



SM1501- The Cell
Course Handbook 2023-2024



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Course Summary

Welcome to the level 1 course 'The Cell' SM1501. This course is designed as an introductory course in cell biology. The course aims to provide students with a basic knowledge of cell structure and function and is a prerequisite for students preparing for more advanced courses in biotechnology, microbiology, physiology, immunology, zoology, genetics and other areas of biology. 'The Cell' course serves as an excellent introduction to fundamental cell biology and is taught by staff from various cell biology disciplines within the university.

The course explores cells as the basic unit of life. All organisms are composed of cells whether they exist as single-celled microbes, or multi-cellular organisms, as is the case with plants and animals. The course starts by discussing how cells evolved, illustrating the diversity of cells types while also showing how cells are all "variations on a theme". As the course progresses the structure and function of cells is explored and the fundamental molecular concepts of life are introduced. Later in the course the focus will be on how cells are able to come together to form multi-cellular organisms such as animals and plants. This multi-cellularity requires cells to stick together and to communicate with each other. The course also explores how cells grow and divide and how some cells can differentiate to allow specialised functions. The last few lectures illustrate some of the exciting cell biology studies being carried out in the University of Aberdeen.

This manual contains all the information relevant to 'The Cell' course. It is an essential source of reference and you are expected to familiarise yourself thoroughly with its content. Remember – what you do not know you can find out by asking a lecturer, consulting books in the library or by interrogating online information from reputable sources. To learn in a university environment, you will need to be proactive, assertive and to take control of your own education.

Good luck and we hope that you enjoy the course!

John Barrow & Pietro Marini (SM1501 Course Co-ordinators)

Course Aims & Learning Outcomes

The course aims to provide a foundation for the understanding of microbial, plant and animal cell biology.

Knowledge Outcomes

Following completion of the course students will:

- understand the cellular nature of living organisms and the role of cells in multicellular organisms.
- know the major differences between prokaryotic and eukaryotic cells.
- explain the functions of the major cell organelles and their structural elements.
- understand the fundamental role of DNA in cells.

- be able to explain key metabolic pathways in cells.
- appreciate that cell biology is at the centre of modern medical science.

Ability Outcomes

Following completion of the course students will be able to:

- perform a variety of basic biology techniques including the correct use of micropipettes, colorimeters and the compound microscope.
- analyse, interpret and present basic biological data.

Course Teaching Staff

Course Co-ordinator(s):

Prof John Barrow (JB)
Dr Pietro Marini (PM)

j.barrow@abdn.ac.uk
p.marini@abdn.ac.uk

Other Staff:

Dr Anke Roelofs (AR)
Prof Steve Tucker (ST)
Rhona Gibson (RG)

a.roelofs@abdn.ac.uk
s.j.tucker@abdn.ac.uk
r.gibson@abdn.ac.uk

Assessments & Examinations

Students are expected to access and study **ALL** lectures, lab classes and online test materials, and to complete all exercises by the given deadlines. The minimum performance acceptable for the granting of a class certificate is evidence of engagement with, at least, 75% of the lectures and lab classes, and presentation of all set course work. Failure to achieve this may result in your class certificate being withheld.

The course assessment consists of 40% continuous assessment based on your marks from the assessments shown below. 60% of the course grade then comes from an end of term exam assessment. Resit assessment will be based on a resit examination constituting 60% of the resit grade; the remaining 40% will come from previous continuous assessment. Your overall performance will be expressed as a grade awarded on the Common Grading Scale (CGS).

Continuous assessment weightings:

Diversity of Cells Lab	10%
Common Lab Techniques Lab	10%
Macromolecules Lab	10%
<u>Lipase and Phosphatase Lab</u>	<u>10%</u>
<i>Total continuous assessment:</i>	<i>40%</i>

Class Representatives

We value students' opinions in regard to enhancing the quality of teaching and its delivery; therefore, in conjunction with the Students' Association we support the Class Representative system.

