



COURSE OUTLINE

SPX301

Exercise in Cardiorespiratory and Metabolic Health

Course Coordinator: Yuri Kriel (ykriel@usc.edu.au) **School:** School of Health and Behavioural Sciences

2021 | Semester 2

USC Sunshine Coast

ON CAMPUS

Most of your course is on campus but you may be able to do some components of this course online.

Please go to the USC website for up to date information on the teaching sessions and campuses where this course is usually offered.

1. What is this course about?

1.1. Description

This course aims to provide you with understanding of the health benefits associated with regular exercise / physical activity and the functional limitations associated with certain chronic diseases. Course content aligns with some Exercise and Sport Science Australia accreditation requirements, if you pursue further studies in clinical exercise physiology. Course content includes risk screening and introduces concepts regarding modification of exercise for clients with risk factors for or cardiopulmonary and metabolic conditions. You will gain further experience in exercise testing and monitoring procedures.

1.2. How will this course be delivered?

| ACTIVITY | HOURS | BEGINNING WEEK | FREQUENCY |
|---------------------|-------|----------------|-----------|
| ON CAMPUS | | | |
| Laboratory 1 | 2hrs | Week 1 | 13 times |
| Lecture | 2hrs | Week 1 | 13 times |

1.3. Course Topics

Physical activity benefits and risks, Chronic Diseases and Aging

Risk screening and stratification

Clinical exercise testing

Cardiac pathophysiology, exercise responses and prescription guidelines

Peripheral artery disease and Hypertension

Respiratory pathophysiology, exercise responses and prescription guidelines

Obesity

Metabolic pathophysiology, exercise responses and prescription guidelines

2. What level is this course?

300 Level (Graduate)

Demonstrating coherence and breadth or depth of knowledge and skills. Independent application of knowledge and skills in unfamiliar contexts. Meeting professional requirements and AQF descriptors for the degree. May require pre-requisites where discipline specific introductory or developing knowledge or skills is necessary. Normally undertaken in the third or fourth full-time study year of an undergraduate program.

3. What is the unit value of this course?

12 units

4. How does this course contribute to my learning?

| COURSE LEARNING OUTCOMES | GRADUATE QUALITIES |
|---|--|
| On successful completion of this course, you should be able to... | Completing these tasks successfully will contribute to you becoming... |
| 1 Explain the pathophysiological mechanisms associated with cardiorespiratory and metabolic conditions, the comorbid relationship that can exist between pathologies and the influence that exercise has on these issues. | Knowledgeable Empowered |
| 2 Apply pre-exercise screening guidelines and identify if medical referral or input is required prior to exercise participation for various clinical populations | Empowered Ethical |
| 3 Select and apply procedures during submaximal and maximal exercise tests for various clinical populations. | Knowledgeable Engaged |
| 4 Apply the relative and absolute contraindications to exercise and the exercise termination criteria for various clinical populations | Empowered Engaged |
| 5 Demonstrate the ability to problem solve and formulate appropriate actions with regards to exercise prescription for various clinical populations. | Creative and critical thinker Ethical |
| 6 Critically analyse and disseminate appropriate professional resources and scientific literature through verbal and written platforms. | Creative and critical thinker |

5. Am I eligible to enrol in this course?

Refer to the [USC Glossary of terms](#) for definitions of “pre-requisites, co-requisites and anti-requisites”.

5.1. Pre-requisites

SPX331

5.2. Co-requisites

SPX300

5.3. Anti-requisites

Not applicable

5.4. Specific assumed prior knowledge and skills (where applicable)

It is assumed that you will be able to demonstrate an understanding of human physiology, exercise testing and prescription, as evidenced through the successful completion of the pre-requisite courses, programme pathway or equivalent credit courses

6. How am I going to be assessed?

6.1. Grading Scale

Standard Grading (GRD)

High Distinction (HD), Distinction (DN), Credit (CR), Pass (PS), Fail (FL).

