

OTTO-VON-GUERICKE-UNIVERSITÄT MAGDEBURG

Fakultät für Humanwissenschaften



Modulhandbuch

für den Masterstudiengang

Performance Analysis of Sport (IMPAS)

zur

Studien- und Prüfungsordnung vom 4.07.2012, in der Fassung vom 18.07.2012  
in der Satzungsänderung vom 01.10.2014

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Modulhandbuches.

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Version: 20. April 2015

## **MODULE SPECIFICATIONS**

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### **International M.Sc. in Performance Analysis in Sport (IMPAS) - Masters of Science Degree (MSc)**

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### Module Specification

Basic module information		
1	Module Title:	<b>Motor Control and Movement Analysis</b>
2	Module Code:	M1
3	Credit Points:	15 ECTS
4	Duration:	14 weeks
5	School:	Faculty of Humanities; A. Hökelmann, K. Witte, J. Edelman-Nusser
6	Campus:	Otto-von-Guericke University of Magdeburg, Germany
7	Date:	Winter Semester

#### 8 Recommended pre-knowledge:

These are modules that you should have studied previously in order to take this module

<u>Module Code</u>	<u>Module Title</u>
	Anatomy
	Physiology
	Biomechanics

#### 9 Programmes containing the module

<u>Level</u>	<u>Core/Option</u>	<u>Mode</u>	<u>Code</u>	<u>Programme Title</u>
M	C	FT		International M.Sc. in Performance Analysis in Sport

#### 10 Overview and Aims

This module aims to provide strong theoretical underpinning of motor control and skill development in conjunction with development of practical skills for the evaluation and analysis of human movement. In addition, an emphasis will be made on teaching students fundamental knowledge in physiology, neurophysiology, and related scientific disciplines for the purpose of clear understanding of structure and function of human nervous and musculoskeletal systems, both in health and disordered conditions. This module will approach neurophysiology, motor control and movement analysis from observational, behavioural, neuropsychological, and neurophysiological principles such that an in-depth understanding is achieved.

The module will use lead-lectures, applied workshops and practical classes to: introduce principles of neurophysiology and motor control including conceptual frameworks; use an interdisciplinary research methods approach and mixed-methods experimental designs to capture, assess, analysis and evaluate human movement in a range of activities, including closed- and open- loop skills.

**11 Module Content**

This module aims to develop the students ability to:

- Address research topics in neurophysiology and motor control within appropriate conceptual framework and methodologies;
- Appreciate the strength and limitations of different methodologies available in the field of motor control and movement analysis;
- Apply different methods for data acquisition such as surface-EMG, EEG, video-based-movement-analysis, measurement of acceleration and force, balance platform;
- Employ different unconventional methods and software tools for data processing and modelling like Neural Networks, Evolutionary Computing, Nonlinear Time Series Analysis and Fuzzy Logic;
- Model and simulate human movements

**12 Indicative Reading**

- Engelbrecht, A. (2003). Computational Intelligence. Chichester: Wiley.
- Travis, J. (2002). LabView for Everyone. Prentice Hall PTR
- Witte, K., Bock, H., Storb, U., Blaser, P. (2003): A synergetic approach to describe the stability and variability of motor behaviour. In: Tschacher, W. & Dauwalder, J.-P. (eds.): The dynamical systems approach to cognition. Singapore: World Scientific Publishing Co. Pte.Ltd.
- Bongaardt, R. And Meijer, O.G. (2000). Bernstein's theory of movement behaviour: Historical development and contemporary relevance. *Journal of Motor Behaviour*, **32**:57-71.
- Guyton, A.C, Hall, J.E. (2006). Textbook of medical physiology. Philadelphia: Elsevier Saunders.
- Purves, D., Augustine, G.J., Fitzpatrick, D., Hall, W.C., La Mantia, A.S., McNamara, J.O., White, L.E. (2008). Neuroscience. Sunderland: Sinauer Associates Inc.
- Drake, R.L., Vogl, A.W., Mitchel, A.W.M. (2009). Gray's anatomy for students. Philadelphia: Churchill Livingstone.

**13 Learning outcomes**

Learning outcomes describe what you should know and be able to do by the end of the module

Knowledge and understanding. After studying this module you should be able to:

- Show a detailed knowledge of methods for data acquisition and data processing;
- Select appropriate methods to solve typical research issues/questions in motor control and neurophysiology;
- Evaluate human movement and principles of motor control in a multi-disciplinary manner; including physiological, psychological and behavioural perspectives.

Skills, qualities and attributes. After studying this module you should be able to:

- Use appropriate unconventional methods and software tools for data processing.
- Use appropriate software for biomechanical simulation and modelling;
- Apply research methodologies to the demands of contemporary scientific issues.

**14 Teaching and Learning**

*Range of modes of direct contact*

This indicates the range of direct contact teaching and learning methods used on this module, e.g. lectures, seminars

This module will be delivered through a series of formal lectures, practical exercises, laboratory sessions and workshops.

Total contact hours: 56

*Range of other learning methods*

This indicates the range of other teaching and learning methods used on this module, e.g. directed reading, research

- Use of on- and off- line learning resources
- Independent data collection, analysis and evaluation
- Directed reading
- Independent research

Total non-contact hours: 252

**15 Assessment methods**

This indicates the type and weighting of assessment elements in the module

<u>Element number</u>	<u>Weighting</u>	<u>Type</u>	<u>Description</u>
1	30%	CWk	Oral presentations relating to data collection, analysis and evaluation of findings.
2	30%	CWk	Written scientific report of data capture, principles and application.
3	40%	CWk	Theoretical test

**Diagnostic/ formative assessment**

This indicates if there are any assessments that do not contribute directly to the final module mark

**Further information on assessment**

This section provides further information on the module's assessment where appropriate  
Coursework for this module will all be submitted by the end of the first teaching block.

