Programme Title: Clinical Biomechanics

Awarding Body: Staffordshire University

Teaching Institution: Staffordshire University

Final Awards: MSc Clinical Biomechanics

Intermediate Awards: Pg Diploma Clinical Biomechanics
Pg Cert Clinical Biomechanics
Pg Cert Gait Analysis
PG Cert Mechanics of the Diabetic Foot

Mode of Study: Blended Learning

UCAS Codes: N/A

QAA Subject Benchmarks: N/A

JACS Code: C600 Sports and Exercise Science

Professional/Statutory Body: N/A

Entry Year: 2017/18

If you require this document in a larger text or a different medium please contact us.
EDUCATIONAL AIMS OF THE PROGRAMME

Programme Aims and Distinctive Features

The Biomechanics' suite of awards is focused on the clinical application of mechanical principles. Clinical practice in recent times has required practitioners to focus more intensely on the exploration of the evidence underpinning their role. There has been in many fields increasing specialisation and a need to develop skills required to undertake advanced clinical practice. In order to effectively treat biomechanical problems it is necessary to be able to perform a skilled diagnosis using up-to-date practices. This requires a sound knowledge of the principles of biomechanics, the origins, tissue stresses and current therapies applicable to the diagnosis and treatment of a range of biomechanically related problems. This combination is extremely important as an advanced clinical skill. Specialist clinical teams in this field drawn from a variety of clinical professions are increasingly being built and the practitioner with skills and the means to seek out advancement in practice as a transferable skill will be in demand. This award will draw heavily on clinical experts using specialist lecturers managed by a small team of module coordinators.

All awards are delivered around teaching on non consecutive weekends and are designed with flexibility in mind for the clinical practitioner. This enables students to build their study into their working week, but also gives time between teaching for reflection and application of clinical knowledge and skills learnt. It also gives professionals in private practice an opportunity to attend and allows us to attract students from a national rather than regional base.

Each award can be studied at postgraduate certificate level, with specific rigid routes defined for specialists in Gait analysis and Mechanics of the diabetic foot. Clinical biomechanics can be studied at postgraduate diploma and master’s level also and all students from any awards can continue their study with appropriate credits and modules to this level.

The distinctive element of this award at Staffordshire University is the focus on the clinical relationship between clinical biomechanical problems, theory and practice. A further distinction is the teaching team which is derived from a compliment of people having a significant clinical practice in the field. This enables students to learn with clinical scenarios and experience. The overall aim of this suite of awards is to enrich and advance the understanding of biomechanics in a clinical setting.

Specifically the awards aim to;

- Demonstrate the relationship between theoretical components of pathology, clinical features, techniques and technologies combined with clinical application of that knowledge.
- Enhance understanding of the key concepts through action and analysis.
- Embed theory and concepts taught into a clinical framework of practical application.
- Encourage independent enquiry/research in the field of Clinical Biomechanics.
- Engender an ethos of evaluation/reflection on practice to inform future judgements and actions.
- Build from the students, a community of musculoskeletal clinical practitioner/researchers.

Individual awards

*PgC/PgD/MSc Clinical Biomechanics*
This award is focused on musculoskeletal practitioners (for example: physiotherapists, orthotists, chiropractors and podiatrists) who provide biomechanical based interventions in their clinical practice. This award at certificate level gives the student an insight into the patho-mechanics of musculoskeletal problems and introduces them to current thinking in the area of biomechanical therapeutic interventions. These principles and concepts are built on at diploma level and an emphasis on research and critical practice allows students to build to a MSc.

*Pg Cert Gait Analysis*

This award specifically looks at the modality of analysing gait for patient intervention, improved performance and human motion. Gait analysis has developed as advances in technology have opened up new methods of recording motion. This award will be focused at both clinical practitioners treating patients and specialist in gait analysis who analyse performance and movement.