In the School of Medicine, Medical Sciences & Nutrition we operate a system of course representatives, who are elected from within each course. Any student registered within a course that wishes to represent a given group of students can stand for election as a class representative. You will be informed when the elections for class representative will take place.

What will it involve?

It will involve speaking to your fellow students about the course you represent. This can include any comments that they may have. You will attend a Staff-Student Liaison Committee and you should represent the views and concerns of the students within this meeting. As a representative, you will also be able to contribute to the agenda. You will then feedback to the students after this meeting with any actions that are being taken.

Training

Training for class representatives will be run by the Students Association. Training will take place within each half-session. For more information about the Class representative system visit www.ausa.org.uk or email the VP Education & Employability vped@abdn.ac.uk. Class representatives are also eligible to undertake the STAR (Students Taking Active Roles) Award with further information about this co-curricular award being available at: www.abdn.ac.uk/careers.

Problems with Coursework

If students have difficulties with any part of the course that they cannot cope with, alone they should notify the course coordinator immediately. If the problem relates to the subject matter general, advice would be to contact the member of staff who is teaching that part of the course. Students with registered disabilities should contact the medical sciences office, (medsci@abdn.ac.uk) (based in the Polwarth Building, Foresterhill) to ensure that the appropriate facilities have been made available. Otherwise, you are strongly encouraged to contact any of the following as you see appropriate:

- Course student representatives
- Course co-ordinator
- Convenor of the Medical Sciences Staff/Student Liaison Committee (Professor Gordon McEwan)
- Personal Tutor
- Medical Sciences Disabilities Co-ordinator (Dr Derryck Shewan)

Commented [MP1]: Dr Donna MacCallum???

All staff are based at Foresterhill and we strongly encourage the use of email or telephone the Medical Sciences Office. You may have a wasted journey travelling to Foresterhill only to find staff unavailable.

If a course has been completed and students are no longer on campus (i.e. work from second half session during the summer vacation), coursework will be kept until the end of Fresher's Week, during the new academic year. After that point, unclaimed student work will be securely destroyed.

Course Reading List

The recommended text for this course is:

Life: The Science of Biology by D. Sadava, *et al.*
Sinauer Associates; 12th edition
(ISBN: 9781319315788)

Older versions of this text are readily available and are perfectly suitable for the course.

Lecture Synopsis

Lecture titles are shown in the timetable at the back of this manual.

Lectures are split across different themes as shown below:

- Theme 1 – Cells as functional units
- Theme 2 – Gene expression
- Theme 3 – Proteins and the cell as a factory
- Theme 4 – Cell division, development, and multicellular life
- Theme 5 – Cell secretion and sensing
- Theme 6 – Brain and the nervous system
- Theme 7 – Immune system

Practical/Lab/Tutorial Work

PRACTICALS

In the weeks when we have practical classes they are on Monday and Tuesday (3pm-6pm).

Classes will be held in the Science Teaching Hub Building (STH) in Labs 1:001/1007.

You need to sign up to a lab session via MyTimetable (i.e., Monday or, Tuesday).

Practical classes and their associated assessments will be run through our paperless lab system called "Lt".

You will need to be signed up to the Lt system, for which you will receive a sign-up email if you are a new user. The system is run via MyAberdeen but you are still required to activate your Lt account and create a password so please make sure you remember it.

Behaviour and Safety in Laboratories

For **ALL** lab classes you will need:

1. Laboratory coat
2. Safety glasses
3. Earpiece for the audio-visual receivers we use in classes

Safety:

Laboratories are potentially dangerous places and certain codes of conduct **MUST** be observed in order that you and everyone else can proceed with the work of the class safely.

ALWAYS:

- arrive on time in order to listen to the instructions for the practical class
- wear a laboratory coat.
- leave notes, bags etc. under your bench – ask a demonstrator if you are unsure of a procedure.
- label reagents and equipment as required
- when finished - CHECK everything is put away safely

NEVER:

- shout or run in a laboratory
- smoke, eat, drink or put anything in your mouth
- leave equipment unattended

The reasons for these instructions are obvious. Please obey them.

