

Alasdair Nicol

Electrical engineering student
University of Melbourne

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Qualifications:

- Stacked Learning: Light Industrial Gas Turbine Operations & Maintenance Training (2026)
- Altium Education – PCB Design Basics

Skills / Software competencies:

- Altium Designer
- Kicad Designer
- Visual Studio Code
- Microsoft Office Suite
- LaTeX document editor
- Autodesk Fusion
- LTSpice
- C/C++
- Java
- HTML/CSS
- Verilog
- PCB assembly (THT)
- Manual PCB Diagnostics
- FPGA logic programming
- Analog filters and amplification (audio)
- PCB design
- FPGA programming
- Op amp and filter circuitry
- Technical Documentation

Who am I?

I am a motivated, highly organised second year electrical engineering student at the university of Melbourne. I've developed practical experience including filter networks, power supply design, electrical and electronic systems programming and objected oriented development. I've got a strong interest in analogue electronics and audio processing, which complements my musical hobbies and provides a strong basis for exploring other areas of design and analysis including vibration analysis. My personal project work has developed my skills in CAD design, PCB design and circuit simulation and analysis. Through my leadership, education and projects, I've gained the tools to learn quickly and tackle many engineering challenges.

My hobbies include performing and composing music. This offers me experience in handling pressure and developing routines with self-evaluation cycles. As well as developing leadership tools for sections and bands.

Education:

The University of Melbourne (Undergraduate):

2025-present:

- Majoring in electrical engineering
- Digital systems, Numerical computation in C, Engineering Mathematics (Calculus 3 equivalent).
- **WAM of 84.50**

St Leonards (IB):

2019-2024:

- Studied Physics HL (7), Computer Science HL (7), Geography HL (6), Spanish SL (6), Maths SL (7), English SL (5)
- IB score of 40 (96.30 ATAR)
- Music leader, Generations in Jazz Superband, House Colours, Academic Colours

Leadership of Tasks and Teams:

- **Black Rock Sports Club ANZAC Day (2026)**
 - Organised musicians for Last Post
 - Maintained up 2000W outdoor PA system
 - constructed temporary bar to reduce wait times.
- **Founder of the EMS Funk Group (2026)**
 - Arranged music played in the ensemble.
 - Created advertisement social media content.
 - Led section rehearsals to focus player improvement
- **St Leonards College (2024)**
 - Conducted 200 person vocal choir in front of 2000 people.
 - Managed AV, creative and logistics team for a multi-group arts performance.

Engineering Projects

Unmanned Ground Vehicle – Mechanical Engineering Student Society: 2026-present

- Member of the power systems, and electrical design sub-team.
- Worked in multidisciplinary team integrating electrical and mechanical system
- Designed reliable low noise 5V and 12V rail power distribution system.
- Produced electrical schematics in Altium Designer
- Researched and itemised options for final product processor.

Personal Project Work:

- **PWM VOC Fan**
 - Designed prototype schematic in KiCad Designer.
 - Modelled and 3D printed cage and piping connections using Autodesk Fusion and Elegoo Slicer.
- **Record Player Preamplifier**
 - Designed low-noise analogue preamplifier for moving magnet cartridge.
 - Simulated gain stages and filter response in LTSpice.
 - Designed active filter networks using operational amplifiers.
 - Built, tested and debugged prototype hardware.
 - Verified frequency response against design specifications.
- **LED Matrix Spectrum Analyser**
 - Implemented FFT analysis of live signal input.
 - Programmed the ESP32 WROOM-32 using the ESP-IDF native development environment.
 - Built Salen-Key filter network for a tighter FFT result.
 - Designed PCB using KiCad Designer
 - Manufactured PCB through JLPCB and assembled it (THT).
- **Digital Storage Management System**
 - Constructed software to database connections (SQL and Java).
 - Followed agile development and evaluation process.
 - Consultation and communication with Client.
 - Performed and documented extensive QA testing on the prototype product.

Work Experience:

Black Rock Sports Club - Bartender 2025-present

- Specified, documented and installed the current audiovisual system.
- Maintained beer dispensing performing fault diagnostic and preventative maintenance.
- Volunteered and helped run ANZAC day event
- Developed standard operation procedures and chemical policy as part of controlled document system.

ASL Catering – Kitchen Hand 2026-present

- Developed set of standard operating procedure documents for dishwasher operation.

Community Experience:

Engineering Music Society: 2024-present

- Stage band lead trumpet and section leader.
- Stage band bassist.
- Orchestra section trumpet.
- Organiser and founder of the EMS Funk Ensemble, including music selection and advertisement.

Whitehorse Brass Band: 2024-present

- Solo cornet 4th chair.
- 2026 national B grade champions.
- Competing in the 2026 Victorian State Solo championships.

ANZAC Day Volunteering 2014-present

- Served breakfast for veterans at Highett RSL (2014-2025).
- Performed last post for Highett RSL (dawn service), Moorabbin football club, and the black rock sports cub.
- Marched in city parade (2025).

References available on request.