### Module Specification

Basic module information		
1	Module Title:	<b>Advances in Sports Coaching</b>
2	Module Code:	M2
3	Credit Points:	15 ECTS
4	Duration:	14 weeks
5	School:	Faculty of Humanities; E. Knisel
6	Campus:	Otto-von-Guericke University of Magdeburg, Germany
7	Date:	Winter Semester

8	<p><b>Recommended pre-knowledge:</b></p> <p>These are modules that you should have studied previously in order to take this module</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;"><u>Module Code</u></td> <td style="text-align: center;"><u>Module Title</u></td> </tr> <tr> <td></td> <td style="text-align: center;">Psychology</td> </tr> </table>	<u>Module Code</u>	<u>Module Title</u>		Psychology
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	Psychology				

9	<p><b>Programmes containing the module</b></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>Level</u></th> <th style="text-align: left;"><u>Core/Option</u></th> <th style="text-align: left;"><u>Mode</u></th> <th style="text-align: left;"><u>Code</u></th> <th style="text-align: left;"><u>Programme Title</u></th> </tr> </thead> <tbody> <tr> <td>M</td> <td>C</td> <td>FT</td> <td></td> <td>International M.Sc. in Performance Analysis in Sport</td> </tr> </tbody> </table>	<u>Level</u>	<u>Core/Option</u>	<u>Mode</u>	<u>Code</u>	<u>Programme Title</u>	M	C	FT		International M.Sc. in Performance Analysis in Sport
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M	C	FT		International M.Sc. in Performance Analysis in Sport							

10	<p><b>Overview and Aims</b></p> <p>This module aims to develop the students ability to:</p> <ul style="list-style-type: none"> <li>• adopt various approaches to the study of the coaching process, drawing on literature and current research into areas such as pedagogy, psychology and sociology;</li> <li>• critically evaluate models of coaching; the social aspects of coaching; the coaching contexts; the role of the coach and others within the coaching process; coaching styles and strategies; leadership skills, the management of the coaching process; and coach education.</li> </ul>
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**11 Module Content**

- Definitions of coaching in sport
- Models of coaching in psychology, pedagogy and sociology
- Coach roles
- Coach philosophy
- Coaching styles and strategies
- Coach qualities
- Personality of coach
- Contexts of coaching
- The coaching process
- Communication und interaction
- Planning, implementation and evaluation of practical coaching sessions
  - Team environment and team culture
  - Critical review of contemporary issues – e.g. professionalism, sexism
  - Coach education

**12 Indicative Reading**

- Cross, N. & Lyle, J. (eds.), (2005). *The Coaching Process: principles and practice for sport*. Oxford: Butterworth-Heinemann.
- Lee, M. Eds.), (2003). *Coaching Children in Sport. Principles and practice*. London, New York: Spon Press.
- Lyle, J. (2002). *Sports Caching Concepts: A Framework for Coaches ´Behaviour*. London, New York: Routledge.
- Cassidy, T. Jones, R. & Potrac, P (2004). *Understanding Sports Coaching : The social, cultural and pedagogical foundations of coaching practice*. London, New York : Routledge.
- Jones, R., Kingston, K. And Hughes, M. (eds.) (2007). *An Introduction to Coaching*. London: Routledge.

**13 Learning outcomes**

Learning outcomes describe what you should know and be able to do by the end of the module

Knowledge and understanding. After studying this module you should be able to:

- Critically evaluate models of coaching from an interdisciplinary perspective.
- Understand the complex relationships that exist within the coaching process and to know how to best manage these.
- Critically reflect upon strategies and coaching styles employed within the coaching process.
- Understand how to apply the scientific principles behind the coaching process.
- Advanced evaluation of coach education.

Skills, qualities and attributes. After studying this module you should be able to:

- Evaluate available resources within the coaching process and to understand how to manage and best utilise these resources.
- Reflect on values and beliefs and how coach impact on coaching philosophy.
- Analyse the roles of the coach and others within the coaching process and critically reflect upon these roles.
- Operate as a reflective practitioner with an appreciation for, and commitment to, lifelong learning.

<b>14</b>	<b>Teaching and Learning</b>	<p><i>Range of modes of direct contact</i></p> <p>This indicates the range of direct contact teaching and learning methods used on this module, e.g. lectures, seminars</p>
		<p>The module will be presented through a series of formal lectures, student-led seminars, discussion groups and field work.</p>
		<p>Total contact hours: 56</p>
		<p><i>Range of other learning methods</i></p> <p>This indicates the range of other teaching and learning methods used on this module, e.g. directed reading, research</p>
		<p>Use of on- and off- line learning resources</p> <p>Independent data collection, analysis and evaluation</p> <p>Directed reading</p> <p>Independent research</p>
		<p>Total non-contact hours: 252</p>

<b>15</b>	<b>Assessment methods</b>	<p>This indicates the type and weighting of assessment elements in the module</p>			
		<u>Element number</u>	<u>Weighting</u>	<u>Type</u>	<u>Description</u>
		1	50%	CWk	Oral presentation of field research and evaluation of coach observations
		2	50%	CWk	Written critical review of literature related to the study of the coaching process.
		<b>Diagnostic/ formative assessment</b>			
		<p>This indicates if there are any assessments that do not contribute directly to the final module mark</p>			
		<p>Students will be able to submit plans and revisions of work to tutor for formative feedback.</p>			
		<b>Further information on assessment</b>			
		<p>This section provides further information on the module's assessment where appropriate</p> <p>Coursework for this module will all be submitted by the end of the first teaching block.</p>			



### Module Specification

Basic module information		
1	Module Title:	<b>Advanced Topics in Notational Analysis</b>
2	Module Code:	M3
3	Credit Points:	15 ECTS
4	Duration:	14 weeks
5	School:	Sports Sciences, Exercise and Health
6	Campus:	Universidade De Trás-Os-Montes E Alto Douro, Vila Real, Portugal
7	Date:	Summer Semester

**8 Recommended pre-knowledge:**

These are modules that you should have studied previously in order to take this module

Module Code      Module Title

**9 Programmes containing the module**

<u>Level</u>	<u>Core/Option</u>	<u>Mode</u>	<u>Code</u>	<u>Programme Title</u>
M	C	FT		International M.Sc. in Performance Analysis in Sport

**10 Overview and Aims**

This module aims to provide a critical understanding of the role of notational analysis. Furthermore, students will develop a comprehensive knowledge of how notational analysis is used to supplement the coaching process. Contemporary issues at the forefront of notational analysis research will be discussed and explored with the view to facilitate key M-Level skills. Specifically, a range of pertinent topics will be covered that will extend current knowledge and allow students to formulate innovative research ideas and evaluate current methodologies.

