COMP3100

Distributed Systems

Session 1, Weekday attendance, North Ryde 2020

Department of Computing

Contents

General Information

Unit convenor and teaching staff
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Credit points
10

Prerequisites
130cp at 1000 level or above including (COMP2100 or COMP202) and (COMP2250 or COMP247)

Corequisites

Co-badged status

Unit description
A distributed system traditionally refers to a group of networked computers; however, it should be today understood in a much wider sense including applications consisting of multiple processes. This unit studies the fundamentals of distributed systems from both hardware perspective and software perspective. The unit also gives some hands-on experience. Topics include distributed systems principles (concurrecy and scheduling), paradigms (cloud computing, mobile computing and Internet of Things), architectures (client-server model, peer-to-peer model and distributed file systems) and techniques (shared memory and message-passing).

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at https://www.mq.edu.au/study/calendar-of-dates

Learning Outcomes

On successful completion of this unit, you will be able to:

> **ULO2:** compose distributed systems to create a single system.
>
> **ULO3:** apply theoretical principles and models to design distributed systems.
>
> **ULO4:** appraise challenges and issues in modern distributed systems.
>
> **ULO5:** discriminate between appropriate technologies for building practical distributed systems.

Assessment Tasks

Coronavirus (COVID-19) Update

Assessment details are no longer provided here as a result of changes due to the Coronavirus (COVID-19) pandemic.

Students should consult iLearn for revised unit information.

Find out more about the Coronavirus (COVID-19) and potential impacts on staff and students

General Assessment Information

If you receive special consideration for the final exam, a supplementary exam will be scheduled in the interval between the regular exam period and the start of the next session. By making a special consideration application for the final exam you are declaring yourself available for a resit during the supplementary examination period and will not be eligible for a second special consideration approval based on pre-existing commitments. Please ensure you are familiar with the policy prior to submitting an application. You can check the supplementary exam information page on FSE101 in iLearn (bit.ly/FSESupp) for dates, and approved applicants will receive an individual notification one week prior to the exam with the exact date and time of their supplementary examination.

Can you please add an item under "General Assessment Information" regarding penalties for late submission. The standard policy is below, but you are free to change the details as long as you state them explicitly.

Late Submission

No extensions will be granted without an approved application for Special Consideration. There will be a deduction of 10% of the total available marks made from the total awarded mark for each 24 hour period or part thereof that the submission is late. For example, 25 hours late in submission for an assignment worth 10 marks – 20% penalty or 2 marks deducted from the total. No submission will be accepted after solutions have been posted.

Delivery and Resources

Coronavirus (COVID-19) Update

Any references to on-campus delivery below may no longer be relevant due to COVID-19.

Please check here for updated delivery information: https://ask.mq.edu.au/account/pub/display/unit_status

Text Books

1. "Distributed Systems: Principles and Paradigms" by Maarten van Steen and Andrew Tanenbaum, 3rd (3.01) edition.
2. "Distributed Systems: Concepts and Design" by George Coulouris, Jean Dollimore, and Tim Kindberg, Addison Wesley, 5th edition.
3. "Distributed and Cloud Computing: From Parallel Processing to the Internet of Things" by Geoffrey C. Fox, Jack Dongarra, and Kai Hwang, 1st edition.

Soft copy of the first two books is "freely" available online.

iLearn Unit Home Page

COMP3100 will make extensive use of the iLearn course management system, including for delivery of class materials, discussion boards, submission of work and access to marks and feedback. Students should check the iLearn site (https://ilearn.mq.edu.au) regularly for unit updates.

Questions and general queries regarding the content of this unit, its lectures or practical classes, or its assessments should be posted to the discussion boards on the COMP3100 iLearn site. In particular, any questions which are of interest to all students in this unit should be posted to one of these discussion boards, so that everyone can benefit from the answers. Questions of a private nature should be directed to the unit teaching staff.

Lectures

Lectures are a core learning experience where we will discuss the theoretical underpinnings and concepts that are essential to this unit. Key ideas for the group project will be discussed from time to time in lectures. Attendance at lectures is highly recommended. Lectures will be recorded on echo360 but some lectures will include interactive components that may not be adequately captured by a recording.

Workshops

Tutorial classes commence in Week 2. Each week has two hours of tutorial class. Each week you should prepare your solutions to the set tutorial questions and attend your enrolled tutorial class. Tutorial classes also provide an opportunity to (collaboratively) work on group project.

Unit Schedule

Coronavirus (COVID-19) Update

The unit schedule/topics and any references to on-campus delivery below may no longer be relevant due to COVID-19. Please consult iLearn for latest details, and check here for updated delivery information: https://ask.mq.edu.au/account/pub/display/unit_status

The detailed unit schedule will be available on iLearn. The following is an approximate schedule and is subject to change. In all cases, refer to iLearn for up-to-date information.

Week	Topic	Textbook	Quiz
1	Introduction to Distributed Systems	M&A Ch 1, Coulouris Ch 1	
2	System models, Architectures, and Networks	M&A Ch 2, Coulouris Chs 2 and 3	
3	Communication	M&A Ch 4, Coulouris Ch 4	
4	Naming and Distributed file systems	Coulouris Ch 13 and M&A Ch 5, and Coulouris Ch 12	
5	Synchronisation and concurrency	M&A Ch 6, Coulouris Chs 14 and 16	Q1
6	Fault tolerance and Security	M&A Chs 8&9, Coulouris Ch 15	
Mid-semester break 1			
Mid-semester break 2			
7	Cluster, Grids and Volunteer computing projects	Geoffrey Chs 2 and 7	
8	Virtualisation: VMs and Containers	Coulouris Chs 19 and 7, and Geoffrey Ch 3	
9	Data centres and Clouds	Geoffrey Ch 4	
10	Mobile computing: including mobile clouds and vehicular clouds	Coulouris Ch 19 and Geoffrey Ch 9	
11	Ubiquotous computing and IoT: edge/fog computing	Coulouris Ch 19 and Geoffrey Ch 9	
12	Real-world distributed systems		Q2
13	Review		

* Note that the schedule is indicative only and subject to change.

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- Academic Appeals Policy
- Academic Integrity Policy
- Academic Progression Policy
- Assessment Policy
- Fitness to Practice Procedure
- Grade Appeal Policy
- Complaint Management Procedure for Students and Members of the Public
- Special Consideration Policy *(**Note:** The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.)*

Students seeking more policy resources can visit the Student Policy Gateway (https://students.mq.edu.au/support/study/student-policy-gateway). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central).

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/study/getting-started/student-conduct

Results

Results published on platform other than eStudent, (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in eStudent. For more information visit ask.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

Student Support

Macquarie University provides a range of support services for students. For details, visit http://students.mq.edu.au/support/

Learning Skills

Learning Skills (mq.edu.au/learningskills) provides academic writing resources and study strategies to help you improve your marks and take control of your study.

- Getting help with your assignment
- Workshops
- StudyWise
- Academic Integrity Module

The Library provides online and face to face support to help you find and use relevant information resources.

- Subject and Research Guides
- Ask a Librarian

Student Services and Support

Students with a disability are encouraged to contact the Disability Service who can provide appropriate help with any issues that arise during their studies.

Student Enquiries

For all student enquiries, visit Student Connect at ask.mq.edu.au

If you are a Global MBA student contact globalmba.support@mq.edu.au

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/ offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the Acceptable Use of IT Resources Policy. The policy applies to all who connect to the MQ network including students.

Changes since First Published

Date	Description
11/02/2020	Fixed late submission