HESC3541

Clinical Exercise Physiology

COURSE OUTLINE

Term 1, 2021

Contents

Please read this outline in conjunction with the following pages on the
School of Medical Sciences website:
-      Advice for Students
-      Learning Resources

Additional information can be found at:
https://medicalsciences.med.unsw.edu.au/students/undergraduate/advice-students

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Course details

Credit Points: 6 UOC

Course Prerequisites / Assumed Knowledge

- PHSL2501 – Human Physiology A
- HESC2501 – Exercise Physiology
- PHSL2502 – Human Physiology B
- PATH2202 – Processes in Disease Health and Exercise Science
  or PATH2201 – Processes in Disease

Course Description

This course will provide you information about the epidemiology and the pathophysiology of respiratory, metabolic, cardiovascular and immune diseases. You will gain knowledge of how to set up and implement exercise testing and programming in these special populations in order to provide symptomatic relief, as well as to manage the underlying disease. You will also learn how to manage the interaction between exercise and medications in these special populations. By the end of the term you will be able to successfully use exercise testing and programming in individuals with these diseases to improve their health and quality of life. The teaching and learning approaches used in this course will include problem-based learning as well as more traditional evidence-based information provided during the lectures.

Aims of the Course
1. To provide knowledge on the epidemiology and the pathophysiology of respiratory, metabolic, cardiovascular and immune disorders
2. Develop an understanding of the specificity of those populations based on their symptoms and treatments and their exercise limitations
3. Develop practical skills necessary for the assessment of the exercise capacity and the prescription of exercise in those populations
4. Develop competencies in exercise testing interpretation

Student Learning Outcomes

This term is used to describe what it is that you should be able to do, explain or understand if you have learned effectively in the course. For each lecture, tutorial, practical and assessment item, the expected learning outcomes will be explicitly stated. The assessment in the course will be matched as closely as possible to the stated learning outcomes. That is, the assessment will test how well you have achieved the learning outcomes of the course. The general learning outcomes for the course are as follows:

At the end of the course you should:
1. Describe the physiological mechanisms responsible for the development of the chronic diseases addressed in this course, as well as the medications used to manage these diseases
2. Identify exercise limitations and contraindications to exercise associated with the chronic diseases addressed in this course
3. Administer pre-exercise screening and safely conduct exercise testing, including monitoring of the cardio-respiratory function at rest and during exercise and recovery
4. Collect, analyse and interpret data from exercise testing to construct individualised exercise programs

Graduate Attributes
- Understand the relationship between physical activity and health
- Deliver lifestyle change programs that use exercise for the primary prevention of disease and the management of chronic disease
- Apply clinical skills and knowledge relevant to cardiopulmonary, metabolic, musculoskeletal and neuromuscular rehabilitation
- Engage in independent and reflective learning for the betterment of professional clinical practice, following an evidence-based approach
- Communicate effectively with patients, colleagues and other health professionals

Rationale for the inclusion of content and teaching approach

How the course relates to the Exercise Physiology profession – This course provides a strong background on the Pathophysiology, the exercise limitations and the strategies to optimize exercise testing and prescription for major chronic conditions. It also develops critical skills necessary for the safe monitoring of cardio-respiratory function at rest, during exercise and recovery.

How the course relates to other courses in the Exercise Physiology program – This course builds on the knowledge and skills introduced in earlier courses in the program, in particular Human Physiology A and B (PHSL2501/2502), Process in Disease (PATH2202) and Exercise Physiology (HESC2501), to further develop critical skills and knowledge to enable students to interact with patients with chronic conditions. These skills and knowledge will be applied throughout the 4th year clinical practicum. Learning about medications and the impact on exercise responses will be extended in Pharmacology for Health and Exercise Science (PHAR2211).

Teaching strategies

Lectures – The lectures will provide you information on the epidemiology and the pathophysiology of respiratory, metabolic, cardiovascular and immune diseases. This information will be further used to implement exercise testing and prescription in those populations by taking into account the specificity of each populations and the interaction with the medications used.

Lecture notes will be available in PDF format and recordings accessible on **Moodle.**

Tutorials – During the tutorials, a problem-based learning strategy will be used to discuss testing exercise capacity in specific populations. Those tutorials will also help you to learn how to use scientific literature to improve exercise testing and prescription in those populations and how to analyse data collected during exercise tests.

