Swansea University
Prifysgol Abertawe

FACULTY OF SCIENCE AND ENGINEERING

UNDERGRADUATE STUDENT HANDBOOK

YEAR 1 (FHEQ LEVEL 4)

MATHEMATICS AND SPORTS SCIENCE

DEGREE PROGRAMMES

SUBJECT SPECIFIC
PART TWO OF TWO
MODULE AND COURSE STRUCTURE
2022-23

DISCLAIMER

The Faculty of Science and Engineering has made all reasonable efforts to ensure that the information contained within this publication is accurate and up-to-date when published but can accept no responsibility for any errors or omissions.

The Faculty of Science and Engineering reserves the right to revise, alter or discontinue degree programmes or modules and to amend regulations and procedures at any time, but every effort will be made to notify interested parties.

It should be noted that not every module listed in this handbook may be available every year, and changes may be made to the details of the modules. You are advised to contact the Faculty of Science and Engineering directly if you require further information.

The 22-23 academic year begins on 26 September 2022

Full term dates can be found here

DATES OF 22-23 TERMS

26 September 2022 – 16 December 2022

9 January 2023 – 31 March 2023

24 April 2023 – 09 June 2023

SEMESTER 1

26 September 2022 – 27 January 2023

SEMESTER 2

30 January 2023 – 09 June 2023

SUMMER

12 June 2023 – 22 September 2023

IMPORTANT

Swansea University and the Faculty of Science of Engineering takes any form of **academic misconduct** very seriously. In order to maintain academic integrity and ensure that the quality of an Award from Swansea University is not diminished, it is important to ensure that all students are judged on their ability. No student should have an unfair advantage over another as a result of academic misconduct - whether this is in the form of **Plagiarism**, **Collusion** or **Commissioning**.

It is important that you are aware of the **guidelines** governing Academic Misconduct within the University/Faculty of Science and Engineering and the possible implications. The Faculty of Science and Engineering will not take intent into consideration and in relation to an allegation of academic misconduct - there can be no defence that the offence was committed unintentionally or accidentally.

Please ensure that you read the University webpages covering the topic – procedural guidance here and further information here. You should also read the Faculty Part One handbook fully, in particular the pages that concern Academic Misconduct/Academic Integrity. You should also refer to the Faculty of Science and Engineering proof-reading policy and this can be found on the Community HUB on Canvas, under Course Documents.

Welcome to the Faculty of Science and Engineering!

Whether you are a new or a returning student, we could not be happier to be on this journey with you.

This has been a challenging period for everyone. The COVID-19 pandemic has prompted a huge change in society as well as how we deliver our programmes at Swansea University and the way in which you study, research, learn and collaborate. We have been working hard to make sure you will have or continue to having an excellent experience with us.

We have further developed some exciting new approaches that I know you will enjoy, both on campus and online, and we cannot wait to share these with you.

At Swansea University and in the Faculty of Science & Engineering, we believe in working in partnership with students. We work hard to break down barriers and value the contribution of everyone. Our goal is an inclusive community where everyone is respected, and everyone's contributions are valued. Always feel free to talk to academic staff, administrators, and your fellow students - I'm sure you will find many friendly helping hands ready to assist you.

We all know this period of change will continue and we will need to adapt and innovate to continue to be supportive and successful. At Swansea we are committed to making sure our students are fully involved in and informed about our response to challenges.

In the meantime, learn, create, collaborate, and most of all – enjoy yourself!

Professor Johann (Hans) Sienz
Interim Pro-Vice Chancellor/Interim Executive Dean
Faculty of Science and Engineering

Faculty of Science and Engineering	
Interim Pro-Vice Chancellor/Interim Executive Dean	Professor Johann Sienz
Head of Operations	Mrs Ruth Bunting
Associate Dean – Student Learning and Experience (SLE)	Professor Paul Holland
School of Mathematics and Computer Science **Head of School: Professor Elaine Crooks**	
School Education Lead	Dr Neal Harman
Head of Mathematics	Professor Vitaly Moroz
Mathematics Programme Director	Dr Kristian Evans
Year Coordinators	Year 0 – Dr Zeev Sobol Year 1 – Dr Noemi Picco Year 2 – Professor Jiang-Lun Wu Year 3 – Dr Grigory Garkusha Year 4/MSc – Professor Chenggui Yuan

STUDENT SUPPORT

The Faculty of Science and Engineering has two **Reception** areas - Engineering Central (Bay Campus) and Wallace 223c (Singleton Park Campus).