PARTICIPATION AT PRACTICALS

You are expected to participate and interact with all lectures and practicals as laid out in the timetable. Participation records for practical classes are recorded as are engagement levels with course materials and live online sessions.

IF YOU ARE UNABLE TO PARTICIPATE IN CLASSES YOU MUST SUBMIT AN ELECTRONIC ABSENCE FROM CLASSES FORM WITHIN ONE WEEK OF YOUR RETURN TO THE UNIVERSITY. THIS FORM CAN BE ACCESSED ON THE WEB IN THE COURSE MYABERDEEN SITE AND SUBMITTED ONLINE.

UNDER NO CIRCUMSTANCE SHOULD YOU LEAVE MATTERS RELATING TO ABSENCE FROM CLASSES UNTIL THE END OF THE COURSE OR EVEN EXAMINATION TIME – IT MAY BE TOO LATE FOR US TO DO ANYTHING.

University Policies

Students are asked to make themselves familiar with the information on key education policies, available [here](#). These policies are relevant to all students and will be useful to you throughout your studies. They contain important information and address issues such as what to do if you are absent, how to raise an appeal or a complaint and how the University will calculate your degree outcome.

These University wide education policies should be read in conjunction with this programme and/or course handbook, in which School specific policies are detailed. These policies are effective immediately, for the 2022/23 academic year. Further information can be found on the [University's Infohub webpage](#) or by visiting the Infohub.

The information included in the institutional area for 2022-23 includes the following:

- Assessment
- Feedback
- Academic Integrity
- Absence
- Student Monitoring/ Class Certificates
- Late Submission of Work
- Student Discipline
- The co-curriculum
- Student Learning Service (SLS)
- Professional and Academic Development
- Graduate Attributes
- Email Use
- MyAberdeen
- Appeals and Complaints

Where to Find the Following Information:

C6/C7- University of Aberdeen [Homepage](#) > [Students](#) > [Academic Life](#) > [Monitoring and Progress](#) > [Student Monitoring \(C6 & C7\)](#)

<https://www.abdn.ac.uk/students/academic-life/student-monitoring.php#panel5179>

Absences- To report absences you should use the absence reporting system tool on Student Hub. Once you have successfully completed and sent the absence form you will get an email that your absence request has been accepted. The link below can be used to log onto the Student Hub Website and from there you can record any absences you may have.

Log In - Student Hub (<https://www.abdn.ac.uk/studenthub/loginbdn.ac.uk>)

Submitting an Appeal- [University of Aberdeen Homepage](#) > [Students](#) > [Academic Life](#) > [Appeals and Complaints](#)

<https://www.abdn.ac.uk/students/academic-life/appeals-complaints-3380.php#panel2109>

Academic Language & Skills support

For students whose first language is not English, the Language Centre offers support with Academic Writing and Communication Skills.

Academic Writing

- Responding to a writing task: Focusing on the question
- Organising your writing: within & between paragraphs
- Using sources to support your writing (including writing in your own words, and citing & referencing conventions)
- Using academic language
- Critical Thinking
- Proofreading & Editing

Academic Communication Skills

- Developing skills for effective communication in an academic context
- Promoting critical thinking and evaluation
- Giving opportunities to develop confidence in communicating in English
- Developing interactive competence: contributing and responding to seminar discussions
- Useful vocabulary and expressions for taking part in discussions