Practicals – During the practicals you will learn clinical skills concerning exercise testing in clinical conditions that will consist of:
- lung function assessment (spirometry)
- cardiac activity monitoring (electrocardiography)
- exploring the metabolic and respiratory adaptations (gas analysis)

Assessments – These tasks have been chosen as tools to enhance and guide your learning as well as a way of measuring performance and are therefore central teaching strategy in this course.

Assessment

Summary of Assessments	Weight	Due Date
ASSESSMENT TASK 1 – QUIZZES	**0%**	Weeks 2, 4, 8, 10
ASSESSMENT TASK 2 – MID TERM EXAM	**20%**	Week 5
ASSESSMENT TASK 3 – CLINICAL SKILLS ASSESSMENT	**15%**	Weeks 7-8
ASSESSMENT TASK 4 – REPORT ON EXERCISE TESTING	**25%**	Week 10
ASSESSMENT TASK 5 – FINAL EXAM	**40%**	Examination period

Submission of Assessment Tasks

Written assessment tasks must be handed in via Turn-it-in which can be found on the TELT Moodle website. Penalties apply for late submissions.

Penalties for late submission of assignments – In cases where an extension has NOT been granted, the following penalties will apply:

1. For assignments submitted after **4.00pm** on the due date, a penalty of 50% of the maximum marks available for that assignment will be incurred.
2. Assignments received two (2) or more days after the due date **will not be allocated a mark,** however, these assignments **must** still be submitted to pass the unit.

Assessment Task 1 – ONLINE QUIZZES (Weeks 2, 4, 8, 10)

Online quizzes offered at the end of each block of lectures on the 4 main topics (respiratory disorders, metabolic disorders, cardiovascular disorders and immune disorders) to test your knowledge on the information delivered on these topics. Answers will need to be submitted through Moodle.

Assessment Task 2 – MID TERM EXAM (Week 5, Thursday 18/03, 9am)

This exam will test your knowledge on the diseases pathophysiology, the effects of exercise on the pathologies or symptoms and the potential interactions with medications in respiratory or metabolic disorders.

Assessment Task 3 – CLINICAL SKILLS ASSESSMENT (Weeks 7-8)

This assessment will evaluate your skills in performing critical clinical tasks during an exercise test. You will get the opportunity to perform practice runs before being assessed during the 'testing metabolic adaptations' lab. The skills you will be assessed on will be randomly assigned. The marking criteria for each skill can be found below.

Clinical Skills Assessment Form – HESC3541

Pre-screening procedure / protocol design

Student's name: _____

Date: _____

Assessor: _____

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1. MEDICAL INTERVIEWING SKILLS (__ Not Observed)

    1   2   3 | 4   5   6 | 7   8   9
    Unsatisfactory   Satisfactory   Superior

2. PROTOCOL DESIGN (__ Not Observed)

    1   2   3 | 4   5   6 | 7   8   9
    Unsatisfactory   Satisfactory   Superior

3. DESCRIPTION / EXPLANATION OF THE PROCEDURES TO THE PATIENT (__ Not Observed)

    1   2   3 | 4   5   6 | 7   8   9
    Unsatisfactory   Satisfactory   Superior

4. MONITORING OF THE PATIENT (__ Not Observed)

    1   2   3 | 4   5   6 | 7   8   9
    Unsatisfactory   Satisfactory   Superior

5. OVERALL CLINICAL COMPETENCE

    1   2   3 | 4   5   6 | 7   8   9
    Unsatisfactory   Satisfactory   Superior

COMMENTS ON STUDENT'S PERFORMANCE:

Clinical Skills Assessment Form – HESC3541

Pre-screening procedure / protocol design

Descriptors of Competencies assessed

1. **Medical Interviewing Skills:** Facilitates patient's telling of story; effectively uses questions/directions to obtain accurate, adequate information needed; responds appropriately to affect, non-verbal cues. Identifies and explores the patient's issues and concerns within the scope of a focused consultation.

2. **Protocol design:** Effectively develop individualized protocol based on anthropometric data and medical history previously collected from the patient. Appropriately assess risk levels and limitations or contraindications to exercise.

3. **Description / Explanation of the procedures to the patient:** Selectively orders/describes the different steps involved in the exercise test. Communicate effectively with patient. Appropriately describe ways of communicating during the test.

4. **Monitoring of the patient:** Communicate effectively with patient during the test. Appropriately collect information to monitor patient's response to the exercise test.