Standard Reception opening hours are Monday-Friday 9am-5pm.

The **Student Support Team** provides dedicated and professional support to all studentsin the Faculty of Science and Engineering. Should you require assistance, have any questions, be unsure what to do or are experiencing difficulties with your studies or in your personal life, our team can offer direct help and advice, plus signpost you to further sources of support within the University. There are lots of ways to get information and contact the team:

Email: studentsupport-scienceengineering@swansea.ac.uk (Monday–Friday, 9am–5pm)

Call: +44 (0) 1792 295514 and 01792 6062522 (Monday-Friday, 10am–12pm, 2–4pm).

Zoom: By appointment. Students can email, and if appropriate we will share a link to our Zoom calendar for students to select a date/time to meet.

The current student **webpages** also contain useful information and links to otherresources:

https://myuni.swansea.ac.uk/fse/coe-student-info/

READING LISTS

Reading lists for each module are available on the course Canvas page and are also accessible via http://ifindreading.swan.ac.uk/. We've removed reading lists from the 22-23 handbooks to ensure that you have access to the most up-to-date versions. Access to print material in the library may be limited due to CV-19; your reading lists will link to on-line material whenever possible. We do not expect you to purchase textbooks, unless it is a specified key text for the course.

THE DIFFERENCE BETWEEN COMPULSORY AND CORE MODULES

Compulsory modules must be **pursued** by a student.

Core modules must not only be **pursued**, but also **passed** before a student can proceed to the next level of study or qualify for an award. Failures in core modules must be redeemed.

Further information can be found under "Modular Terminology" on the following link - https://myuni.swansea.ac.uk/academic-life/academic-regulations/taught-guidance/essential-info-taught-students/your-programme-explained/

Year 1 (FHEQ Level 4) 2022/23
Mathematics and Sports Science

BSc Mathematics and Sports Science[GC16]
BSc Mathematics and Sports Science with a Year Abroad[GC17]
BSc Mathematics and Sports Science with a year in industry[GC18]

Coordinator: Dr N Picco

Semester 1 Modules	Semester 2 Modules
MA-101 **Introduction to Analysis 1** **15 Credits** **Prof ECM Crooks** **CORE**	**MA-102** **Introduction to Analysis 2** **15 Credits** **Prof ECM Crooks** **CORE**
MA-111 **Foundations of Algebra** **15 Credits** **Dr EJ Beggs** **CORE**	**MA-112** **Introductory Linear Algebra** **15 Credits** **Dr G Garkusha** **CORE**
SR-141 **Human Anatomy** **15 Credits** **Dr L Mason**	**MA-192** **Probability and Statistics** **15 Credits** **Prof C Yuan**
	SR-145 **Human Physiology** **15 Credits** **Dr RS Metcalfe**
	SR-146 **Introduction to Biomechanics 2** **15 Credits** **Prof NE Bezodis/Dr C Starbuck**
Total 120 Credits	

MA-101 Introduction to Analysis 1

Credits: 15 Session: 2022/23 September-January

Pre-requisite Modules:

Co-requisite Modules: MA-111

Lecturer(s): Prof ECM Crooks

Format: 33 hours: This will be a mixture of sessions which may include for example lectures, quizzes, exercises.

11 hours: In Person Interactive Small Group Sessions. This will be an examples class. If it is not possible to deliver these sessions in person then they will take place as Live Online Teaching.

Delivery Method: All programmes will employ a blended approach to delivery using the Canvas digital learning platform.

Module Aims: The module introduces basic concepts such as sets, functions, completeness, sequences and series.

