UNSW Course Outline

PHSL3211 Cardiovascular Physiology and Pathophysiology - 2024

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General Course Information

Course Code : PHSL3211
Year : 2024
Term : Term 2
Teaching Period : T2
Is a multi-term course? : No
Faculty : Faculty of Medicine and Health
Academic Unit : School of Biomedical Sciences
Delivery Mode : In Person
Delivery Format : Standard
Delivery Location : Kensington
Campus : Sydney
Study Level : Undergraduate
Units of Credit : 6

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

This course focuses on the physiology and pathophysiology of the cardiovascular system. Unit

One covers molecular and cellular aspects of cardiovascular tissues; the vascular endothelium, cardiac and smooth muscle and cell communication. Unit Two addresses systemic cardiovascular physiology, from capillary exchange, the microcirculation, the ECG, control of regional blood flow and hemodynamics, up to regulation of cardiac output and blood pressure and the function of the cardiovascular system in exercise. Unit Three focuses on the pathophysiology of the cardiovascular system, with lectures delivered by leading researchers in the fields of atherosclerosis, heart failure, hypertension and cerebrovascular disease. Lecture-based material is complemented by practical classes, on-line tutorials and problem-based learning.

Course Aims

The objective of this course is for you to gain an understanding of the physiology of the cardiovascular system, from characteristics of cardiac and vascular cells through to the functioning of circulatory systems, the contribution to homeostasis and how they interact with their environment. The course also aims to introduce you to modern experimental approaches and to apply basic physiological concepts to understanding cardiovascular pathology.

Relationship to Other Courses

Assistance with progression checking:

If you are unsure how this course fits within your program, you can seek guidance on optimising your program structure from staff at the Nucleus Student Hub.

- Progression plans for UNSW Medicine and Health programs can be found on the UNSW Medicine & Health website.
- Progression plans for UNSW Science programs can be found on the UNSW Science website.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Explain the basic principles and cellular physiology that contribute to the function of the heart and blood vessel wall.
CLO2 : Explain the regulatory processes that occur at the cellular, organ and system level to control the cardiovascular system in physiological and pathophysiological conditions.
CLO3 : Employ self-directed learning and critical analysis skills to effectively summarise and present research on cardiovascular physiology and pathophysiology.
CLO4 : Describe experimental approaches related to cardiovascular systems and interpret the experimental results.

Course Learning Outcomes	Assessment Item
CLO1 : Explain the basic principles and cellular physiology that contribute to the function of the heart and blood vessel wall.	• Mid-term test • Final Examination
CLO2 : Explain the regulatory processes that occur at the cellular, organ and system level to control the cardiovascular system in physiological and pathophysiological conditions.	• Problem-Based Learning (PBL) Session • Mid-term test • Final Examination
CLO3 : Employ self-directed learning and critical analysis skills to effectively summarise and present research on cardiovascular physiology and pathophysiology.	• Poster Presentation • Problem-Based Learning (PBL) Session
CLO4 : Describe experimental approaches related to cardiovascular systems and interpret the experimental results.	• Poster Presentation • Mid-term test • Final Examination

Learning and Teaching Technologies

Moodle - Learning Management System | Microsoft Teams | Echo 360

Learning and Teaching in this course

All course materials and course announcements are provided on the course learning management system, Moodle (or Open Access).

By accessing and using the ICT resources provided by UNSW, you are agreeing to abide by the 'Acceptable Use of UNSW ICT Resources' policy particularly on respect for intellectual property and copyright, legal and ethical use of ICT resources and security and privacy.

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Mid-term test Assessment Format: Individual	25%	Start Date: Not Applicable Due Date: Week 5: 24 June - 30 June
Poster Presentation Assessment Format: Group	20%	Start Date: Not Applicable Due Date: Week 10: 29 July - 04 August
Final Examination Assessment Format: Individual	45%	Start Date: Not Applicable Due Date: During Exam period
Problem-Based Learning (PBL) Session Assessment Format: Individual	10%	Start Date: Not Applicable Due Date: Week 9: 22 July - 28 July

Assessment Details

Mid-term test

Assessment Overview

The mid-term test is composed of multiple-choice and short answer questions covering both lecture and practical class content from approximately the first half of the course. For the practical component, you will be examined on the experimental approaches and interpretation of results. The test is typically scheduled in week 5. Feedback is provided through grades and model answers released to you following the assessment.

Course Learning Outcomes

- CLO1 : Explain the basic principles and cellular physiology that contribute to the function of the heart and blood vessel wall.
- CLO2 : Explain the regulatory processes that occur at the cellular, organ and system level to control the cardiovascular system in physiological and pathophysiological conditions.
- CLO4 : Describe experimental approaches related to cardiovascular systems and interpret the experimental results.

