



Advanced Physics Laboratories

Welcome!



School of Physics move to Beech Hill

- We are temporarily located in Beech Hill (BH) since 2023.
- Date to move back to Science TBD but we will be back for 2027/2028 academic year.
- BH Building will be closing at **21:30**, so you must leave by then.
- Please let us know if there are any issues with schedules and commuting between UCD main campus and Beech Hill.





Advanced Physics Laboratories (APL) 2026–2027

The Advanced Physics Laboratories are located in Beech Hill on the ground and first floors of the B-wing:

- Rooms B001, B002, B003, B004 and B005 (Ground Floor)
- Rooms B103 (Paul Hanratty & Joe Branson's Offices) and B105 (First Floor)

Important: When accessing the labs on the first floor, do so using the stairs at the back of the labs on the ground floor to avoid going through classroom in B106-BH whilst lectures are taking place!



School of Physics move to Beech Hill

No Physics Library, common room or dedicated write-up space in Beech Hill.

You will be able to use B106-BH as your base:

- Microwave and kettle available at end of room
- Must make sure that room is kept clean / no strong smells
- At end of day, chairs must be left ready for next day's lectures
- B106 will may have lectures scheduled in it – we will post schedule on the door once we have it

Points of contact:

- Main Office (B109–BH / SCN 1.45)
- Bairbre Fox, School Manager (A109–BH)
- Prof. Dominic Zerulla, Head of School's Office (A108–BH)
- Dr. Ian Mercer, Stage 3 teaching Team coordinator (Science South 0.009)





Information & Communication

Website for the ADVANCED PHYSICS LABORATORY

<https://physicslabs.ucd.ie>

(General information, Deadlines, Presentation Slides,
Python programming, Data acquisition, Data analysis)

Email notification list for the ADVANCED PHYSICS LABORATORY

UCD-PHYSICSLABS3@listserv.heanet.ie

You (UCD email) should all have already been added.
Only staff can send.



APL Philosophy

Laboratory Philosophy:

- Educational environment
- Interaction with staff & demonstrators is important
- The key aims of the Advanced Laboratory is to develop independent critical-thinking **research and transferable skills** in an Experimental Physics setting, but with wider applications:

Learn to Think Independently!

- Not only about the report, but also demonstrating understanding of the experiment, including set-up, execution, data analysis, interpretation of results.



APL Philosophy

Laboratory Philosophy:

- Work must be your own – if a report is found to be plagiarised from another student's work, this will be investigated and could be referred to the School Disciplinary Committee.
- You must be able to explain and defend everything written in your reports (and code!) during the discussions with staff. Your ability to do so will be part of the grading for the experiment.



AI Use in Laboratory

Students may use generative AI tools for limited support in this module.

You may use AI for planning and researching your experimental work, debugging your own code or refining the language of text you alone have authored, but **not to generate text, interpret experimental results, formulate scientific conclusions or write the code required for data acquisition or computational physics projects.**

Students remain fully responsible for the accuracy and reliability of their learning, and should be able to demonstrate their understanding of the experimental work undertaken during the discussions with staff which will follow each experiment. Specifically, students are expected to be able to explain and justify the theory, procedures, analysis and conclusions provided in their laboratory reports, as well as the structure and workings of any code used.

Any use of AI must be cited appropriately, including details of the tools used and the prompts submitted.



APL Staff

Staff:

- Module coordinators:**
- Prof. John Quinn (PHYC30170)
 - Dr. Tom McCormack (PHYC30300/30360/30370)
 - Assoc. Prof. León Vintró (PHYC30310/30320)

- Other staff involved:**
- Dr. Patrick Hayden
 - Prof. Vladimir Lobaskin (Computational)
 - Dr. Morgan Fraser (Astro Experiments)
 - Prof. Brian Vohnsen
 - Dr. Aoife Ivory

- Technical staff:**
- Mr. Paul Hanratty, Dr. Joe Branson

+ Postgraduate demonstrators



Staff



John
Quinn



Luis
León Vintro



Tom
McCormack



Paddy
Hayden



Brian
Vohnsen



Morgan
Fraser



Vladimir
Lobaskin



Aoife
Ivory



Joe
Branson

Paul
Hanratty

Number of Experiments

	Trimester 1	Trimester 2
Single Hons.	4 expts.	4 expts.
PASS	4 expts	4 expts.
TP / SA(5)	2 expts Finish in lab by 29/10/2026	2 expts Finish in lab by 12/3/2027

- A *Statement of Intent (Experiment Plan)*, signed off by a staff member, must be produced before commencing work on an experiment. (*Not required for Computational / Electronics / CCD / AIA*)
- You must submit a report before being assigned a new experiment.