Module Content: • sets, basic properties and set operations
• examples of sets of numbers: natural numbers, integers, rational numbers, real numbers
• arithmetic and ordering properties of real numbers
• the absolute value, inequalities, intervals
• mathematical induction
• functions (domain, co-domain, range), examples including polynomials, rational functions
• injective, surjective, bijective functions, composition of functions, inverse functions
• upper and lower bounds of subsets of real numbers, infimum and supremum
• completeness of the real numbers, Archimedean property
• sequences of real numbers, limits of sequences
• algebra and ordering of limits of sequences
• monotone sequences, recursively-defined sequences
• Cauchy sequences, subsequences, Bolzano-Weierstrass
• series, convergence of series, examples of convergent and divergent series
• absolute convergence of series
• comparison, ratio, root, alternating and integral tests for series convergence

Intended Learning Outcomes: At the end of this module students should be able to:

1) explain basic set theory
2) give a formally correct proof
3) use the concept of mathematical induction
4) determine properties of functions such as injectivity, surjectivity, bijectivity
5) discuss the completeness of the real numbers
6) identify well-known sequences and series
7) apply various techniques to determine whether or not sequences and series converge

Assessment: Examination (80%)
Assignment 1 (20%)

Resit Assessment: Examination (Resit instrument) (100%)

Assessment Description: Examination: A closed book examination to take place at the end of the module.
Assignment 1: formed of a number of coursework assignments along with participation in the module during the semester. The assignments will develop student's skills in problem solving, and developing and writing logical arguments.

Moderation approach to main assessment: Universal second marking as check or audit

Assessment Feedback: For the homework assignments, students will receive feedback in the form of marks, model solutions, overall feedback on the cohort performance, and some individual comments on their work.
For the exam, students will receive feedback in the form of marks and overall feedback on the cohort performance. Further, individualised feedback, can be provided upon request.

Failure Redemption: Supplementary examination.

Additional Notes: Delivery of teaching will be on-campus. Continuous assessment will be submitted online.

Available to visiting and exchange students

MA-102 Introduction to Analysis 2

Credits: 15 Session: 2022/23 January-June

Pre-requisite Modules:

Co-requisite Modules: MA-101; MA-111

Lecturer(s): Prof ECM Crooks

Format: 33 hours: This will be a mixture of sessions which may include for example lectures, quizzes, exercises.

11 hours: In Person Interactive Small Group Sessions. This will be an examples class. If it is not possible to deliver these sessions in person then they will take place as Live Online Teaching.

Delivery Method: All programmes will employ a blended approach to delivery using the Canvas digital learning platform.

Module Aims: The module introduces fundamental concepts such as limits, continuity, differentiability and integrability.

Module Content: • open and closed subsets of real numbers
• limits for real-valued functions, properties of limits
• continuous functions, examples and properties of continuous functions
• Intermediate Value Theorem
• continuous functions on closed bounded intervals
• uniform continuity
• derivatives, basic properties of derivatives
• Rolle's Theorem, Mean Value Theorem
• local extreme values of functions
• L'Hopital's rules
• exponential, trigonometric and hyperbolic functions
• partition of an interval, lower and upper Riemann sums
• Riemann integral
• inequalities and Mean Value Theorem for integrals
• fundamental theorem of calculus
• improper integrals

Intended Learning Outcomes: At the end of this module students should be able to:

1) use the definition of limit to prove results about the limits of real-valued functions
2) outline properties of continuous and differentiable functions
3) use properties of the derivative to investigate the behaviour of functions
4) sketch the graphs of the exponential, trigonometric and hyperbolic functions
5) determine whether or not functions are Riemann integrable

Assessment: Examination (80%)
Assignment 1 (20%)
Resit Assessment: Examination (Resit instrument) (100%)

Assessment Description: Examination: A closed book examination to take place at the end of the module.
Assignment 1: formed of a number of coursework assignments along with participation in the module during the semester. The assignments will develop student's skills in problem solving, and developing and writing logical arguments.

Moderation approach to main assessment: Universal second marking as check or audit

Assessment Feedback: For the homework assignments, students will receive feedback in the form of marks, model solutions, overall feedback on the cohort performance, and some individual comments on their work.
For the exam, students will receive feedback in the form of marks and overall feedback on the cohort performance. Further, individualised feedback, can be provided upon request.

Failure Redemption: Supplementary examination.

Additional Notes: Delivery of teaching will be on-campus. Continuous assessment will be submitted online.

Available to visiting and exchange students

MA-111 Foundations of Algebra

Credits: 15 Session: 2022/23 September-January

Pre-requisite Modules:

Co-requisite Modules: MA-101

Lecturer(s): Dr EJ Beggs

Format: 44

Delivery Method: All programmes will employ a blended approach to delivery using the Canvas digital learning platform.