5. **Overall Clinical Competence:** Demonstrates judgment, synthesis, caring, effectiveness and efficiency. Note that this is <u>not</u> an average of the other domains. It is a global assessment that takes into account that in different settings the competencies take on different weightings.

Clinical Skills Assessment Form – HESC3541

Spirometry – Gas analysis

Student's name: _____

Date: _____

Assessor: _____

_____

1. MEDICAL INTERVIEWING SKILLS (__ Not Observed)

      1   2   3 | 4   5   6 | 7   8   9
      Unsatisfactory   Satisfactory   Superior

2. DESCRIPTION / EXPLANATION OF THE PROCEDURES TO THE PATIENT (__ Not Observed)

      1   2   3 | 4   5   6 | 7   8   9
      Unsatisfactory   Satisfactory   Superior

3. POSITIONING OF THE PATIENT / USAGE OF THE SPIROMETER / GAS ANALYSER (__ Not Observed)

      1   2   3 | 4   5   6 | 7   8   9
      Unsatisfactory   Satisfactory   Superior

4. ANALYSIS OF THE PERFORMANCE / MONITORING OF GAS EXCHANGE (__ Not Observed)

      1   2   3 | 4   5   6 | 7   8   9
      Unsatisfactory   Satisfactory   Superior

5. OVERALL CLINICAL COMPETENCE

      1   2   3 | 4   5   6 | 7   8   9
      Unsatisfactory   Satisfactory   Superior

COMMENTS ON STUDENT'S PERFORMANCE:

Clinical Skills Assessment Form – HESC3541

Spirometry – Gas Analysis

Descriptors of Competencies assessed

1. **Medical Interviewing Skills:** Facilitates patient's telling of story; effectively uses questions/directions to obtain accurate, adequate information needed; responds appropriately to affect, non-verbal cues. Identifies and explores the patient's issues and concerns within the scope of respiratory disorders.

2. **Description / Explanation of the procedures to the patient:** Selectively orders/describes the different steps involved in the spirometry and gas analysis. Communicate effectively with patient.

3. **Positioning of the patient / Usage of the spirometer / gas analyser:** Provide clear and appropriate instructions on the correct positioning of the patient during the test. Adequately demonstrate the correct usage of the spirometer and the gas analyser.

4. **Analysis of the performance:** Effectively identify characteristic values for the spirometry. Appropriately analyse the shape of the spirometry flow volume loop curve. Clinically interpret the performance of the patient for the spirometry. Determine predictive maximal ventilation. Effectively identify characteristic resting values for the gas analysis.

5. **Overall Clinical Competence:** Demonstrates judgment, synthesis, caring, effectiveness and efficiency. Note that this is <u>not</u> an average of the other domains. It is a global assessment that takes into account that in different settings the competencies take on different weightings.

Clinical Skills Assessment Form – HESC3541

Blood pressure

Student's name: _____

Date: _____

Assessor: _____

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1. DESCRIPTION / EXPLANATION OF THE PROCEDURES TO THE PATIENT (__ Not Observed)

    1   2   3 | 4   5   6 | 7   8   9
   Unsatisfactory   Satisfactory   Superior

2. CORRECT POSITIONING / ORGANISATION / EFFICIENCY (__ Not Observed)

    1   2   3 | 4   5   6 | 7   8   9
   Unsatisfactory   Satisfactory   Superior

3. MONITORING OF THE HAEMODYNAMIC RESPONSE (__ Not Observed)

    1   2   3 | 4   5   6 | 7   8   9
   Unsatisfactory   Satisfactory   Superior

4. INTERPRETATION OF THE RESULTS (__ Not Observed)

    1   2   3 | 4   5   6 | 7   8   9
   Unsatisfactory   Satisfactory   Superior

5. OVERALL CLINICAL COMPETENCE

    1   2   3 | 4   5   6 | 7   8   9
   Unsatisfactory   Satisfactory   Superior

COMMENTS ON STUDENT'S PERFORMANCE:

Clinical Skills Assessment Form – HESC3541

Blood pressure

Descriptors of Competencies assessed

1. **Description / Explanation of the procedures to the patient:** Selectively orders/describes the different steps involved. Communicate effectively with patient.

2. **Correct positioning of the Cuff / Sphygmomanometer / Organisation / Efficiency:** Appropriately position the apparatus and can describe critical aspects concerning the correct positioning of the patient. Prioritises; is timely, succinct

3. **Monitoring of the haemodynamic response:** Effectively perform assessment in a timely manner during each stage. Correctly identify normal haemodynamic response to exercise. Appropriately assess safety of pursuing the test based on the values collected in real time.

