MODULE SPECIFICATION TEMPLATE

*See the Code of Practice for Quality Assurance for Taught Programmes: Annex B before completing this template (see http://www.kent.ac.uk/uelt/quality/code2001/annexb.html) and the relevant Faculty notes of guidance.*

*To use this template, download the file and insert text in the sections provided.*

*You should consult your School Director of Learning and Teaching when preparing a proposal for a new module intended primarily to be used as part of an undergraduate programme, or your School Director of Graduate Studies when preparing a proposal for a new module intended primarily to be used as part of a postgraduate programme[[1]](#footnote-1). Directors of Learning and Teaching and Directors of Graduate Studies are required to sign off proposals as appropriate before submission to the Faculty Learning and Teaching Committee or Faculty Graduate Studies Committee.*

***Please delete all the sections in italics before submission to the Faculties Support Officer.***

***Instructions:***

1. *If the module is part of a programme of study in a University School, please complete sections 1 and 2.*
2. *If the module is part of a programme of study in a Partner College or Validated Institution, please complete Sections 1 and 3.*

**SECTION 1: MODULE SPECIFICATIONS**

1. Title of the module **Introduction to Biomechanics**
2. School which will be responsible for management of the module

**School of Sport and Exercise Sciences**

1. Start date of the module **Spring 2014**
2. The cohort of students (onwards) to which the module will be applicable **2013**
3. The number of students expected to take the module **70**
4. Modules to be withdrawn on the introduction of this proposed module and consultation with other relevant Schools and Faculties regarding the withdrawal

**NONE**

1. Level of the module *(e.g. Certificate [C], Intermediate [I], Honours [H] or Postgraduate [M])* **C**
2. The number of credits which the module represents **15**

***Note****: undergraduate full-time students take modules amounting to 120 credits per year and postgraduate full-time students take modules amounting to 180 credits per year for a Masters award*

1. Which term(s) the module is to be taught in (or other teaching pattern) **Spring**
2. Prerequisite and co-requisite modules **NONE**
3. The programme(s) of study to which the module contributes **B.Sc. Sport & Exercise Science**
4. **The intended subject specific learning outcomes and, as appropriate, their relationship to programme learning outcomes**
   1. Define basic biomechanical terms including: kinematic terms such as velocity and acceleration, force, mass, work, energy.
   2. Apply Newton’s Laws and the impulse-change in momentum relationship to basic two dimensional whole body movement.
   3. Use basic trigonometric and algebraic techniques to manipulate and solve equations of uniform acceleration.
   4. Describe the effect of air resistance on performance in sports such as cycling and tennis.

**These outcomes contribute to the programme learning outcomes as listed in the B.Sc. Sport Science programme specification:**

PLO A1 – Anatomical and physiological principles related to sports and exercise (12.1, 12.2, 12.3, 12.4).

PLO A2 – Critically understand the human response to exercise (12.1, 12.2, 12.4).

PLO A5 – Evaluate physical capacity and exercise training programmes (12.1, 12.2).

PLO C14 – Relate the concepts of anatomy, physiology and metabolism to the body’s response to exercise (12.1, 12.2, 12.3, 12.4).

PLO C17 – Analyse closely, interpret and show critical judgement in the understanding and evaluation of the sport sciences (12.1, 12.2, 12.3, 12.4).

1. **The intended generic learning outcomes and, as appropriate, their relationship to programme learning outcomes**
   1. Apply knowledge to the solution of familiar and unfamiliar problems – evidenced via the selection and solution of appropriate equations to gain insight into human movement principles.
   2. Communication, presentation, numeracy and C & IT skills – evidenced via the completion of calculations in seminars and assessments, the use of computer software to aid in the collection and processing of biomechanical data, and the interpretation in worksheets and assessments of this data.
   3. Interactive group skills – evidenced via the collection and analysis of biomechanical data in groups for coursework assessment
   4. Problem solving skills – evidenced via the completion of calculations and data analysis.
   5. Ability to self-appraise and reflect on practice - achieved through the completion of formative online quizzes and the completion of in class exercises.
   6. Ability to plan and manage learning – through completing the extra self-directed study and optional online exercises necessary to successfully complete the required assignments and tasks throughout the module.

These outcomes contribute to the following generic programme learning outcomes of section 12 of the **BSc (Hons) Sports Science** programme specification:

PLO D18- Communication, presentation, numeracy and C & IT skills (13.2, 13.3)

PLO D20- Problem solving skills (13.1, 13.4)

PLO D21- Ability to self-appraise and reflect on practice (13.5)

PLO D22- Ability to plan and manage learning skills (13.6)

1. **A synopsis of the curriculum**

Indicative content includes:

* Definition and computation of kinematic quantities: position, displacement, velocity and acceleration.
* Vector and scalar quantities.
* Newton's Laws of linear motion.
* Impulse-change in momentum relationship.
* Projectile motion.
* Basic fluid mechanics.
* Searching and reading the biomechanics literature.

1. **Indicative Reading List**

Hamill, J. and Knutzen, K.M. (2009) Biomechanical basis of human movement. 3rd Ed. London: Lippincott Williams and Wilkins.