*Pg Cert Mechanics Of the Diabetic Foot*

As in the previous awards this award is designed for clinical practitioners involved in therapeutic interventions based on biomechanics. Diabetes affects the musculoskeletal system and in order to effectively treat a patient suffering from all types of diabetes it is necessary to understand the mechanics and pathomechanics of the musculoskeletal system as well as the mechanics behind the condition that they are treating. This requires a good knowledge of the principles of clinical biomechanics, the effects of diabetes and its relationship to pathomechanics. This award draws heavily on clinical experts using specialist lecturers managed by a small team of module co-ordinators.

**PROGRAMME OUTCOMES**

A tiered approach to learning allows for students to build on their experiences and align modules to clinical practice. Each level of study allows for new skills to be taught whilst supporting and developing existing skills.

At the end of studying **Postgraduate Certificate in - :**

**Clinical Biomechanics**
**Gait Analysis**
**Mechanics of the Diabetic Foot**

all students will:

1. Gain a critical understanding of biomechanics and its clinical application when managing musculoskeletal pathology. (SU: Knowledge & Understanding, Learning, Analysis, Communication, Enquiry, Problem Solving)

Additional to this generic outcome for the postgraduate certificate, students will then specifically address a second outcome depending on the chosen award studied;

For the Postgraduate Certificate in Clinical Biomechanics students will:
2. Investigate the principles and origins of biomechanics and show an awareness of assessment, diagnosis and management of pathologies. (SU: Knowledge & Understanding, Learning, Analysis, Communication, Enquiry, Problem Solving)

For the Postgraduate Certificate in Gait Analysis OR Mechanics of the Diabetic Foot students will:

2. Develop a critical appreciation of Gait Analysis OR mechanics of the diabetic foot and how complications are managed in the clinical environment. (SU: Knowledge & Understanding, Learning, Analysis, Communication, Enquiry, Problem Solving)

At the end of a **PgD in Clinical Biomechanics** students will in addition:

1. Demonstrate the capacity to develop clinical practice with an expanding range of autonomous practice skills, underpinned by a systematic understanding of specialist knowledge and enquiry. (SU: Knowledge and Understanding, Learning, Enquiry)

2. Examine evidence with a suitable level of critique from a variety of theoretical perspectives in relation to the area of specialist practice to determine the implications for future research and practice development. (SU: Enquiry, Analysis, Problem Solving, Application)

3. Reflect on your own patient case load, applying theoretical models into clinical practice with a critical analysis of the expected outcomes. (SU: Reflection, Application, Analysis, Enquiry, Problem Solving)

At the end of an **MSc in Clinical Biomechanics** students will in addition:

4. Plan, organise, implement and communicate a piece of research in the area of clinical biomechanics, demonstrating intellectual rigour in respect of research method. (SU: Knowledge and Understanding, Application, Communication)

5. Reflect on the processes involved in the preparation and implementation of research and evaluate the findings in relation to advancing clinical biomechanics. (SU: Enquiry, Analysis, Problem Solving, Application, Reflection)

**Potential Awards:**
Postgraduate Certificate (60 credits) – comprises of 2 rigid structured awards to give students either a **Pg Cert in Gait Analysis** or **Pg Cert in Mechanics of the Diabetic foot**. Modules that are studied are the core module in Critical Appraisal Skills with either Gait Analysis OR Mechanics of the Diabetic Foot (depending on which subject specific route has been selected) with Tissue stress.

Additionally students who are studying on the flexible Clinical Biomechanics award can exit with 60 credits with a **Pg Cert Clinical Biomechanics** after studying critical appraisal skills, and then a selection of the modules on offer that are equal to 45 credits.

Postgraduate Diploma (120 credits) – comprises of any of the above PG Cert awards plus additional 60 credits from studying Research Methods, and any of the other modules that are on offer that have not been previously studied.

Master of Science (180 credits) – comprises of conducting and writing a 12 000 word original research dissertation.