Module Aims: An introduction to logic and algebraic structures. The course covers the basics of logic, proof and algebraic manipulation before introducing the abstract algebra of groups, rings and fields.

Module Content: Logic: statements, connectives, truth tables, quantifiers, what does it mean 'to prove'.
Binary operations on sets: commutative, associative operations, manipulations with brackets.
Introduction to groups and group homomorphisms, symmetric group, integers modulo n
Introduction to rings and ring homomorphisms, integers, rationals.
Introduction to fields, rationals and reals.
Polynomials, polynomial division, roots, irreducibility.
Complex numbers, roots, algebraically closed fields.
Matrices, 2 by 2 determinants.

Intended Learning Outcomes: At the end of this module, the student should be able to:

1) explain and apply the basic principles of logic, proof and algebraic manipulation,
2) define groups, rings and fields and describe their basic properties,
3) solve basic algebraic problems in concrete and abstract situations,
4) apply appropriate techniques of algebraic manipulation to a given situation,
5) recognise patterns underlying a variety of algebraic situations,
6) work with and explain the need for complex numbers,
7) state the fundamental theorem of algebra.

Assessment: Examination (80%)
Assignment 1 (20%)
Resit Assessment: Examination (Resit instrument) (100%)

Assessment Description: Examination: A closed book examination to take place at the end of the module.
Assignment 1: formed of a number of coursework assignments along with participation in the module during the semester. The assignments will develop student's skills in problem solving, and developing and writing logical arguments.

Moderation approach to main assessment: Universal second marking as check or audit

Assessment Feedback: For the homework assignments, students will receive feedback in the form of marks, model solutions, overall feedback on the cohort performance, and some individual comments on their work.
For the exam, students will receive feedback in the form of marks and overall feedback on the cohort performance. Further, individualised feedback, can be provided upon request.

Failure Redemption: Supplementary examination.

Additional Notes: Delivery of teaching will be on-campus. Continuous assessment will be submitted online.

Available to visiting and exchange students

MA-112 Introductory Linear Algebra

Credits: 15 Session: 2022/23 January-June

Pre-requisite Modules:

Co-requisite Modules: MA-101; MA-111

Lecturer(s): Dr G Garkusha

Format: 44

Delivery Method: All programmes will employ a blended approach to delivery using the Canvas digital learning platform.

Module Aims: An introduction to combinatorics, vectors, matrices and abstract vector spaces.

Module Content: Divisibility, Euclid algorithm for numbers and polynomials.
Relations and orders.
Combinatorics and the binomial theorem.
Countability, Russell's paradox.
Matrices and linear equations, Gauss elimination.
Determinants, PLU decomposition.
Introduction to vector spaces and linear transformations, subspaces, bases, matrix representation of linear transformations.

Intended Learning Outcomes: At the end of this module, the student should be able to:

1) explain set orderings and the concept of countability,
2) apply basic combinatorial techniques,
3) calculate the greatest common divisor and otherwise manipulate the Euclidean algorithm,
4) define the concept of a vector space and subspace and give standard examples of vector spaces,
5) explain the relationships between vectors, matrices, vector spaces and linear transformations,
6) solve systems of linear equations using Gaussian elimination,
7) define the concepts of bases and coordinates in vector spaces and subspaces,

Assessment: Examination (80%)
Assignment 1 (20%)
Resit Assessment: Examination (Resit instrument) (100%)

Assessment Description: Examination: A closed book examination to take place at the end of the module.
Assignment 1: formed of a number of coursework assignments along with participation in the module during the semester. The assignments will develop student's skills in problem solving, and developing and writing logical arguments.

Moderation approach to main assessment: Universal second marking as check or audit

Assessment Feedback: For the homework assignments, students will receive feedback in the form of marks, model solutions, overall feedback on the cohort performance, and some individual comments on their work.
For the exam, students will receive feedback in the form of marks and overall feedback on the cohort performance. Further, individualised feedback, can be provided upon request.

Failure Redemption: Supplementary examination.

Additional Notes: Delivery of teaching will be on-campus. Continuous assessment will be submitted online.