4. **Interpretation of the results:** Effectively analyse the data collected during the test and can assess the normality of the response.

5. **Overall Clinical Competence:** Demonstrates judgment, synthesis, caring, effectiveness and efficiency. Note that this is <u>not</u> an average of the other domains. It is a global assessment that takes into account that in different settings the competencies take on different weightings.

Clinical Skills Assessment Form – HESC3541

Electrocardiography

Student's name: _____

Date: _____

Assessor: _____

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1. DESCRIPTION / EXPLANATION OF THE PROCEDURES TO THE PATIENT (__ Not Observed)

    1   2   3 | 4   5   6 | 7   8   9
    Unsatisfactory   Satisfactory   Superior

2. CORRECT POSITIONING OF THE ELECTRODES (__ Not Observed)

    1   2   3 | 4   5   6 | 7   8   9
    Unsatisfactory   Satisfactory   Superior

3. DETERMINATION OF THE HEART VECTOR (__ Not Observed)

    1   2   3 | 4   5   6 | 7   8   9
    Unsatisfactory   Satisfactory   Superior

4. INTERPRETATION OF THE ECG TRACE (__ Not Observed)

    1   2   3 | 4   5   6 | 7   8   9
    Unsatisfactory   Satisfactory   Superior

5. OVERALL CLINICAL COMPETENCE

    1   2   3 | 4   5   6 | 7   8   9
    Unsatisfactory   Satisfactory   Superior

COMMENTS ON STUDENT'S PERFORMANCE:

Clinical Skills Assessment Form – HESC3541

Electrocardiography

Descriptors of Competencies assessed

1. **Description / Explanation of the procedures to the patient:** Selectively orders/describes the different steps involved. Communicate effectively with patient.

2. **Correct positioning of the electrodes:** Effectively describe correct anatomical positioning of the electrodes and appropriately place them on the patient.

3. **Determination of the heart vector:** Use relevant data to effectively determine the heart vector. Clinically interpret its significance.

4. **Interpretation of the ECG trace:** Can describe strategy to systematically assess ECG trace. Can identify major cardiac abnormalities.

5. **Overall Clinical Competence:** Demonstrates judgment, synthesis, caring, effectiveness and efficiency. Note that this is <u>not</u> an average of the other domains. It is a global assessment that takes into account that in different settings the competencies take on different weightings.

Assessment Task 4 – REPORT ON EXERCISE TESTING (Week 10, Friday 23/04, 4pm)

To be able to prepare this document you will need to submit your group of two students to the course co-convenor (matthew.jones@unsw.edu.au) by Friday 4pm in Week 4 (12/03/21). Failure to provide timely information concerning your group will result in a penalty of 25% on your mark for this assignment.

The data used to complete that document will be generated during labs 3 and 4. During those labs your performance in conducting the exercise testing will be assessed against set criteria described above. You will also be given access to pre-existing data if you would like to use those instead.

Report will need to be submitted through Moodle by Friday at 4pm in Week 10.

The report should be a 3 pages A4 PDF document and should be divided into 3 sections.

Anthropometry:
- description of the pre-testing procedures: risk assessment, regular physical activity evaluation, spirometry, ECG/BP.
- presentation of the anthropometric measurements and tested resting values

Aerobic capacity:
- description of the protocol: workload increments, parameters measured (methods of determination), precautions in the population
- analysis of the results, determination of the maximality of the test, VO2max, ventilatory threshold, double product break point. One graph per variable should be presented (VO2max, VO2VT, DBBP).

Metabolic test:
- description of the protocol: workload increments, parameters measured (methods of determination), precautions in the population
- analysis of the results, determination of Cross over point and Lipoxmax (1 graph per variable) as well as total energy expenditure during the test.

