



UNIVERSITY OF
AUCKLAND
Waipapa Taumata Rau
NEW ZEALAND

ENGINEERING

Te Herenga Mātai Pūkaha

COMPSYS/ELECTENG/ SOFTENG 770: Capstone

Lecture 1.1: Introduction



Welcome!

South Land Engineering is one
of New Zealand's premiere
electronic engineering firms



Your Project

Develop a prototype

Write and present a business proposal

Working in multi-disciplinary teams

- Electrical, computer systems, and software engineering

Our support:

- Senior staff member as a mentor
- Access to our technical support forums

Full details are in your manual



Who are We?

Overall project coordinators

- Dr Craig Sutherland



You can email me or visit my office:

- cj.sutherland@auckland.ac.nz
 - Put “Capstone” in the email title
- Office: 405-739 (open-door policy)



Who are We?

Overall project coordinators

- Dr James Tizard



The best way to contact me is via email:

- james.tizard@auckland.ac.nz
 - Put “Capstone” in the email title



About Plunket

Whānau Āwhina Plunket is a charity and Aotearoa New Zealand's largest support service for the health and wellbeing of tamariki under-five and their whānau.



Find out more information online at <https://www.plunket.org.nz/plunket/about-plunket/>

Our year in review

Well Child Tamariki Ora

280,928



Number of tamariki on our books (0-5 years) in 2022/23

45,792



New Whānau Āwhina Plunket babies in 2022/23 – (79% of new babies across Aotearoa New Zealand). This includes 67% of all Māori pēpi born².

386,683

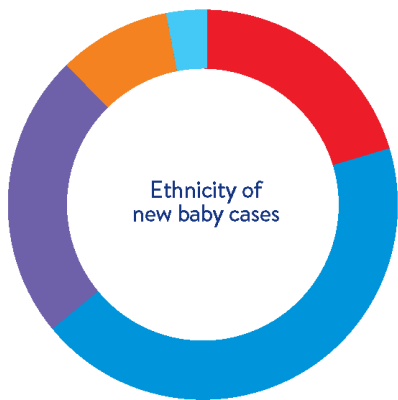


Clinical contacts made with whānau

24,013



B4 School Checks for 4-year-olds completed (contracts in Auckland, Waitematā, Counties Manukau, Lakes, Bay of Plenty, Manawatu, Wellington, Hutt Valley and Kapiti).



21.4% Māori
41.1% European
24.7% Asian
9.7% Pacific
3.1% Other

Website and social media



1,678,859
website visits



20
Facebook Live Chats
We reached
46,000
people through our
Facebook Live Chats



1,060
breastfeeding support
sessions using video
conference

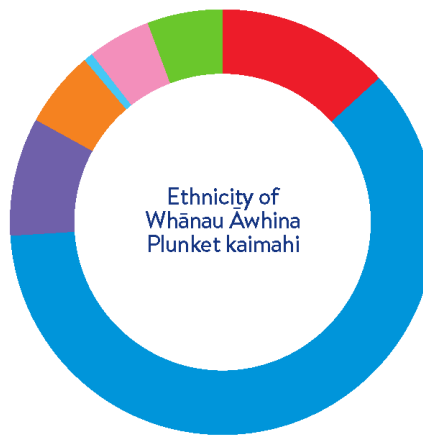


96,034
calls handled by PlunketLine
(inbound and customer
support outbound)

Top topics

- Child health and illness
- Breastfeeding
- Child behaviour
- Nutrition
- Sleep

Our people



14.2% Māori
58.9% European
10.6% Asian
6.2% Pacific
1.5% Middle Eastern, Latin American and African
4.4% Unknown
4.2% Other