**11 Module Content**

The module content will include:

- Notational analysis as a sub-discipline of performance analysis.
- The notational analysis process.
- The role of feedback in the coaching process.
- Integrated time-motion analysis.
- Sport-specific notational analysis systems.
- Normative performance profiles.
- Situational variability and momentum analysis.
- Dynamical systems theory and ecological psychology as a framework to capture sports performance.
- Statistical considerations for notational analysis research.
- Communication and interpersonal skills training.

**12 Indicative Reading**

- Glazier, P.S. (2010) 'Game, Set and Match? Substantive Issues and Future Directions in Performance Analysis', *Sports Medicine*, **40**: 625-634.
- Grehaigne, J-F., Bouthier, D. And David, B. (1997). Dynamic-system analysis of opponent relationships in collective actions in soccer. *Journal of Sports Sciences*, **15**, 137-149.
- Hughes, M. (2004). Performance analysis – a 2004 perspective. *International Journal of Performance Analysis in Sport*, **4**, 103-109.
- Hughes, M. and Franks, I.M. (2004). Notational Analysis for Sport: Systems for Better Coaching and Performance in Sport. Routledge: London, UK.
- Hughes, M. and Franks, I.M. (2008). The Essentials of Performance Analysis: An Introduction. Routledge: London, UK.
- Hughes, M., Evans, S. And Wells, J. (2001). Establishing normative profiles in performance analysis. *International Journal of Performance Analysis in Sport*, **1**, 1-26.
- Hughes, M., Fenwick, B. And Murray, S. (2006). Expanding normative profiles of elite squash players using momentum of winners and errors. *International Journal of Performance Analysis in Sport*, **6**, 161-171.
- McGarry T, O'Donoghue P, Sampaio J. (2013) Routledge Handbook of Sports Performance Analysis. Routledge, London (504p).
- Nevill, A., Atkinson, G., Hughes, M. And Cooper, S-M. (2002). Statistical methods for analysing discrete, categorical data recorded in sport performance and notation analyses. *Journal of Sports Science*, **20**, 829 - 844.
- O'Donoghue, P. (2010) *Research Methods for Sports Performance Analysis*, London: Routledge.

<b>13</b>	<b>Learning outcomes</b>
Learning outcomes describe what you should know and be able to do by the end of the module	
Knowledge and understanding. After studying this module you should be able to:	
<ul style="list-style-type: none"> <li>• Critically appraise the role and processes of notational analysis.</li> <li>• Synthesise and critically evaluate a breadth of discipline-specific research articles.</li> <li>• Demonstrate a systematic understanding of current methodologies in notational analysis research.</li> <li>• Apply contemporary theories to sports performance.</li> </ul>	
Skills, qualities and attributes. After studying this module you should be able to:	
<ul style="list-style-type: none"> <li>• Develop advanced strategies for the analysis of sports performance.</li> <li>• Formulate innovative research questions in areas of notational analysis and skill acquisition.</li> <li>• Synthesise and critically examine contemporary research in notational analysis.</li> <li>• Operate independently and work effectively as a member of a team.</li> <li>• Communicate scientifically and articulately in both oral and written formats.</li> </ul>	

<b>14</b>	<b>Teaching and Learning</b>
<i>Range of modes of direct contact</i>	
This indicates the range of direct contact teaching and learning methods used on this module, e.g. lectures, seminars	
The teaching methods will centre around a blended learning approach and include: Lectures, seminars, discussion forums (including face-to-face and on-line), NOW-based exercises, invited guest speakers, laboratory and practical work.	
Total contact hours:	48
<i>Range of other learning methods</i>	
This indicates the range of other teaching and learning methods used on this module, e.g. directed reading, research	
Students will be expected to engage in additional learning which may involve, for example, the following activities:	
<ul style="list-style-type: none"> <li>• Directed reading.</li> <li>• Independent learning and research project.</li> <li>• Experiential learning (supporting consultancy projects &amp; associated coaching briefs).</li> <li>• Reflective practice.</li> <li>• A variety of I.T. resources (Word, Excel, PowerPoint).</li> </ul>	
Total non-contact hours:	252

15	<b>Assessment methods</b>		
This indicates the type and weighting of assessment elements in the module			
<u>Element number</u>	<u>Weighting</u>	<u>Type</u>	<u>Description</u>
1	100%	CWk	Notational analysis research project (Scientific Report).
<b>Diagnostic/ formative assessment</b>			
This indicates if there are any assessments that do not contribute directly to the final module mark			
Oral Presentation(s) On-line discussion forum Critique of research article(s)			
<b>Further information on assessment</b>			
This section provides further information on the module's assessment where appropriate			
The emphasis of Advanced Topics in Notational Analysis is to develop a comprehensive and critical understanding of the principles and processes behind notational analysis. This module represents a holistic approach to performance analysis e.g. exposure to processes, theory and communication training, thereby maximising student employability for the future. Specifically, students will develop not only the capacity to apply the principles taught to a variety of contexts, but will also be able to deliver the information in the most appropriate and conducive format.			
Coursework for this module will all be submitted by the end of the second teaching block.			