Marking Criteria for the Report on Exercise Testing

Anthropometry (30 marks):
Anthropometry
Medical history / Lifestyle / Classification
Description of the pre-testing procedure and parameters measurement

Aerobic capacity (30 marks):
Description of the testing procedures
Method for determination of the different parameters
Analysis of the data collected and determination of specific parameters to determine physical capacity (VO2max, ventilatory threshold, double product break point)
Inclusion of pertinent graphs to support parameters determination

Metabolic test (30 marks):
Description of the testing procedures
Method for determination of the different parameters
Analysis of the data collected and determination of specific parameters to determine physical capacity (Cross Over Point, Lipoxmax)
Inclusion of pertinent graphs to support parameters determination

Document (10 marks):
Clear, concise and informative, creative, engaging and useful
Adapted to AEP audience, individualised testing procedure
Use of references that are fully quoted as footnotes
APA website for guidelines for referencing: http://www.apastyle.org/

Marking Criteria for the Report on Exercise Testing (continued)

	1	2	3	4
Anthropometry	Most of the relevant information including age, gender, height, weight, BMI missing. Major issues with the corresponding units	Some of the relevant information included with issues with the corresponding units	Most of the relevant information including age, gender, height, weight, BMI included. Some issues with the corresponding units	All relevant information including age, gender, height, weight, BMI and the corresponding units included
Medical history, medications, lifestyle screening	Very limited information provided and very little details	Some relevant information including medical history, family history, medications, physical activity levels, diet, sleep, smoking, drinking is provided but the level of details is insufficient	Most of the relevant information including medical history, family history, medications, physical activity levels, diet, sleep, smoking, drinking is provided but the level of details does not support the full interpretation of the data collected	All relevant information including medical history, family history, medications, physical activity levels, diet, sleep, smoking, drinking provided with adequate level of details to support full interpretation
Pretesting procedures and parameters used	Very limited pretesting procedures, including, ECG, BP, HR, SaO2 and spirometry are described and limited corresponding values are provided	Some relevant pretesting procedures, including, ECG, BP, HR, SaO2 and spirometry are described and some of the corresponding values are provided	Most relevant pretesting procedures, including, ECG, BP, HR, SaO2 and spirometry are adequately described and most of the corresponding values are provided	All relevant pretesting procedures, including, ECG, BP, HR, SaO2 and spirometry are adequately described, and the corresponding values are provided
Classification and risk assessment	No interpretation of the data recorded during the pre-screening is provided with no risk assessment or categorisation	There is a limited attempt to perform a risk assessment using the data recorded during the pre-screening with some categorisation in terms of risk level	A risk assessment is performed using the data recorded during the pre-screening with some categorisation in terms of risk level	The data recorded during the pre-screening including anthropometry, medical history, medication, lifestyle and pretesting procedures is adequately used to perform a risk assessment for the client and to categorise in terms of risk level
Description of the testing procedures for the maximal test	There is very limited description of the testing procedures for the max test making it impossible to reproduce the protocol	The testing procedures for the max test are incorrectly described with critical information missing to be able to reproduce the protocol	The testing procedures for the max test are mostly adequately described with only few details missing to be able to reproduce the protocol	The testing procedures for the max test are adequately described with sufficient details so that the protocol can be reproduced
Description of the methods for the determination of the VO2max, the ventilatory threshold and the double product breakpoint	The methods for the determination of the VO2max, the ventilatory threshold and the double product break point are not described or are mostly incorrect	The methods for the determination of the VO2max, the ventilatory threshold and the double product break point are described with several errors	The methods for the determination of the VO2max, the ventilatory threshold and the double product break point are described with minor errors but still support the determination of the three parameters	The methods for the determination of the VO2max, the ventilatory threshold and the double product break point are adequately described and support the correct determination of the three parameters
Determination of the VO2max, the ventilatory threshold and the double product breakpoint	The VO2max, the ventilatory threshold and the double product break point are incorrectly or not determined. Some graphs are included but contain major errors or are not relevant	The VO2max, the ventilatory threshold and the double product break point are determined but some incorrectly. Most of the relevant graphs are included but contain major errors	The VO2max, the ventilatory threshold and the double product break point are mostly adequately determined, and the relevant graphs are included but contain few errors	The VO2max, the ventilatory threshold and the double product break point are adequately determined, and the relevant graphs are included to support their determination
Analysis of the data and interpretation of the results for the maximal test	Most of the data is incorrectly analysed and interpreted with very limited or no conclusions drawn in relation to the maximality of the test, the correspondence of the ventilatory threshold with the double product break point, their level in	The data is only partially analysed and interpreted correctly with very limited conclusions drawn in relation to the maximality of the test, the correspondence of the ventilatory threshold with the double product break point, their level in respect to	The data is analysed and interpreted mostly correctly with some conclusions drawn in relation to the maximality of the test, the correspondence of the ventilatory threshold with the double product break point, their level in respect to	The data is analysed and interpreted correctly with the appropriate conclusions drawn in relation to the maximality of the test, the correspondence of the ventilatory threshold with the double product break point, their level in respect to