6.2. Details of early feedback on progress

During week 4, you will undertake your first summative assessment task, a 60 minute quiz, during your laboratory class. You will receive feedback on this quiz, immediately after completion, allowing you to evaluate your comprehension of concepts and progress during the early stages of the course. This assessment task will also provide early exposure to the question format(s) used in later summative assessment tasks. Additionally, you will be given the opportunity to complete formative on-line multiple-choice quizzes (consisting of 10 questions each) during weeks 3, 7 and 12. The content of these multiple-choice quizzes will be based upon content from the proceeding 2-4 weeks. You will receive feedback on your performance in these quizzes immediately upon completion. These formative pieces of assessment, whilst not contributing to your overall course grade, allow further opportunities to gain insight into your comprehension of course topics and your progress throughout semester.

6.3. Assessment tasks

| DELIVERY MODE | TASK NO. | ASSESSMENT PRODUCT | INDIVIDUAL OR GROUP | WEIGHTING % | WHAT IS THE DURATION / LENGTH? | WHEN SHOULD I SUBMIT? | WHERE SHOULD I SUBMIT IT? |
|---------------|----------|-----------------------------------|---------------------|-------------|--------------------------------|-----------------------|---------------------------|
| All | 1 | Quizzes | Individual | 30% | Each quiz will take 1 hour. | Refer to Format | In Class |
| All | 2 | Oral and Written Piece | Group | 25% | 15 minutes | Refer to Format | In Class |
| All | 3 | Examination - Centrally Scheduled | Individual | 45% | 120 minutes | Exam Period | Exam Venue |

All - Assessment Task 1: Quizzes

| | | |
|------------------|---|--|
| GOAL: | The goals of the two quizzes are 1) to allow you to demonstrate thorough knowledge of, and the ability to explain and apply course theory and concepts and 2) to provide feedback on your engagement and progress during the course. | |
| PRODUCT: | Quizzes | |
| FORMAT: | Two individually completed 60 minute quizzes, which will consist of multiple choice and short answer questions. Multiple choice questions will be assessed for correctness and short answer questions for completeness and correctness. Multiple choice questions will be allocated one mark per question. The marks for short answer questions vary and will be noted clearly. The first quiz, conducted during your scheduled class in Week 4, will be based on learning materials, including course readings, from Week 1 up to and including Week 3. The second quiz, conducted during your scheduled class in Week 9, will be based on learning materials, including course readings, from Week 1 up to and including Week 8. You are expected to make yourself available during these assessment periods. | |
| CRITERIA: | No. | Learning Outcome assessed |
| | 1 | Your explanation of the pathophysiological mechanisms associated with the conditions and factors covered so far in the course, the comorbid relationship that can exist between pathologies and the influence that physical activity has on these issues. 1 |
| | 2 | Your application of pre-exercise screening guidelines and the contraindications to exercise relevant to the clinical populations covered so far in the course. 2 3 4 |
| | 3 | Your selection and application of appropriate and safe procedures and endpoints during exercise tests for the conditions and populations covered so far in the course. 1 3 4 5 |
| | 4 | Your ability to problem solve and formulate appropriate, safe and effective actions with regards to exercise testing and prescription for the conditions and populations covered so far in the course. 1 2 3 4 5 |