Medical Sciences Common Grading Scale

Grade	Grade Point	% Mark	Category	Honours Class	Description
A1	22	90-100	Excellent	First	<ul style="list-style-type: none"> • Outstanding ability and critical thought • Evidence of extensive reading • Superior understanding • The best performance that can be expected from a student at this level
A2	21	85-89			
A3	20	80-84			
A4	19	75-79			
A5	18	70-74			
B1	17	67-69	Very Good	Upper Second	<ul style="list-style-type: none"> • Able to argue logically and organise answers well • Shows a thorough grasp of concepts • Good use of examples to illustrate points and justify arguments • Evidence of reading and wide appreciation of subject
B2	16	64-66			
B3	15	60-63			
C1	14	57-59	Good	Lower Second	<ul style="list-style-type: none"> • Repetition of lecture notes without evidence of further appreciation of subject • Lacking illustrative examples and originality • Basic level of understanding
C2	13	54-56			
C3	12	50-53			
D1	11	47-49	Pass	Third	<ul style="list-style-type: none"> • Limited ability to argue logically and organise answers • Failure to develop or illustrate points • The minimum level of performance required for a student to be awarded a pass
D2	10	44-46			
D3	9	40-43			
E1	8	37-39	Fail	Fail	<ul style="list-style-type: none"> • Weak presentation • Tendency to irrelevance • Some attempt at an answer but seriously lacking in content and/or ability to organise thoughts
E2	7	34-36			
E3	6	30-33			
F1	5	26-29	Clear Fail	Not used for Honours	<ul style="list-style-type: none"> • Contains major errors or misconceptions • Poor presentation
F2	4	21-25			
F3	3	16-20			
G1	2	11-15	Clear Fail/Abysmal		<ul style="list-style-type: none"> • Token or no submission
G2	1	1-10			
G3	0	0			