### Module Specification

Basic module information		
1	Module Title:	<b>Applied performance analysis</b>
2	Module Code:	M4
3	Credit Points:	15 ECTS
4	Duration:	14 weeks
5	School:	Sports Sciences, Exercise and Health
6	Campus:	Universidade De Trás-Os-Montes E Alto Douro, Vila Real, Portugal
7	Date:	Summer Semester

#### 8 Recommended pre-knowledge:

These are modules that you should have studied previously in order to take this module

Module Code      Module Title

#### 9 Programmes containing the module

<u>Level</u>	<u>Core/Option</u>	<u>Mode</u>	<u>Code</u>	<u>Programme Title</u>
M	C	FT		International M.Sc. in Performance Analysis in Sport

#### 10 Overview and Aims

This module aims to provide strong practical competencies in numerous performance analysis systems, specifically, those designed for match, motion and technique analysis. The applied nature of the module provides a unique opportunity for students to gain sufficient experience to demonstrate autonomy across a number of computerised software packages. This module also aims to enhance the student's ability to develop and critically appraise analytical systems across a variety of sports. Furthermore, students will develop the capacity to synthesise and interpret large quantitative data sets using advanced statistical techniques.

## 11 Module Content

The module content will include:

- The notational analysis process.
- Examples of sport-specific analysis systems.
- Development of notation systems.
- Systematic observation protocols.
- Development of performance indicators (normalization and variability).
- Operational definitions.
- Inter and intra-reliability analysis.
- Statistical techniques for non-parametric data.
- Performance profiling using computerised systems e.g. SimiScout, Sportscodex Gamebreaker Plus and GPS-based technologies (GPSSports).
- Qualitative video analysis. Performance profiling using Longomatch computerized system and Tablet-based (Dartfish EasyTag).
- Data capture and re-formatting.
- Video editing techniques.

## 12 Indicative Reading

- Glazier, P.S. (2010) 'Game, Set and Match? Substantive Issues and Future Directions in Performance Analysis', *Sports Medicine*, **40**: 625-634.
- Hughes, M. (2004). Notational analysis – a mathematical perspective. *International Journal of Performance Analysis in Sport*, **4**, 97-139.
- Hughes, M. And Bartlett, R. (2002). The use of performance indicators in performance analysis. *Journal of Sports Sciences*, **20**, 739-754.
- Hughes, M. and Franks, I.M. (2004). Notational Analysis for Sport: Systems for Better Coaching and Performance in Sport. Routledge: London, UK.
- Hughes, M. and Franks, I.M. (2008). The Essentials of Performance Analysis: An Introduction. Routledge: London, UK.
- Hughes, M., Cooper, S.M., Nevill, A. And Brown, S. (2003). An example of reliability and establishing performance profiles for non-parametric data from performance analysis. *International Journal of Computer Science in Sport*, **2**, 34-56.
- Hughes, M., Evans, S. And Wells, J. (2001). Establishing normative profiles in performance analysis. *International Journal of Performance Analysis in Sport*, **1**, 1-26.
- Hughes, M., Fenwick, B. And Murray, S. (2006). Expanding normative profiles of elite squash players using momentum of winners and errors. *International Journal of Performance Analysis in Sport*, **6**, 161-171.
- Hughes, M.T. and Hughes, M. (2005). The evolution of computerised notational analysis through the example of squash. *International Journal of Computer Science in Sport*, **4**, 5-20.
- McGarry T, O'Donoghue P, Sampaio J. (2013) Routledge Handbook of Sports Performance Analysis. Routledge, London (504p).
- Nevill, A., Atkinson, G., Hughes, M. And Cooper, S-M. (2002). Statistical methods for analysing discrete, categorical data recorded in sport performance and notation analyses. *Journal of Sports Science*, **20**, 829 - 844.
- O'Donoghue, P. (2010) *Research Methods for Sports Performance Analysis*, London: Routledge.
- O'Donoghue, P. (2007). Reliability issues in performance analysis. *International Journal of Performance Analysis in Sport*, **7**, 35-48.

<b>13 Learning outcomes</b>
Learning outcomes describe what you should know and be able to do by the end of the module
Knowledge and understanding. After studying this module you should be able to:
<ul style="list-style-type: none"> <li>• Critically appraise computerised notation systems.</li> <li>• Demonstrate and apply advanced principles for the assessment of sports performance.</li> <li>• Demonstrate a systematic understanding of current methodologies in performance analysis research.</li> <li>• Apply complex statistical techniques for the analysis of quantitative data sets.</li> </ul>
Skills, qualities and attributes. After studying this module you should be able to:
<ul style="list-style-type: none"> <li>• Exhibit autonomy in qualitative video analysis and editing techniques.</li> <li>• Operate autonomously computerised match analysis software packages.</li> <li>• Operate independently and work effectively as a member of a team.</li> <li>• Evaluate own performance through reflective practice.</li> <li>• Communicate scientifically and articulately in both oral and written formats.</li> </ul>

<b>14 Teaching and Learning</b>
<i>Range of modes of direct contact</i>
This indicates the range of direct contact teaching and learning methods used on this module, e.g. lectures, seminars
The teaching methods will centre around a blended learning approach and include: Lectures, seminars, discussion forums (including face-to-face and on-line), NOW-based exercises, guest speakers, laboratory and practical work.
Total contact hours: 48
<i>Range of other learning methods</i>
This indicates the range of other teaching and learning methods used on this module, e.g. directed reading, research
Students will be expected to engage in around 6-8 h per week of additional learning which may involve, for example, the following activities:
<ul style="list-style-type: none"> <li>• Directed reading.</li> <li>• Independent learning and research project.</li> <li>• Experiential learning (supporting consultancy projects &amp; associated coaching briefs).</li> <li>• Reflective practice.</li> <li>• A variety of I.T. resources (Word, Excel, Powerpoint).</li> </ul>
Total non-contact hours: 252