Frontline nurses

523

Kaiāwhina

50

Community karitāne

90

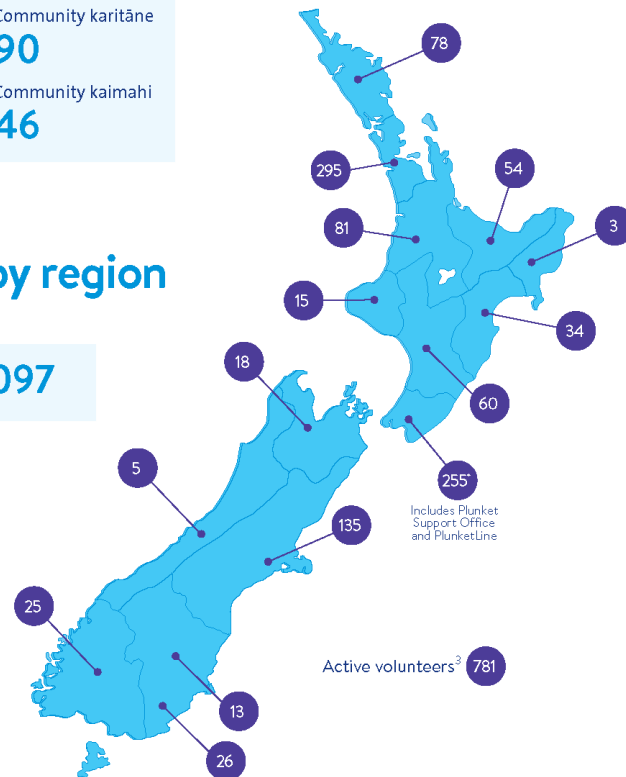
Community kaimahi

46

Our kaimahi by region

Total kaimahi
across Aotearoa

1,097



Request for Proposals

Whānau Āwhina Plunket is looking for a smart scale system to weigh babies from newborn to one year of age.

Integrated system that will reduce the work on their frontline staff



Full details of the requirements are available in the project brief.

Must meet all stated requirements, plus they are looking for something help that will help them (i.e., goes beyond the minimum requirements.)

Projects will be judged on achievability, usability, technical completeness, and vision.

Project Deliverables

Risk Analysis	8 March
Project Proposal	28 March
Proposal Peer Reviews	19 April
Final Report	24 May
Personal Reflection	31 May

Plus

Demonstration in the week starting 20 May

Full details are in your manual



Regular Activities

Meeting with your mentor

- Every week
- Guidance on working in a team
- Answer three questions:
 1. What did you do over the past week?
 2. What will you do for the coming week?
 3. What blockers stand in your way?
- If unable to attend, must contact one of the coordinators