Detailed Assessment Description

Detailed information about this assessment will be provided on the course Moodle page.

Assessment Length

60 mins

Submission notes

Refer to Moodle for submission information.

Assessment information

Use of Generative Artificial Intelligence (AI) in the assessment

UNSW Pro-Vice Chancellor Education and Student Experience (PVCESE) provides guidance on the use of generative Artificial Intelligence in assessments.

NO ASSISTANCE is permitted for this test.

It is prohibited to use any software or service to search for or generate information or answers. If such use is detected, it will be regarded as serious academic misconduct and subject to the standard penalties, which may include 00FL, suspension and exclusion.

Assignment submission Turnitin type

Not Applicable

Poster Presentation

Assessment Overview

You will work in groups to evaluate and summarise a research article on a specific topic of cardiovascular physiology and pathophysiology and to communicate this work in a poster presentation. Groups and topics will be assigned by the end of week 3. The final poster is due for assessment in week 10. The poster should include: an Introduction; Methods; Data drawn from the article; and a Summary. Each group is expected to also provide a 10-15 min oral presentation of poster. The task is worth 20%: 15% ascribed by the examiners based on both the poster presentation and its oral defence, where each group member gets the same grade; and 5% peer-marked based on a mark given to each individual group member by fellow group members. Feedback is provided at the end of the assessment process with specific comments and marks.

Course Learning Outcomes

- CLO3 : Employ self-directed learning and critical analysis skills to effectively summarise and present research on cardiovascular physiology and pathophysiology.
- CLO4 : Describe experimental approaches related to cardiovascular systems and interpret the experimental results.

Detailed Assessment Description

Detailed information about this assessment will be provided on the course Moodle page.

Assessment Length

30 mins

Submission notes

Refer to Moodle for submission information.

Assessment information

Use of Generative Artificial Intelligence (AI) in the assessment

UNSW Pro-Vice Chancellor Education and Student Experience (PVCESE) provides guidance on the use of generative Artificial Intelligence in assessments.

NO ASSISTANCE is permitted for this test.

It is prohibited to use any software or service to search for or generate information or answers. If such use is detected, it will be regarded as serious academic misconduct and subject to the standard penalties, which may include 00FL, suspension and exclusion.

Assignment submission Turnitin type

Not Applicable

Final Examination

Assessment Overview

The final examination will be a 2-hour exam composed of multiple-choice and short answer questions covering both lecture and practical class content from the entire course. For the practical component, you will be examined on the experimental approaches and interpretation of results. Feedback is provided through grades incorporated into a final course grade released via official UNSW communication, and performance of the cohort in the exam released through Moodle. Further feedback is available on request.

Course Learning Outcomes

- CLO1 : Explain the basic principles and cellular physiology that contribute to the function of the heart and blood vessel wall.
- CLO2 : Explain the regulatory processes that occur at the cellular, organ and system level to control the cardiovascular system in physiological and pathophysiological conditions.
- CLO4 : Describe experimental approaches related to cardiovascular systems and interpret the experimental results.

Detailed Assessment Description

Detailed information about this assessment will be provided on the course Moodle page.

Assessment Length

120 mins

Submission notes

Refer to Moodle for submission information.

Assessment information

Use of Generative Artificial Intelligence (AI) in the assessment

UNSW Pro-Vice Chancellor Education and Student Experience (PVCESE) provides guidance on the use of generative Artificial Intelligence in assessments.

NO ASSISTANCE is permitted for this test.

It is prohibited to use any software or service to search for or generate information or answers. If such use is detected, it will be regarded as serious academic misconduct and subject to the standard penalties, which may include 00FL, suspension and exclusion.

Assignment submission Turnitin type

This assignment is submitted through Turnitin and students do not see Turnitin similarity reports.

Problem-Based Learning (PBL) Session

Assessment Overview

You will undertake self-directed learning using a case study or scenario relevant to cardiovascular physiology and pathophysiology. You will be given an outline of the problem and “clues” towards what information is required, and tutors will be available to support this activity. You will then research the material and present your findings using both oral and written communication. The oral presentation is no longer than 5 minutes and may be accompanied by slides or other visual aids. The written summary is to be no longer than a single-side A4-sized sheet. The activity takes place in weeks 7 (discussion of case study and assignment of topic) and 9 (presentations due). Feedback is provided at the end of the assessment process with specific comments and marks.