15	<b>Assessment methods</b>		
This indicates the type and weighting of assessment elements in the module			
<u>Element number</u>	<u>Weighting</u>	<u>Type</u>	<u>Description</u>
1	50%	CWk	Critical appraisal of computerised notation systems (Poster presentation format).
2	50%	CWk	Proficiency assessment of computerised systems.
<b>Diagnostic/ formative assessment</b>			
This indicates if there are any assessments that do not contribute directly to the final module mark			
Reflective practice Development of sport-specific systems Oral Presentation(s).			
<b>Further information on assessment</b>			
This section provides further information on the module's assessment where appropriate			
The emphasis of Applied Performance Analysis is to develop the practical skills and competencies that will make you an effective practitioner. Furthermore, the breadth of experiences afforded will enhance employability opportunities across numerous sectors of professional sport. To this end, assessment is focused on task accomplishment that will provide robust foundation to working in the area of performance analysis and athlete support and enhancement. This is a highly practical module and much of the assessment will be practical based.			
Coursework for this module will all be submitted by the end of the second teaching block.			



### Module Specification

Basic module information		
1	Module Title:	<b>Research Methods in Kinesiology</b>
2	Module Code:	M5
3	Credit Points:	15 ECTS
4	Duration:	14 weeks
5	School:	Univerza na Primorskem
6	Campus:	Koper, Slovenia
7	Date:	Winter Semester

8	<p><b>Recommended pre-knowledge:</b></p> <p>These are modules that you should have studied previously in order to take this module</p> <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;"><u>Module Code</u></th> <th style="text-align: center;"><u>Module Title</u></th> </tr> </thead> <tbody> <tr> <td></td> <td style="text-align: center;">Fundamentals in Research Methodology/Statistics</td> </tr> </tbody> </table>	<u>Module Code</u>	<u>Module Title</u>		Fundamentals in Research Methodology/Statistics
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<u>Level</u>	<u>Core/Option</u>	<u>Mode</u>	<u>Code</u>	<u>Programme Title</u>							
M	C	FT		International M.Sc. in Performance Analysis in Sport							

10	<p><b>Overview and Aims</b></p> <p>This module aims to provide a philosophically, ethically and methodologically sound framework for research and applied work; define and explain the research paradigms involved in performance analysis, human movement analysis and notational analysis; present principles surrounding the design of the research that are specific to these fields; develop further students experimental assessment toolkit; increase students capacity to study, interpret and analyse research projects in the most important lines of research, within their relevant field.</p>
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**11 Module Content**

Ethics and experimental Research in Sport Performance.

Research in Sport Performance: -

- Research problems approached from the perspective of the sport performance.
- Selected issues in the sport performance research;
- Examples of relevant publications and doctoral theses;
- Review of the literature: web pages, journals, and links related to the sports performance.

Research design: -

- Types of design adapted to a range of research problems;
- Relation between design and statistical techniques applied.

Collection and reporting of data: -

- Statistical software;
- Data collection requirements;
- Treatment of different types of primary variables;
- Interpretation of results and conclusions;
- Reporting of data;
- Academic writing in quantitative analysis.

**12 Indicative Reading**

- Morrow, J., Jackson, A., Disch, P., Mood, D. (2005). *Measurement and Evaluation in Human Performance*. Champaign, Illinois: Human Kinetics.
- Thomas, J.R.; Nelson, J.K. (2005). *Research methods in physical activity*. 5<sup>th</sup> Ed. Champaign, Illinois: Human Kinetics.
- Vincent, W.J. (2005). *Statistics in kinesiology*. 3<sup>rd</sup> Ed. Champaign, Illinois, Human Kinetics.
- Hughes, M., Cooper, S-M., Nevill, A. And Brown, S. (2003). An example of reliability testing and profiling using non-parametric data from performance analysis. *International Journal of Computers in Sport Science*, **2**, 34 – 56.
- Hughes, M., Cooper, S-M. And Nevill, A. (2002) Analysis procedures for non-parametric data from performance analysis. *EJPAS International Journal of Performance Analysis Sport (Electronic)*, **2**, 6 – 20.
- Hughes, M., Evans, S. And Wells, J. (2001). Establishing normative profiles in performance analysis. *eJPAS*, **1**, 4 – 27.
- Nevill, A., Atkinson, G., Hughes, M. And Cooper, S-M. (2002). Statistical methods for analysing discrete, categorical data recorded in sport performance and notation analyses. *Journal of Sports Science*, **20**, 829 - 844.

**13 Learning outcomes**

Learning outcomes describe what you should know and be able to do by the end of the module

Knowledge and understanding. After studying this module you should be able to:

- Comprehend the complex research environment, its constraints and challenges;
- Operate within an ethically sound framework;
- Select, design and evaluation appropriate methodologies relevant to the collection of data in areas relevant to performance analysis (Kinesiometrics).

Skills, qualities and attributes. After studying this module you should be able to:

- Control a range of assessment tools; such as strain gauges, force plate, motion analysis, EMG, instrumented insole pressure plants, accelerometers; Spirometry; for the assessment of human performance;
- Prepare a scientific report;
- Choose and apply appropriate statistical techniques;
- Assess experimental results for reliability'
- Compile experimental results in the form of a written paper;
- Planning and reporting experimental methods in kinesiology.

#### 14 Teaching and Learning

##### *Range of modes of direct contact*

This indicates the range of direct contact teaching and learning methods used on this module, e.g. lectures, seminars

The module will be presented through a series of lectures and formal tutorials that will be supplemented by seminars, practical laboratory classes, and presentations, and guided independent study.

