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<b>Module Code:</b>	SES402
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<b>Module Title:</b>	Introduction to Biomechanics and Performance Analysis
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<b>Level:</b>	4	<b>Credit Value:</b>	20
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<b>Cost Centre(s):</b>	GASP	<b>JACS3 code:</b>	C600
		<b>HECoS code:</b>	100433

<b>Faculty</b>	FSLs	<b>Module Leader:</b>	Julian Ferrari
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Scheduled learning and teaching hours	20 hrs
Placement tutor support	0hrs
Supervised learning eg practical classes, workshops	16 hrs
Project supervision (level 6 projects and dissertation modules only)	0 hrs
<b>Total contact hours</b>	<b>36 hrs</b>
Placement / work based learning	<b>0</b>
Guided independent study	165 hrs
<b>Module duration (total hours)</b>	<b>200 hrs</b>

<b>Programme(s) in which to be offered (not including exit awards)</b>	Core	Option
BSc (Hons) Applied Sport and Exercise Sciences	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>

<b>Pre-requisites</b>
N/A

<b>Office use only</b>		
Initial approval:	01/04/2020	Version no: 1
With effect from:	28/09/2020	
Date and details of revision:		Version no:

## Module Aims

This module aims to:

1. Introduce and develop knowledge, understanding and analysis of Biomechanics through technique analysis.
2. Introduce and develop knowledge, understanding and analysis of Performance through notation analysis.
3. Study how performance analysis can inform the sport scientist, coaching practitioner, sports official and athlete.
4. Use a variety of tools and techniques to study gross and fine movements and Technical / tactical patterns in sport.

## Module Learning Outcomes - at the end of this module, students will be able to:

1	Demonstrate a comprehension of simple biomechanical principles involved in sport
2	Demonstrate an ability to use audio visual technology for effective biomechanical analysis.
3	Design an appropriate system for analysing aspects of performance within a sporting context
4	Describe how performance analysis processes can be used to assess performance in sport

<b>Employability Skills The Wrexham Glyndŵr Graduate</b>	<b>I = included in module content A = included in module assessment N/A = not applicable</b>
<b>CORE ATTRIBUTES</b>	
Engaged	I
Creative	I
Enterprising	I
Ethical	I
<b>KEY ATTITUDES</b>	
Commitment	A
Curiosity	A
Resilient	A
Confidence	I
Adaptability	A
<b>PRACTICAL SKILLSETS</b>	
Digital fluency	A
Organisation	A
Leadership and team working	A
Critical thinking	A
Emotional intelligence	A
Communication	A
<b>Derogations</b>	

N/A

### Assessment:

#### Indicative Assessment Tasks:

Assessment 1: **Report (2000 words)** The students will produce a report that will demonstrate the ability to record an action using an appropriate audio video medium. They will use the recorded sporting action to appropriately describe the sporting movement in terms of biomechanical principles using IT systems. Calculations will be completed to evidence both kinematic and kinetic elements.

Assessment 2: **Case Study (2000 words)** The student will produce a portfolio of work which will include a review of the literature relating to notation analysis in physical activity/sport. They will use this information to design an appropriate system for analysing sporting performance/physical activity. This system will be applied through the use of cutting edge computer software to analyse a sport/physical activity and describe how the outcome of the analysis can be used to guide performance.

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)
1	1 and 2	Report	50%
2	3 and 4	Case Study	50%

### Learning and Teaching Strategies:

This module will be taught through a series of lectures, seminars, practical workshops and blended learning, with the primary emphasis on the application of theory to practice. Whilst lectures and seminars will be used for delivery of the theoretical components of the module, students will also be required to learn how to effectively use workplace leading computer software (Hudl SportsCode, NacSport, Kinovea and Quintic), these will be taught through workshops and blended learning opportunities.

As an additional aid to learning external links and reading materials will be highlighted. These will enable the student to identify strengths and weaknesses in their knowledge as well as opportunities to access resources in their own time. Formative learning opportunities will be provided throughout the module.

Elements of this module are maths based, support will be offered in-class as well as through the academic skills department.

**Syllabus outline:**

An appreciation of the physiological demands on players (player profiles, movement patterns, activity rates, training versus match demands, player specific demands).

An appreciation of the psychological demands on players (team cohesion/dynamics, roles and responsibilities linked to goal-setting).

The assessment and calculation of kinematic principles in sport technique.

The assessment and calculation of kinetic principles in sport technique.

The understanding of projectile motion in respect of sport performance.

Newtonian and non-Newtonian ways to describe motion

The use of IT, Kinovea and recording media to analyse biomechanics in sport

The use of hand and computerised notation systems in the analysis of sport (use of, benefits and limitations).

The use of types of feedback (knowledge of performance, knowledge of results, verbal, visual and video).

The use of hand and computerised notation systems in the analysis of sport (use of, benefits and limitations).

Applied use of Sportscode and Nacsport.

The use of types of feedback (knowledge of performance, knowledge of results, verbal, visual and video).

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**Indicative Bibliography:****Essential reading**

Blazevich, J. (2017), *Sports Biomechanics, the Basics: Optimising Human Performance*. 3<sup>rd</sup> ed. London: Bloomsbury.

Watkins, J. (2014), *Fundamental Biomechanics of Sport and Exercise*. London: Routledge.

Hughes, M. and Franks, I. (2015), *The Essentials of Performance Analysis*. London: Routledge.

O'Donoghue, P. (2014), *An Introduction to Performance Analysis of Sport*. 2nd ed. London: Routledge.

**Other indicative reading**

Bartlett, R. (2014), *Introduction to Sports Biomechanics: Analysing Human Movement Patterns*. 3<sup>rd</sup> Ed. London: Routledge.

Carling, C., Williams, A. M. and Reilly, T. (2006), *Handbook of Soccer Match Analysis*. London: Routledge.

**Indicative Bibliography:**

Franks, I. and Hughes, M. (2016), Soccer Analytics: Successful Coaching Through Match Analysis. Maidenhead: Meyer & Meyer Sport.

Grimshaw, P., Fowler, N., Lees, A. and Burden, A. (2006), Instant Notes in Sport & Exercise Biomechanics. London: Routledge.

McGarry, T., O'Donoghue, P., and Sampaio, J, (2013), Routledge Handbook of Sports Performance Analysis. London: Routledge.

Payton, C. and Bartlett, R. (2007), Biomechanical Evaluation of Movement in Sport & Exercise. London: Routledge. Payton, C. and Bartlett, R. (2007), Biomechanical Evaluation of Movement in Sport & Exercise. London: Routledge.