SM1501 Course Timetable: 2023-2024

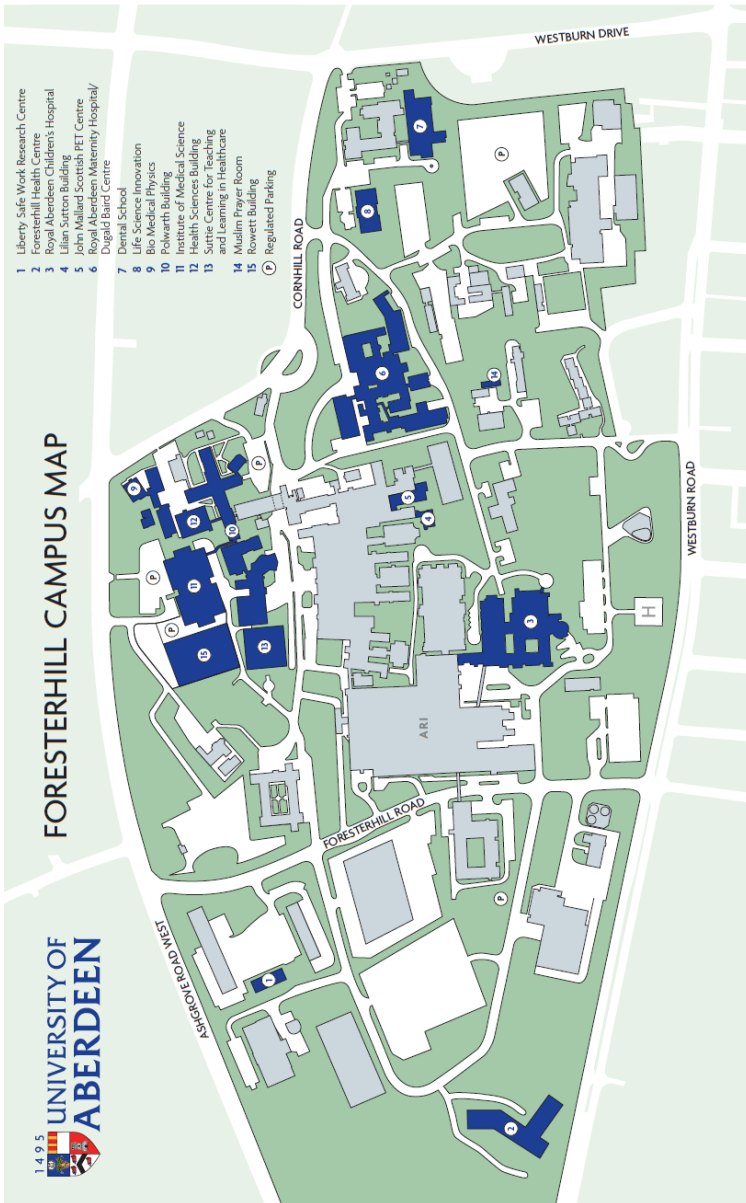
Date	Time	Venue	Subject	Session	Staff
Week 26					
Mon 22 Jan					
Tue 23 Jan	13:00-14:00	Arts LT	Course introduction	Lecture	JB/PM/RG
Wed 24 Jan					
Thu 25 Jan					
Fri 26 Jan	15:00-16:00	Arts LT	Beginnings of life & cells as functional units	Lecture	PM
	16:00-17:00	Arts LT	Prokaryotes v Eukaryotes	Lecture	PM
Week 27					
Mon 29 Jan	15:00-18:00	STH 1:001/1:007	Group 1: Diversity of cells	Pract1	PM/JB
Tue 30 Jan	13:00-14:00	Arts LT	Cell Membranes	Lecture	PM
	15:00-18:00	STH 1:001	Group 2: Diversity of cells	Pract1	PM/JB
Wed 31 Jan					
Thu 1 Feb					
Fri 2 Feb	15:00-16:00	Arts LT	Nucleus	Lecture	PM
	16:00-17:00	Arts LT	Cytoskeletons	Lecture	PM
Week 28					
Mon 5 Feb					
Tue 6 Feb	13:00-14:00	Arts LT	Gene expression - transcription	Lecture	JB
Wed 7 Feb					
Thu 8 Feb					
Fri 9 Feb	15:00-16:00	Arts LT	Gene expression - translation	Lecture	JB
	16:00-17:00	Arts LT	Ombea revision session 1 (Themes 1 and 2)	Lecture	JB/PM
Week 29					
Mon 12 Feb	15:00-18:00	STH 1:001/1:007	Group 1: Common lab techniques	Pract2	JB/PM
Tue 13 Feb	13:00-14:00	Arts LT	Proteins 1	Lecture	JB
	15:00-18:00	STH 1:001	Group 2: Common lab techniques	Pract2	JB/PM
Wed 14 Feb					
Thu 15 Feb					
Fri 16 Feb	15:00-16:00	Arts LT	Proteins 2	Lecture	JB
	16:00-17:00	Arts LT	The cell as a factory 1	Lecture	JB
Week 30					
Mon 19 Feb					
Tue 20 Feb	13:00-14:00	Arts LT	The cell as a factory 2	Lecture	JB
Wed 21 Feb					
Thu 22 Feb					
Fri 23 Feb	15:00-16:00	Arts LT	The cell as a factory 3	Lecture	JB
	16:00-17:00	Arts LT	Secretion	Lecture	JB
Week 31					
Mon 26 Feb	15:00-18:00	STH 1:001/1:007	Group 1: Macromolecules in cells	Pract3	PM/JB
Tue 27 Feb	13:00-14:00	Arts LT	Sensing the conditions	Lecture	JB
	15:00-18:00	STH 1:001	Group 2: Macromolecules in cells	Pract3	PM/JB
Wed 28 Feb					
Thu 29 Feb					
Fri 1 Mar	15:00-16:00	Arts LT	Cell division and cell death	Lecture	AR
	16:00-17:00	Arts LT	Differentiation	Lecture	AR