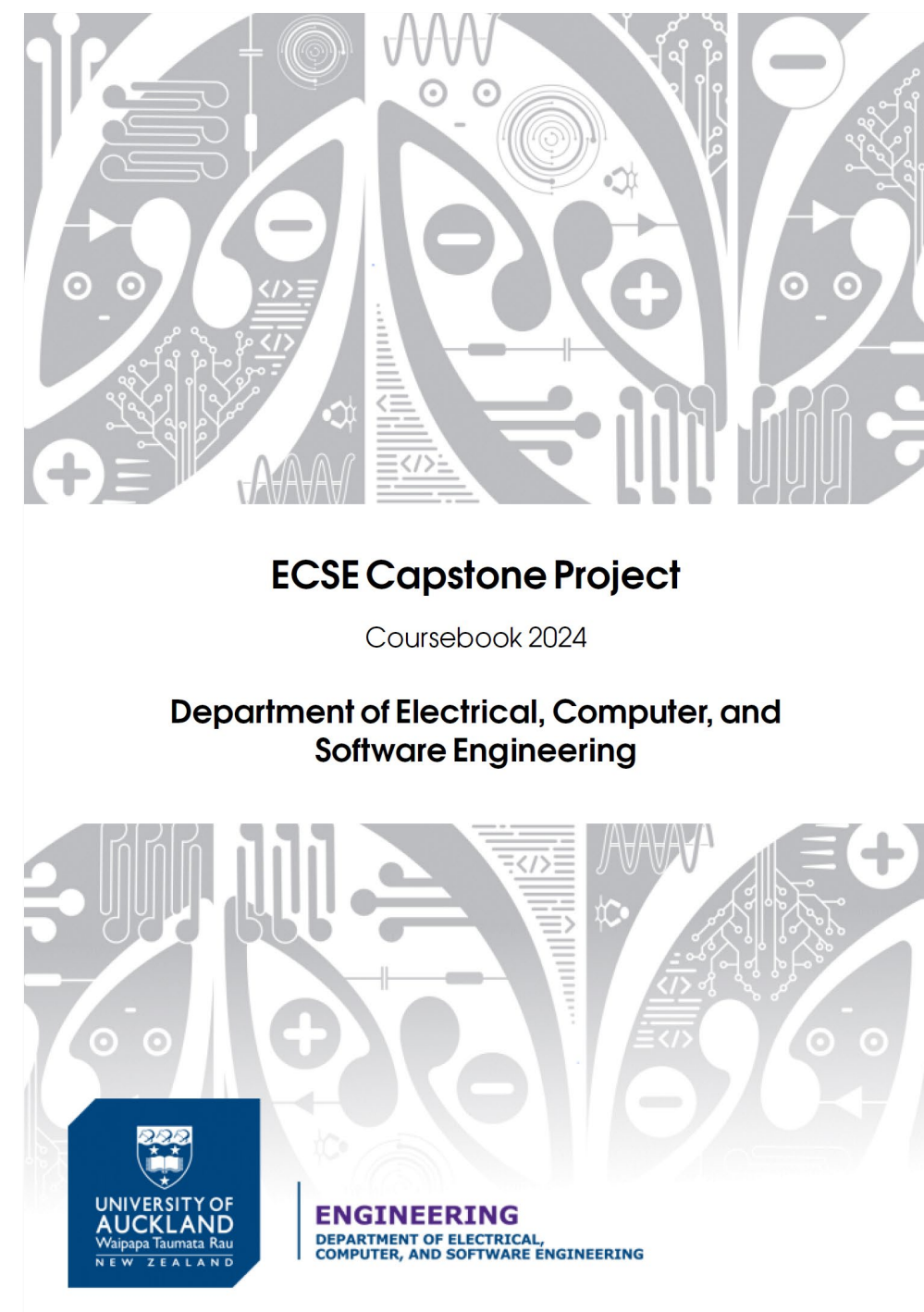
Full details are in your manual



What is the Manual?

Contains:

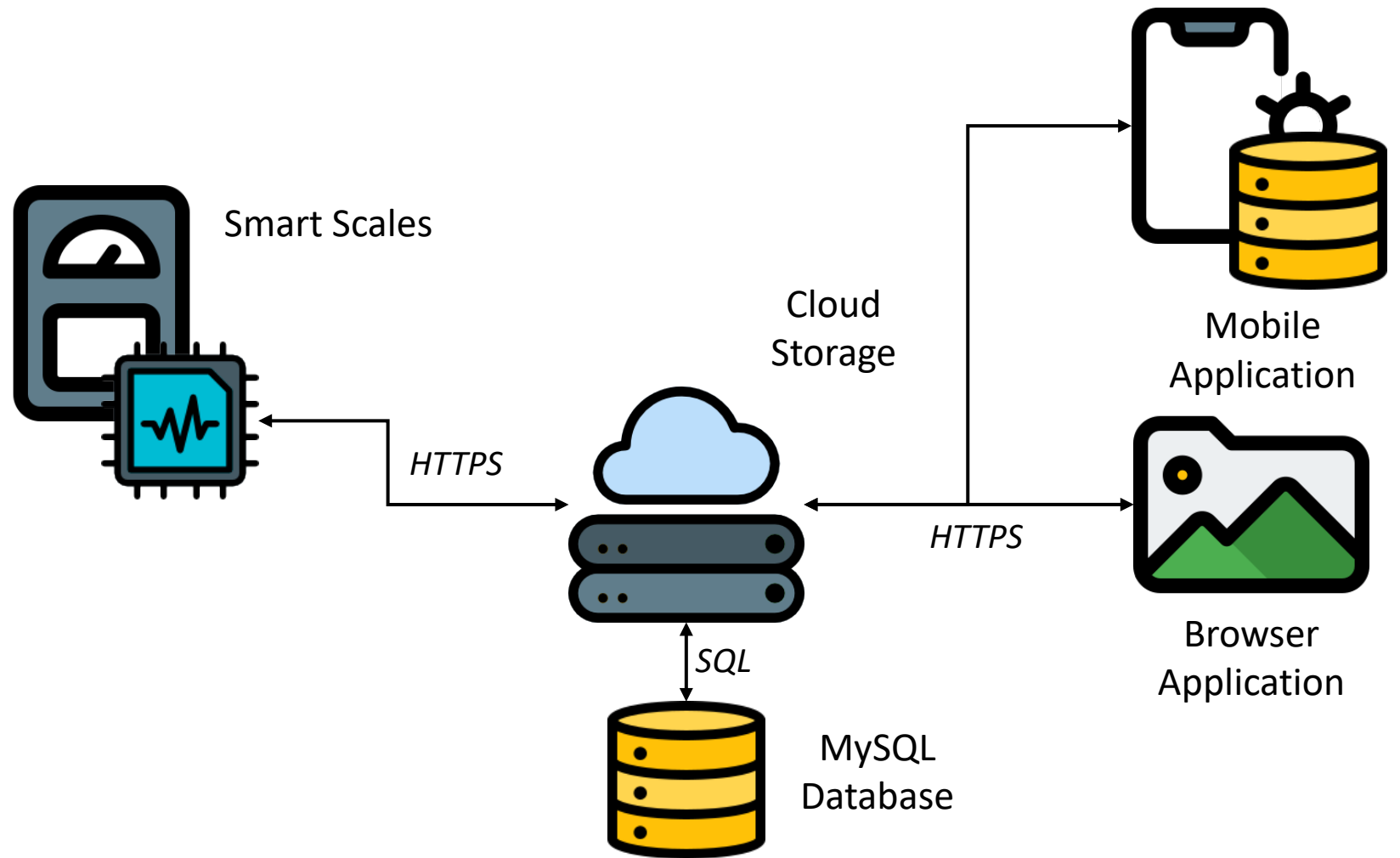
- Course information
- Project brief
- Assignment information
- Background content
 - Risk
 - Sustainability
 - Peer reviewing
 - Te tiriti o Waitangi
 - Privacy
- Appendices
 - Additional information, e.g., team work, Git, and LaTeX