Available to visiting and exchange students

MA-192 Probability and Statistics

Credits: 15 Session: 2022/23 January-June

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Prof C Yuan

Format: 44 hours: Primarily lectures, additional support classes and lab classes

Delivery Method: All programmes will employ a blended approach to delivery using the Canvas digital learning platform.

Lectures on campus

Module Aims: The module is an introductory course on applied statistics. It will cover a variety of statistical tests, criteria for choosing appropriate tests, and the use of statistical software in dealing with large data sets.

Module Content: This module will treat the following topics:

Basic probability;
Confidence intervals;
Hypothesis testing;
Regression;
Parametric techniques;
Statistical computing.

Intended Learning Outcomes: At the end of the module the student should be able to:

1) Use basic results in probability;
2) Construct confidence intervals;
3) Test hypotheses including the use of t-tests and ANOVA;
4) Choose correct statistical tests;
5) Use parametric techniques to treat data sets;
6) Use regression techniques;
6) Use statistical software to deal with large data sets.

Assessment: Examination (70%)
Assignment 1 (20%)
Assignment 2 (10%)

Resit Assessment: Examination (Resit instrument) (100%)

Assessment Description: Component 1 is a written closed book examination to take place at the end of the module. Component 2 is formed of a number of coursework assignments along with participation in classes during the semester. The assignments will develop skills in problem solving and applying techniques to real world problems. Component 3 is formed of a computing based controlled test to assess skills in the use of computers to investigate and analyse real world problems."

Moderation approach to main assessment: Universal second marking as check or audit

Assessment Feedback: For the coursework assignments, students will receive feedback in the form of marks, model solutions, overall feedback on the cohort performance, and some individual comments on their work.
For the exam, students will receive feedback in the form of marks and overall feedback on the cohort performance. Further, individualised feedback, can be provided upon request.

Failure Redemption: Supplementary exam

Additional Notes: Delivery of teaching will be on-campus. Continuous assessment will be submitted online.

Available to visiting and exchange students

SR-141 Human Anatomy

Credits: 15 Session: 2022/23 September-January

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Dr L Mason

Format: Lectures 17 hours
e content 11 hours
Labs/Workshops 2 hours

Contact Hours will be delivered through a blend of live activities online and on-campus, and may include, for example, lectures, seminars, practical sessions and Academic Mentoring sessions.

Delivery Method: All Programmes will employ a blended approach to delivery using the Canvas Digital Learning Platform for live and self-directed online activity, with live and self-directed on-campus activities each week. Students may also have the opportunity to engage with online versions of sessions delivered on-campus

17 x 1 hour lectures
11 x 1 hour e content
2 x 1 hour lab/workshops

Module Aims: The purpose of the module is to develop knowledge and understanding of the structure and function of the following systems of the human body: skeletal system, muscular system, articular system, nervous system, endocrine system, digestive system and urinary system.

Module Content: 1. Tissues and cellular organisation in multicellular organisms
Tissues: epithelia, muscle, nerve, connective
Cellular organisation: tissues, organs, systems

2. The musculoskeletal system
Skeletal system : skeleton and joint support structures, functions of the skeleton, axial skeleton and appendicular skeleton
Muscular system : structure of muscle, pennate and non-pennate fibre arrangements.
Muscle function : muscle contraction, anatagonistic pairs of muscles, force transmission, control of joint movements.
Categories of movement : upright posture, transport, manipulation of objects
Loading on the musculoskeletal system: effects of open chain arrangement of the bones.

3. Connective tissues
Ordinary connective tissues: areolar tissue, regular collagenous connective tissue
Special connective tissues: cartilage, bone.

4. The articular system
Structural classification of joints.
Fibrous joints : syndesmoses
Cartilaginous joints : synchondroses, symphyses
Synovial joints

5. The nervous system
Structural division of the nervous system.
Neurones : structure, types.
Spinal cord: gray matter, white matter, dorsal root, ventral root
Spinal nerves: epineurium, perineurium, endoneurium

6. The neuromuscular system
Muscle fibre structure and function: sliding filament theory; motor units.
Kinaesthetic sense and proprioception: types of proprioceptors
Mechanical characteristics of musculotendinous units: length-tension relationship; force-velocity relationship.
Muscle architecture and function: roles of muscles; muscle fibre arrangement and force and excursion; biarticular muscles.
Stretch-shorten cycle; storage and use of elastic strain energy.

