

## Liverpool John Moores University

Title: BIOMECHANICAL FOUNDATIONS  
Status: Definitive  
Code: **4006SPOSCI** (114191)  
Version Start Date: 01-08-2011

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

Team	Leader
Mark Lake	Y

**Academic Level:** FHEQ4  
**Credit Value:** 12.00  
**Total Delivered Hours:** 25.00  
**Total Learning Hours:** 120  
**Private Study:** 95

### Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	16.000
Practical	6.000
Tutorial	2.000

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	AS1	Practical report	50.0	
Exam	AS2	Multiple choice and short answer exam	50.0	1.00

### Aims

*The aim of this module is to establish the foundational theory of biomechanics and apply it to the study of the body in a sport and exercise context.*

### Learning Outcomes

After completing the module the student should be able to:

- 1 Describe sports skills and techniques in mechanical terms.
- 2 Illustrate basic mechanical and biological principles applied to the musculo-skeletal system.
- 3 Solve basic mechanical problems applied to sports skills.
- 4 Explain and Illustrate foundational biomechanical techniques.
- 5 Collect and interpret basic biomechanical data via group experimental work.

### Learning Outcomes of Assessments

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

Lab report	1	2	3
Multiple choice / short answer	3	4	5

### Outline Syllabus

*Biomechanics of joint and muscle function.*  
*Physical characteristics of sports skills.*  
*Representation of the human body by a biomechanical model.*  
*Segmental analysis.*  
*Video analysis.*  
*Force analysis.*

### Learning Activities

Lectures and demonstrations will be central to the student learning experience, where key foundational biomechanical principles and techniques will be explored. Experimental work within the laboratory will enable students to gain hand-on experience of techniques and engage in their own learning.

### References

<b>Course Material</b>	Book
<b>Author</b>	Hall, S
<b>Publishing Year</b>	1999
<b>Title</b>	Basic Biomechanics
<b>Subtitle</b>	
<b>Edition</b>	3rd ed.
<b>Publisher</b>	St Louis: McGraw-Hill
<b>ISBN</b>	0070921180

<b>Course Material</b>	Book
<b>Author</b>	Hamill, J. and Knutzen, K.M.

<b>Publishing Year</b>	2003
<b>Title</b>	Biomechanical Basis of Human Movement
<b>Subtitle</b>	
<b>Edition</b>	2nd ed.
<b>Publisher</b>	Baltimore: Williams and Wilkins.
<b>ISBN</b>	0781734053

<b>Course Material</b>	Book
<b>Author</b>	Carr, G.
<b>Publishing Year</b>	2004
<b>Title</b>	Sports Mechanics for Coaches
<b>Subtitle</b>	
<b>Edition</b>	2nd ed.
<b>Publisher</b>	Human Kinetics
<b>ISBN</b>	0736039724

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### Notes

The module uses lecture and laboratory sessions to develop the students understanding of foundational theory of biomechanics and their ability to apply it to the study of the body in a sport and exercise context. The assessment tasks are designed to evidence the level of understanding and practical skill of the students.