All - Assessment Task 2: Oral and Written Piece

| GOAL: | The goal of the oral presentation is for you to work collaboratively within a group to consolidate, critically analyse and convey (via written, verbal and visual delivery) relevant, current information regarding pathophysiological processes and the role of exercise in the context of your topic via presentation software. | | | | | | | | | | | | | |
|------------------|--|---------------------------|--|---------------------------|---|--|----------------|---|--|----------------|---|---|---|--|
| PRODUCT: | Oral and Written Piece | | | | | | | | | | | | | |
| FORMAT: | <p>You will work in groups and deliver a video recorded oral PowerPoint presentation on a specific condition that is relevant to cardiorespiratory and metabolic health. You will be required to nominate your topic in Week 2 by selecting from a list of topics on Blackboard. You may also nominate your own topic, but this must be approved by the course coordinator during Week 2. PowerPoint presentations will be 15 minutes in duration. During Week 7 you will be allocated some time to work on your presentations as a group, using collaborative platforms. The group's final presentation slides are due to be handed in during your scheduled class of Week 11 and the complete video recording of the presentation is to be finalised and submitted during your scheduled class time of Week 12.</p> <p>Explicit, detailed assessment criteria and the associated grading rubric relating to the presentation are available on the course Blackboard site, and you should refer to these when preparing your presentations for submission and grading.</p> <p>At the time of submission during Week 12, you and your group members will be asked to supply a grade reflecting members contributions to the group. This grade will represent 0 - 10% of your final Task 2 grade.</p> <p>You will receive a numerical result against a grading rubric and feedback on presentations will be provided.</p> | | | | | | | | | | | | | |
| CRITERIA: | <table border="1"> <thead> <tr> <th>No.</th> <th></th> <th>Learning Outcome assessed</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>your ability to provide relevant background information about the condition, describe the recommended exercise testing and prescription guidelines and the effects of common treatments on the expected exercise responses and clinical status of individual</td> <td>1 2 3 4 5 6</td> </tr> <tr> <td>2</td> <td>the accuracy of your presentation content and the ability to disseminate the content through verbal and written platforms.</td> <td>1 2 3 4 5 6</td> </tr> <tr> <td>3</td> <td>your critical analysis of the relevant research supporting the roles for exercise and physical activity participation in the prevention and treatment of the condition.</td> <td>6</td> </tr> </tbody> </table> | No. | | Learning Outcome assessed | 1 | your ability to provide relevant background information about the condition, describe the recommended exercise testing and prescription guidelines and the effects of common treatments on the expected exercise responses and clinical status of individual | 1 2 3 4 5 6 | 2 | the accuracy of your presentation content and the ability to disseminate the content through verbal and written platforms. | 1 2 3 4 5 6 | 3 | your critical analysis of the relevant research supporting the roles for exercise and physical activity participation in the prevention and treatment of the condition. | 6 | |
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| 3 | your critical analysis of the relevant research supporting the roles for exercise and physical activity participation in the prevention and treatment of the condition. | 6 | | | | | | | | | | | | |

All - Assessment Task 3: Examination

| | |
|-----------------|---|
| GOAL: | The goal of the final examination is for you to demonstrate thorough knowledge of, and the ability to apply, the course theory and concepts. |
| PRODUCT: | Examination - Centrally Scheduled |
| FORMAT: | You will complete an individual two hour final examination during the centrally-scheduled examination period. The exam content will consist of multiple choice and short answer questions based on the learning outcomes, materials and activities, including course readings, covered throughout the entire semester. Multiple choice questions will be allocated one mark per question. The marks for short answer questions vary and will be noted clearly on the exam paper. You are expected to make yourself available during the examination period. |

CRITERIA:

| No. | | Learning Outcome assessed |
|-----|--|---------------------------|
| 1 | Your thorough and accurate explanation of the pathophysiological mechanisms associated with conditions covered in this course, the comorbid relationship that can exist between conditions and the influence that physical activity has on these issues. | 1 |
| 2 | Your ability to apply relevant screening guidelines and identify if medical referral or appropriate input from other health professionals is required for the conditions covered in this course. | 2 |
| 3 | Your ability to select appropriate and safe procedures and end points during exercise tests for the clinical populations covered during this course. | 3 4 |
| 4 | Your ability to demonstrate and formulate appropriate, safe and effective actions and decisions with regards to exercise prescription for the clinical populations covered in this course. | 5 |

7. Directed study hours

A 12-unit course will have total of 150 learning hours which will include directed study hours (including online if required), self-directed learning and completion of assessable tasks. Directed study hours may vary by location. Student workload is calculated at 12.5 learning hours per one unit.

