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<b>Module Code:</b>	SES501
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<b>Module Title:</b>	Applied Biomechanics and Performance Analysis
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<b>Level:</b>	5	<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	15 hrs
Placement tutor support	0hrs
Supervised learning eg practical classes, workshops	15 hrs
Project supervision (level 6 projects and dissertation modules only)	0 hrs
<b>Total contact hours</b>	<b>30 hrs</b>
Placement / work based learning	
Guided independent study	170 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"/>

<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. Apply the biomechanical principles identified in the module 'Introduction to Biomechanics and Performance Analysis' to sport specific activities.
2. Highlight the importance of developing a range of 'real-time' assessment techniques to assist performance.
3. Expose students to a range of practical issues in conducting performance analysis.
4. Further develop feedback mechanisms for presenting analysed data.
5. Develop quantitative and qualitative approaches to applied research.

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

1	Analyse a sporting technique through biomechanical principles.
2	Evaluate the impact of biomechanical principles on the performance of a sports technique using quantitative and qualitative methods
3	Design and evaluate a notational analysis system within an applied sport environment
4	Utilise Notational analysis data to inform technical and / or tactical future performance

<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	A
Adaptability	A
<b>PRACTICAL SKILLSETS</b>	
Digital fluency	I
Organisation	A
Leadership and team working	A
Critical thinking	I
Emotional intelligence	A
Communication	A

## Derogations

N/A

## Assessment:

Indicative Assessment Tasks:

**Assessment 1: Case Study:** Working in small groups (2 or 3) to collect performance data students will produce an individual report that describes the design of a notation analysis system and use it to evaluate the technical or tactical aspects in sport. They will use this information to design an appropriate system for assessing sporting performance, this design, through the use of analysis software (Sportscode or Nacsport) will then be used to describe how the interpretation of analysed data can be disseminated to a client and used to enhance performance.

**Assessment 2: AV Presentation** The students will produce an individual submission that describes the key technical/coaching elements of a sporting action. They will analyse the technical/coaching elements in terms of the mechanical principles that underpin their execution. The students will record the action, using an appropriate AV medium, and describe the action using quantitative or qualitative methods, evaluating the impact of the result of the analysis on the performance outcome of the action.

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)
2	1 and 2	Presentation	50%
1	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 to further develop theoretical components of the module, students will also be required to develop their use of 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:**

Application of qualitative and quantitative approaches to technique analysis in a variety of environments and population groups.  
Factors impacting health and effective movement  
Movement patterns and Injury prevention  
Deterministic modelling  
Models in qualitative analysis of sports technique.  
The use of technology in Biomechanics (Quintic Coaching)  
Systematic observation of athletic performance in individual and team sports.  
Integration within the Coaching environment.  
Sport, position and individual athlete profiling  
Collection and presentation of performance analysis data.  
Validity and reliability of performance analysis methodologies.  
Intervention strategies to maximize the impact of performance analysis.  
The use of computer software in notational analysis (Hudl Sportscode and Nacsport).  
The use of performance indicators to assist in the development of notation analysis systems.

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

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

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

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

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

**Other indicative reading**

Bartlett, R. (2014), Introduction to Sports Biomechanics: Analysing Human Movement Patterns. 2<sup>nd</sup> Ed. London: Routledge.

Grimshaw, P., Cole, M., Burden, A. and Fowler, N. (2019), Instant Notes in Sport & Exercise Biomechanics. 2<sup>nd</sup> Ed. London: Routledge.

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

Payton, J. and Burden, A. (eds.) (2018), Biomechanical Evaluation of Movement in Sport and Exercise. Abingdon: Routledge.

