PHSL2101/PHSL2121/PHSL2501
Physiology 1A

Course Outline

Term 1, 2023

School of Biomedical Sciences

Faculty of Medicine & Health

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1. Staff

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Course Convenors	Dr. Lesley Ulman Dr. Nicole Marden	Phys1a@unsw.edu.au Phys1a@unsw.edu.au	Ph: (02) 9385 3601 Ph: (02) 9065 0453
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If you need to consult with the course convenors or a lecturer, appointments can be set up through email.

The teaching staff involved in the running of this course are located on the second and third floors of the east and west wings of the Wallace Wurth building. Unfortunately, students are not able to access these areas and if you wish to contact one of us you will need to do so by email and we can organise to meet with you if necessary.

2. Course information

Units of credit: 6 Units of Credit

Pre-requisite(s): 6 UOC of level 1 Biology; and 6 UOC of Level 1 CHEM; and 6 UOC Level 1 MATH or equivalent DPST courses.

Teaching times and locations - this is a jointly taught course. Refer to:

- PHSL2101 - https://timetable.unsw.edu.au/2023/PHSL2101.html
- PHSL2121 - https://timetable.unsw.edu.au/2023/PHSL2121.html
- PHSL2501 - https://timetable.unsw.edu.au/2023/PHSL2501.html

2.1. Course summary

This course introduces students to fundamental physiological principles, from basic cellular function in terms of chemical and physical principles to the operation and interaction of body systems. Although introductory in the level of content, this course in Human Physiology is comprehensive in scope covering a range of body systems from a cellular to a more integrative approach. The areas of physiology covered in this course are cell physiology, muscle, the cardiovascular system, blood and neuroscience. The course includes a substantial series of practical class experiments in which students work in small groups to conduct experiments that give a deeper insight into these specific topic areas, and an appreciation of how the results of experiments depend not only on what we measure but how we measure it. Online self-directed activities and online practicals further support the course content and learning objectives.

2.2. Course aims

This course is offered to second year students and is the first physiology course that students will encounter. The major aims of this course are to provide students with a basic understanding of the fundamental processes and mechanisms that serve and control the various functions of the body. Physiology is a core discipline in the study of body function and this introductory course is offered to students from a diverse range of study programs. The course aims to equip students to progress further in medical sciences or related subjects, and / or to be able to apply their specific program knowledge in a biological context.

It should be noted that, although introductory, this course in Human Physiology is comprehensive in scope. Areas treated in detail include both relatively simple cellular mechanisms (for example, the sequence of ion permeability changes in membranes that can result in the initiation and propagation of a nerve impulse along a nerve fibre) as well as more complex interactions between whole organ systems. The major areas of study include cell physiology, muscle, the cardiovascular system, blood and neurophysiology. It should also be noted that, where appropriate, subject areas are treated quantitatively as well as qualitatively, an approach that requires students to have at least a basic knowledge of mathematics and chemistry.

2.3. Course learning outcomes (CLO)

At the successful completion of this course you (the student) should be able to:

1. demonstrate an understanding of the fundamental principles underlying the function of the individual body systems covered, which include excitable tissues, muscle, blood and the cardiovascular system, and the nervous system.
2. clearly and concisely describe the basic physiological mechanisms responsible for how our body mediates cell communication and/or maintains homeostasis as related to muscle, blood, the cardiovascular and nervous systems.
3. develop basic skills in experimental physiology with a focus on skills in accurately interpreting experimental data related to the systems under study.

The Bachelor of Science learning outcomes are outlined at Handbook - Science (unsw.edu.au)

UNSW programs aspire to graduate:

a) Scholars capable of independent and collaborative enquiry, rigorous in their analysis, critique and reflection, and able to innovate by applying their knowledge and skills to the solution of novel as well as routine problems.

b) Entrepreneurial leaders capable of initiating and embracing innovation and change, as well as engaging and enabling others to contribute to change.

c) Professionals capable of ethical, self- directed practice and independent lifelong learning.

d) Global citizens who are culturally adept and capable of respecting diversity and acting in a socially just and responsible way.

2.4. Relationship between course learning outcomes and assessments

Course Learning Outcome (CLO)	LO Statement	Related Tasks & Assessment
CLO 1	demonstrate an understanding of the fundamental principles underlying the function of the individual body systems covered, which include excitable tissues, muscle, blood and the cardiovascular system, and the nervous system.	Mid-session Theory Exam Online tutorials End of session exam
CLO 2	clearly and concisely describe the basic physiological mechanisms responsible for how our body mediates cell communication and/or maintains homeostasis as related to the muscle, blood, cardiovascular and nervous systems.	Mid-session Theory Exam Post lab revision modules End of session exam
CLO 3	develop basic skills in experimental physiology with a focus on skills in accurately interpreting experimental data related to the systems under study.	Post lab revision modules End of session exam

3. Strategies and approaches to learning

3.1. Learning and teaching activities

The philosophy underpinning this course and its Teaching and Learning Strategies is based on "Guidelines on Learning that Inform Teaching at UNSW". The teaching activities are centered on assisting you to achieve the course aims and learning objectives, in an environment which interests and challenges you. The teaching of Physiology 1A is structured around established knowledge of the fundamental processes and mechanisms that serve and control the various functions of the body. Content is delivered by discipline experts, drawn from different research areas.

Physiology 1A is delivered across 10 teaching weeks in Term 1, typically comprising the equivalent of 3 x 1 hr lectures per week, 1 x 3 hours of practical class per fortnight, and a series of supporting online learning activities. Although the primary source of information for this course is the lecture material, effective learning can be enhanced through self-directed use of other resources such as textbooks, literature references and web-based sources. Lectures will provide you with the concepts and theory essential for an understanding of the fundamental processes of body function. Your practical classes will be directly related to the lecture material, and it is essential that all students prepare for practical classes before attending by completing the online pre-laboratory modules (accessed through Moodle) and reading the practical notes (available via Moodle). The practical classes assist in the development of research and analytical skills, and further learning of the key objectives. Physiology is an experimental discipline, and the practical work allows you to obtain insights into the development of knowledge and experimental approaches.

