

BSc (Honours) in Prosthetics and Orthotics

Student Handbook

Session 2023 – 2024

Please retain this handbook as you will need to refer to it throughout your time at Strathclyde and perhaps for years to come in order to meet enquiries from employers and professional institutions.

The aim of this handbook is to answer the many questions you may have about the different aspects of studying for a degree at the University of Strathclyde. The handbook contains practical information about the University, the Department and your course of study including course regulations, class syllabi and departmental procedures. It is an important reference document which will help you to ensure that your time here is organised efficiently and to maximum benefit.

The contents of this book are as far as possible up to date and accurate at the date of publication. Changes may be made from time to time and the University reserves the right to add to, amend, or withdraw information and resources, and to make any other alteration as it may deem desirable and necessary. Such changes will be published by incorporation in the next edition of the University regulations and student handbook.

It is the responsibility of each individual student to become familiar with all University Regulations which apply to them. The University's regulations can be found in the University Calendar on the University's web pages:

<http://www.strath.ac.uk/sees/educationenhancement/qualityassurance/universityregulations/>

and the Department of Biomedical Engineering encourages students to read Part 1: General Regulations with particular reference to sections 3, 4 and 5, which describe the University's regulations regarding the library, examinations and student discipline respectively.

StrathLife – The Student Journey

This handbook should be read in conjunction with everything you need to know about student life and can be found here:

www.strath.ac.uk/studywithus/strathlife/

which provides information on the range of support and information services within the University.

The Strathclyde graduate will be recognised as deeply knowledgeable and adaptable, demonstrating the skills, attributes and confidence to thrive in an evolving, often challenging world. To meet the needs of professions and career pathways, this will be achieved through the design of our curricula and the provision of opportunities for all students to engage in work related activities, entrepreneurial events and programmes and globally conscious initiatives throughout their studies.

Roy Bowers, Course Director

WELCOME

From the Head of Department

Dear all

On behalf of the Department of Biomedical Engineering and the Faculty of Engineering, I would like to offer a warm welcome to the Department of Biomedical Engineering and the University of Strathclyde.

You are joining one of the longest established Departments of Biomedical Engineering in the world, a department that has been at the forefront of teaching and research in Biomedical Engineering and Prosthetics and Orthotics for over 60 and 50 years respectively. Our teaching programmes are multi-accredited and the department's staff do their utmost to ensure that all of our students are supported in every way possible throughout their studies. Our courses are strong on education, but we hope enjoyable and relevant to the aspirations of the modern Biomedical Engineering or Prosthetics and Orthotics student in pursuing a career in this exciting field.

As new undergraduate students, you also have your part to play in the success of your course and Department. The course team has put together an exciting curriculum, spanning the field of biomedical engineering, and I ask that you apply yourself to your studies with energy and enthusiasm. Wherever you go, you are now representatives of the Department of Biomedical Engineering and the University of Strathclyde.

Our Wolfson Centre underwent a complete renovation and upgrade a couple of years ago – to keep Biomedical Engineering at Strathclyde at the forefront of biomedical teaching and research for the next 60 years and beyond. We are delighted in having you join us in these revamped facilities. Our clinical teaching facilities for prosthetics and orthotics are located in the Curran Building, which also underwent a number of renovations this summer ahead of the 23/24 semester start.

You may be transitioning from school to university, which we fully understand is a major change. Educationally, you will be required to do a lot more independent learning, which necessitates good time management and motivation. You may be living away from home for the first time which also brings new financial independence and responsibilities. If you feel that you are struggling in any way please come and talk to the course director, or one of the other departmental staff, and we will do all we can to help.

We are delighted to have you join us.



