VICTORIA UNIVERSITY OF
WELLINGTON
TE HERENGA WAKA

ENGR489
Course Introduction

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Course Introduction

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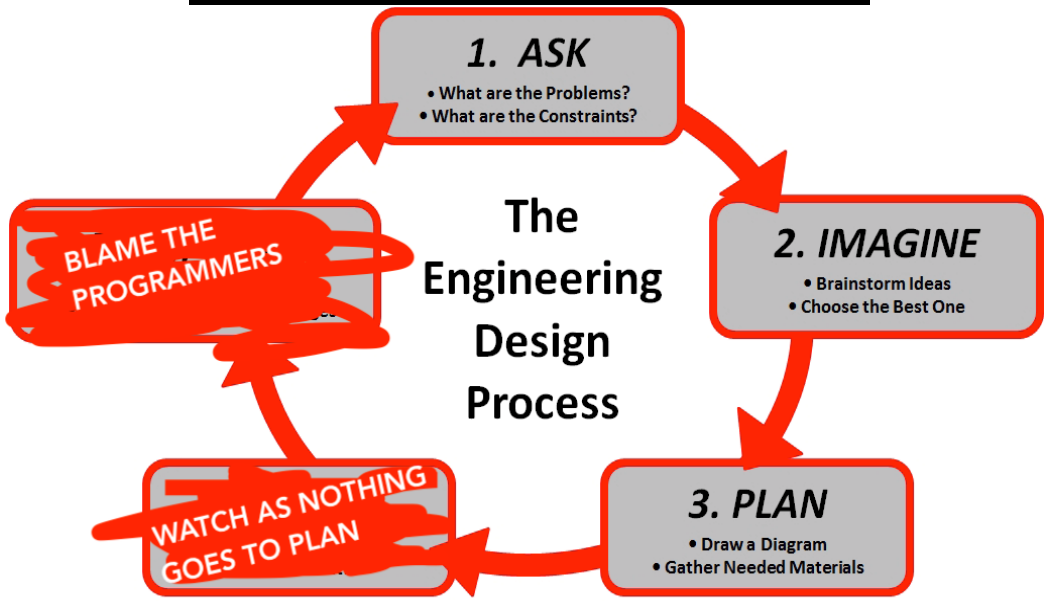
What is ENGR489?

Individual Engineering Project

- The ENGR489 project course consists of an **individual project** done under the supervision of one (or more) academic staff.
- Individual projects with a similar theme and same supervisor(s) may be collated together as a ’group project’
  - Still marked individually
- **Weighs more in your honours calculation than other 4XX courses**

What is an ENGR489 Project?

- Individual project done under supervision
- Projects have a flavour of ‘engineering’
- Some are offered from (or in partnership with) Industry
- Has a specific timeline and time (300 Hours)



ENGR489 Expectations

- ENGR489 projects are expected to solve real-world problems using technically innovative solutions.
- ENGR489 projects must show an emphasis on design and provide evidence of the effectiveness of the devised solutions through appropriate evaluation.
- Students are expected to demonstrate craft in the design and implementation of their solution, and to use engineering processes and/or notations appropriate for their specialisation.

ENGR489 Timeline (1)

- ENGR489 is a full-year (two-trimester) course
  - You will have two trimesters including mid-year break to work on your projects!

- For due dates, ECS Submission System will always prevail

ENGR489 Timeline (2)

Trimester	Week	Milestones / Activities
Trimester 1	Week 1	Students rank projects using project allocation system.
	Week 2	Project allocation performed by course coordinators.
	⋮	Students meet with supervisor(s) and begin work.
	Week 5 (Thursday, 23:59)	**Students submit project proposal, health and safety forms, and IP forms on ECS Submission System** (email confirmation of IP plans is sufficient for internal projects).
	⋮	Work continues. Students meet regularly with supervisor(s).
	Week 12 (Friday, 23:59)	**Students submit preliminary report on ECS Submission System.**

ENGR489 Timeline (3)

Mid-Year Break		Work continues. Students meet with supervisor(s) where possible.
Trimester 2	Week 1	Students can arrange to give presentation on preliminary report to elicit feedback (Not Compulsory)
	⋮	Work continues. Students meet regularly with supervisor(s).
	Week 7 (Sunday, 23:59)	Students submit a draft of final report to their supervisor(s).
	⋮	Work continues. Students meet regularly with supervisor(s).
	Week 12 (Sunday, 23:59)	**Students submit final report on ECS Submission System.**
	TBD	**Students submit presentation slides on ECS Submission System.**
	TBD	**Students present their work during** ENGR489 **symposium.**
	TBD	**Students demonstrate their artifact.**

Assessment Structure

Item	Weight
Preliminary Report	20%
Final Report and Presentation	40%
Artefact and Demonstration	40%
Total	**100%**

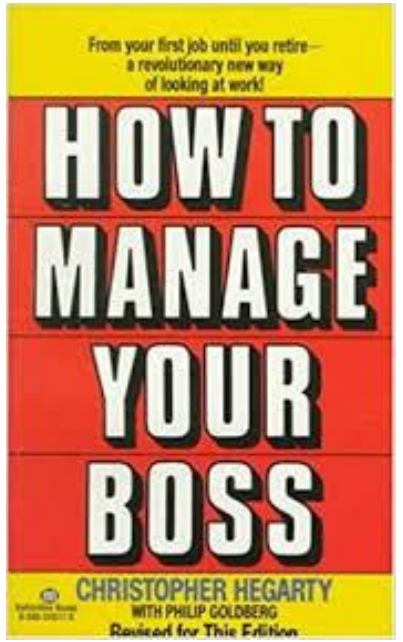
- You must also maintain a log of your meetings with your supervisor(s) and submit the log on the last day of the course!
  - Penalty of up to two grades points from final grade for not adequately submitting a log

Supervision

- Meet you regularly
- Provide you with guidance (academic and scholarly)
- Assess your progress and give you feedback
- Guiding to University facilities
- Help you to comply with Univ. regulations

Meetings

- Expect you to meet with your supervisor every week (regularly) for a minimum of 30 minutes (working minimum).
- For industry projects, weekly meeting with your industry supervisor.
  - VUW supervisor's choice to attend the meeting and not compulsory.
- Keep a log of all meetings with supervisor.
  - Logs need to be submitted at the end of the course!