Hay, J.G. (1993) The biomechanics of sports techniques. 4th Ed. Englewood Cliffs NJ: Prentice-Hall.

McGinnis, P. (2005) Biomechanics of sport and exercise. 2nd Ed. Champaign, IL: Human Kinetics.

Nordin, M. and Frankel, V. H. (2001) Basic biomechanics of the musculoskeletal system. 3rd Ed. London : Lippincott Williams & Wilkins.

Nigg, B. and Herzog, W. (2007). Biomechanics of the Musculoskeletal System. 3rd Ed. Chichester: Wiley & Son.

Winter, D. A. (2009) Biomechanics and Motor Control of Human Movement. 4th Ed. Chichester: Wiley & Son

1. **Learning and Teaching Methods, including the nature and number of contact hours and the total study hours which will be expected of students, and how these relate to achievement of the intended learning outcomes**

Achievement of the learning outcomes will be spread across the following contact and study hours.

Lecture: 11 hours

Seminar / practical 11 hours

Reading 33 hours

Completion of calculations after seminar or practical 22 hours

Review of online support material and self-test quizzes 33 hours

Completion of assessments 40 hours

TOTAL 150 hours

This module introduces students to the study of biomechanics. Students will develop a secure understanding of mechanical principles relevant to the study of sport and exercise. A wide variety of sport and exercise situations will be used to demonstrate the application of these principles. A series of laboratory practicals will introduce some of the key analytical tools available to the biomechanist, and will help students consolidate their understanding of the theory.

1. **Assessment methods and how these relate to testing achievement of the intended learning outcomes**

|  |  |  |  |
| --- | --- | --- | --- |
| Assessment Type | Weighting | Pass Mark | Learning Outcomes Assessed |
| Coursework (Online open book quizzes: mixture of multiple choice, calculations) | 60% | 40% | 12.1, 12.2, 12.3, 12.4  13.1, 13.2, 13.4, 13.5, 13.6 |
| Coursework (Final written worksheet including extended calculation) | 40% | 40% | 12.2, 12.3  13.1, 13.3, 13.4, 13.5, 13.6 |

1. **Implications for learning resources, including staff, library, IT and space**

The module will be convened by an existing member of the School of Sport and Exercise Sciences. Library and IT resources will be mainly provided by using existing provision given that the Drill Hall Library already contains a good selection of books relevant to the module. Teaching will take place in existing lecture theatres, computer rooms and laboratories. It will be necessary to purchase a site licence for software to support teaching on the course, however this software can be used across all of the biomechanics provision within the School.

1. **The School recognises and has embedded the expectations of current disability equality legislation, and supports students with a declared disability or special educational need in its teaching. Within this module we will make reasonable adjustments wherever necessary, including additional or substitute materials, teaching modes or assessment methods for students who have declared and discussed their learning support needs. Arrangements for students with declared disabilities will be made on an individual basis, in consultation with the University’s disability/dyslexia support service, and specialist support will be provided where needed.**
2. Campus(es) where module will be delivered[[2]](#footnote-2) **Medway**

***If the module is part of a programme in a Partner College or Validated Institution, please complete the following:***

1. Partner College/Validated Institution **N / A**
2. University School (for cognate programmes) or Faculty (for non-cognate programmes) responsible for the programme **N / A**

**SECTION 2: MODULE IS PART OF A PROGRAMME OF STUDY IN A UNIVERSITY SCHOOL**

**Statement by the School Director of Learning and Teaching/School Director of Graduate Studies (as appropriate):** "I confirm I have been consulted on the above module proposal and have given advice on the correct procedures and required content of module proposals"

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| --- | --- |
| ................................................................  Director of Learning and Teaching/Director of Graduate Studies (delete as applicable)  …………………………………………………  Print Name | ..............................................  Date |

**Statement by the Head of School:** "I confirm that the School has approved the introduction of the module and, where the module is proposed by School staff, will be responsible for its resourcing"

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| --- | --- |
| .................................................................  Head of School  …………………………………………………….  Print Name | ..............................................  Date |

**SECTION 3: MODULE IS PART OF A PROGRAMME IN A PARTNER COLLEGE OR VALIDATED INSTITUTION**

(Where the module is proposed by a Partner College/Validated Institution)

**Statement by the Nominated Officer of the College/Validated Institution** *(delete as applicable)***:** "I confirm that the College/Validated Institution*(delete as applicable)* has approved the introduction of the module and will be responsible for its resourcing"

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| .................................................................  Nominated Responsible Officer of Partner College/Validated Institution  ………………………………………………….  Print Name  …………………………………………………..  Post | ..............................................  Date |

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Partner College/Validated Institution

Module Specification Template  
Last updated November 2011

1. For the purposes of the Code integrated masters programmes are regarded as undergraduate programmes and Graduate Certificate and Graduate Diploma programmes as postgraduate programmes. [↑](#footnote-ref-1)
2. Required for information purposes only. Changes of campus will not require re-approval of the module specification. [↑](#footnote-ref-2)