*Professor Stuart Reid FRSE
Head of Department
Department of Biomedical Engineering*

BSc (Honours) in Prosthetics and Orthotics

Student Handbook

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1. ACADEMIC YEAR 2023-2024

1.1 Key Dates

August 2023	21	Clinical Placement – Ends 22 December 2023
September	11	Registration Week
	11	Induction Week – new first year
	18	Semester 1 – years 1, 2 and 3
	25	UNIVERSITY CLOSED
October	Tba	Staff/Student Liaison Committee
December	1	Last day teaching of Semester 1
	4	Semester 1 Examination Diet – Ends 15 December 2023
	18	Winter vacation starts
	22	UNIVERSITY CLOSED
January 2024	8	University Opens
	w/c 8	Prosthetics and Orthotics Clinical Examinations
	15	Semester 2
	15	Clinical Placement – Ends 17 May 2024
	tbc	Honours Examination Board
February		Staff/Student Liaison Committee
March	31	UNIVERSITY CLOSED
April	1	UNIVERSITY CLOSED
	1–12	Spring Break
	17	Semester 2 Examination Diet – Ends 19 May 2024
May	1	UNIVERSITY CLOSED
	w/c 20	Prosthetics and Orthotics Clinical Examinations
	27	UNIVERSITY CLOSED
	Tbc	Honours Examination Board Meeting
	Tbc	Undergraduate Examination Board Meeting
	Tbc	Graduation
July	12	UNIVERSITY CLOSED
	15	UNIVERSITY CLOSED
August	tbc	Resit Examination Diet Resit Examination Board

2. GENERAL INFORMATION

2.1 Introduction

The aim of this handbook is to answer questions you may have about the many different aspects of studying for a degree at the National Centre for Prosthetics and Orthotics (NCPO) in the department of Biomedical Engineering at the University of Strathclyde. Aside from your aim of learning about prosthetics and orthotics, you will need to know the practicalities and procedures used in the department to ensure that your time is organised efficiently and to your maximum benefit. Please ensure you read every section of this handbook annually, including the Appendices.

2.2 Departmental Offices

The NCPO clinical and technical facilities are located in the Curran Building. To help you find your way about the National Centre we have provided a map (see Appendix A).

2.3 Lounge Area

On entry to the National Centre, there is a lounge area which students may use. This area must be kept clean and tidy at all times. The toilets in this area are for patients, visitors and staff only. Toilets for students are located in the stairwell.

2.4 Personal Development Advisor

Every undergraduate student is allocated a member of staff as a Personal Development Advisor. Your advisor will be a member of the National Centre teaching staff and will be available for help and advice if needed. Arrangements should be made by students to see their Personal Development Advisor at the beginning of each session.

There are three purposes in assigning an Advisor to you.

- The first is that there should be someone that you know you can go to if there is any matter which you would like to discuss or obtain advice.
- The second is that you have someone who keeps an eye on your overall progress through your degree course.
- The third is to increase contact between students and teaching staff.

Your Advisor will normally ask you to drop in about twice a year.

Those who find they cannot speak freely to the member of staff assigned to them should contact the Administrative Office.

If you wish to see a member of staff, particularly during the revision period before examinations, please make sure you make an appointment with them beforehand to avoid any disappointment.

2.5 Undergraduate Student-Staff Committee

The purpose of the Undergraduate Student-Staff Committee is to provide a forum for discussion where students can raise issues on any aspects of the degree programme. Each year group has two student representatives on the committee. Therefore if there is an issue which is important to a large number of students and which you believe should be discussed by this committee, you should inform your student representatives and it will be placed on the agenda of the next meeting. The committee normally meets twice a year, mid-way through each semester.

2.6 Notification of Absence and Personal Circumstances

Students are expected to attend all classes, unless they are prevented through ill health, or are granted an exemption from a class. Students are asked to contact Administration or class leader by email if absent from practical or assessed classes. Students whose performance and attendance is deemed unsatisfactory may be asked to withdraw from the course. This is in accordance with Regulations 8.1.11 and 8.1.12 which state:

Attendance and Performance

8.1.11 *Every candidate for a degree is required to attend regularly each class in the curriculum and to perform satisfactorily the work of that class.*

8.1.12 *A candidate who, in the opinion of the Head of Department offering the class, does not satisfy the requirements concerning attendance and performance will not be entitled to be examined in that class and will be informed accordingly. The names of such candidates will be reported to the relevant Board of Study.*

All absences must be logged via PEGASUS. Guidance on logging absences can be found at:

<http://www.strath.ac.uk/sees/studentpolicies/policies/attendance/absenceandvoluntarysuspension/>

When circumstances beyond your control affect your performance in assessment you should report these circumstances to the University as soon as possible as Personal Circumstances.