The online learning modules are a mix of activities designed to review the materials and/or support the exploration of the material in more depth. Online tutorials allow you to engage in a more interactive form of learning than is possible in the lectures. They have been carefully designed to enhance and test your understanding of the lecture material.

It is up to you to ensure you perform well in each part of the course: keeping up with the lecture material posted on Moodle, attending the weekly online question and answer sessions, engaging with the tutorials, making full use of the pre and post laboratory modules, studying for exams and seeking assistance to clarify your understanding. Online feedback quizzes and past exam questions are provided to assist you in preparing for examinations.

Students are strongly recommended to allocate additional time for self-directed study, which includes revision for assessments.

3.2. Expectations of students

Participation

Attendance at **ALL** of the face-to-face practical classes is deemed to be compulsory unless you have a medical or other valid reason for non-attendance. It is really important that you register your attendance in each practical class by ensuring that you get your name marked off the class roll.

Satisfactory completion of the work set for each class is essential and **IS A REQUIREMENT FOR PASSING PHYSIOLOGY**. Non-attendance for other than documented medical or other serious reasons may make you ineligible to successfully complete this course. At the very least you may be required to complete written reports on the practical classes, as well as undertaking the normal practical exam.

Students who miss practical classes due to illness or for other reasons must submit a medical certificate **WITHIN 7 DAYS** of missing a class. If received after this time, no consideration will be given, and you will be marked absent from that class. Medical certificates may be sent via email to the course convenors (Phys1a@unsw.edu.au), submitted to academic staff during lab time, or left with a member of the technical staff located in room 118 East Wing Wallace Wurth Building.

The following details must be provided along with the medical certificate: Name, Student number, Group number, Date of the class, Name of class missed.

Please note that you are NOT required to apply for special consideration via Online Services in myUNSW for a missed practical class. The Special Considerations unit will NOT process these applications.

The practical component of the final exam is compulsory FOR ALL STUDENTS.

Missing any examination, however, requires lodging a medical certificate via Online Services in myUNSW within 3 DAYS of the missed assessment.

(further details on how to do this can be found via the following link: student.unsw.edu.au/special-consideration).

Important note regarding COVID-19 and attendance

It is important that we highlight safety precautions relating to COVID-19 and attendance.

You should not attend campus if you are unwell or experiencing any COVID-19 or respiratory symptoms. If you are unwell, please take the time you need to recover. If you have mild symptoms but are well enough to study, we urge you to study from home until your symptoms have cleared. Staying off campus

when you have symptoms will ensure that we continue to protect everyone in our community, especially the most vulnerable.

If you were on campus during your infectious period, (2 days before onset of symptoms or positive test), please let us know immediately by submitting the UNSW COVID-19 Case Notification form. We use this information to alert our community members to the sites of potential exposure on campus.

Household and close contacts of COVID-19 do not need to self-isolate. However, you should not attend campus if you are unwell or experiencing any COVID-19 or respiratory symptoms. If you are unwell, please follow the advice above.

Students who miss practical classes due to infection with COVID-19 are not required to provide any medical documentation, however you **must** contact the course convenors (Phys1a@unsw.edu.au) to inform them of your absence.

Please refer to the UNSW COVID 19 Coronavirus Advice & FAQs – Information for Students for further information relating to keeping the UNSW community safe from COVID-19: https://www.covid-19.unsw.edu.au/information-students

Guidelines on Extra-curricular activities affecting attendance

Students should refer to the following website for information relating to extracurricular activities.

https://medicalsciences.med.unsw.edu.au/sites/default/files/Extra-curricularActivitiesSOMS.pdf

4. Course schedule and structure

4.1. Course structure

Physiology 1 is a 6 unit of credit course which will be delivered in a blended mode. There will be no face-to-face lectures; instead lecture material will be incorporated into an online delivery mode combining short videos, text, activities and quizzes. These online lecture modules will provide you with the concepts and theory essential for understanding the fundamental processes of body function. There will be a series of synchronous online Q&A sessions at 5pm most Mondays for students to ask questions and clarify any issues which may have arisen from the previous weeks lecture material. There are also some additional synchronous online Q&A sessions in certain weeks to make up for sessions missed due to public holidays and for exam revision sessions. Please refer to the course schedule for details of these.

There are online tutorials relating to all the major topic areas. These are designed to complement and enhance your understanding of the lecture material.

The practical classes are a major component of our course.

All students enrol in a face-to-face practical group. There will be 4 timetabled face-to-face practical sessions. You will be divided into small working teams of approximately 6 students within your practical group at the beginning of the term and you will remain in these teams throughout the term. These practicals comprise a fortnightly 3-hour laboratory session during which you will work in your teams and carry out the laboratory exercises outlined in the practical notes.

There are also 3 online self-directed practical classes which all students will complete in their own time. These classes are clearly outlined in your practical timetable.