Course Learning Outcomes

- CLO2 : Explain the regulatory processes that occur at the cellular, organ and system level to control the cardiovascular system in physiological and pathophysiological conditions.
- CLO3 : Employ self-directed learning and critical analysis skills to effectively summarise and present research on cardiovascular physiology and pathophysiology.

Detailed Assessment Description

Detailed information about this assessment will be provided on the course Moodle page.

Assessment Length

30 mins

Submission notes

Refer to Moodle for submission information.

Assessment information

Use of Generative Artificial Intelligence (AI) in the assessment

UNSW Pro-Vice Chancellor Education and Student Experience (PVCESE) provides guidance on the use of generative Artificial Intelligence in assessments.

NO ASSISTANCE is permitted for this test.

It is prohibited to use any software or service to search for or generate information or answers. If such use is detected, it will be regarded as serious academic misconduct and subject to the standard penalties, which may include 00FL, suspension and exclusion.

Assignment submission Turnitin type

This is not a Turnitin assignment

General Assessment Information

Detailed instructions regarding assessments for this course are provided on the course Moodle page (or Open Learning).

For student information on results, grades, and guides to assessment see: https://student.unsw.edu.au/assessment

Grading Basis

Standard

Requirements to pass course

In order to pass this course students must:

- Achieve a composite grade of at least 50 out of 100
- Meet any additional requirements specified in the assessment details section and on Moodle.

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 27 May - 2 June	Lecture	L - Course Introduction/Cardiac Muscle (2h) L - Vascular Smooth Muscle (2h)
	Laboratory	P - Cardiac Muscle Tues May 28, 2-5 PM, WW120
Week 2 : 3 June - 9 June	Lecture	L - Vascular Endothelium (2h) L - Introduction to the ECG (1h)
	Laboratory	P - Recording and Interpretation of the ECG, Tues June 4th, 2-5 PM, WW120.
Week 3 : 10 June - 16 June	Lecture	L - Control of Cardiac Output (2h) L - Haemodynamics (2h)
	Laboratory	P - Computer Lab: Isolated Heart Muscle and Cardiovascular Exercises, Tues June 11th, 2-5 PM, WW120.
Week 4 : 17 June - 23 June	Lecture	L - Microcirculation and Lymphatics (2h)
	Laboratory	P - Microcirculation, Tues June 18th, 2-5 PM, WW120.
Week 5 : 24 June - 30 June	Lecture	L - Autonomic Control of the Cardiovascular System (1h) L - Cardiovascular Regulation During Exercise (1h)
	Laboratory	P - Exercise Physiology
	Assessment	Mid-session exam
Week 6 : 1 July - 7 July	Other	Recharge week
Week 7 : 8 July - 14 July	Lecture	L - Control of Blood Pressure (2h) L - Control of the Regional Circulations (2h)
	Activity	PBL 'Joan Murray' Part 1; Tues July 9, Mat 303 + 308.
Week 8 : 15 July - 21 July	Lecture	L - Circulatory Shock (1h) L - Atherosclerosis (2h)
	Laboratory	P - Autonomic Control of the CVS, Tues July 16, WW120
Week 9 : 22 July - 28 July	Lecture	L - Heart Failure (1h) L - Cardiac Arrhythmia (1h)
	Assessment	PBL-2'Joan Murray' Part 2, assessment, Tues July 23, Mat 302, 308
Week 10 : 29 July - 4 August	Lecture	L - Hypertension (2h) L - Oxygen Radicals and Reperfusion Injury (1h)
	Assessment	Poster presentation, Tues July 30, 2-5 PM, WW120.

Attendance Requirements

Students are strongly encouraged to attend all classes and review lecture recordings.

General Schedule Information

The times and locations of classes can be found on myUNSW under Class Timetable.

The expected engagement for all UNSW 6UOC courses is 150 hours per term. This includes lectures, tutorials, readings, and completion of assessments and exam preparation (if relevant).

Course Resources

Prescribed Resources

Type Item # Title/Author Edition Requirement

Recommended 9781498739849 Levicks Introduction to Cardiovascular Physiology
Herring Neil 6e18 _____

Digital - https://unswbookshop.vitalsource.com/products/-v9781498739917

Recommended 9781455743773 MEDICAL PHYSIOLOGY 3ED
BORON 2016 _____

Digital - https://unswbookshop.vitalsource.com/products/-v9781455733286

Recommended 9780323597128 Guyton and Hall Textbook of Medical Physiolog
Guyton & Hall 14 _____

Digital - https://unswbookshop.vitalsource.com/products/-v9780323640039

Recommended Resources

Recommended resources for this course are provided on the course Moodle page.