Supervisor Guidance

- Standards required for this project
- Planning your research
- Skills you need to achieve
- Research Resources
- Methodology
- Literature review support
- Ethical, Legal, Professional, H&S issues
- Expectations of examiners

Your Responsibilities

- Devote around 10 hours a week
  - Including mid trimester and year breaks
- Attend supervisory meetings
- Provide all required documentation to supervisors on time (if you want their prompt feedback)
- Complete H&S and Ethics (if needed) documentation
- Remember 30 points; weighs more in your honours calculation than other 4XX courses

Lectures

- Unlike other courses, ENGR489 have no regular lectures
- Upcoming lectures are to be announced via e-mail
  - No announcement means no lecture!
- First two weeks are confirmed:
  - Week 1: Course Intro and Project Selection Q&A
  - Week 2: Proposal Preparation

Use of AI

- You are allowed to use AI in this course to help you revise and structure your writing and to check grammar/spelling
- You are responsible for the authenticity and accuracy of your writing
- AI can also be a useful tool to generate research ideas or understand concepts, but you must be very mindful of hallucinations and ensure you fully understand what you are doing
- It may invent citations and concepts or give incorrect results, often very subtly

Course Wiki

- Visit our course wiki regularly
  https://ecs.wgtn.ac.nz/Courses/ENGR489_2024FY/WebHome

- Important resources are available in the wiki:
  - ENGR489 Handbook
  - Proposal Templates
  - And more!

What is Engineering?

Image source: https://gradaustralia.com.au/career-planning/which-engineering-specialisation-is-right-for-me-here-are-a-few

- "the application of *science* and *mathematics* by which the properties of matter and the sources of energy in nature are made useful to people" [Merriam-Webster]

What is Engineering?

Image source: https://gradaustralia.com.au/career-planning/which-engineering-specialisation-is-right-for-me-here-are-a-few

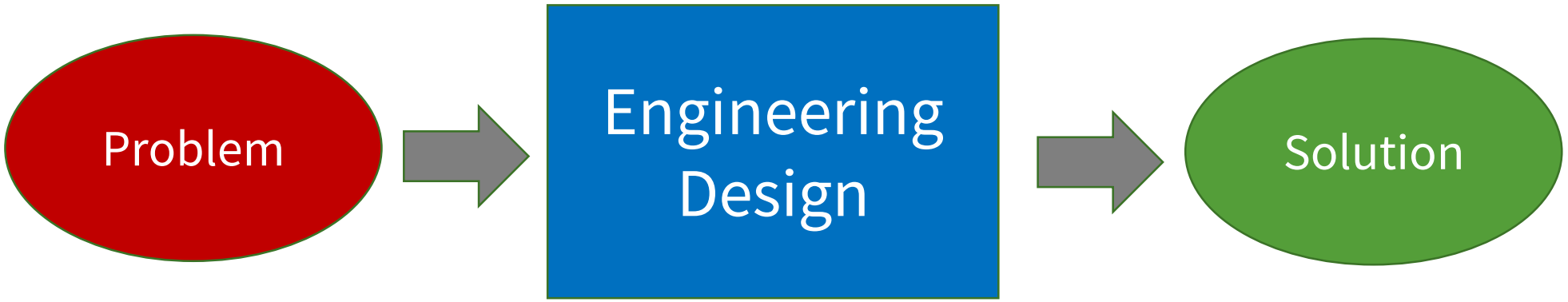
- “the application of a systematic, disciplined, quantifiable approach to structures, machines, products, systems or processes” [IEEE]

Engineering Project

- An engineering project solves a real-world problem using the **engineering design process**
- Emphasis on **design** and providing evidence of its effectiveness through an **evaluation**
- Literature survey is mainly from available systems in the market

Engineering Design

- Engineering design is the process of devising a solution to a given problem through a systematic, disciplined, quantifiable approach



- Engineering design is a problem solving activity to come up with a feasible solution from a set of possible solutions

“Wicked problem”

- **Open ended and vaguely defined**
- There are usually several alternative ways to solve the problem

- How to solve wicked problems?

Source: https://www.wicked7.org/what-is-a-wicked-problem/

Solving a wicked problem

- A wicked problem is one that could be clearly defined only by solving it or by solving part of it

- **Therefore: A wicked problem has to be solved once in order to define it clearly and then solved again to create a solution that works**

Steps in engineering design

1. Define the problem
2. Gather pertinent information
3. Generate multiple solutions
4. Analyse and select a solution
5. Implement the solution

- **Not necessarily linear but more iterative: knowledge gained at any step may be used to inform earlier tasks and an iteration in the process**

Action Items (Recap)

- Rank projects you like to work on
  - Opened on Monday 26 Feb 15:00hrs
  - Ends on Friday 1 Mar 23:59hrs
  - PAS: https://ecs.wgtn.ac.nz/apps/projectselection
- The PAS system contains only a brief description of each project
  - You are encouraged to speak to potential supervisors to gain a better idea of what is involved
- **Make sure to "finalize" your selection on or before Friday 1 Mar 23:59hrs**

- We will let you know the results on Wednesday, Week 2

Next Lecture

- On 6 March 2024: Proposal Preparation