4.2. Term 1 2023 Course Schedule

Week No. Commencing	Recorded Lectures (Asynchronous: accessed via Moodle)	Live sessions: Q&A Sessions (MS Teams) & Mid-term exam	Practicals	Deadlines (post-labs and tutorials)
O-Week 6th Feb	**Moodle Welcome – Introductory presentation video, Animal Ethics module, Health & Safety online practical**			
1 13-Feb	**Cell Physiology L1**: Cells *Moorhouse* **Cell Physiology L2**: Membrane Transport *Moorhouse* **Cell Physiology L3:** Transporters and Osmosis *Moorhouse*	**Mon 13 Feb 5-6 PM** Course Introduction & animal ethics Q&A *Ulman, Marden, All Staff*	**Fun with Blood:** **Group 1: Tues 14 Feb 10-1 -** *WW 115* **Group 2: Tues 14 Feb 2-5 -** *WW 115* **Group 3: Wed 15 Feb 10-1 -** *WW 115* **Group 4: Wed 15 Feb 2-5 -** *WW 115* **Cell Physiology online lab: Groups 5-7**	
2 20-Feb	**Cell Physiology L4**: Membrane Potentials *Moorhouse* **Cell Physiology L5**: Action Potentials *Moorhouse* **Cell Physiology L6:** Synaptic Transmission *Moorhouse*	**Mon 20 Feb 5-6 PM** Cell Physiology L1-L3 Q&A *Moorhouse*	**Fun with Blood:** **Group 5: Tues 21 Feb 10-1 -** *WW 115* **Group 6: Tues 21 Feb 2-5 -** *WW 115* **Group 7: Wed 22 Feb 10-1 -** *WW 115* **Cell Physiology online lab: Groups 1-4**	
3 27-Feb	**Muscle L1:** Skeletal Muscle *Von Wegner* **Muscle L2:** Cardiac Muscle *Von Wegner* **Muscle L3:** Smooth Muscle *Von Wegner*	**Mon 27 Feb 5-6 PM** Cell Physiology L4-L6 Q&A *Moorhouse*	**Skeletal Muscle:** **Group 1: Tues 28 Feb 10-1 -** *WW 115* **Group 2: Tues 28 Feb 2-5 -** *WW 115* **Group 3: Wed 1 Mar 10-1 -** *WW 115* **Group 4: Wed 1 Mar 2-5 -** *WW 115*	

4 6-Mar	**ANS**: Overview of Autonomic System functioning *Vickery* **Cardiovascular L1**: Blood flow through the heart, cardiac muscle, nervous supply of the heart, cardiac output, blood vessels, measuring cardiac output and other body fluid volumes *Ulman* **Cardiovascular L2:** Electrical Events in the Cardiac Cycle *Ulman*	**Mon 6 Mar 5-6 PM** **No Q&A due to lecturer availability**	**Skeletal Muscle:** **Group 5: Tues 7 Mar 10-1 -** *WW 115* **Group 6: Tues 7 Mar 2-5 -** *WW 115* **Group 7: Wed 8 Mar 10-1 -** *WW 115*	**Fun with Blood post lab due** **Wed 8 Mar 11.55 PM**
5 13-Mar	**Cardiovascular L3:** Mechanical Events in the cardiac cycle *Ulman* **Cardiovascular L4**: Control of Cardiac Output *Murphy* **Cardiovascular L5**: Haemodynamics *Murphy*	**Mon 13 Mar 5-6 PM** Midterm Exam Revision Q&A *Ulman, Marden, Moorhouse, Von Wegner* **Tues 14 Mar 9-10 AM** Muscle Q&A *Von Wegner* **Wed 15 Mar 9-10 AM** **Midterm Exam**	**NO PRACTICALS**	**Cell Physiology tutorial due** **Sun 12 Mar 11.55 PM** **Muscle tutorial due** **Sun 19 Mar 11.55 PM**
6 20-Mar	**Flexibility Week**			
7 27-Mar	**Cardiovascular L6**: Control of Blood Pressure *Murphy* **Cardiovascular L7**: Local and Regional Control of Blood Flow *Murphy* **Cardiovascular L8**: Microcirculation and Integrative Cardiovascular Physiology *Murphy*	**Mon 27 Mar 5-6 PM** Cardiovascular System Q&A *Ulman, Murphy*	**Intro to CVS:** **Group 1: Tues 28 Mar 10-1 -** *WW 115* **Group 2: Tues 28 Mar 2-5 -** *WW 115* **Group 3: Wed 29 Mar 10-1 -** *WW 115* **Group 4: Wed 29 Mar 2-5 -** *WW 115* **Online Electrical and Mechanical Events in the Cardiac Cycle: Groups 5-7**	**Skeletal Muscle post lab due** **Mon 27 Mar 11.55 PM**
8 3-Apr	**Blood L1:** Cells in blood *Ulman*	**Mon 3 Apr 5-6 PM** Cardiovascular System Q&A *Ulman, Murphy*	**Intro to CVS:** **Group 5: Tues 4 Apr 10-1 -** *WW 115*	

	Blood L2: Erythropoiesis, anaemia and blood groups *Ulman* **Blood L3:** Haemostasis and some of its disorders *Ulman*		**Group 6: Tues 4 Apr 2-5 -** *WW 115* **Group 7: Wed 5 Apr 10-1 -** *WW 115* **Online Electrical and Mechanical Events in the Cardiac Cycle: Groups 1-4**	
9 10-Apr	**Neurophysiology L1:** Big Questions *Vickery* **Neurophysiology L2:** Sensory Systems *Vickery* **Neurophysiology L3:** Auditory and Vestibular System *Vickery*	**Mon 10 Apr 5-6 PM** **Easter Monday – no Q&A** **Wed 12 Apr 9-10 AM** Blood Q&A *Ulman*	**Sensory Physiology:** **Group 1: Tues 11 Apr 10-1 -** *WW 115* **Group 2: Tues 11 Apr 2-5 -** *WW 115* **Group 3: Wed 12 Apr 10-1 -** *WW 115* **Group 4: Wed 12 Apr 2-5 -** *WW 115*	**CVS tutorial due** **Sun 16 Apr 11.55 PM**
10 17-Apr	**Neurophysiology L4:** Vision *Vickery* **Neurophysiology L5:** Cortical Processing *Vickery* **Neurophysiology L6:** Motor System *Vickery*	**Mon 17 Apr 5-6 PM** Theory and Prac Exam Revision Q&A *Moorhouse, Vickery, Von Wegner, Murphy, Marden, Ulman* **Wed 19 Apr 9-10am** Neurophysiology Q&A *Vickery*	**Sensory Physiology:** **Group 5: Tues 18 Apr 10-1 -** *WW 115* **Group 6: Tues 18 Apr 2-5 -** *WW 115* **Group 7: Wed 19 Apr 10-1 -** *WW 115*	**Intro to CVS post lab due** **Wed 19 Apr 11.55 PM** **Blood tutorial due** **Sun 23 Apr 11.55 PM** **Sensory Physiology post lab due Wed 3 May 11.55 PM** **Neurophysiology tutorial due Sun 7 May 11.55 PM**

Exam Period: 28 Apr – 11 May 2023

Supplementary Exam Period: 22 May – 26 May 2023

4.3. Practical Class Information

Practical class information

Practical classes are a core experience in your degree and are a major component of our course. Practical classes provide the opportunity to acquire valuable generic skills.