7. The endocrine system
Hormonal and neural control of body functions
Endocrine glands, neuroendocrine glands, autocrines and paracrines.
Hormones: amino acid-based and steroids; effects of hormones; regulation of hormones.

8. The digestive system
The alimentary canal and accessory digestive organs
Digestive processes: ingestion, swallowing, peristalsis, digestion, absorption, defecation.

9. The urinary system
Components of the urinary system: kidneys, ureter, bladder.
Kidneys: cortex, medulla, pelvis, blood supply, nephrons.
Urine: formation, regulation of concentration and volume

Intended Learning Outcomes: By the end of this module the student will be expected to be able to:

1. Identify and distinguish between the four basic types of tissues and cellular organisation in multicellular organisms
2. Identify and label the composition of the musculoskeletal system
3. Classify and explain the structure of ordinary connective tissues, cartilage, and bone
4. Recognise and describe the structure of the following organ/tissue systems:
articular, nervous, neuromuscular, endocrine, digestive, urinary.

Assessment:	Class Test 1 - Coursework (10%) Examination (50%) Class Test 1 - Practical Assessment Not Exam Cond (10%) Class Test 2 - Coursework (10%) Class Test 3 - Coursework (10%) Class Test 4 - Coursework (10%)
Resit Assessment:	Examination (Resit instrument) (100%)

Assessment Description: A written examination in January will make up 50% of the mark for the module

Students will also be assessed using small weighted continuous assessments during the semester. Four of these will be online tests and one will be practical lab assessment using virtual reality. Each is worth 10% of the mark for the module.

Moderation approach to main assessment: Universal second marking as check or audit

Assessment Feedback: Written feedback based on cohort performance will be made available for exam questions.

Online feedback will be provided following the online tests.

Immediate feedback will be given during the virtual reality based assessment.

There will be numerous possibilities for students to gain informal feedback across the module as a whole these include, but are not limited to:
Formative e-content assessments which provide regular weekly feedback.
Office drop in sessions
Asking questions during lectures and practical sessions
Informal discussion and seeking advice during lectures or using Canvas discussion groups

Failure Redemption: A supplementary examination will form 100% of the module mark.

Additional Notes: Delivery of both teaching and assessment will be blended including live and self-directed activities online and on-campus.

The Faculty of Science and Engineering has a ZERO TOLERANCE policy for late submission of coursework, meaning that a mark of zero will be recorded in such cases.

SR-145 Human Physiology

Credits: 15 Session: 2022/23 January-June

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Dr RS Metcalfe

Format: Lectures (22-h) and Seminars (11-h).
Contact Hours will be delivered through a blend of live online lectures and seminars.

Delivery Method: All Programmes will employ a blended approach to delivery using the Canvas Digital Learning Platform for live and self-directed online activity, with live and self-directed on-campus activities each week. Students may also have the opportunity to engage with online versions of sessions delivered on-campus

The module consists of lectures and seminars. All lecturers will be recorded and made available via Canvas. Live delivery will be supplemented with online (blended) learning materials and activities to be completed at home.

Module Aims: The purpose of the module is to provide a basic introduction to the physiological systems and metabolic processes responsible for the production and utilisation of energy both at rest and during physical activity. This module is lecture and seminar based and is intended to develop introductory knowledge and understanding on the structure and function of the human body from cellular to gross body systems fundamental to the study of sports and exercises. The module practically investigates how to assess the physiological and biochemical state at rest and during exercise.

Module Content: The module will include:

1. Basic Biochemistry - understanding of units and relevant definitions.
2. The Cell - functional components with reference to differences between cell types.
3. Nutrients - the digestive system, the basis of the chemical structures of carbohydrates, amino acids and lipids and their metabolism
4. Acid-Base Balance - the concept of pH, alkalosis and acidosis. Sources of H+ ions & pH regulation by organs. Changes in pH with exercise.
5. PCr hydrolysis and glycolysis: its role in maximal exercise metabolism.
6. Aerobic metabolism, glucose, lipids, oxidative phosphorylation, the electron transport chain and their roles in sub-maximal exercise.
7. The cardiovascular system structure and its function in response to exercise.
8. The respiratory system structure and its function in response to exercise.