Additional Costs

There are no additional costs associated with this course.

Course Evaluation and Development

Student feedback is taken seriously, and continual improvements are made to the course based, in part, on such feedback.

We use student feedback from myExperience surveys to develop and make improvements to the course each year. We do this by identifying areas of the course that require development from both the rating responses and written comments. Please spare a few minutes to complete the myExperience surveys for this course posted at the top of the Moodle page at the end of term.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Director of teaching	Jennie Ceder holm		WWSW	93851000	Contact for availability	Yes	No
Convenor	Tim Murphy		WW316	0448381608	Contact for availability	Yes	Yes
	Felicita JUSO F		WW200	93851000	Contact for availability	Yes	No

Other Useful Information

Academic Information

As a student of UNSW Medicine & Health you are expected to familiarise yourself with the contents of this course outline and the UNSW Student Code and policies and procedures related to your studies.

Student Code of Conduct

Throughout your time studying at UNSW Medicine & Health, you share a responsibility with us for maintaining a safe, harmonious and tolerant University environment. This includes within the courses you undertake during your degree and your interactions with the UNSW community, both on campus and online.

The UNSW Student Code of Conduct website provides a framework for the standard of conduct expected of UNSW students with respect to both academic integrity and your responsibility as a UNSW citizen.

Where the University believes a student may have breached the code, the University may take disciplinary action in accordance with the Student Misconduct Procedure.

The Student Conduct and Integrity Office provides further resources to assist you to understand your conduct obligations as a student at UNSW.

Academic Honesty and Plagarism

Academic integrity

UNSW has an ongoing commitment to fostering a culture of learning informed by academic integrity. All UNSW staff and students have a responsibility to adhere to the principle of academic integrity, and ethical scholarship of learning is fundamental to your success at UNSW Medicine & Health.

Plagiarism, contract cheating, and inappropriate use of generative AI undermine academic integrity and are not tolerated at UNSW. For more information see the Academic Integrity and Plagiarism toolkit.

In addition to the information you are required to review in your ELISE training, UNSW Medicine & Health strongly recommends that you complete the Working with Academic Integrity module before submitting your first assessment task.

Referencing

Referencing is a way of acknowledging the sources of information that you use to research your assignments. Preferred referencing styles vary among UNSW Medicine & Health disciplines, so check your course Learning Management System (e.g. Moodle or Open Learning) page for information on preferred referencing styles.

For further information on referencing support and styles, see the Current Student Referencing page.

Academic misconduct and plagiarism

At UNSW, academic misconduct is managed in accordance with the Student Misconduct Procedure. Allegations of plagiarism are generally handled according to the UNSW Plagiarism Management Procedure. Plagiarism is defined in the UNSW Plagiarism Policy and is not tolerated at UNSW.

Use of Generative AI and other tools in your assessment

UNSW has provided guiding statements for the use of Generative AI in assessments. This will differ, depending on the individual assessment task, your course requirements, and the course stage within your program.

Your course convenor will outline if and how you can use Generative AI in each your assessment tasks. Options for the use of generative AI include: (1) no assistance; (2) simple editing assistance; (3) planning assistance; and (4) full assistance with attribution.

You may be required to submit the original generative AI responses, or drafts of your original work. Inappropriate use of generative AI is considered academic misconduct.

See your course Moodle (or Open Learning) page for the full instructions for individual assessment tasks for your course.

Submission of Assessment Tasks

Special Consideration

In cases where illness, misadventure or other circumstances beyond your control will prevent you from submitting your assessment by the due date and you require an extension, you need to formally apply for Special Consideration through myUNSW.

UNSW has a **Fit to Sit/Submit rule**, which means that by sitting or submitting an assessment on the scheduled assessment date, you are declaring that you are fit to do so and cannot later apply for Special Consideration.

Timed online assessment tasks

If you experience a technical or connection problem during a timed online assessment, such as a timed quiz, you can apply for Special Consideration. To be eligible to apply you need to contact the Course Convenor and advise them of the issue immediately. You will need to submit an application for Special Consideration immediately, and upload screenshots, error messages or other evidence of the technical issue as supporting documentation. Additional information can be found on: https://student.unsw.edu.au/special-consideration

Examinations

Information about the conduct of examinations in your course is provided on your course Moodle page.

Other assessment tasks

Late submission of assessment tasks

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 calendar day (including Saturday, Sunday and public holidays).

Late submissions penalties are capped at five calendar days (120 hours). This means that a student is not permitted to submit an assessment more than 5 calendar days (120 hours) after the due date for that assessment (unless extension or exemption previously agreed).