7.1. Schedule

| PERIOD AND TOPIC | ACTIVITIES |
|------------------|---|
| 1 | Lecture: Physical Activity, Chronic Disease and Aging Laboratory: Risk screening, stratification, exercise guidelines and referral |
| 2 | Lecture: Cardiorespiratory Fitness and Clinical Exercise Testing Laboratory: Exercise program design for older individuals |
| 3 | Lecture: Exercise testing: Signs and Symptoms, expected responses Laboratory: Exercise Testing choices |
| 4 | Lecture: Cardiac pathophysiology and exercise responses Laboratory: In-Class Quiz 1 (Summative Assessment Task) |
| 5 | Lecture: Exercise prescription in a cardiac context. Laboratory: Exercise prescription for cardiac populations |
| 6 | Lecture: Peripheral Artery Disease and Hypertension Laboratory: Exercise prescription for a hypertensive client |
| 7 | Lecture: Respiratory pathophysiology and exercise responses Laboratory: Preparing your cardiorespiratory and metabolic presentations |
| 8 | Lecture: Exercise prescription in a respiratory context Laboratory: Exercise prescription for respiratory populations |
| 9 | Lecture: Obesity Laboratory: In-Class Quiz 2 (Summative Assessment Task) |
| 10 | Lecture: Metabolic pathophysiology and exercise responses. Laboratory: The 6 minute walk test protocol |
| 11 | Lecture: Exercise prescription in a metabolic context. Laboratory: Exercise prescription for metabolic populations including co-morbidities - complex case study. Summative Assessment Task 2 Hand-in of slides. |
| 12 | Lecture: Presentations Laboratory: Presentations |
| 13 | Lecture: Discursive, collaborative session covering lecture material and associated queries. Laboratory: Discursive, collaborative session regarding course material, tasks and application in future courses / professions. |

8. What resources do I need to undertake this course?

Please note: Course information, including specific information of recommended readings, learning activities, resources, weekly readings, etc. are available on the course Blackboard site– Please log in as soon as possible.

8.1. Prescribed text(s) or course reader

Please note that you need to have regular access to the resource(s) listed below. Resources may be required or recommended.

| REQUIRED? | AUTHOR | YEAR | TITLE | PUBLISHER |
|-----------|--------|------|---|---------------------------------|
| Required | ACSM | 2017 | ACSM's Guidelines for Exercise Testing and Prescription | Lippincott Williams and Wilkins |

8.2. Specific requirements

This course has a substantial interactive case study component intended to build your knowledge, skills, professional practice and assist in ensuring your competency and safety as an exercise physiologist, in line with external Exercise and Sports Science Australia (ESSA) accreditation requirements. Therefore, preparation for, attendance of, and active participation in the sessions is expected and an attendance roll will be taken. Furthermore, in keeping with the U.S.C. Student Charter, professional practice expectations, and the ESSA Code of Conduct, this course has a particular focus on treating all individuals with respect. Specifically, due to the nature of some discussion topics and tasks in this course and to ensure a safe and respectful environment for all, students may be asked to leave the class and/or course if they demonstrate disrespectful or inappropriate behaviour.

It is your responsibility to familiarise yourself with the Health and Safety policies and procedures applicable within the University campus areas, associated technology enabled environments and to understand the risks of specific courses. In this course you may voluntarily take part in exercise physiology activities, which may include: completion of risk assessment / screening tools including divulging personal information, undertaking submaximal to maximal exercise, appropriate degrees of physical contact with others, be required to wear specialist clothing, use sports or diagnostic equipment, partial disrobing, and possibly undertake scientific, exercise or clinical measurements. It is imperative that, if you do not wish to (or cannot) take part in any activity or task, that you make this known to your course co-ordinator, lecturer or supervisor / demonstrator / session host before opting out of the activity.

9. How are risks managed in this course?

Risk assessments have been performed for all laboratory classes and a low level of health and safety risk exists. Some risk concerns may include equipment, instruments, and tools; as well as manual handling items within the laboratory. It is your responsibility to review course material, search online, discuss with lecturers and peers and understand the risks associated with your specific course of study and to familiarise yourself with the University's general health and safety principles by reviewing the [online induction training for students](#), and following the instructions of the University staff.

10. What administrative information is relevant to this course?

10.1. Assessment: Academic Integrity

Academic integrity is the ethical standard of university participation. It ensures that students graduate as a result of proving they are competent in their discipline. This is integral in maintaining the value of academic qualifications. Each industry has expectations and standards of the skills and knowledge within that discipline and these are reflected in assessment.