	respect to the maximal capacity and the implications for the level of fitness of the client	the maximal capacity and the implications for the level of fitness of the client	the maximal capacity and the implications for the level of fitness of the client	the maximal capacity and the implications for the level of fitness of the client
Description of the testing procedures for the metabolic test	There is very limited description of the testing procedures for the metabolic test making it impossible to reproduce the protocol	The testing procedures for the metabolic test are incorrectly described with critical information missing to be able to reproduce the protocol	The testing procedures for the metabolic test are mostly adequately described with only few details missing to be able to reproduce the protocol	The testing procedures for the metabolic test are adequately described with sufficient details so that the protocol can be reproduced
Description of the methods for the determination of the cross over point and the lipoxmax	The methods for the determination of the cross over point and the lipoxmax are not described or are mostly incorrect	The methods for the determination of the cross over point and the lipoxmax are described with several errors	The methods for the determination of the cross over point and the lipoxmax are described with minor errors but still support the determination of the two parameters	The methods for the determination of the cross over point and the lipoxmax are adequately described and support the correct determination of the three parameters
Determination of the cross over point, the lipoxmax and the total energy expenditure	The cross over point, the lipoxmax and the total energy expenditure are incorrectly or not determined. Some graphs are included but contain major errors or are not relevant	The cross over point, the lipoxmax and the total energy expenditure are determined but some incorrectly. Most of the relevant graphs are included but contain major errors	The cross over point, the lipoxmax and the total energy expenditure are mostly adequately determined, and the relevant graphs are included but contain few errors	The cross over point, the lipoxmax and the total energy expenditure are adequately determined, and the relevant graphs are included to support their determination
Analysis of the data and interpretation of the results for the metabolic test	Most of the data is incorrectly analysed and interpreted with very limited or no conclusions drawn in relation to the cross over point and the lipoxmax, their level in respect to the maximal capacity and the implications for the level of fitness of the client	The data is only partially analysed and interpreted correctly with very limited conclusions drawn in relation to the cross over point and the lipoxmax, their level in respect to the maximal capacity and the implications for the level of fitness of the client	The data is analysed and interpreted mostly correctly with some conclusions drawn in relation to the cross over point and the lipoxmax, their level in respect to the maximal capacity and the implications for the level of fitness of the client	The data is analysed and interpreted correctly with the appropriate conclusions drawn in relation to the cross over point and the lipoxmax, their level in respect to the maximal capacity and the implications for the level of fitness of the client
Quality of the document	The document is mostly unclear and not useful as it lacks a lot of the relevant information	The document is not really clear or informative making it hardly useful	The document is mostly clear, concise and informative, creative, engaging and useful but could be improved	Clear, concise and informative, creative, engaging and useful document
Suitability for the target audience	The document is not fit for AEP audience and does not use individualised testing procedures	The document is only marginally adapted to an AEP audience and mostly uses non individualised testing procedures	The document is mostly adapted to an AEP audience and uses mostly individualised testing procedures	The document is clearly adapted to an AEP audience and uses individualised testing procedures
References	No relevant references included or quoted, and the document is full of typos and grammatical errors	Only few relevant references are included and are only partially quoted. The document contains several typos and grammatical errors	Most relevant references are correctly included and quoted, and the document only contains few typos and grammatical errors	All relevant references are correctly included and quoted, and the document is free of typos and grammatical errors

Assessment Task 5 – FINAL EXAM

This exam will test your knowledge about the diseases pathophysiology, the effects of exercise of the pathologies or symptoms and the potential interactions with medications. It will also test your practical skills for testing patients, analysing the data obtained using the test, prescribing exercise using data from the tests and information from scientific literature.

NB: *Final exam period for Term 1, 2021 is Fri 30th April to Thursday 13th May. Supplementary exam period for Term 1, 2021 is Mon 24th May to Fri 28th May*.