**Progression:**
In order to progress from one stage of an award to another (i.e. PgC to PgD, PgD to Masters), you must pass the modules and gain sufficient credits to move on to the next level. Students who register on a post graduate certificate who wish to continue their study may transfer on to the MSc Clinical Biomechanics.

Two podopaediatric modules will be on offer, Paediatric Lower Limb Development (DL) and Lower Limb Paediatric Pathology and Therapies. This is to enrich this growing specialism and to also introduce a full distance learning module to the award. By doing this we can explore delivering podopaediatrics distance learning as an option for international students.
HOW WILL I BE TAUGHT AND ASSESSED?

Teaching and Learning

Students will be asked to be actively involved in learning and teaching. The teaching and learning within these awards will occur through blended learning, where the face to face delivery and student interaction will occur during teaching weekends. The network of students/practitioners developed at these weekends will be supported through e-mail discussion forums and E learning Blackboard. All support material for the courses will be provided electronically through Blackboard. This style of delivery allows for effective dissemination of practical and clinical skills with group discussions on implementation within the students work place.

A predominant feature of the award taught elements will be a type of problem based learning in which students will undertake tasks and become involved with the group. The tutors will lead in selecting these tasks to demonstrate the key aspects they want, but will then become facilitators in the learning process. Students will also be asked to produce case studies and to lead seminars and workshops in a demonstration of disseminating theory, practice and skills. Students will be asked to undertake tasks in their place of work and to lead discussions on it. There will also be specialist lecturers that will lecture in the traditional format, to ensure specialist new knowledge is provided as a prelude to workshops and task based sessions.

This suite of awards and modules will form the Clinical Biomechanics Scheme within the postgraduate framework. The modules will also form a part of a stepped programme in which a student can elect to use a module to attain a Postgraduate Certificate or Diploma, or an MSc, providing it is specified in these awards as a suitable module by route designation or option.

The award timetable is based on blocks of 12 weeks. Each 30 credits of study is presented as blocks of study over a nine week period per module with a three week break between them (Total of 12 weeks). 30 credits of study include attendance at the University for three weekends. There is a minimum registration period of 12 months and a maximum registration period of 36 months.

There are two types of modules in this award.

- 30 credit – Based on 3 non consecutive weekends (6 contact days) with attendance required on each of the teaching days.
- 15 credits. – Either based on 3 consecutive days where attendance is required for each of the teaching days OR one specified contact day with additional learning and support delivered via Blackboard.

There is an induction day staged on the Friday of the first weekend period of study. This weekend commences the awards in September.

Although the modules can be studied in any order it will be recommended that a student takes a general module on qualitative and quantitative critical appraisal skills as their first module, if they are returning to PG study from clinical practice.

At certificate level for Gait analysis or Mechanics of the Diabetic Foot students will study Critical Appraisal (15 credits) Tissue Stress (15 credits) and either Gait analysis OR Mechanics of the Diabetic Foot (both 30 credits) to gain the relevant certificate.
Assessment

The assessment strategies within these awards adhere to the Sport and Exercise TLA strategy. Further details on assessment specific to these awards are given below:

<table>
<thead>
<tr>
<th>Module Title</th>
<th>Assessment Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical Appraisal Skills</td>
<td>Critical review of 2 set research papers (50%) along with a subject specific literature review (50%)</td>
</tr>
<tr>
<td>Gait Analysis</td>
<td>Gait analysis report (60%) Assignment to debate 2D v 3D analysis (40%)</td>
</tr>
<tr>
<td>Mechanics of the Diabetic Foot</td>
<td>Portfolio based on set tasks</td>
</tr>
<tr>
<td>Tissue Stress</td>
<td>A Reflective Learning Diary (40%) Case study Assignment (60%)</td>
</tr>
<tr>
<td>Origins and Principles of Biomechanics</td>
<td>Portfolio based on set tasks</td>
</tr>
</tbody>
</table>
Therapies Using Biomechanical Principles

