

CAB432 Cloud Computing

Lecture 1 - Introduction

Faculty of Science





People, content and schedule

UNIT OVERVIEW



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About Us



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Iain Rouse
Director & Country Leader | Worldwide Public Sector -
Australia & New Zealand for AWS
Iain will lecture some of the second half of the unit.
Final lecture split TBC

Contact details
on the BB
Contacts page.

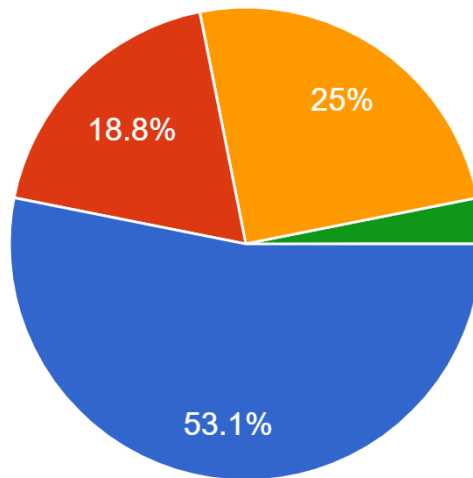
Tutors:

- Kiara Davison
- Michael Esteban
- Chad Gay
- Hui Law
- Saskia Mathers (Marking and cover only)

About You

What is your current course?

32 responses

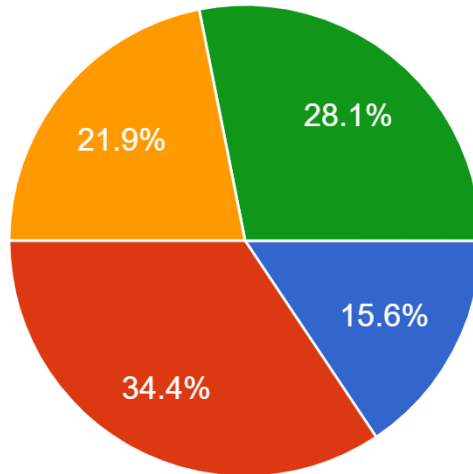


- Undergraduate Information Technology (including double degrees)
- Postgraduate Information Technology (including MIT and MDA)
- Engineering (including double degrees)
- Games and Interactive Environments (Software Major)

About You

How would you describe your knowledge of JavaScript?

32 responses



- Expert - I use it frequently and am up to date with ES6 and modern libraries
- Moderate - I have written some non-trivial JS code but I am not an expert
- Basic - I have written some basic client side code (perhaps using the DOM) but I don't know the language properly.
- Novice - I have little or no experience with the language.

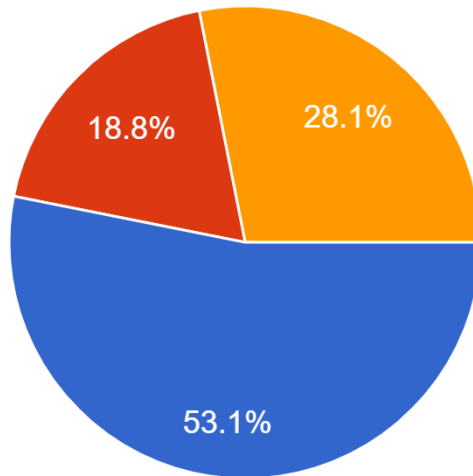
What You Need

- We don't care about the client side
- DON'T rush out and learn React or Angular
- DO get up to speed with the basics if necessary
- Then follow our pracs and you will be fine by the time you need it.

About You

How would you describe your knowledge of the Web, including HTTP/HTTPS requests and responses and servers such as Node.js or Apache?