Intended Learning Outcomes: At the end of the module the learner is expected to be able to:

1. Describe the gross anatomical structure of the major components of the: cardiovascular system, respiratory system, digestive system, endocrine system and urinary/renal system.
2. Describe cardiac and peripheral circulation and the physiological control of the cardiovascular system.
3. Describe the processes of inspiration, expiration, gaseous exchange and explain the control of respiration.
4. Describe the functional relationships between endocrine glands and their regulation of physiological function.
5. Describe the digestion and absorption of carbohydrates, fats and proteins.
6. Describe renal control of water, electrolytes and acid/base balance.
7. Observe and describe the effect of progressive exercise on the cardiovascular and respiratory systems.

Assessment: Examination 1 (80%)
Coursework 1 (2%)
Coursework 2 (2%)
Coursework 3 (2%)
Coursework 4 (2%)
Coursework 5 (2%)
Coursework 6 (2%)
Coursework 7 (2%)
Coursework 8 (2%)
Coursework 9 (2%)
Coursework 10 (2%)

Resit Assessment: Examination (Resit instrument) (100%)

Assessment Description: Students will complete a series of weekly online Canvas quizzes (20% of the module) and a written examination (80% of the module). The written examination will consist of a combination of multiple choice, short answer and essay based questions.
Moderation approach to main assessment: Second marking as sampling or moderation
Assessment Feedback: Students will receive feedback on their weekly online Canvas quizzes, including guidance on any incorrectly answered questions. Written feedback based on cohort performance will be made available for exam questions.
Failure Redemption: A supplementary examination will form 100% of the module mark
Additional Notes: Delivery of both teaching and assessment will be blended including live and self-directed activities online and on-campus. The Faculty of Science and Engineering has a ZERO TOLERANCE policy for late submission of coursework, meaning that a mark of zero will be recorded in such cases.

SR-146 Introduction to Biomechanics 2

Credits: 15 Session: 2022/23 January-June

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Prof NE Bezodis, Dr C Starbuck

Format: 22 hours lecture based
11 hours practical based
Contact Hours will be delivered through a blend of live activities online and on-campus, and may include, for example, lectures, seminars, practical sessions and Academic Mentoring sessions.

Delivery Method: All Programmes will employ a blended approach to delivery using the Canvas Digital Learning Platform for live and self-directed online activity, with live and self-directed on-campus activities each week. Students may also have the opportunity to engage with online versions of sessions delivered on-campus

Lectures, practical laboratory classes, blended learning (online workshop sessions) and directed independent study.

Module Aims: The purpose of the module is to develop knowledge and understanding of the fundamental mechanical concepts and principles that underlie human movement. The module introduces angular motion and the study of kinetics.

Module Content: Introduction to angular kinematics
Advanced projectile motion
Aerial and rotational motion
Linear kinetics
Friction
Impacts
Air resistance
Work, energy, and power
Angular kinetics
Musculoskeletal levers
Video-based measurement and analysis of biomechanical variables

Intended Learning Outcomes: At the end of the module the learner is expected to be able to:

1. Remember and apply fundamental laws of human motion.
2. Apply mathematical calculations to 'real-life' human motion examples.
3. Analyse simple 1-D and 2-D kinematic data.

Assessment: Examination 1 (80%)
Class Test 1 - Practical Assessment Not Exam Cond (10%)
Class Test 2 - Practical Assessment Not Exam Cond (10%)
Resit Assessment: Examination (Resit instrument) (100%)

Assessment Description: Examination (80%)
Two laboratory practical assessments (10% each)

Moderation approach to main assessment: Universal second marking as check or audit

Assessment Feedback: Verbal feedback based on cohort performance will be made available for laboratory practical assessments
Written feedback based on cohort performance will be made available for exam questions

Failure Redemption: A supplementary examination will form 100% of the module mark.

Additional Notes: Delivery of both teaching and assessment will be blended including live and self-directed activities online and on-campus.

PENALTY: The Faculty of Science and Engineering has a ZERO TOLERANCE penalty policy for late submission of all coursework and continuous assessment, including non-attendance at designated assessed labs.