<table>
<thead>
<tr>
<th>Therapies Using Biomechanical Principles</th>
<th>Portfolio based on set tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spinal Mechanics</td>
<td>Case study with poster (60%) and an assignment (40%)</td>
</tr>
<tr>
<td>Sports Mechanics in Injury</td>
<td>An Assignment (60%) and a case study (40%)</td>
</tr>
<tr>
<td>Paediatric Lower Limb Development</td>
<td>Learning Diary (60%) clinical assessment (40%)</td>
</tr>
<tr>
<td>Lower limb Paediatric Pathologies and Therapies</td>
<td>Portfolio based on set tasks</td>
</tr>
<tr>
<td>Research Methods and Methodologies</td>
<td>Critical Literature review OR Research Proposal (3500 words 100%)</td>
</tr>
</tbody>
</table>

**Portfolio.**

The nature and content of the portfolio will be determined by the specific needs of the module and the student’s negotiation with the module co-ordinator. In practice it means that all of a student’s work, including preparative work for assignments and past work experience can be included and the student needs to prove that he/she has met the learning outcomes for the module. The award induction includes a session on portfolio building. The contents of the portfolio would normally include a written assignment based on observations during practical workshops and tasks provided to them. The key is the inclusion of preparatory work and linking work to the learning outcomes. Providing comprehensive critique on existing research and clinical practice along with reflection within individual tasks will ensure PG level of learning within the portfolio.

In brief, the essence of this assessment is to test:
- A student’s reflection on theory to practice.
- Self appraisal, identification of gaps and the actions taken to fill them in response to the work for the module.
- A continuous record of study and practice.
- Organisation of evidence as a demonstration of using knowledge on clinical practice.

Participants will therefore need to include:
- Evidence of participating in the designed learning experiences/activities.
- Demonstration through various mechanisms that learning has taken place as evidenced on two levels:
1. Academic (the demonstration of gaining knowledge related to clinical podiatric biomechanical practice, the process of attaining and selecting this knowledge for the portfolio, and the rationale for its inclusion with cross linkage between different areas within the portfolio)

2. Clinical Application (evidence of application in using diagnostic skills in the workplace setting and provision by the student of a written critical evaluation of how his/her clinical work has changed as a result of attending the course).

60 credit Dissertation.
One 12,000 word dissertation (100%)

ADDITIONAL INFORMATION

Entry Requirements (including IELTS score)
Minimum 7.0

What qualifications would I need to join this programme?

The applicant will normally be in employment as a clinical practitioner, medic or working in the field of Clinical Biomechanics. The employment of the applicant should allow him/her to benefit from the learning experience, for example working in clinical areas where he/she can meet patients with musculoskeletal problems.

When considering the general criteria set out below, the degree or other acceptable qualification must be in a healthcare or biomechanical field involving the treatment of patients. Healthcare professionals need to hold any necessary post qualification registration (e.g. HCPC Registration) deemed a requirement for working with patients.

- An honours degree of a UK University, or any other qualification deemed to be equivalent to a UK honours degree.

or

- If an applicant does not have an honours degree he/she may still be admitted if he/she has significant appropriate experience and can provide substantial evidence of ability to undertake the course successfully and benefit from it. A professional portfolio indicating achievements is a highly suitable source of evidence to produce at interview.

Disability Statement
Staffordshire University operates a policy of inclusive teaching and learning to ensure that all students have an equal opportunity to fulfil their educational potential. Details about how to apply to have your needs assessed can be found at:
http://www.staffs.ac.uk/study_here/disabled_students/index.jsp

AWARD SPECIFIC INFORMATION
Specific to this award, the regulations for compensation marks are not adhered to and failed modules will not be compensated for demonstration elsewhere in your modules the ability to satisfy the learning outcomes of your award level. This is in keeping with professional standards and statutory bodies.

Further information about the award can be found in the relevant Student Handbook and on the University Website. This includes information about optional modules, student support, and academic regulations.

====================================