Total contact hours: 48

##### *Range of other learning methods*

This indicates the range of other teaching and learning methods used on this module, e.g. directed reading, research

Use of on- and off- line learning resources  
 Independent data collection, analysis and evaluation  
 Directed reading  
 Independent research

Total non-contact hours: 252

#### 15 Assessment methods

This indicates the type and weighting of assessment elements in the module

<u>Element number</u>	<u>Weighting</u>	<u>Type</u>	<u>Description</u>
1	70%	CWk	(A) Research review (ca. 5,000 words) (70% of module mark) (B) Oral presentation (30% of module mark)

##### **Diagnostic/ formative assessment**

This indicates if there are any assessments that do not contribute directly to the final module mark

Module assessment will navigate student towards completion of their research proposal underpinning their final year research project. Students will be supported and guided in shaping their research proposal through tutorials and seminars. The research review will provide opportunity to explore literature and research within the student's field of interest, evaluating key aspects of research and gaps for future investigations. The oral presentation gives opportunity for open discussion and further evaluation of student's comprehension and understanding of the research field.

**Further information on assessment**

This section provides further information on the module's assessment where appropriate

Coursework for this module will all be submitted by the end of the third teaching block.

### Module Specification

Basic module information		
1	Module Title:	<b>Training Circulation, Oxygen Consumption and Muscle Force Development + Kinesiometrics</b>
2	Module Code:	M6
3	Credit Points:	15 ECTS
4	Duration:	14 weeks
5	School:	Univerza na Primorskem
6	Campus:	Koper, Slovenia
7	Date:	Winter Semester

8	<p><b>Recommended pre-knowledge:</b></p> <p>These are modules that you should have studied previously in order to take this module</p> <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th><u>Module Code</u></th> <th><u>Module Title</u></th> </tr> </thead> <tbody> <tr> <td></td> <td>Anatomy</td> </tr> <tr> <td></td> <td>Physiology</td> </tr> </tbody> </table>	<u>Module Code</u>	<u>Module Title</u>		Anatomy		Physiology
<u>Module Code</u>	<u>Module Title</u>						
	Anatomy						
	Physiology						

9	<p><b>Programmes containing the module</b></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>Level</u></th> <th style="text-align: left;"><u>Core/Option</u></th> <th style="text-align: left;"><u>Mode</u></th> <th style="text-align: left;"><u>Code</u></th> <th style="text-align: left;"><u>Programme Title</u></th> </tr> </thead> <tbody> <tr> <td>M</td> <td>C</td> <td>FT</td> <td></td> <td>International M.Sc. in Performance Analysis in Sport</td> </tr> </tbody> </table>	<u>Level</u>	<u>Core/Option</u>	<u>Mode</u>	<u>Code</u>	<u>Programme Title</u>	M	C	FT		International M.Sc. in Performance Analysis in Sport
<u>Level</u>	<u>Core/Option</u>	<u>Mode</u>	<u>Code</u>	<u>Programme Title</u>							
M	C	FT		International M.Sc. in Performance Analysis in Sport							

10	<p><b>Overview and Aims</b></p> <p>This module aims to develop the students' ability to select techniques and assessment tools to define a study related to sports physiology, kinesiology, and biomechanics; to classify and analyse different physiological, kinetic and kinematic variables; and to develop their experience in practical sport physiology and kinesiology applications and diagnostic tools.</p> <p>An emphasis will be set on enhancing students' understanding of underpinning mechanisms of respiratory, cardiovascular, and musculoskeletal systems functions. In addition, utilization and application of up-to-date tools and devices for analysis of various parameters in kinesiology will be taught.</p>
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**11 Module Content**

- Analysis from the Physiological perspective: -
- Blood circulation in rest during activity.
  - Oxygen consumption in rest and during activity.
  - Development of muscle force.
- Quantitative models to analyse sport performance: -
- Methodology for making up models.
  - Contrast of the models.
  - Modelling and computer simulation.
- The Techniques for Kinesiological Analysis: -
- Techniques for Kinematical Analysis.
  - Techniques for Kinetic Analysis.
  - Combined Techniques, and alternatives.
- Applications and practical examples in sport context: -
- Athletics.
  - Football.
  - Weightlifting.
  - Adapted Sport.
  - Swimming.
  - Basketball.
  - Equipment Assessment.
  - Nordic Walking.

**12 Indicative Reading**

- ABBOT, A. V; WILSON, D. G. (1995) Human-Powered vehicles. Champaign, IL: Human Kinetics
- ALLARD, P.; STOKES, I.A.F.; BLANCHY, J.P.(1995). Three dimensional analysis of movements. Champaign Illinois: Human Kinetics
- BARTLETT, R. (2007). Introduction of Sports Biomechanics. Analysing Human movement patterns (2nd Ed), Routledge, UK
- CALDWELL, G., HAMILL, J., KAMEN, G., SAUNDERS N. WHITTLESEY, D. GORDON E. ROBERTSON. (2004) Research Methods in Biomechanics. Human Kinetics. Champaign, Illinois
- DRAKE, R.L., VOGL, A.W., MITCHEL, A.W.M. (2009). Gray's anatomy for students. Philadelphia: Churchill Livingstone.
- GUYTON, A.C. and HALL, J.E. (2006). Textbook of medical physiology. Philadelphia: Elsevier Saunders.
- HAMILL, J., KNUTZEN, K.M. (2003). Biomechanical basis of human movement. USA: Williams & Wilkins.
- KNUDSON, D. V.,(2007) Fundamentals of Biomechanics, Springer, New York.
- MAGLISCHO, E.W. (2003). Swimming fastest. Ed. Human Kinetics
- MCARDLE, W.D., KATCH, F.I., KATCH, V.L. (2001). Exercise physiology: Energy, nutrition, and human, performance. Philadelphia: Lippincott Williams & Wilkins.
- MUSCOLINO, J.E. (2011). Kinesiology: The skeletal system and muscle function. St. Louis: Mosby.
- NEUMANN, D.A. (2010). Kinesiology of the musculoskeletal system. St. Louis: Mosby.
- POWERS, S., HOWLEY, E. (2011). Exercise physiology: Theory and application to fitness and performance. New York: McGraw-Hill.
- ZATSIORSKI, V., (ed) (2000). Biomechanics in Sport: performance enhancement and injury prevention. Blackwell Science, Oxford

