object and XML-based systems
- design and implement distributed applications using JacORB and SOAP

D. Learning Activities

What opportunities does the course provide for me to learn? What will I be expected to do?

Each week there will be 2 hours of lectures and 2 hours of supervised laboratory work.

Students will be presented with a series of new recent developments in the distributed technology. Comprehensive class notes are available. The lecture materials are a compilation of papers published in well-known conferences and other referred texts. Lectures were designed to cover the fundamentals of advanced distributed systems, which can help students to understand the core approaches of such systems. Exercises are provided in tutorials to improve the understanding of students through examples. Practical exercises are provided for students to enable them to put into practice the concepts and techniques learned during the lectures and tutorials. Student will be required:

- to deepen their technical knowledge in the distributed systems area by reading research papers and books available at the RMIT library and the course's URL.
- to prepare the provided series of laboratory exercises.

E. Assessment

How will I demonstrate my learning in this course?

As outlined under the headings below:

Assessment Tasks and Value

Assignments are worth 40% of the total marks. All assignments MUST be submitted using "turnin" software.

Assignment I is worth 30%
Topic: Advanced Programming with CORBA
Due date: 5th September, 5:30pm

Assignment II is worth 10%
Topic: Programming with SOAP
Due date: 12th October, 5:30pm

The final exam is worth 60% of the total marks
Exam Duration: 3 hours
Closed book exam and covers all topics provided during the lectures

To attain a pass in the course, students are required to pass both the practical component and the examination component. Each component should therefore be viewed as a hurdle. In the event that a student passes one component and fails the other, the student result is a Fail and their final % mark is the lower of the two components.

For standard assessment information relating to Computer Science and IT courses see:
http://www.rmit.edu.au/csit/cgi

F. Academic Administration Procedures

What do I do if I need help with deadlines or have become ill?

If you need help with deadlines or have become ill please see:
http://www.cs.rmit.edu.au/courseguides/cginfo.shtml

G. Course Evaluation and Feedback

How can I let you know about my experience of this course?

Student feedback is encouraged through a range of mechanisms - including questionnaires and staff student consultative committee (SSCC) meetings - see:
http://www.rmit.edu.au/csit/cgi

H. Academic Misconduct

I. Learning Resources

What will I need to access and read for this course?

For extra support with study organisation, assignment planning or learning skills you may wish to contact any of the following:

Learning Skills Unit:
For appointments - ring 9925 4488 or go to Bldg 93, level 3
For drop-in, no appointment needed - go to HUB Bldg 12, level 4

CS&IT Teaching & Learning Advisors:
For appointments go to http://inside.cs.rmit.edu.au/staffbooking/ & click on Jeanette Holkner, Cecily Walker, Kath Lynch or TLA.

Prescribed Text

Reference Textbook

Z. Tari and O. Bukres: Fundamentals of Distributed Object Systems: The CORBA Perspective. John Wiley, Febuary 20001. ISBN: 0-471-35198-9.

Class notes as well as the textbook will be available for purchase in the city bookshop.

References

Recommended books:

M. Henning and S. Vinoski: Advanced CORBA Programming with C++. Addison Wesley, 1999.
D. Slama, J. Garbis and P. Russel: Enterprise CORBA. Prentice Hall, 199. ISBN 0-13-083963-9

Thomas J. Mowbray and William A. Ruh: Inside CORBA: Distributed Object Standards and Applications. Addison Wesley,1997. ISBN 0-201-89540-4.

A. Pope: The CORBA Reference Guide: Understanding CORBA. Addison Wesley, 1997. ISBN 0-201-63386-8.

OMG and X/Open, The Common Object Request Broker: Architecture and Specification.

J. Student Learning Program

Where do I start?

CSIT classes will commence in RMIT's week 2 (18th – 22rd July). Refer to online timetables at www.cs.rmit.edu.au/timetables for specific timings.

Every effort will be made to adhere to this outline, but the School reserves the right to make changes as appropriate.

WEEK 1 (11th - 15th July):
Activities and workshop details and registration via http://www.rmit.edu.au/csit

WEEK 2
LECTURE (2 hr) Basics of CORBA
TUTORIAL (1 hr) and LABORATORY (1 hr) Introduction to CORBA

WEEK 3
LECTURE (2 hr) Basics of CORBA
TUTORIAL (1 hr) and LABORATORY (1 hr)IDL

WEEK 4
LECTURE (2 hr) Portable Adapters
TUTORIAL (1 hr) and LABORATORY (1 hr) Advanced IDL and Exceptions

WEEK 5
LECTURE (2 hr) Portable Adapters
TUTORIAL (1 hr) and LABORATORY (1 hr) Naming and POA

WEEK 6
LECTURE (2 hr) Caching
TUTORIAL (1 hr) and LABORATORY (1 hr) POA and TIE

WEEK 7
LECTURE (2 hr) Caching
TUTORIAL (1 hr) and LABORATORY (1 hr) DII

WEEK 8
LECTURE (2 hr) Load Balancing
TUTORIAL (1 hr) LABORATORY (1 hr) Work on assignment #1

WEEK 9
LECTURE (2 hr) Load Balancing
TUTORIAL (1 hr) and LABORATORY (1 hr) Demo of assignment #1

WEEK 10
LECTURE (2 hr) Basics of SOAP
TUTORIAL(1 hr) and LABORATORY (1 hr) Introduction to SOAP

WEEK 11
SOAP Performance
TUTORIAL(1 hr)and LABORATORY (1 hr)SOAP Messaging

WEEK 12
SOAP Performance
TUTORIAL(1 hr) and LABORATORY (1 hr) Simple vs Complex Type

WEEK 13
LECTURE (2 hr) SOAP Security and Revision
TUTORIAL (1 hr) and LABORATORY (1 hr) RPC vs Messaging