32 responses

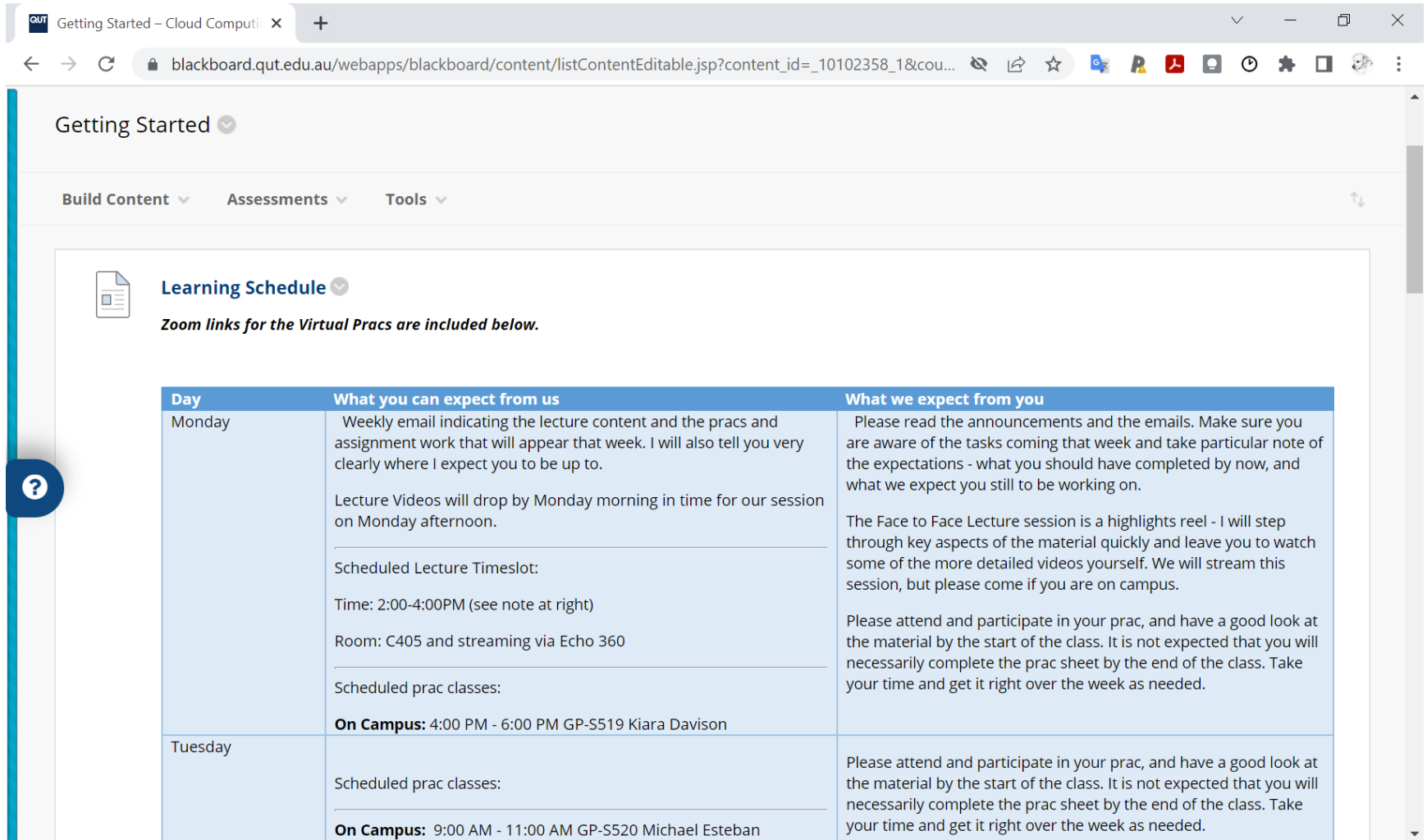


- Strong - I did well in CAB230 or a similar unit and I have written at least some web applications
- Moderate - I have some knowledge of Web Computing, but I don't have much practical experience.
- Weak - I know some of the basic terminology but really don't know the area well at all.

What You Need

- You need to work with node and with web apps
- But we revise this in a cloud context, so don't panic
- Just make sure that do the pracs and you will be fine
- We will introduce things in context
- We will explain things in the lectures and pracs

Getting Started



The screenshot shows a web browser window with the address bar displaying 'blackboard.qut.edu.au/webapps/blackboard/content/listContentEditable.jsp?content_id=_10102358_1&cou...'. The page header includes the QUT logo and the text 'Getting Started - Cloud Computi...'. Below the header, there are navigation tabs: 'Build Content', 'Assessments', and 'Tools'. The main content area is titled 'Getting Started' and contains a section 'Learning Schedule' with a document icon. Below this section, a note states: 'Zoom links for the Virtual Pracs are included below.' A table follows, detailing the learning schedule for Monday and Tuesday. The table has three columns: 'Day', 'What you can expect from us', and 'What we expect from you'. The 'Day' column lists 'Monday' and 'Tuesday'. The 'What you can expect from us' column provides details about weekly emails, lecture videos, scheduled lecture times (2:00-4:00 PM), room (C405), streaming via Echo 360, and scheduled prac classes (4:00 PM - 6:00 PM GP-S519 Kiara Davison for Monday, and 9:00 AM - 11:00 AM GP-S520 Michael Esteban for Tuesday). The 'What we expect from you' column outlines expectations for reading announcements, participating in the Face to Face Lecture session, and attending and participating in the prac.