Two-trimester modules

Module	Name	Credits	Timetabled Laboratory Hours	Module Coordinator
PHYC30170	Astronomy and Astrophysics Lab I	20	12 hrs/wk.	John Quinn
PHYC30300	Advanced Laboratory I (Physics)	20	12 hrs/wk.	Tom McCormack
PHYC30320	Advanced Laboratory I (TP)	10	6 hrs/wk.	Luis Leon Vintro

One-trimester modules (Study Abroad)

Module	Name	Credits	Timetabled Laboratory Hours	Module Coordinator
PHYC30360	Study Abroad Physics Labs (10)	10	12 hrs/wk.	Tom McCormack
PHYC30370	Study Abroad Physics Labs (5)	5	6 hrs/wk.	Tom McCormack

Study Abroad Laboratory Modules must be completed in either trimester.



Laboratory Schedule

- **Trimester 1: Labs **start today** and will **close on**:**
 - Thursday 29th October for TP / SA (5 credit)
 - Thursday 26th November for Physics / PASS / SA (10 credit)
- **Trimester 2: Labs start on 19th January and will close on:**
 - Friday March 12th for TP / SA (5 credit)
 - Thursday 25th March for Physics / PASS / SA (10 credit)
 - **The Labs will be open in the March field–work weeks (extended hours)**
- Main Laboratory (with demonstrators):

Tues., Weds., Thurs. 2-6pm.
- You should be working on lab activities at all timetabled hours
- Sign in and out (QR code)

Statement of Intent (Experiment Plan)



Statement of Intent

UCD School of Physics
Advanced Laboratories

Name:

Experiment:

Date:

The Statement of Intent should address the following four points about the experiment you are about to undertake:

1. What is the aim of the experiment?
2. What measurements will be made and how?
3. How will the final result be obtained from the experimental data?
4. What are the main safety concerns with the experiment and precautions that should be taken?

The statement should be reviewed by a member of staff before you begin the experiment.

Motivation:

- While writing report students realise what they should have done!
- Know what you have to do in advance and make a plan!
- Safety

Equipment:

- May be different to handout (e.g AJP paper)
- **You should not turn on any equipment until you have discussed with a member of staff.**
- **It is ok (expected!) to look at the equipment before writing the Statement of Intent.**

The Institute of Physics requested student Statements of Intents as part of the accreditation process.

- Safety in the lab is of the utmost importance:
 - People
 - Equipment
- Safety needs to be thought about in advance and included in the Statement of Intent.
- Please **think** critically about the safety aspects before using any equipment.
- Equipment: we frequently have blown fuses - please know how to wire up a basic circuit including how to put an ammeter in a circuit!
- Every Stage 3 student will do the Ramsauer-Townsend Experiment that involves liquid nitrogen (LN₂) - everyone has to be safety trained for LN₂ (next)

Time Management

- Managing your time effectively is critical
- Each experiment is worth 2.5 ECTS credits (50-75 hrs) - 50% of a lecture module
- Indicative breakdown: assuming 3 weeks per experiment:
 - First week: familiarising with experiment: aims, equipment, set up and procedure including writing data-acquisition code (if relevant), preliminary data
 - Second week: refine experimental procedure, preliminary analysis, final data sets
 - Third week: final analysis and write report
- You will be slower at first and get faster as the year progresses!
- Do not stay stuck! Ask for help!
- Labs start today - it is vital to get into things this week.

Progress targets for 1st trimester

	Physics / PASS / SA (10)	TP / SA (5)
Expt 1	Complete 24 th Sept	Complete 1 st Oct*
Expt 2	Complete 15 th Oct**	Complete 29th Oct Submission by 9th Nov
Expt 3	Complete 5 th Nov	NA
Expt 4	Complete 26 th Nov Submission by 18th Jan	NA

* Last possible **Submission 5pm on 5th Oct**

** Last possible **Submission 5pm on 27th Oct**

Doing Experiments

- You must keep a laboratory notebook with a detailed record of what you did for each experiment (set-up, procedure, results).
- All data should be available (in either written or electronic form, if appropriate) in case requested by staff.
- Please frequently backup all your work!
- If there is no activity on an experiment after a period of time the experiment will be allocated to someone else.
- Experiments are designed to be extendable: if you have an idea to do something different / extra / new then please do so! (initiative and independent thinking are very important!). Note: could also be with analysis or interpretation!

Reports

- All reports are to be typed (do not forget to append Jupyter notebooks and data acquisition code to the end of your reports. Be careful with Jupyter Notebook PDF appendices that they are not all on one page! No code screenshots!)
- An Electronic version of each report in a single pdf document is to be [submitted through Brightspace](#) (originality checker will run on it).
- Each experiment and report to be completed (submitted) before starting the next one.
- **We do not want large reports** – brief, informative reports that are clear and understandable are preferred. (**report-writing session next week**)
- Appendices are not dumping grounds - compact, documented, referenced!