Students should enrol in a face-to-face practical group. All students will complete 7 practical classes; 4 of the 7 practicals (Fun with Blood, Skeletal Muscle, Introduction to the Cardiovascular System and Sensory Physiology) will be run as face-to-face classes in our teaching laboratories in the Wallace Wurth Building, while the remaining 3 practical classes will be self-directed online practical classes. All 7 practical classes are examinable in the final examination.

The first self-directed online practical class is the Health and Safety practical, and this **must** be completed prior to attending your first face-to-face practical. Completion of this practical will be monitored, and students will not be allowed to enter the laboratory unless this has been done.

The second self-directed online practical class is the Cell Physiology – Membrane Potential Virtual Lab. It is recommended that students complete this virtual lab during weeks 1 and 2 after engaging with the Cell Physiology lecture series. Note that it will remain open for the duration of the term should students wish to access it again for revision purposes.

The third self-directed online practical class is the Electrical and Mechanical Events in the cardiac cycle module. This is best attempted after the CVS lectures covering this material.

For each face-to-face practical class, we have designed an online pre-laboratory module to enable you to understand what you will be doing in that particular class and to outline important Health and Safety information relating to the practical. You are required to complete this module before attending the relevant practical and will not be allowed into the class if this has not been completed.

PHYSIOLOGY TERM 1 PRACTICAL TIMETABLE 2023

Week	Day & Time	Date	Prac Group	Face-to-face practicals Wallace Wurth East Wing LAB 115	Prac Group	Online practicals
Orientation week					All Groups	**ONLINE HEALTH & SAFETY PRACTICAL*** *MUST BE DONE BEFORE ATTENDING THE FIRST FACE-TO-FACE PRACTICAL*
1	Tues 10-1 Tues 2-5 Wed 10-1 Wed 2-5	14/2 14/2 15/2 15/2	1 2 3 4	**FUN WITH BLOOD**	All Groups	**ONLINE CELL PHYSIOLOGY – MEMBRANE POTENTIAL VIRTUAL LAB**
2	Tues 10-1 Tues 2-5 Wed 10-1	21/2 21/2 22/2	5 6 7	**FUN WITH BLOOD**		
3	Tues 10-1 Tues 2-5 Wed 10-1 Wed 2-5	28/2 28/2 1/3 1/3	1 2 3 4	**SKELETAL MUSCLE**		**N/A**
4	Tues 10-1 Tues 2-5 Wed 10-1	7/3 7/3 8/3	5 6 7	**SKELETAL MUSCLE**		**N/A**
5	Tues 10-1 Tues 2-5 Wed 10-1 Wed 2-5	14/3 14/3 15/3 15/3		**NO PRACTICALS**		
6	Tues 10-1 Tues 2-5 Wed 10-1	21/3 21/3 22/3		**FLEXIBILITY WEEK**		
7	Tues 10-1 Tues 2-5 Wed 10-1 Wed 2-5	28/3 28/3 29/3 29/3	1 2 3 4	**INTRO TO CVS**	All Groups	**ONLINE ELECTRICAL & MECHANICAL EVENTS IN THE CARDIAC CYCLE**
8	Tues 10-1 Tues 2-5 Wed 10-1	4/4 4/4 5/4	5 6 7	**INTRO TO CVS**		
9	Tues 10-1 Tues 2-5 Wed 10-1 Wed 2-5	11/4 11/4 12/4 12/4	1 2 3 4	**SENSORY PHYSIOLOGY**		**N/A**
10	Tues 10-1 Tues 2-5 Wed 10-1	18/4 18/4 19/4	5 6 7	**SENSORY PHYSIOLOGY**		**N/A**

Exam Period: 28 Apr – 11 May 2023
Supplementary Exam Period: 22 May – 26 May 2023

COMPULSORY LAB COATS REQUIRED FOR "SHADED" CLASSES

*** You MUST complete the online Health & Safety practical class prior to attending your first face-to-face practical class (Fun with Blood). If you have not completed this online practical, you will NOT be permitted to attend the Fun with Blood practical class.**

Laboratory Regulations and Behaviour

Health and Safety is a primary concern for both students and staff working in any laboratory.

The following regulations MUST be adhered to when participating in Physiology practical classes:

- Each practical class has a student risk assessment (SRA) and a student safe working procedure (SSWP) associated with it.
- The SRA identifies the hazards and risks associated with the particular practical and outlines appropriate controls that must be followed to minimize these risks. The SRA also lists the personal protective equipment (PPE) that students are required to wear for that class, emergency procedures and clean up and waste disposal instructions. Please note that the SRA has been updated carefully to incorporate COVID-19 safety precautions.
- The SSWP provides background information relating to the class and outlines the procedures to be carried out in that class.
- Students must read the practical notes and sign the SRA prior to commencing the class.
- In each laboratory there are also more comprehensive school approved risk assessments, associated safe work procedures and safety data sheets (SDS) for each particular class. You may refer to these if you require further information. First aid kits and specific spill kits are also located in the laboratories.
- If any accidents or incidents occur, they should be reported immediately to the demonstrator in charge of the class who will record the incident and recommend what further action is required.
- Students are required to wear the appropriate PPE for each class. As part of our COVID-19 safety precautions, students must wear surgical facemasks in addition to other PPE required for the class. Students should bring their own masks, or they can purchase one from the Technical staff or on campus.
- Enclosed shoes are mandatory for entering any laboratory and you will not be permitted to participate in the practical if you are not wearing appropriate footwear. Most practical classes will also require a lab coat which you must provide. You must regularly wash your lab coat. If you do not bring your lab coat to these classes, you will not be able to participate.
- Many classes will require you to wear gloves (which will be provided). Gloves must be removed before writing in lab books and using computers or other electrical equipment.
- You must not wear lab coats or gloves outside the laboratory.
- You must not eat or drink in any laboratory.
- Students are expected to arrive on time. Any student arriving more than 10 minutes late may be refused entry.
- Mobile phones should be turned off before entering the class.
- Laboratory computers may only be used for work relating to the practical class.
- It is expected that students behave appropriately in laboratory classes. In the event of inappropriate behaviour students may be asked to leave.
- It is of course vital that animals used in practical classes MUST be treated humanely and with respect. Taking photos or videos is **ABSOLUTELY UNACCEPTABLE** and will result in removal from the class and a referral to the Head of Department.