<b>13 Learning outcomes</b>
Learning outcomes describe what you should know and be able to do by the end of the module
Knowledge and understanding. After studying this module you should be able to:
<ul style="list-style-type: none"> <li>• Develop a critical understanding of the theoretical basis of sports physiological analysis and kinesiological analysis.</li> <li>• Critically evaluate techniques used in motion analysis, segmental inertia determination and computer simulation models.</li> <li>• Critically evaluate movement from physiological and kinesiological perspective.</li> </ul>
Skills, qualities and attributes. After studying this module you should be able to:
<ul style="list-style-type: none"> <li>• Apply a range of computer programs and computer devices and be familiar with modern electronic systems;</li> <li>• Evaluate information gathered to provide constructive feedback to coaches, athletes and researches for technique improvement and injury prevention.</li> </ul>

<b>14 Teaching and Learning</b>
<i>Range of modes of direct contact</i>
This indicates the range of direct contact teaching and learning methods used on this module, e.g. lectures, seminars
The module will be presented through a series of lectures and formal tutorials that will be supplemented by seminars, practical laboratory classes, and presentations, and guided independent study.
Total contact hours: 48
<i>Range of other learning methods</i>
This indicates the range of other teaching and learning methods used on this module, e.g. directed reading, research
Use of on- and off- line learning resources
Independent data collection, analysis and evaluation
Directed reading
Independent research
Total non-contact hours: 252

<b>15 Assessment methods</b>												
This indicates the type and weighting of assessment elements in the module												
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1	70%	CWk	(C) Written formal report of physiological and kinesiological analysis (50% of module mark). (D) Oral presentation (20% of module mark).									
2	30%	Exam	Written examination									

**Diagnostic/ formative assessment**

This indicates if there are any assessments that do not contribute directly to the final module mark

**Further information on assessment**

This section provides further information on the module's assessment where appropriate

Coursework for this module will all be submitted by the end of the third teaching block.



### Module Specification

Basic module information	
1	Module Title: <b>Scientific Applied Work Placement</b>
2	Module Code: M7
3	Credit Points: 10 ECTS
4	Duration: 12 weeks
5	School:
6	Campus:
7	Date: February

**8 Recommended pre-knowledge:**

These are modules that you should have studied previously in order to take this module

<u>Module Code</u>	<u>Module Title</u>
	IMPAS Modules 1-6

**9 Programmes containing the module**

<u>Level</u>	<u>Core/Option</u>	<u>Mode</u>	<u>Code</u>	<u>Programme Title</u>
M	C	FT		International M.Sc. in Performance Analysis in Sport

**10 Overview and Aims**

The main aims of this specialised module are to skill students in their capacity to apply theory to practice, specifically within an industry-based and research-based settings. Drawing on knowledge and understanding gained through taught modules, students will be based within a setting offering scientific support to athletes and coaches, persons undergoing rehabilitation procedures, individuals with special needs for movement, and other. In addition to applying theory to practice, students will develop transferable skills, such as team-work, communication, task-deadline accomplishment and professional work ethic. Work placement opportunities may well take place in clubs, organisation and/or federations, rehabilitation centers, research institutes and laboratories, and similar. It may be that placements are hosted within academic institutions working alongside practitioners who offer sport science support and performance analysis to their elite teams. This module aims to enhance the students' employability and career preparation by developing a range of both subject-specific and key transferable skills.

**11 Module Content**

Students on this module will spend time working within and alongside sports clubs, companies, associations, research laboratories, etc. Involved with delivery of applied work in area of sport and movement science. Time will be spent in preparing students for placement, such as placement-host agreements, pre-placement introduction seminars, health and safety arrangements, key contact details, etc.

**12 Indicative Reading**

- Parker, C. (2001) 101 Communication Tips for Managers; Handbook of Communication. Institute of Leisure and Amenity Managers, UK

**13 Learning outcomes**

Learning outcomes describe what you should know and be able to do by the end of the module

Knowledge and understanding. After studying this module you should be able to:

- Evaluate suitable and innovative methodologies designed to improve an individual's analytical capacity.
- Plan, design and execute assessment of human performance.
- Demonstrate theoretical underpinning to the application of practical techniques and solutions for the monitoring, analysis and evaluation of performance analysis of sport.
- Evaluate the link between applied sport science and the coaching process for enhancement of athletic performance.

Skills, qualities and attributes. After studying this module you should be able to:

- Use appropriate methodologies in the analysis and interpretation of data obtained in performance analysis of sport.
- Develop innovative and creative methodologies for the capture of human movement.
- Undertake safe and effective laboratory and field work.
- Demonstrate vocationally relevant performance analysis skills.
- Communicate effectively in a manner that influences an athlete(s) performance and the coaching process.
- Demonstrate transferable skills expected by industry of performance analyst.