Resources for students

See also Learning Resources on the SoMS website

Textbooks (Recommended)

Textbook 1: Brooks G.A., Fahey T.D. and Baldwin K.M. (2004). Exercise Physiology, human bioenergetics and its application. McGraw-Hill. 4th Ed.
Textbook 2: Hampton R.J. (2013). The ECG made easy. Churchill Livingstone Elsevier. 8th Ed.
Textbook 3: LeMura L.M. and von Duvillard S.P. (2004). Clinical Exercise Physiology: Application and Physiological Principles. Lippincott Williams and Wilkins. (Purchase at the bookshop, Also in special reserve)
Textbook 4: Ehrman J.K., Gordon P.M., Visich P.S. and Keteyian S.J. (2019). Clinical Exercise Physiology. Human Kinetics. 4th Ed.
Textbook 5: American College of Sports Medicine (2014). ACSM's Guidelines for Exercise Testing and Prescription. Lippincott Williams and Wilkins. 9th Ed

Course evaluation and development

Every year, feedback from students is collected through the myExperience online survey. This evaluation and feedback are used to constantly improve the course content and make it more relevant to the students. Significant changes are then communicated to the following cohort of students.
This year additional material has been developed to better guide the learning experience during the labs and allow more focus on the clinical skills that needs to be developed during these classes.

GENERAL INFORMATION

Attendance Requirements
For details on the Policy on Class Attendance and Absence see Advice for Students and the Policy on Class Attendance and Absence.

Guidelines on extra-curricular activities affecting attendance can be found on the School of Medical sciences Website. Advice for Students – Special Consideration

Attendance is expected at all lectures, practicals and tutorials for this course. Attendance at all practicals, tutorials and clinicals will be recorded. Students who do not participate in these sessions for any reason other than medical or misadventure, will be marked absent and will be awarded a grade of FAIL for the entire course. If absent for medical reasons, a medical certificate must be lodged with the lecturer within 7 days of the time period of the certificate's expiry. No consideration will be given after this time. Although lectures will be available on EchoServer, student participation is encouraged in both the lectures and the tutorials and these are important to attend

Special Consideration

Please see UNSW-Special Consideration and Student Advice-Special Consideration

If you unavoidably miss the final exam in HESC3541, you must lodge an application with UNSW Student Central for special consideration. If your request for consideration is granted an alternative assessment will be organised in the form of a supplementary exam.

See: Student-Advice-Reviews and Appeals

Student Support Services

Student Advice-Student support services.

Transitioning to Online Learning

Guide to Online Study

UNSW Student Life Hub

Equitable Learning Services

Academic Integrity and Plagiarism

The UNSW Student Code outlines the standard of conduct expected of students with respect to their academic integrity and plagiarism.

More details of what constitutes plagiarism can be found here

Course schedule

Week	Date	Lecture 1 Wednesday 2-3 pm	Lecture 2 Wednesday 4-5pm	Lecture 3 Thursday 9-10am	Tutorial (check enrolment)	Laboratory (check enrolment)
1	15/02-19/02	Introductory lecture – **DS - MJ**	Asthma - **CH**	Chronic obstructive pulmonary diseases - **DS**		Pulmonary function assessment
2	22/02-26/02	Cystic fibrosis- **SW**	Exercise testing in respiratory diseases - **DS**	Exercise programming in respiratory diseases - **DS**	Exercise testing in clinical population	Introduction to exercise testing
3	01/03-05/03	Insulin resistance and type 2 diabetes - **DS**	Exercise testing in metabolic diseases - **DS**	Exercise programming in metabolic diseases - **DS**	Maximal exercise testing	Introduction to exercise testing
4	08/03-12/03	T2D case study - **BP**	Endothelial dysfunction & atherosclerosis - **BC**	Hypertension - **DS**	Exercise testing in metabolic diseases	Testing aerobic capacity
5	15/03-19/03	Hypertension case study-**BP**	Peripheral arterial diseases – **BP**	Mid semester exam	ECG	Testing aerobic capacity
6	22/03-26/03					
7	29/03-02/04	Peripheral arterial diseases case study - **BP**	Coronary artery diseases - **DS**	Coronary artery diseases case study - **BP**		Testing metabolic adaptations
8	05/04-09/04	Chronic heart failure - **DS**	Cardiac rehabilitation - **DS**	Innate immunity - **DS**	Data analysis	Testing metabolic adaptations
9	12/04-16/04	Adaptive Immunity - **DS**	Immune system and exercise - **DS**	Cancer: pathophysiology – **DS**	Report preparation	
10	19/04-23/04	Rehabilitation in Cancer - **DS**	Rehabilitation in paediatric cancer - **CB**	HIV/AIDS - **DS**		

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