



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
2023-24**

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 23-24 academic year begins on 25 September 2023

Full term dates can be found [here](#)

DATES OF 23-24 TERMS

25 September 2023 – 15 December 2023

8 January 2024 – 22 March 2024

15 April 2024 – 07 June 2024

SEMESTER 1

25 September 2023 – 29 January 2024

SEMESTER 2

29 January 2024 – 07 June 2024

SUMMER

10 June 2024 – 20 September 2024

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.

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.

At Swansea University and in the Faculty of Science and 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, technical and administrative staff, administrators - I'm sure you will find many friendly helping hands ready to assist you. And make the most of living and working alongside your fellow students.

During your time with us, please learn, create, collaborate, and most of all – enjoy yourself!

Professor David Smith
Pro-Vice-Chancellor and Executive Dean
Faculty of Science and Engineering



Faculty of Science and Engineering	
Pro-Vice-Chancellor and Executive Dean	Professor David Smith
Director of Faculty Operations	Mrs Ruth Bunting
Associate Dean – Student Learning and Experience (SLE)	Professor Laura Roberts
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 Nelly Villamizar Year 2 – Professor Chenggui Yuan Year 3 – Professor Grigory Garkusha Year 4 – Professor Grigory Garkusha MSc – Dr Guo Liu

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 8.30am-4pm.

The **Student Support Team** provides dedicated and professional support to all students in 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 (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 other resources:

<https://myuni.swansea.ac.uk/fse/>

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 23-24 handbooks to ensure that you have access to the most up-to-date versions.

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) 2023/24
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 NY Villamizar

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 Prof 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: 2023/24 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: Moderation of the entire cohort 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: 2023/24 January-June

Pre-requisite Modules:

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

Lecturer(s): Prof ECM Crooks

Format: 44 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%)
- Coursework 1 (5%)
- Coursework 2 (5%)
- Coursework 3 (5%)
- Assignment 1 (5%)

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

Assessment Description: Exam: A closed book examination to take place at the end of the module.

Courseworks 1-3: This coursework will develop students' skills in problem solving, and developing and writing logical arguments.

Assignment 1 is an Employability Assessment: A number of employability quizzes with the same deadline.

Moderation approach to main assessment: Moderation of the entire cohort 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: 2023/24 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: <ul style="list-style-type: none"> 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: Moderation of the entire cohort 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: 2023/24 January-June	
Pre-requisite Modules:	
Co-requisite Modules: MA-101; MA-111	
Lecturer(s): Prof 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: <ol style="list-style-type: none"> 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%) Coursework 1 (5%) Coursework 2 (5%) Coursework 3 (5%) Assignment 1 (5%)
Resit Assessment:	Examination (Resit instrument) (100%)
Assessment Description: Exam: A closed book examination to take place at the end of the module. Courseworks 1-3: This coursework will develop students' skills in problem solving, and developing and writing logical arguments. Assignment 1 is an Employability Assessment: A number of employability quizzes with the same deadline.	
Moderation approach to main assessment: Moderation of the entire cohort 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: 2023/24 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%)
Coursework 1 (6%)
Coursework 2 (7%)
Coursework 3 (7%)
Laboratory 1 (10%)

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

Assessment Description: Examination: A closed book examination to take place at the end of the module.

Courseworks 1-3: This coursework will develop skills in problem solving, applying techniques to real world problems and understanding the use of computers to investigate problems.

Lab Assessment: Computing based controlled assessment to assess skills in the use of computers to investigate and analyse real world problems.

Moderation approach to main assessment: Moderation of the entire cohort 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: 2023/24 September-January

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Dr L Mason

Format: Lectures 21 hours, e-content 11 hours, 3 hours workshops.

Delivery Method: This module will employ a blended approach to delivery. Lectures and workshops will all be on campus but students will also engage in online self-paced e-learning and assessment through a learning platform.

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:	Moderation of the entire cohort 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: 2023/24 January-June

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Dr RS Metcalfe

Format: Lectures (22-h) and Lab Practicals (16.5-h).

Contact hours will be delivered through live in person lectures and laboratory practicals

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 materials from sessions delivered on-campus. The module consists of lectures and laboratory practicals. All lectures will be recorded and made available via Canvas. Laboratory practicals will not be recorded. 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 practical 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 and differences between cell types.
3. Energy and metabolism - physiological roles, chemical structures, digestion, absorption, transport, storage and metabolism of carbohydrates, lipids and amino acids. Phosphocreatine hydrolysis.
4. Oxidative metabolism of glucose, lipids and amino acids and effects of exercise intensity and duration on substrate utilisation.
5. Water and acid-Base balance - the concept of pH, alkalosis and acidosis. Sources of H⁺ ions & physiological regulation of pH.
6. The cardiovascular system structure and its function in response to exercise.
7. The respiratory system structure and its function in response to exercise.
8. Theoretical understanding and practical application of tools and techniques to measure cardiovascular, respiratory and metabolic responses at rest and during exercise in human participants.

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 the structure of the heart 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 the endocrine system and the regulation of physiological function and metabolism.
5. Describe the processes of digestion, absorption, transport and metabolism 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:	Moderation by sampling of the cohort
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: 2023/24 January-June

Pre-requisite Modules:

Co-requisite Modules:

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

Format: 22 hours lecture/workshop 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, workshops, 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 the study of kinetics.

Module Content: Linear kinetics

Forces

Friction

Impacts

Air resistance

Aerial and rotational motion

Advanced kinematic analysis

Work, energy, and power

Angular kinetics

Centre of Mass

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 and kinetic data

Assessment: Examination 1 (70%)
Class Test 1 - Coursework (10%)
Class Test 2 - Coursework (10%)
Laboratory report (10%)

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

Assessment Description: Examination (70%)

Online quiz (10%)

Online quiz (10%)

Short laboratory report (10%)

Moderation approach to main assessment: Moderation of the entire cohort as Check or Audit

Assessment Feedback: Verbal and summary written feedback based on cohort performance will be made available for all coursework 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.