

Liverpool John Moores University

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Title: SPORTS TECHNOLOGY APPLICATIONS
Status: Definitive
Code: **6011SPOSCI** (114292)
Version Start Date: 01-08-2013

Owning School/Faculty: Sports Sciences
Teaching School/Faculty: Sports Sciences

Team	Leader
Mark Lake	Y
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Academic Level: FHEQ6 **Credit Value:** 24.00 **Total Delivered Hours:** 48.00
Total Learning Hours: 240 **Private Study:** 192

Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Practical	24.000
Tutorial	24.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	AS1	Experimental project	50.0	
Essay	AS2	Literature Review	50.0	

Aims

The aim of this course is to investigate the design and construction of sports equipment and its relationship to use and performance in specific sports. The techniques of movement analysis, instrumentation, player - equipment interaction, materials and mathematical modelling and simulation will be applied to technology in

specific sports.

Learning Outcomes

After completing the module the student should be able to:

- 1 Describe the mechanical and biomechanical principles which apply to equipment design in a selected sport
- 2 Critically appraise the equipment demands of a selected sport and identify the key factors associated with both performance and protection.
- 3 Critically appraise the research findings with regard to the application of equipment design and materials to a selected sport.
- 4 Write scientific reports on the experimental investigation of equipment design characteristics.
- 5 Plan and conduct a minor project on the selected sports equipment.

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Experimental Project	3	4	5
Literature Review	1	2	3

Outline Syllabus

Example topics to be covered:

1. *Introduction to the multifaceted nature of sports equipment design.*
2. *Introduction to data visualisation methods using standard engineering analysis packages i.e ANSYS, MATLAB, SIMULINK.*
3. *Understanding and interpretation of biomechanical data from the literature.*
4. *Mechanics and dynamics of a selected sport*
5. *Movement analysis and player - equipment interaction for this sport*
6. *Materials and modeling applied to equipment design for this sport.*
7. *Design and fluid mechanics applied to the selected sport.*

Learning Activities

Students will be required to attend tutorials and practical sessions on a weekly basis. The tutorial sessions will include equipment and computer software analysis package usage and writing a literature review in order to conduct two minor projects involving the equipment demands of the selected sport.

References

Course Material	Book
Author	Haake, S. J.
Publishing Year	1998

Title	The Engineering of Sport
Subtitle	
Edition	
Publisher	Blackwell Science Ltd
ISBN	0-632-05048-9

Course Material	Book
Author	Zatsiorsky, V.
Publishing Year	2000
Title	Biomechanics in Sport: Performance enhancement and injury prevention
Subtitle	
Edition	
Publisher	Blackwell Science
ISBN	0-632-053925

Course Material	Book
Author	S.J. Haake
Publishing Year	1997
Title	Sports Engineering Journal
Subtitle	
Edition	
Publisher	Blackwell Science
ISBN	

Course Material	Book
Author	Ujihashi, S and Haake, S.J.
Publishing Year	2002
Title	The Engineering of Sport 4
Subtitle	
Edition	
Publisher	Blackwell Science
ISBN	0632064811

Notes

This is a core module for level 3 Sports Technology students which seeks to develop their critical understanding of the technical and biomechanical aspects of specific sporting applications.