The procedures used in the laboratory classes involving the use of animals have been approved by the UNSW Animal Ethics Committee on the Use of Animals in Research and Teaching (Approval Number: ACEC 22/54B expiring on May 17, 2025).

Experiments in this course which involve the use of human subjects, have been considered and approved by the School of Biomedical Sciences Teaching Ethics Committee on Experimental Procedures Involving Human Subjects for teaching. Practical classes involving your participation as a subject requires you to read the Participant information sheet and sign a witnessed, informed consent form.

Practical Work in Physiology

An important component of our Physiology courses is the practical work. All the classes have been carefully considered and they are included for various reasons. It is hoped that students will not only gain maximum benefit from the content of the classes but will understand why they are included.

The scope of the practical work in the different courses offered is determined by a number of factors such as the level of the course, the perceived needs of the students for whom the course is intended, and the safety of different experimental procedures. Some valuable classes have always been beyond the financial or human resources of the Department, and regrettably financial and other pressures continue to militate against the practical component of the curriculum.

The following should help students understand why the course is given and why the classes have been chosen.

Why practical work? The value of having practical work at all may be questioned. It is sometimes said that one could use the time simply in working from a book or notes and learn more. This may be true in the short term in some instances. But even if it were true, one must understand that the purpose of the course is not merely to acquire as much book learning as possible in the minimum time. In discussing Medicine, Sir William Osler once said, "*To study Medicine without books is to sail an uncharted sea; to study Medicine without seeing patients is not to go to sea at all"*. Much the same could be said about studying science without experiments. The practical course in an undergraduate curriculum cannot produce a fully-fledged scientist any more than a few yacht races can produce a master mariner; but at least doing some experiments will give an insight into how knowledge is obtained, and how the results of experiments depend not only on what we measure but how we measure it.

These classes show important principles or methods, and it must also be realised that many graduates from the Science course will work in health-related areas.

As far as possible the classes in the practical course cover a wide range of physiological systems. We have also incorporated several different types of practical classes which provide information on how physiological systems function as well as allowing students to develop various practical and safety skills in the laboratory.

Some of the different sorts of practical classes are listed below.

1. **Training in general laboratory practice.** Examples are the online Health and Safety modules, and the face-to-face Fun with Blood class. Both are designed to warn students of the dangers of some laboratory procedures and to teach how to minimise these dangers.
2. **Classes on human subjects.** Much of physiology has been, and will continue to be, driven by an interest in human function. Therefore, it is desirable that students perform a number of experiments on one another and learn what it is like to be a subject. They also learn the sensitivities of one another and the carrying out of these experiments is some introduction to what they may be doing later in their careers.

These classes illustrate physiological principles but have other values. For example, the class on human blood pressure introduces students to a very common clinical measurement; and the classes on respiratory gas exchange and control of respiration (term 2) give an introduction to some of the physiological testing or monitoring procedures used in operating theatres, in intensive care units, or in a sports medicine laboratory.

3. **Classes using animals.** There are several reasons for classes involving use of animals. Many of the advances in Physiology and related sciences have come from animal-based research, and in the foreseeable future many more advances will come from such work. It is vital that students are acquainted with the use of animals so that they can understand how present knowledge has been obtained and how it may change in the future. If there is no exposure to animal-based experiments, it is all too easy to fall into one of two errors. It can be thought (wrongly) that animal experiments cannot be applicable to human beings; or it can be thought (also wrongly) that animal results can be transferred directly to human beings. Some examples illustrate this. Many of the cardiovascular reflexes that apply to humans can be shown well in the rabbit, or other experimental animals, and these cannot be shown in class in the intact animal or in a human being. However, study of the rabbit shows that its resting heart rate is much higher than that of humans - the two species have a different resting balance in the influence of the sympathetic and parasympathetic nervous systems. Without study of rabbits or other animals, one cannot see how these vital reflexes operate; nor can one see the limitation of animals as experimental models.
   For experiments on muscle contraction, amphibian preparations are used. They have advantages in several important respects. The red cells of the amphibian are nucleated and larger than those of mammals and so are easier to see under the microscope. Also, the preparations from these cold-blooded animals last better at room temperature than preparations from a warm-blooded mammal. Much of the knowledge of the properties of nerve fibres and muscle has been gained from studies on cold-blooded animals.
   It is of course vital that animals in classes are treated humanely and with respect and it is important that students are given instruction in these aspects, both by word and example.
4. **Classes on cells**. The basis of animal function is the cell, and some classes study the properties of cells on their own rather than the properties of organ systems. An example is the section on blood typing included in the class on Fun with Blood.
5. **Classes based on computers**. A number of classes involve computer simulated experiments. This is partly in response to pressures on resources and partly because some aspects of the course are better taught in this way. For instance, the accurate, direct recording of membrane and action potentials in nerves requires extensive experience and specialised equipment making it impractical for a large introductory Physiology course. In this case students can be given ideal results and from there calculate the properties of the nerve.

There are other benefits of the practical course. The experiments are not designed for fast learning, but they give greater depth of study in some areas. The classes also provide an opportunity for students and staff to meet and discuss the work together, in a different setting from the tutorial class. Many problems of understanding are resolved in this way.

We believe that the present practical course is a good balance between what is ideal and what is readily achievable. It includes classes with a number of different approaches and on different systems of the body. We hope that all students will find it stimulating and profitable, and the Department is always open to suggestions as to how improvements can be made.

5. Assessment

5.1. Assessment tasks

The exams will be held online as remote, open book exams, and more details will be given closer to the exam dates.