14	<p><b>Teaching and Learning</b></p> <p><i>Range of modes of direct contact</i></p> <p>This indicates the range of direct contact teaching and learning methods used on this module, e.g. lectures, seminars</p>
	<p>Student learning will take place in the form of “on-the-job” training at host organisation. Students’ will be mentored by experienced staff in field of performance analysis and will shadow staff within the organisation supporting them in their role. It would be expected that students demonstrate autonomy in their working within set, and agreed, boundaries.</p> <p>Total contact hours: 10</p>
	<p><i>Range of other learning methods</i></p> <p>This indicates the range of other teaching and learning methods used on this module, e.g. directed reading, research</p>
	<p>Use of on- and off- line learning resources</p> <p>Independent data collection, analysis and evaluation</p> <p>Directed reading</p> <p>Independent research</p> <p>Total non-contact hours: 290</p>

15	<b>Assessment methods</b>		
This indicates the type and weighting of assessment elements in the module			
<u>Element number</u>	<u>Weighting</u>	<u>Type</u>	<u>Description</u>
1	100%	CWk	<p>A) Reflective journal (60%) – evaluation of the placement experience, capturing work undertaken, critique of application of theory to practice.</p> <p>B) Oral presentation on placement experience (40%) – critical evaluation of application of theoretical knowledge and understanding in practical situations and implementation.</p>
<b>Diagnostic/ formative assessment</b>			
This indicates if there are any assessments that do not contribute directly to the final module mark			
Students will be supported throughout their placement period by their tutor and/or programme leader. Discussion points, through telephone conversations, e-mail, etc. Can occur throughout the placement. Drafts of reflective journal can be submitted for formative feedback to the placement tutor.			
<b>Further information on assessment</b>			
This section provides further information on the module's assessment where appropriate			
Coursework for this module will all be submitted by the end of your second year of study. Placements may be undertaken outside the country in which you are registered to study. Your primary supervision team will be academic staff from your home university.			

### Module Specification

Basic module information		
1	Module Title:	<b>Research Project / Master Thesis</b>
2	Module Code:	M8
3	Credit Points:	20 ECTS
4	Duration:	20 weeks
5	School:	
6	Campus:	
7	Date:	May

#### 8 **Recommended pre-knowledge:**

These are modules that you should have studied previously in order to take this module

<u>Module Code</u>	<u>Module Title</u>
	IMPAS Modules 1-6

#### 9 **Programmes containing the module**

<u>Level</u>	<u>Core/Option</u>	<u>Mode</u>	<u>Code</u>	<u>Programme Title</u>
M	C	FT		International M.Sc. in Performance Analysis in Sport

#### 10 **Overview and Aims**

This module aims to provide students with the opportunity to:

- explore and critically analyse current issues at the forefront of a particular area of performance analysis;
- conduct independent research that is unique and forward-thinking in a particular area of performance analysis;
- undertake and evaluate complex issues in a systematic and creative way for the purpose of hypothesis testing;
- develop excellent time management skills as required for their intended professional discipline;
- prepare work for possible presentation their research in a peer-reviewed environment (e.g., conference, journal).

**11 Module Content**

At the beginning of the module, students will be provided with a comprehensive dissertation handbook. This will provide background knowledge required to undertake the dissertation successfully. Students are encouraged to identify areas for research and consult with a member of academic staff to shape concepts in to a feasible, and achievable, research proposal. Under the guidance of the Supervisor, each student will critically evaluate literature relevant to the research topic; undertake a period of empirical data collection; analyse and evaluate findings; and present a written thesis in addition to preparing for an oral presentation of the thesis with open question defence.

**12 Indicative Reading**

Students will be expected to source information from peer reviewed, primary information resources. Additionally, secondary sources of information may be consulted (relevant textbooks, etc.).

Other resources may also be suitable for supporting project development and statistics; such as:

- Thomas, J.R.; Nelson, J.K. (2005). *Research methods in physical activity*. 5<sup>th</sup> Ed. Champaign, Illinois: Human Kinetics.
- Vincent, W.J. (2005). *Statistics in kinesiology*. 3<sup>rd</sup> Ed. Champaign, Illinois, Human Kinetics.

**13 Learning outcomes**

Learning outcomes describe what you should know and be able to do by the end of the module

Knowledge and understanding. After studying this module you should be able to:

- Demonstrate a systematic understanding of knowledge and critical awareness of the issues at the forefront of performance analysis;
- Review research that is unique and forward-thinking in a particular area of performance analysis.

Skills, qualities and attributes. After studying this module you should be able to:

- Deal with complex issues in a systematic and creative way and show originality in solving problems;
- Analyse and communicate the findings of current performance analysis research in written format;
- Show sound judgement, personal responsibility and initiative;
- Produce an individual and substantial piece of independent work to specific timescales.

14	<p><b>Teaching and Learning</b></p> <p><i>Range of modes of direct contact</i></p> <p>This indicates the range of direct contact teaching and learning methods used on this module, e.g. lectures, seminars</p>
	<p>Students will embark on a piece of independent research, showing autonomy in working, capacity to meet specified deadlines, ability to implement effective time management skills, along with record-keeping skills. Each student will be assigned a suitable member of academic staff to oversee and supervise the research project, however there needs to be maintained a level of independence by the student. Supervisory meetings will be arranged as and when necessary and appropriate.</p> <p>Total contact hours: 8</p>
	<p><i>Range of other learning methods</i></p> <p>This indicates the range of other teaching and learning methods used on this module, e.g. directed reading, research</p>
	<p>Use of on- and off- line learning resources</p> <p>Independent data collection, analysis and evaluation</p> <p>Directed reading</p> <p>Independent research</p> <p>Total non-contact hours: 592</p>

15	<b>Assessment methods</b>		
This indicates the type and weighting of assessment elements in the module			
<u>Element number</u>	<u>Weighting</u>	<u>Type</u>	<u>Description</u>
1	100%	CWK	A) Written thesis (70%) ca. 15,000 words B) Oral presentation of the thesis including questions and answers (30%)
<b>Diagnostic/ formative assessment</b>			
This indicates if there are any assessments that do not contribute directly to the final module mark			
Written proposal outlining the aims, objectives, methodologies including experimental design and data analysis will be reviewed. Regular supervisory meetings will provide opportunity to monitor progress and developments, discuss emerging issues and share good practice.			
<b>Further information on assessment</b>			
This section provides further information on the module's assessment where appropriate			
Coursework for this module will all be submitted within the second year of study. It is expectant that the research project will take in the region of 5 months to complete. Research projects can be undertaken outside of the country in which you are registered, however your primary supervisory team will be based in the country in which you are registered to study.			