

Project/Directed Study Registration Form

To formally enrol in this Project subject, please submit this signed form (and any supporting documentation) by e-Request.

Project Number
Office use only

		Phone (mobile)	0491157813
Student No.	24557656	Email	Zachary.c.zerafa@student.uts.edu.au
Course code & name	C09119		
Major	Mathematical Analysis		
UTS Supervisor	Dr Mark Craddock	Supervisor's Faculty	Science (MAPS)
Subject No. & name	32931 (Technology Research Methods)		
Session	Autumn	Year	2026

Project title

Fourier Analysis and Signal Processing

Project description (minimum two paragraphs, but no more than a page)

The project will investigate the use of methods of harmonic analysis in signal processing. Signal processing is of enormous and growing importance in the modern world. Mobile phones, the internet communication with interplanetary probes rely crucially on sophisticated techniques for the handling of electromagnetic signals. Sophisticated mathematics is essential to this technology.

The project will develop these techniques with particular emphasis on radio technology. The necessary background in the theory of differential equations, Fourier analysis and electromagnetic theory will be explored and their application to radio technology will be studied.

Your supervisor may want to review a brief outline of the project, using appropriate technical language by identifying what contributions your project can make to the Engineering/IT community in terms of scholarship, novel design, validation and verification of a method or model. The supervisor must agree to the proposed learning outcomes, deliverables and weighting of marks.

Learning outcomes (between 2-5) - expressed in "Subject Learning Outcome" format: *verb-content-context*

Upon successful completion of this study/project the student should be able to:

- Explain the mathematics of radio technology.
- Understand the role of Fourier Analysis in signal processing.
- Understand the connection between the mathematics of radio technology and the actual construction of radio devices.

Deliverables, due dates and % mark (total 100%) (between 1-5) – *must be specific to this project proposal*

A written report of 30 pages on the mathematics of radio technology. This will be worth 100% of the student's mark.

Provide name and contact details for **external or co-supervisors** for your project (if applicable):

(Note: **not your UTS supervisor – their name is entered over...**)

If you are undertaking your project in a group, list the names of other group members here:

(Surname, First name, Student#)

Note: Each student should provide a report at the end of project, describing who did what.

CHECKLIST: Student to complete (* compulsory – must be completed)

- ☒ *Supervisor's signature on this form
- ☒ *Student's signature on the declaration on this form

Please tick one or more of the following to describe the project you are undertaking;

- ☒ The project topic was available from a list provided by my supervisor.
 - ☐ The project topic was my own idea and developed further through discussions with my supervisor.
 - ☐ The project topic is my own, and I have secured a supervisor who is interested in what I am doing.
 - ☐ The project topic was developed at my current, or previous place of work.
- Note: Please explain in the project description section, how this project is different from your current or past duties at work.
- ☐ The project will be undertaken away from UTS and not require UTS support or resources (other than supervisor).
 - ☐ This project may require an Intellectual Property Agreement or Confidentiality Agreement.
 - ☐ This project may require me to visit external workplaces where I am not covered by my employer's insurance.
 - ☐ This project requires a Human Research Ethics approval as determined by my supervisor

Student Declaration

I understand that I am responsible for my project and all activities associated with it. I undertake to adhere to the subject requirements, and student responsibilities and expectations. I will undertake all activities related to my project on my own (unless it is a group project) and will acknowledge all information sources and all assistance received.

I understand that completing this registration form does NOT formally enrol me in a project subject. I understand it is my responsibility to enrol correctly via the required UTS procedures into the correct project subject by the enrolment deadline.

I will discuss with my supervisor to determine if human research ethics approval is required.

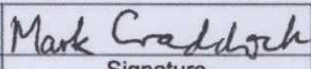
I will follow risk assessment procedures to identify and reduce all risks. I will discuss the Faculty's Environment, Health and Safety (EHS) policy with my UTS supervisor and follow all directions. I will obtain advice from my project supervisor as well as the Project subject coordinator before going to an external workplace where I may not be covered by my employer's insurance.

Student to sign: ... 

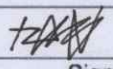
Date: 11/12/2026

Securing Project Supervision – Supervisor declaration

I understand that by signing this I am agreeing to supervise this student project and thereby agree to adhere to all subject guidelines and requirements. I will review the project for any human research ethics issues.

Mark Craddock	Science		29/1/26
Name	Faculty	Signature	Date

Subject Coordinator Authorisation

Zachary Zerafa	FEIT		11/2/26
Name	Faculty	Signature	Date