Academic integrity means that you do not engage in any activity that is considered to be academic fraud; including plagiarism, collusion or outsourcing any part of any assessment item to any other person. You are expected to be honest and ethical by completing all work yourself and indicating in your work which ideas and information were developed by you and which were taken from others. You cannot provide your assessment work to others. You are also expected to provide evidence of wide and critical reading, usually by using appropriate academic references.

In order to minimise incidents of academic fraud, this course may require that some of its assessment tasks, when submitted to Blackboard, are electronically checked through SafeAssign. This software allows for text comparisons to be made between your submitted assessment item and all other work that SafeAssign has access to.

10.2. Assessment: Additional Requirements

Eligibility for Supplementary Assessment

Your eligibility for supplementary assessment in a course is dependent of the following conditions applying:

The final mark is in the percentage range 47% to 49.4%

The course is graded using the Standard Grading scale

You have not failed an assessment task in the course due to academic misconduct

10.3. Assessment: Submission penalties

Late submission of assessment tasks may be penalised at the following maximum rate:

- 5% (of the assessment task's identified value) per day for the first two days from the date identified as the due date for the assessment task.

- 10% (of the assessment task's identified value) for the third day - 20% (of the assessment task's identified value) for the fourth day and subsequent days up to and including seven days from the date identified as the due date for the assessment task.

- A result of zero is awarded for an assessment task submitted after seven days from the date identified as the due date for the assessment task. Weekdays and weekends are included in the calculation of days late. To request an extension you must contact your course coordinator to negotiate an outcome.

10.4. Study help

For help with course-specific advice, for example what information to include in your assessment, you should first contact your tutor, then your course coordinator, if needed.

If you require additional assistance, the Learning Advisers are trained professionals who are ready to help you develop a wide range of academic skills. Visit the [Learning Advisers](#) web page for more information, or contact Student Central for further assistance: +61 7 5430 2890 or studentcentral@usc.edu.au.

10.5. Wellbeing Services

Student Wellbeing provide free and confidential counselling on a wide range of personal, academic, social and psychological matters, to foster positive mental health and wellbeing for your academic success.

To book a confidential appointment go to [Student Hub](#), email studentwellbeing@usc.edu.au or call 07 5430 1226.

10.6. AccessAbility Services

Ability Advisers ensure equal access to all aspects of university life. If your studies are affected by a disability, learning disorder mental health issue, , injury or illness, or you are a primary carer for someone with a disability or who is considered frail and aged, [AccessAbility Services](#) can provide access to appropriate reasonable adjustments and practical advice about the support and facilities available to you throughout the University.

To book a confidential appointment go to [Student Hub](#), email AccessAbility@usc.edu.au or call 07 5430 2890.

10.7. Links to relevant University policy and procedures

For more information on Academic Learning & Teaching categories including:

- Assessment: Courses and Coursework Programs
- Review of Assessment and Final Grades
- Supplementary Assessment
- Administration of Central Examinations
- Deferred Examinations
- Student Academic Misconduct
- Students with a Disability

Visit the USC website: <http://www.usc.edu.au/explore/policies-and-procedures#academic-learning-and-teaching>

10.8. General Enquiries

In person:

- **USC Sunshine Coast** - Student Central, Ground Floor, Building C, 90 Sippy Downs Drive, Sippy Downs
- **USC Moreton Bay** - Service Centre, Ground Floor, Foundation Building, Gympie Road, Petrie
- **USC SouthBank** - Student Central, Building A4 (SW1), 52 Merivale Street, South Brisbane
- **USC Gympie** - Student Central, 71 Cartwright Road, Gympie
- **USC Fraser Coast** - Student Central, Student Central, Building A, 161 Old Maryborough Rd, Hervey Bay
- **USC Caboolture** - Student Central, Level 1 Building J, Cnr Manley and Tallon Street, Caboolture

Tel: +61 7 5430 2890

Email: studentcentral@usc.edu.au