- A staff member will read your report and discuss it with you. (NB. Notebook).
- Assessment is based on quality of work, understanding and practical skills.
- Assessment Breakdown:
 - 80% for laboratory reports and discussions with staff
 - 20% general continuous assessment mark by the staff
- Please remember that one experiment is worth 2.5 ECTS (50-75 hrs of effort). This is 50% that of a typical lecture module and budget your time and effort accordingly!
- Grading Guide: <https://www.ucd.ie/registry/t4media/UCD%20Module%20Grade%20Descriptors.pdf>

Additional Considerations for Assessment Policy

- Effective September 2026, UCD has introduced the **Additional Considerations for Assessment Policy (AdCon)**.
- For more information see:
 - <https://www.ucd.ie/registry/projects/adcons/#h820557>
 - https://hub.ucd.ie/usis/!W_HU_MENU.P_PUBLISH?p_tag=GD-DOCLAND&ID=301
- For the labs:
 - year-long modules will have two permitted self-certified five-working-day extensions (each with an additional five-day one-grade penalty permitted).
 - one-trimester modules there will be one permitted self-certified extension).
- However, in all cases, **you will not be assigned your next laboratory until the report for the previous one has been submitted.**

Additional Considerations for Assessment Policy

The new policy in a nutshell

From the 2026–27 academic year, a new unified policy will replace both the Extenuating Circumstances and Late Submission of Coursework policies. This new policy introduces **three clear support pathways** for students facing temporary or ongoing difficulties that impact their assessments.

Self-Declare for Extension	Certified Additional Considerations	Retrospective Applications
- Students can request up to 5 working days to complete eligible* assessment tasks, without needing documentation or academic approval. - Designed for short-term issues, students simply notify the university via SISWeb before the submission deadline. - With the approval of the Module Coordinator, this may be extended to an additional 5-day extension with a one-grade penalty. <i>*Extension option will only automatically apply to certain assessment types that are included: Assignment (including essay/poster), Portfolio, Reflective Assignment, Report(s) and Individual Project. However, a module coordinator will be opt in to this option for other Assessment Types.</i>	- For longer-term or more serious circumstances (e.g. bereavement, health issues, caregiving responsibilities). - Students submit supporting documentation, which their Governing Board reviews. The Board may approve a variety of outcomes such as a local solution, extension, IX and/or WN grade.	- For cases where students were unable to apply on time due to exceptional circumstances. - Reviewed case-by-case with clear criteria.

Beyond 5 days (+5 with one grade penalty) or after using up allowed extensions?

- Late work not accepted.
- Local solutions not permitted
- Application (with supporting documentation) and approval needed

Introductory Sessions

- *Welcome and Introduction to the Advanced Laboratories*, Prof. John Quinn, Tuesday 8 September at 14:00-14:50 (BH: B106)
- *Data Acquisition in Python*, Prof. John Quinn, Wednesday 9 September at 14:00-14:50 (BH: B106)
- *Report Writing*, Dr. Tom McCormack, Tuesday 15 September at 14:00-14:50 (BH: B106)
- *Data Analysis I*, Assoc. Prof. John Quinn, Wednesday 16 September at 14:00-14:50 (BH: B106)
- *Data Analysis II*, Assoc. Prof. John Quinn, Wednesday 23 September at 14:00-14:50 (BH: B106)
- ***On Wednesday September 30 at 2pm the Student Seminars (Stage 4) start (BH: B106)***



Dignity and Respect

- The Advanced Physics Laboratories aim to provide an educational environment with the highest standards of behaviour and ethics, free of bias and any forms of harassment or bullying.
- You should familiarise yourself with and abide by the UCD policies on Student Conduct and Academic Integrity (<https://www.ucd.ie/secca/studentconduct/>)

UCD Dignity and Respect Support Service

Supporting any student, employee or UCD community member who is impacted by issues of **bullying, harassment or sexual misconduct**

- Confidential and proactive support
- Specialist information and guidance
- Support to explore informal and formal resolution options
- Ongoing aftercare support
- Drop in or make an appointment

L532, Level 5 James Joyce Library Building

respect@ucd.ie ucd.ie/dignityandrespect

Other Information

- A GPA of 2.48 is needed to progress to Stage 4.
- 3rd year will form 30% of the marks for the final degree.
- PASS/TP: if want to take the Medical Physics module in 4th year, then you need to take Nuclear Physics module in 3rd year.
- Google Form sign in and sign out via the QR codes posted in the lab – required for attendance and safety (& insurance) reasons.
- UCD Library Physics guide: <http://libguides.ucd.ie/physics>



What now?

- Questions?
- Class Rep(s).
- Next: Liquid Nitrogen safety training (3pm, here!)
- Get started
- Have fun!