Assessment task	Length	Weight	Mark	Due date
1: Mid-term Theory Exam	50 min (+5 min reading time)	20%	Wednesday 15th March 9-10am 10 multiple choice questions on material covered in all Cell Physiology, Muscle and ANS lecture material and tutorials and Two 15-minute short answer questions: one on Cell Physiology and one on Muscle.	Week 5 Wed 9am 15 March
2: Tutorials	varied	10%	5 online tutorials (2% each) related to each of the major lecture topics. You will be required to interact and provide answers to questions online in Moodle. You can attempt these tutorials as many times as you wish but you need to score 90% or more by the due date in order to attain the 2% course credit assigned to each of the online tutorials.	Refer to 4.2 Course Schedule
3: Post-laboratory Revision Modules	varied	10%	4 post-laboratory revision modules (2.5% each), one for each of the face-to-face practical classes. The post-lab modules are accessed via Moodle and should be completed after the respective practicals as they have been designed to consolidate your understanding of the material covered in the practical. You can attempt these revision modules as many times as you wish but you need to score 90% or more by the due date in order to attain the 2.5% course credit assigned to each revision module.	Refer to 4.2 Course Schedule
4: Final Exams Part 1 – Theory Part 2 – Practical	 Part 1 85 min (+10 min reading time) Part 2 60 min	 35% 25%	Exam period – 28 April – 11 May Part 1 covers topics in the second half of the course and consists of 20 MCQs on material covered in all CVS, Blood and Neurophysiology lecture material and tutorials, and three 15-minute short answer questions: one on CVS, one on Blood and one on Neurophysiology. Part 2 covers material from the Practical Classes throughout the whole course (face-to-face **and** online) and consists of 30 MCQs.	Exam period – exact dates / times to be advised

Further information

UNSW grading system: https://student.unsw.edu.au/grades

UNSW assessment policy: https://student.unsw.edu.au/assessment

5.2. Assessment criteria and standards

Grading of online tutorials

There are five major tutorial topics: Cell Physiology, Muscle, Cardiovascular System (CVS), Blood and Neurophysiology. Within each of these major tutorial topics, some are broken down into smaller sub-topic modules (e.g. Cell Physiology part 1, part 2, and part 3; see below).

Each of the major tutorial topics contribute 2% towards the final course grade. The grades for the smaller sub-topic modules within a major topic are equally weighted and thus depend on the number of smaller modules within that topic (e.g. for muscle there are 4 sub-topic modules, which are each worth 0.5%, whereas for the Cardiovascular System, there are only 2 sub-topic modules, which are therefore each worth 1%).

Remember that you need to achieve a minimum score of 90% in a particular tutorial module by the due date in order to be awarded the grade for that module. If you do not achieve the required minimum score, the gradebook will either show no grade or a zero grade for that particular module and you will need to attempt it again before the due date.

Absolutely no extensions on due dates will be given.

The grades for all the tutorial modules are outlined below:

Major Tutorial Topic	Sub-topic Module	Grade
Tutorial 1: Cell Physiology	Part 1: Cell membrane and membrane transport	0.67
	Part 2: Action potential	0.67
	Part 3: Synapse	0.66
	Maximum Total for Cell Physiology	**2.00**
Tutorial 2: Muscle	Part 1: Skeletal Muscle	0.50
	Part 2: Smooth Muscle	0.50
	Part 3: Cardiac Muscle	0.50
	Part 4: Comparing skeletal, cardiac and smooth muscle	0.50
	Maximum Total for Muscle	**2.00**
Tutorial 3: CVS	Part 1: CVS lectures 1-3	1.00
	Part 2: CVS lectures 4-8	1.00
	Maximum Total for CVS	**2.00**
Tutorial 4: Blood	Only 1 part: Blood	2.00
	Maximum Total for Blood	**2.00**
Tutorial 5: Neurophysiology	Part 1: Neural coding	0.66
	Part 2: Wiring a brain	0.67
	Part 3: Concept maps	0.67
	Maximum Total for Neurophysiology	**2.00**

Grading of post-laboratory revision modules

There are 4 post-laboratory revision modules, one for each of the face-to-face practical classes: Fun with Blood, Skeletal Muscle, Introduction to CVS and Sensory Physiology. Each post-laboratory revision module is accessed via Moodle and contributes 2.5% towards the final course grade. You will be required to interact and provide answers to questions online in Moodle, and you will receive feedback to help you understand why your answers are correct or incorrect.

Remember that you need to achieve a minimum score of 90% in a particular post-laboratory revision module by the due date in order to be awarded the grade for that module. If you do not achieve the required minimum score, the gradebook will either show no grade or a zero grade for that particular module and you will need to attempt it again before the due date.

Absolutely no extensions on due dates will be given.

5.3. Submission of assessment tasks

Tutorials and post-lab revision modules are to be completed online in Moodle. No extensions on deadlines will be given. Exams will also be held online as remote, open book exams. More details will be given closer to the exam dates.

Late Submission

UNSW has standard late submission penalties as outlined in the UNSW Assessment Implementation Procedure, with no permitted variation. All late assignments (unless extension or exemption previously agreed) will be penalised by 5% of the maximum mark per day (including Saturday, Sunday and public holidays). For example, if an assessment task is worth 30 marks, then 1.5 marks will be lost per day (5% of 30) for each day it is late. So, if the grade earnt is 24/30 and the task is two days late the student receives a grade of 24 – 3 marks = 21 marks.

Late submission is capped at 5 days (120 hours). This means that a student cannot submit an assessment more than 5 days (120 hours) after the due date for that assessment.

Applications for Special Consideration

If you believe that your performance in a course, either during term or in an examination, has been adversely affected by sickness or for any other reason, you should ask for special consideration in the determination of your results. Such requests should be made as soon as practicable after the problem occurs. **Special consideration sought more than three days after an examination in a course WILL NOT be accepted except in TRULY exceptional circumstances.**

An application for special consideration must be made via Online Services in myUNSW. **You must obtain and attach Third Party documentation (e.g. medical certificates) before submitting the application. Failure to do so may result in the application being rejected.** Log into myUNSW and go to My Student Profile tab > My Student Services channel > Online Services > Special Consideration. Once completed, submit to UNSW Student Central (https://student.unsw.edu.au/central). In addition to this, you should also inform the course convenor that you have applied for special consideration.

