

# SWEN 438 — Course Introduction

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# Course Information

Information on the course may be obtained from the following sources:

- **Course Outline**

<https://www.wgtn.ac.nz/courses/SWEN/438/2021/>

- **Course Wiki**

[https://ecs.wgtn.ac.nz/Courses/SWEN438\\_2021T2/](https://ecs.wgtn.ac.nz/Courses/SWEN438_2021T2/)

- **Blackboard (linked from the course wiki)**

- **GitLab**

<https://gitlab.ecs.vuw.ac.nz/course-work/swen438/2021/username/>

# Class Representative Selection

[Image] "Who wants to be class rep?"

Screenshot from VUWSA video linked from

<https://www.vuwsa.org.nz/class-representatives/>

# What is DevOps?

There are many definitions. . .

*“DevOps is a software development and delivery methodology that provides ... increased speed and stability while delivering value to organisations.”*

Forsgren, *DevOps delivers*, Communications of the ACM **61**, 32 (2018).

# What is DevOps?

There are many definitions. . .

*“DevOps, whether in a situation that has operations engineers picking up development tasks or one where developers work in an operations realm, is an effort to move the two disciplines closer.”*

Roche, *Adopting DevOps practices in quality assurance*,  
Communications of the ACM **56**, 38 (2013).

# What is DevOps?

There are many definitions. . .

*“DevOps is a collaborative and multidisciplinary effort within an organisation to automate continuous delivery of new software versions, while guaranteeing their correctness and reliability.”*

Leite *et al.*, *A Survey of DevOps Concepts and Challenges*,  
ACM Computing Surveys **52**, 127 (2019).

# CAMS, CALMS and CALMRS

The DevOps method:

- C** Culture
- A** Automation
- L** Lean
- M** Measurement
- R** Reliability
- S** Sharing

# CALMRS Expanded

## Culture

*“Integration of mutual trust, willingness to learn, continuous improvement, constant flow of information, open-mindedness to changes, and experimentation between developers and operations.”*

Wiedemann *et al.*, *Research for Practice: The DevOps Phenomenon*, Communications of the ACM **62**, 44 (2019).



# CALMRS Expanded

## Automation

*“Implementing deployment pipelines with a high level of automation (most notably continuous integration/continuous delivery) and comprehensive test automation.”*

Wiedemann *et al.*, *Research for Practice: The DevOps Phenomenon*, Communications of the ACM **62**, 44 (2019).

# CALMRS Expanded

## Lean

*“Applying lean principles such as minimisation of work in progress, as well as shortening and amplification of feedback loops to identify and minimise value flow breaks to increase efficiency.”*

Wiedemann *et al.*, *Research for Practice: The DevOps Phenomenon*, Communications of the ACM **62**, 44 (2019).

# CALMRS Expanded

## Measurement

*“Monitoring the key system metrics such as business or transactions metrics and other key performance indicators.”*

Wiedemann *et al.*, *Research for Practice: The DevOps Phenomenon*, Communications of the ACM **62**, 44 (2019).

# CALMRS Expanded

## Reliability

*“Robust to faults external or internal to the system, able to scale automatically in response to load and to recover automatically or semi-automatically from failure.”*

Or "... faster, safer and easier to change." — DevOps Handbook.  
Sometimes also expressed as Recovery or Recoverability.

# CALMRS Expanded

## Sharing

*“Sharing knowledge in the organisation and across organisational boundaries. Team members should learn from each other’s experiences and pro-actively communicate.”*

Wiedemann *et al.*, *Research for Practice: The DevOps Phenomenon*, Communications of the ACM **62**, 44 (2019).

# Culture is Key

Without culture what value lies in . . .

- Automation
- Continuous Integration/Deployment
- Monitoring

. . . or any other practice?

# The DevOps Lifecycle

[Image] DevOps (DevOps parody) from PhoenixStudio

<https://www.redbubble.com/people/PhoenixStudio/>

# The DevOps Lifecycle

[Image] DevOps Lifecycle from <https://tech.ucsf.edu/devops>



# SWEN 438 Conceptual Arc

SWEN 438 *Special Topic: DevOps* structure

From Dev to Ops

Following the CALMRS method

and

the DevOps lifecycle.

**Next Lecture:** *Everything is Code.*