Failure to complete an assessment task

You are expected to complete all assessment tasks for your courses. In some courses, there will be a minimum pass mark required on a specific assessment task (a “hurdle task”) due to the need to assure clinical competency.

Where a hurdle task is applicable, additional information is provided in the assessment information on your course Moodle page.

Feedback on assessments

Feedback on your performance in assessment tasks will be provided to you in a timely manner. For assessment tasks completed within the teaching period of a course, other than a final assessment, feedback will be provided within 10 working days of submission, under normal circumstances.

Feedback on continuous assessment tasks (e.g. laboratory and studio-based, workplace-based, weekly quizzes) will be provided prior to the midpoint of the course.

Any variation from the above information that is specific to an assessment task will be clearly indicated in the course and assessment information provided to you on your course Moodle (or Open Learning) page.

Faculty-specific Information

Additional support for students

The university offers a wide range of support services that are available for students. Here are some links for you to explore.

- The Current Students Gateway: https://student.unsw.edu.au
- Academic Skills and Support: https://student.unsw.edu.au/academic-skills
- Student support: https://www.student.unsw.edu.au/support
- Student Wellbeing, Health and Safety: https://student.unsw.edu.au/wellbeing

Mind Smart Guides are a series of mental health self-help resources designed to give you the

psychological flexibility, resilience and self-management skills you need to thrive at university and at work.

- Mind Smart Guides: https://student.unsw.edu.au/mindsmart
- Equitable Learning Services: https://student.unsw.edu.au/els
- Guide to studying online: https://www.student.unsw.edu.au/online-study

Most courses in UNSW Medicine & Health use Moodle as your Learning Management System. Guidance for using UNSW Moodle can be found on the Current Student page. Difficulties with Moodle should be logged with the IT Service Centre.

- Moodle Support: https://student.unsw.edu.au/moodle-support

The IT Service Desk is your central point of contact for assistance and support with remote and on-campus study.

- UNSW IT Service Centre: https://www.myit.unsw.edu.au/services/students

Course evaluation and development

At UNSW Medicine & Health, students take an active role in designing their courses and their overall student experience. We regularly seek feedback from students, and continuous improvements are made based on your input. Towards the end of the term, you will be asked to participate in the myExperience survey, which serves as a source of evaluative feedback from students. Your input to this quality enhancement process is valuable in helping us meet your learning needs and deliver an effective and enriching learning experience. Student responses are carefully considered, and the action taken to enhance educational quality is documented in the myFeedback Matters section of your Moodle (or Open Learning) course page.

School-specific Information

Laboratory or practical class safety.

For courses where there is a laboratory or practical-based component, students are required to wear the specified personal protective equipment (e.g., laboratory coat, covered shoes, safety glasses) indicated in the associated student risk assessments. The student risk assessments

will be provided on the course Moodle page and must be read and acknowledged prior to the class.

Master of Science in Health Data Science courses

Courses in the Master of Science in Health Data Science are hosted through Open Learning. Additional resources are available on the Health Data Science Student Hub.

Recording of lectures, tutorials and other teaching activities (MSc. HDS only)

Lectures, tutorials and other teaching activities may be recorded. Students should be advised that they are consenting to the recording by their enrolment in the course or participation in the activity. The purpose of audio and video recordings is to enhance the student experience by supporting engaged learning in an online teaching environment and ensure equitable access to all course resources for our students. If you have concerns about accessing course recordings, or being recorded, please contact the Course Convenor.

School Contact Information

School guidelines on contacting staff:

Course questions

All questions related to course content should be posted on Moodle (or Open Learning) or as directed by your Course Convenor.

In cases where email communication with course convenors is necessary, we kindly request the following:

- Use your official email address for any correspondence with teaching staff.
- We expect a high standard of communication. All communication should avoid using short-hand or texting language.
- Include your full name, student ID, and your course code and name in all communication.

Our course convenors are expected to respond to emails during standard working hours of Monday to Friday, 9am-5pm.

Administrative questions

If you have an administrative question about your program of study at the School please submit your enquiry online at UNSW Ask Us.

Complaints and appeals

Student complaints and appeals: https://student.unsw.edu.au/complaints

If you have any grievances about your studies, we invite you to address these initially to the Course Convenor. If the response does not meet your expectations, you may then contact:

School Grievance Officer, Prof Nick Di Girolamo (n.digirolamo@unsw.edu.au)

Health Data Science programs: School Grievance Officer, Dr Sanja Lujic (s.lujic@unsw.edu.au)