UNSW has a Fit to Sit / Submit rule, which means that if you sit an exam or submit a piece of assessment, you are declaring yourself fit to do so and cannot later apply for Special Consideration. If you miss an assessment and have applied for Special Consideration, this will be taken into account when your final grade is determined. You should note that marks derived from completed assessment tasks may be used as the primary basis for determining an overall mark e.g., by extrapolating from your percentile rank on those tasks. Where appropriate, supplementary examination may be offered. **These will be held**

between Monday 22nd May and Friday 26th May for Term 1 2023 **so you MUST ensure that you are available throughout this period.**

Normally, if you miss an exam (without medical reasons) you will be given an absent fail. If you start an exam late no time extension will be granted. Please refer to https://student.unsw.edu.au/special-consideration for further details regarding special consideration.

Repeating students

Practical class exemptions may be granted to repeat students, but students must check with the course convenor whether they have exemption prior to their first practical class. All students must be familiar with the material covered in the practical classes. All students must do the practical exam.

Educational Adjustments

Those students who have a disability that requires some adjustment in their teaching or learning environment are encouraged to discuss their study needs with the course convenors prior to, or at the commencement of their course, or with the Disability Advisor in the Equitable Learning Services unit (9385 4734 or https://student.unsw.edu.au/els). Students that have been granted an Equitable Learning Plan (ELP) should email this to the Course Convenors (Phys1a@unsw.edu.au) as soon as possible in the term.

Issues to be discussed may include access to materials, signers or note-takers, the provision of services and additional exam and assessment arrangements. Early notification is essential to enable any necessary adjustments to be made.

5.4. Feedback on assessment

Feedback on Mid-term Exam, Online Tutorials and Post-laboratory Revision Modules

Model answers to the short answer questions in the mid-term exam will be posted up in Moodle as soon as possible after the exam. Students will be given temporary access to their own submitted answers and will be able to see where they went wrong by comparing their answers to the model answer supplied.

The online tutorials and post lab modules are interactive and will let the student know if they have provided an incorrect answer.

Knowledge Consolidation Quizzes

Aside from the graded assessments, we also have a series of formative knowledge consolidation quizzes relating to each lecture topic. While there is no course credit assigned to these quizzes, they allow you to test your understanding of each topic and half of the multiple choice questions in the theory exams will be taken directly from this bank of questions while the other half will be modified bank questions. These quizzes will be available via Moodle throughout the entire term but are best attempted after completion of the corresponding lectures. These quizzes are designed to be used as a study aid and you will receive immediate detailed feedback after submitting your answers. You can attempt these formative quizzes in your own time and as many times as you wish.

Please note that knowledge consolidation quizzes are intended to motivate your study, provide feedback on your progress and to stimulate your learning. There is published data which demonstrates that students who participate in this sort of assessment perform significantly better than their peers in end of course examinations.

When attempting each knowledge consolidation quiz, it is recommended that you complete it under exam conditions (by exam conditions, we mean you should do it by yourself, don't look up the answers

as you do it, and commit yourself to an answer), at least the first time you attempt it. This will provide the most realistic appraisal of your performance.

Give yourself plenty of time and attempt the assessment in a place where you won't be interrupted. If you are attempting to simulate exam conditions, you should allow up to 2 minutes per question.

Write down items that you are not sure about as you go. Even if you get the question right, you should still read further about anything that is unclear to you.

If you don't agree with, or can't understand the reason for an answer, ask the appropriate member of academic staff. If you are not sure who that is, ask your colleagues or the course convenor.

6. Academic integrity, referencing and plagiarism

Referencing is a way of acknowledging the sources of information that you use to research your assignments. You need to provide a reference whenever you draw on someone else's words, ideas or research. Not referencing other people's work can constitute plagiarism.

Further information about referencing styles can be located at
https://student.unsw.edu.au/referencing

Academic integrity is fundamental to success at university. Academic integrity can be defined as a commitment to six fundamental values in academic pursuits**:** honesty, trust, fairness, respect, responsibility and courage.[1] At UNSW, this means that your work must be your own, and others' ideas should be appropriately acknowledged. If you don't follow these rules, plagiarism may be detected in your work.

Further information about academic integrity and **plagiarism** can be located at:

- The Current Students site *https://student.unsw.edu.au/plagiarism*, and
- The ELISE training site https://subjectguides.library.unsw.edu.au/elise

The Conduct and Integrity Unit provides further resources to assist you to understand your conduct obligations as a student: *https://student.unsw.edu.au/conduct*.

The School of Biomedical Sciences will not tolerate plagiarism in submitted written work. The University regards this as academic misconduct and imposes severe penalties. Evidence of plagiarism in submitted assignments, etc. will be thoroughly investigated and may be penalised by the award of a score of zero for the assessable work. Flagrant plagiarism will be directly referred to the Division of the Registrar for disciplinary action under UNSW rules.

Plagiarism at UNSW is defined as using the words or ideas of others and passing them off as your own. Examples include:

Copying	Using the same or very similar words to the original text or idea without acknowledging the source or using quotation marks. This includes copying materials, ideas or concepts from a book, article, report or other written document, presentation, composition, artwork, design, drawing, circuitry, computer program or software, website, internet, other electronic resource, or another person's assignment, without appropriate acknowledgement.

[1] International Center for Academic Integrity, 'The Fundamental Values of Academic Integrity', T. Fishman (ed), Clemson University, 2013.