Some Technical Details



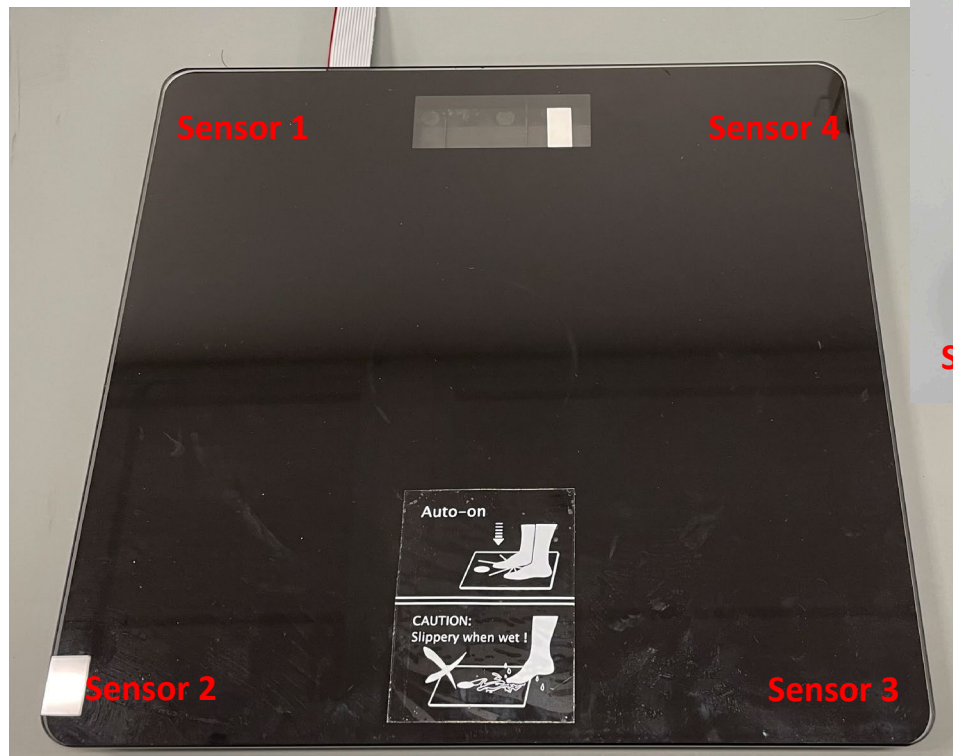
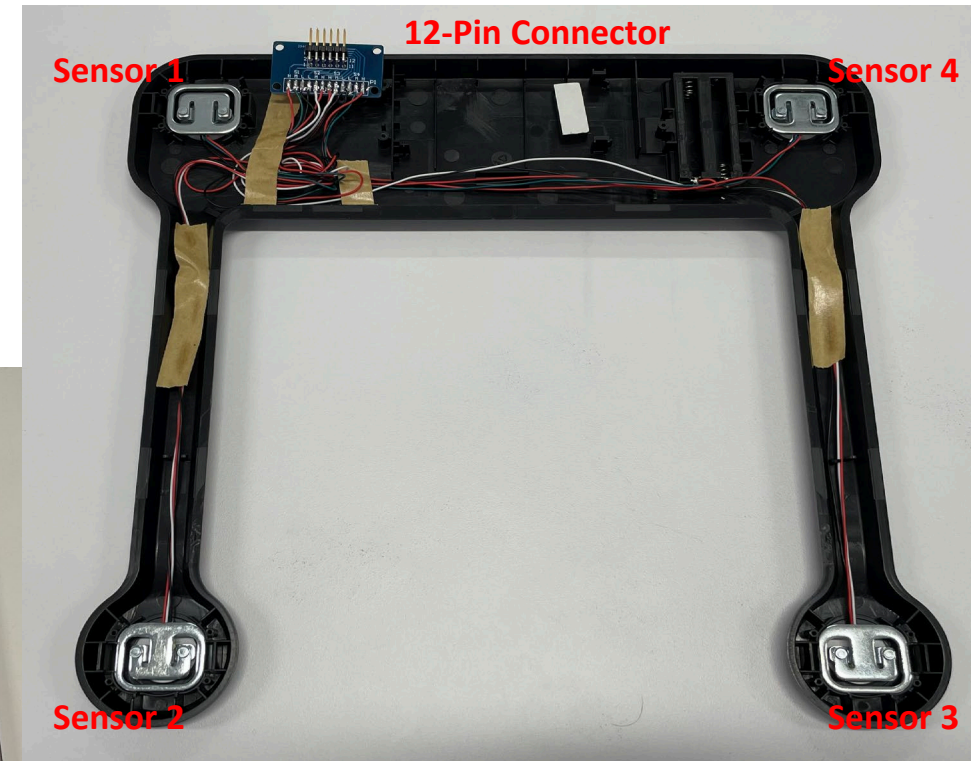
An Overall Picture