Day	What you can expect from us	What we expect from you
Monday	<p>Weekly email indicating the lecture content and the pracs and assignment work that will appear that week. I will also tell you very clearly where I expect you to be up to.</p> <p>Lecture Videos will drop by Monday morning in time for our session on Monday afternoon.</p> <p>Scheduled Lecture Timeslot:</p> <p>Time: 2:00-4:00PM (see note at right)</p> <p>Room: C405 and streaming via Echo 360</p> <p>Scheduled prac classes:</p> <p>On Campus: 4:00 PM - 6:00 PM GP-S519 Kiara Davison</p>	<p>Please read the announcements and the emails. Make sure you are aware of the tasks coming that week and take particular note of the expectations - what you should have completed by now, and what we expect you still to be working on.</p> <p>The Face to Face Lecture session is a highlights reel - I will step through key aspects of the material quickly and leave you to watch some of the more detailed videos yourself. We will stream this session, but please come if you are on campus.</p> <p>Please attend and participate in your prac, and have a good look at the material by the start of the class. It is not expected that you will necessarily complete the prac sheet by the end of the class. Take your time and get it right over the week as needed.</p>
Tuesday	<p>Scheduled prac classes:</p> <p>On Campus: 9:00 AM - 11:00 AM GP-S520 Michael Esteban</p>	<p>Please attend and participate in your prac, and have a good look at the material by the start of the class. It is not expected that you will necessarily complete the prac sheet by the end of the class. Take your time and get it right over the week as needed.</p>

Graphical Schedule

Class timetable for 2022/SEM-2 (25-Jul-2022 to 19-Nov-2022)

	Monday	Tuesday	Wednesday	Thursday	Friday
8am					
9am		9:00 - 11:00 PRC S-520 (Practical - On Campus Class (Weeks 1 - 13))	9:00 - 11:00 PRC S-506 (Practical - On Campus Class (Weeks 1 - 13))		
10am					
11am			11:00 - 1:00 PRC S-506 (Practical - On Campus Class (Weeks 1 - 13))		
12pm		12:00 - 2:00 PRC S-518 (Practical - On Campus Class (Weeks 1 - 13))	12:00 - 2:00 PRC VIRT-OLT39 (Practical - Online Class (Weeks 1 - 13))		
1pm					
2pm	2:00 - 4:00 LEC C-405 (Lecture - On Campus Class (Weeks 1 - 13))	2:00 - 4:00 LEC VIRT-OLT20 (Lecture - Live-Streaming Class (Weeks 1 - 13))		2:00 - 4:00 PRC VIRT-OLT43 (Practical - Online Class (Weeks 1 - 13))	
3pm			3:00 - 5:00 PRC S-506 (Practical - On Campus Class (Weeks 1 - 13))	3:00 - 5:00 PRC VIRT-OLT12 (Practical - Online Class (Weeks 1 - 13))	
4pm	4:00 - 6:00 PRC S-519 (Practical - On Campus Class (Weeks 1 - 13))				
5pm					
6pm					

The Schedule

Activity	Day	Time	Location	Teaching Staff
Lecture	MON	2:00 PM - 4:00 PM	GP-C405*	Jim Hogan
Practical	MON	4:00 PM - 6:00 PM	GP-S519	Kiara Davison
Practical	TUE	9:00 AM - 11:00 AM	GP-S520	Michael Esteban
Practical	TUE	12:00 PM - 2:00 PM	GP-S518	Michael Esteban
Practical	TUE	12:00 PM - 2:00 PM	Zoom	Hui Eng Law
Practical	WED	9:00 AM - 11:00 AM	GP-S506	Chad Gay
Practical	WED	11:00 AM - 1:00 PM	GP-S506	Chad Gay
Practical	WED	3:00 PM - 5:00 PM	GP-S506	Chad Gay
Practical	WED	3:00 PM - 5:00 PM	Zoom	Kiara Davison
Practical	THU	2:00 PM - 4:00 PM	Zoom	Hui Eng Law
*: The lecture session will also be live streamed and recorded				
	Highlighting indicates virtual pracs: see Getting Started Guide			
	for the Zoom links for each prac.			