Inappropriate paraphrasing	Changing a few words and phrases while mostly retaining the original structure and/or progression of ideas of the original, and information without acknowledgement. This also applies in presentations where someone paraphrases another's ideas or words without credit and to piecing together quotes and paraphrases into a new whole, without appropriate referencing.
Collusion	Presenting work as independent work when it has been produced in whole or part in collusion with other people. Collusion includes ▪ students providing their work to another student before the due date, or for the purpose of them plagiarising at any time ▪ paying another person to perform an academic task and passing it off as your own ▪ stealing or acquiring another person's academic work and copying it ▪ offering to complete another person's work or seeking payment for completing academic work. This should not be confused with academic collaboration.
Inappropriate citation	Citing sources which have not been read, without acknowledging the 'secondary' source from which knowledge of them has been obtained.
Self-plagiarism	'Self-plagiarism' occurs where an author republishes their own previously written work and presents it as new findings without referencing the earlier work, either in its entirety or partially. Self-plagiarism is also referred to as 'recycling', 'duplication', or 'multiple submissions of research findings' without disclosure. In the student context, self-plagiarism includes re-using parts of, or all of, a body of work that has already been submitted for assessment without proper citation.

Students are reminded of their Rights and Responsibilities in respect of plagiarism, as set out in the University Undergraduate and Postgraduate Handbooks and are encouraged to seek advice from academic staff whenever necessary to ensure they avoid plagiarism in all its forms.

7. Readings and resources

We will be using the UNSW Moodle learning management system to provide you with information about the course and access to online resources. Lecture notes, online modules, access to your grades, course documents and reference material can all be found on the course Moodle site. For System Requirements for Moodle refer to: https://www.student.unsw.edu.au/moodle-system-requirements

All resources such as textbooks and some reference materials are available through Moodle. The textbook for this course is:

PRINCIPLES OF HUMAN PHYSIOLOGY by Cindy L. Stanfield, Global Edition (6th edition), 2016, published by Pearson Education. Books are available from the UNSW bookshop.

This textbook comes with an online platform called Mastering A&P which contains some useful interactive modules. We have selected some of these interactive modules which provide a good supplement to the lecture and tutorial material and will help with revision of this material. You will not be examined on this material specifically as it really serves to clarify and consolidate your understanding of the lecture content. There is no set time allocated for these suggested self-study sessions. You are

encouraged to work through these sessions in your own time. Please refer to the section on self-study sessions for further details, including how to access these modules.

8. Administrative matters

General Information

The Department of Physiology is part of the School of Biomedical Sciences and is within the Faculty of Medicine and Health. It is located on the 2nd and 3rd floors of the East and West Wings of the Wallace Wurth Building. General inquiries can be submitted via the UNSW Student Portal Web Forms

https://unswinsight.microsoftcrmportals.com/web-forms/

Professor Gary Housley is Head of Department and appointments to see him may be made through email (G.Housley@unsw.edu.au).

There is an honours program conducted by the School. Any students considering an Honours year should discuss the requirements with the honours convenor (SBMShonours@unsw.edu.au). Outstanding students may be considered for scholarships offered by the University and School, and these are offered annually.

Postgraduate research degrees **-** The Department of Physiology offers students the opportunity to undertake a Doctorate *(Ph.D)*. For further information contact the co-ordinator, Prof Pascal Carrive (P.Carrive@unsw.edu.au).

Communication

All students in courses PHSL2101, 2121 and 2501 are advised that email is the official means by which the School of Biomedical Sciences at UNSW will communicate with you. All email messages will be sent to your official UNSW email address (e.g. z1234567@unsw.edu.au) and, if you do not wish to use the University email system, you MUST arrange for your official mail to be forwarded to your chosen address. Email correspondence with the University should be from your UNSW email address in order to reduce identity confusion.

The University recommends that you check your mail at least every other day. Facilities for checking email are available in the School of Biomedical Sciences and in the University library. Further information and assistance is available from the IT Service Centre (02) 9385 1333.

All current timetables, notices and information relevant to you will be available on Moodle. It is your responsibility to check Moodle regularly.

Grievance Resolution Officer

In case you have any problems or grievance about the course, you should try to resolve it with one of the Course Convenors. If the grievance cannot be resolved in this way, you should contact the School of Biomedical Sciences Grievance Officer, Prof Nick di Girolamo (n.digirolamo@unsw.edu.au).

9. Additional support for students

Some pages with important information for students:

- The Current Students Gateway: https://student.unsw.edu.au/
- Academic Skills and Support: https://student.unsw.edu.au/academic-skills

- Student Wellbeing and Health https://www.student.unsw.edu.au/wellbeing
- UNSW IT Service Centre: https://www.myit.unsw.edu.au/services/students
- UNSW Student Life Hub: https://student.unsw.edu.au/hub#main-content
- Student Support and Development: https://student.unsw.edu.au/support
- IT, eLearning and Apps: https://student.unsw.edu.au/elearning
- Student Support and Success Advisors: https://student.unsw.edu.au/advisors
- Equitable Learning Services (Formerly Disability Support Unit): https://student.unsw.edu.au/els
- Transitioning to Online Learning https://www.covid19studyonline.unsw.edu.au/
- Guide to Online Study https://student.unsw.edu.au/online-study
- UNSW Student Life Online https://www.student.unsw.edu.au/hub

The UNSW Learning and Career Hub offers workshop programmes throughout the academic year on a wide variety of Academic and Career Development skills. These include referencing, writing skills, critical thinking, exam preparation and time management. Individual assistance is available on request. Further information can be obtained using the link https://student.unsw.edu.au/support

10. Continual Course Improvement

Periodically student evaluative feedback on the course is gathered, using, among other means, UNSW's MyExperience process. Student feedback is taken seriously, and continual improvements are made to the course based in part on such feedback. Significant changes to the course will be communicated to subsequent cohorts of students taking the course.

Student Representatives

We are seeking student representatives for our term 1 2023 course. Ideally, we would like to have two representatives from each of our different cohorts (Science, Medical Science, Engineering, Optometry and Exercise Physiology). In terms of commitment, it is expected that we would meet with student representatives about twice during the term. During these meetings representatives will have the opportunity to report on any feedback relating to the course that has been gathered from peers. Being a student representative gives you the opportunity to provide a voice for your student cohort and is a role that can be listed on your CV. Please email Dr Nicole Marden (Phys1a@unsw.edu.au) if you would like to be a student representative or if you would like any further information.