Week 32					
Mon 4 Mar					
Tue 5 Mar	13:00-14:00	Arts LT	Multicellular life	Lecture	AR
Wed 6 Mar					
Thu 7 Mar					
Fri 8 Mar	15:00-16:00	Arts LT	Egg to organism	Lecture	AR
	16:00-17:00	Arts LT	Inheritance	Lecture	AR
Week 33					
Mon 11 Mar	15:00-18:00	STH 1:001/1:007	Group 1: Lipase and phosphatase	Pract4	PM/JB
Tue 12 Mar	13:00-14:00	Arts LT	Sexual Reproduction	Lecture	AR
	15:00-18:00	STH 1:001	Group 2: Lipase and phosphatase	Pract4	PM/JB
Wed 13 Mar					
Thu 14 Mar					
Fri 15 Mar	15:00-16:00	Arts LT	Ombea revision session 2 (Themes 3 and 4)	Lecture	AR/JB
	16:00-17:00	Arts LT	Brain and nervous system 1	Lecture	ST
Week 34					
Mon 18 Mar					
Tue 19 Mar	13:00-14:00	Arts LT	Brain and nervous system 2	Lecture	ST
Wed 20 Mar					
Thu 21 Mar					
Fri 22 Mar	15:00-16:00	Arts LT	Brain and nervous system 3	Lecture	ST
	16:00-17:00	Arts LT	Brain and nervous system 4	Lecture	ST
Week 35					
Mon 25 Mar	15:00-18:00	STH 1:001/1:007	Group 1: Enterprise workshop	Pract5	PM/JB
Tue 26 Mar	13:00-14:00	Arts LT	Animal defence systems Part 1	Lecture	PM
	15:00-18:00	STH 1:001	Group 2: Enterprise workshop	Pract5	PM/JB
Wed 27 Mar					
Thu 28 Mar					
Fri 29 Mar	15:00-16:00	Arts LT	Culturing Future Careers Success	Lecture	RG
	16:00-17:00	Arts LT	Animal defence systems Part 2	Lecture	PM
Weeks 36-38: Holidays					
Week 39					
Mon 29 April					
Tue 30 April					
Wed 1 May					
Thu 2 May	14:00-15:00	Arts LT	Ombea revision session 3 (Themes 5 and 6)	Lecture	JB/PM
Fri 3 May					

Staff

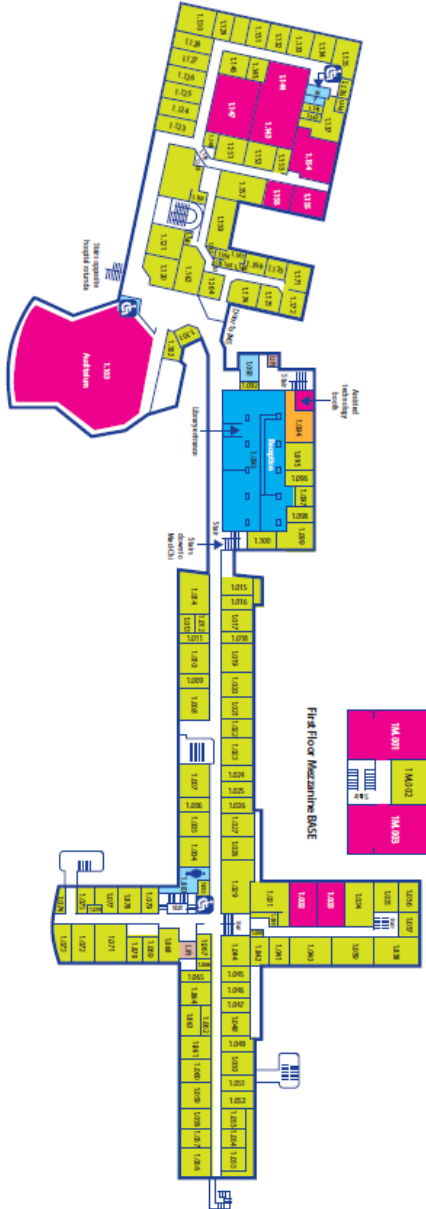
JB – John Barrow
 PM – Pietro Marini
 JP – Rona Gibson
 AR – Anke Roelofs
 ST – Steve Tucker