Some Technical Details

Some of our senior engineers have developed an initial proof-of-concept

The Scale

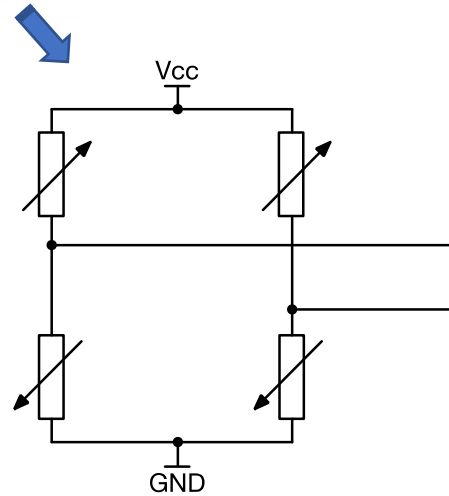


Some Technical Details

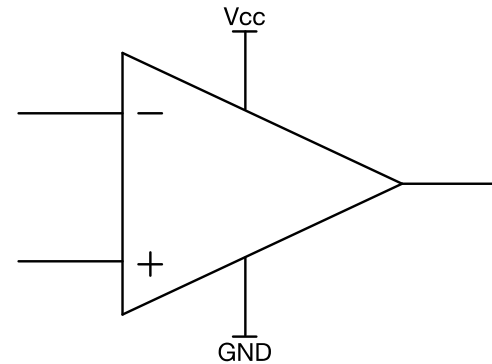


Hardware Functionality

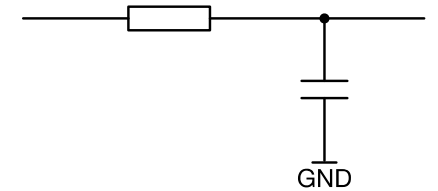
Sensors x 4



Convert to Voltage
(Wheatstone Bridge ??)

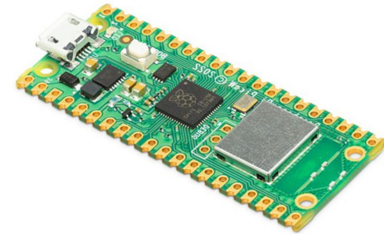


Amplifier (Gain of ??)



Filter (Active/Passive ??)

Microcontroller + WiFi



The initial proof-of-concept contains these but needs improvement!

Remember...

You are **NOT** designing “**A Circuit**” that just works, but rather “**A Saleable Product**”



Academic Integrity

Why academic integrity is important:

- Student Academic Conduct Statute (2021):
“Such integrity maintains the reputation and quality of its qualifications and protects their international recognition.”
- Engineering New Zealand’s Code of Ethical Conduct: “In performing, or in connection with, your engineering activities you must act with honesty, objectivity, and integrity ...”
- Academic dishonesty may have long-term consequences, e.g. damaged reputation

NEW ZEALAND

Engineer suspended after signing off on unsafe tuk-tuks



NZ Herald

14 Jan, 2020 02:53 PM 2 mins to read

Save

Share



A Tuk-tuk signed off as safe by the engineer rolled in Wellington in 2016. Photo / 123RF

Academic Integrity at UoA

Academic misconduct may happen in coursework and exams.

- Examples: inadvertent plagiarism, collusion and contract cheating.

Revisit the Academic Integrity Module.

Ask me if you are unsure about anything.

Read more information about academic integrity:
<https://www.auckland.ac.nz/en/students/forms-policies-and-guidelines/student-policies-and-guidelines/academic-integrity-copyright/about-academic-integrity.html>

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Before We Go...

Don't forget to fill in the team preferences survey

We will allocate your teams tomorrow

Meet your team during the lab sessions

- You will need to meet your mentor in your allocated time slot
- Develop your team charter and allocate roles

All the best for your projects!