Slack

The screenshot shows the Slack web interface. The sidebar on the left lists several channels under the workspace 'cab432-2022'. The channels include 'assignment1', 'assignment1-demos', 'assignment2', 'assignment2-demos', 'assignment2-find-a-partner', 'aws', 'azure', 'docker', 'gcp', 'general' (which is highlighted), 'javascript', 'lectures', and 'linux'. The main chat area shows the '# general' channel with a list of members and a message input field. A blue overlay box is positioned over the right side of the chat area, containing the following text:

On the BB Side MENU

Talk to Us

Slack Group Link

Contact Us

Slack Invitation

Accounts and Infrastructure

- AWS cloud accounts will be provided via QUT
- They will be restricted, but fairly generous.
- You will use your QUT credentials to gain AWS access.
- You can use them *only* for CAB432 related work
- AWS and Azure have student grants
- You are free to use them, but be careful
- The environment will not match the pracs exactly
- Google requires a credit card for access



The topics we expect to cover

THE SCHEDULE

Unit Schedule (as at July 2022)

- Indicative schedule subject to minor revision
- Dates are the Monday of the week
- Week 1 (25/7): Introduction
- Week 2 (1/8): CaaS
 - The Container as a service model via Docker
 - Prac: Docker (Will run into week 3)
- [JS Support sessions running in weeks 2 and 3.]

Unit Schedule (July 2022)

- Week 3 (8/8): The Cloud Application
 - Cloud Pre-requisites, Revision of Web Computing
 - REST, HTTP requests, Intro to Node Web Applications
 - Prac: Finishing the docker exercises from last week
 - Prac: Node – leading into Week 4
- Week 4 (15/8): Advanced Node
 - Exploring a Node Web Application
 - Prac: A full node application exposing an API
 - Some overlap with the Web Computing unit, but very different prac focus.

Unit Schedule (July 2022)

- **Week 5 (22/8): Cloud Architecture and Storage**
 - Deeper treatment of the Cloud Application
 - Vendor agnostic persistence
 - Prac: Persistence in the cloud app
 - Prac: Assignment 1
- **Week 6 (29/8): Load Balancing and AutoScaling**
 - EC2, Load balancing, Scaling groups, Specialised services .
 - Prac: Scalability
 - Prac: Assignment 1

Unit Schedule (July 2022)

- Week 7 (5/9): Persistence and CAP
 - Persistence trade-offs at Scale and the CAP Theorem
 - Prac: Assignment 1
- Week 8 (12/9): Cloud Security
 - Encryption, Authorization, HTTPS, OpenID, OAuth
 - CORS, DoS, SQL Injection, Event-based security
 - Cloud Policies
 - Prac: Assignment 1

Unit Schedule (July 2022)

- Week 9 (19/9): Lambdas and Serverless Cloud
 - Lambdas, Serverless Architectures, Service Offerings
 - Prac: Catch-ups and demos
- (26/9): Mid-Semester Break
- Week 10 (3/10): Architecting for Cost
 - Trade-offs in large scale cloud architectures
 - Prac: Assignment 2; Remaining Assignment 1 demos

Unit Schedule (July 2022)

- **Week 11 (10/10): Introduction to DevOps**
 - Introduction to Dev Ops in a cloud environment
 - Prac: Assignment 2
- **Week 12 (17/10): Swarm and Kubernetes**
 - Orchestration of container clusters in a cloud environment
 - Prac: Assignment 2
- **Week 13 (24/10): Guest Lecture**
 - Recent Developments in Cloud

The Assessment (Summary)

- Individual Assignment (30%)
 - Docker and web app
- Assessed prac exercises (10%)
 - Scaling and load balancing
 - Persistence
- Paired Assignment (60%)
 - Auto-scaling of a serious application
 - Group mark: 45%
 - Individual: 15%