Campus Maps - Foresterhill



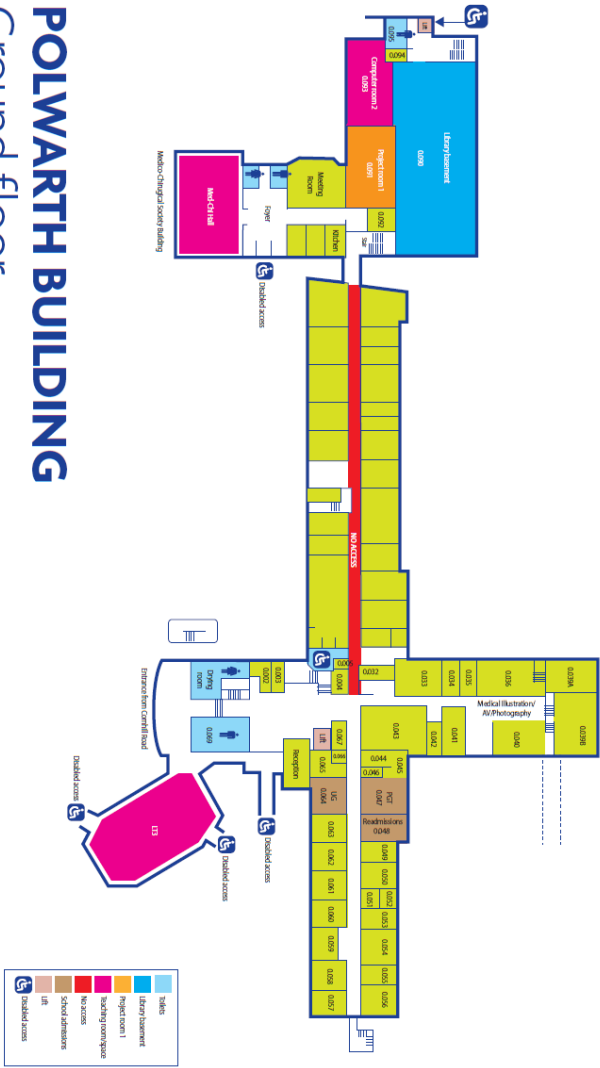
Polwarth Floor Plans

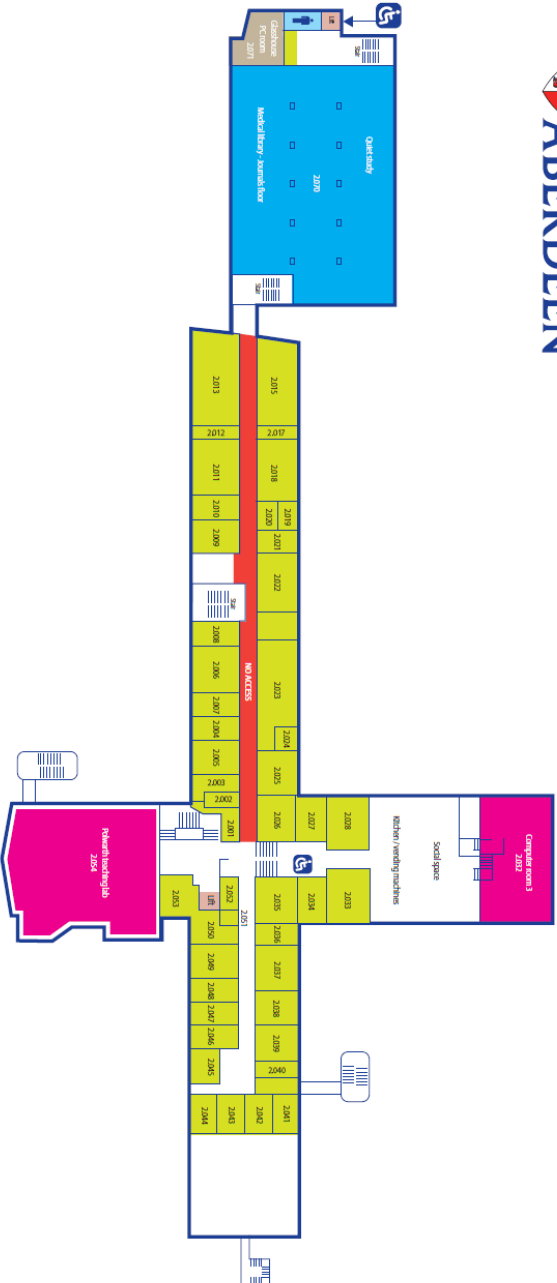
POLWARTH BUILDING
First floor



POLWARTH BUILDING

Ground floor





POLWARTH BUILDING

Second floor