The University's Personal Circumstances Policy states that: **Claims must be submitted within 5 working days** of the end of the examination diet affected. Failure to submit your mitigating circumstances within 5 working days will normally render them inadmissible in the event of a subsequent academic appeal.

Guidance on logging mitigating circumstances can be found at:

<https://www.strath.ac.uk/sees/studentpolicies/policies/appealscomplaintsdiscipline/personalcircumstancesprocedure/>

2.7 Maintaining Personal Details on PEGASUS

Students are required to keep their personal details and both permanent and term-time address updated on PEGASUS at:

www.strath.ac.uk/studentlifecycle/personaldetails/

2.8 Council Tax/Bank/Status Letters

Information on Council Tax, Bank and Status letters can be found at:

www.strath.ac.uk/studentlifecycle/letterscounciltaxbankstatus/

2.9 Funding and Financial Support

Information on Funding and Financial Support can be found at:

[Student Awards Agency Scotland - SAAS - Funding Your Future](http://www.strath.ac.uk/studentlifecycle/fundingandfinancialsupport/)

2.10 International Students

Student Experience and Enhancement Services provides advice and support for all students including international students. It can be found Learning & Teaching Building information and advice counter. Students wishing advice or further information should visit:

www.strath.ac.uk/sees/infoint/

Your Country & Strathclyde

<https://www.strath.ac.uk/studywithus/internationalstudents/yourcountry/>

Student Visa

International students engagement in their studies will be monitored on a weekly basis by the Administration Office. This is a compulsory requirement for the Universities UK Visas and immigration sponsorship.

<https://www.strath.ac.uk/studywithus/internationalstudents/beforeyouarrive/visasimmigration/>

2.11 Student Counselling

The Student Advisory and Counselling Service of the University provides short and long-term advice, support and counselling for all students at the University, both undergraduate and postgraduate. There is an appointment system, but in a crisis, students are seen as soon as possible. See website for further information.

<https://www.strath.ac.uk/studywithus/strathlife/studentcounselling/>

2.12 Students with Additional Support Needs (www.strath.ac.uk/disabilityservice/)

The University's Disability Service provides information and assistance for students. It is important that students with additional support needs make contact as early as possible in the academic year if they feel that they will require additional support or equipment as a result of a disability or health problem. It is essential that students who think that they will require special examination arrangements make an appointment to discuss these arrangements, and that they do so at least two months prior to the date of their first diet of exams. Such students should make themselves known to the Departmental Disability Contacts as soon as possible.

Dr Christine McMonagle, christine.mcmonagle@strath.ac.uk or
Dr Michelle MacLean, michelle.maclean@strath.ac.uk

Equality and Diversity

The University of Strathclyde is committed to achieving and promoting equality of opportunity in the learning, teaching, research and working environments.

We value the diversity of our students and support the development of mutual respect and positive relations between people.

The University has in place [Equality Outcomes](#) which meet the requirements the Equality Act 2010.

You are advised to familiarise yourself with the University approach to equality and diversity and relevant developments and information by visiting the website:

www.strath.ac.uk/equalitydiversity/

If you have any queries please bring these to the attention of staff or the University's Equality and Diversity office.

Email: equalopportunities@strath.ac.uk Tel: 0141 548 2811

Disability and Wellbeing

The University is committed to providing an inclusive learning and working environment for disabled people.

If you have, or think you have, a disability we encourage you to disclose it as soon as possible. Declaring your disability will enable you to access any additional support that you may need and help to ensure you become a successful student. The information you provide will be treated as confidential and will not be shared with other staff without your consent.

The University has a dedicated Disability Service that offers specific advice, information and assistance to disabled students, including information on the Disabled Students Allowance (DSA). Further information is available from the website:

www.strath.ac.uk/professionalservices/disabilityandwellbeing/

The Departmental Disability Contact list is available on the website at:

[Departmental Disability Contacts \(DDC\) | University of Strathclyde](#)

Email: disability-wellbeing@strath.ac.uk Tel: 0141 548 3402

Issues with Physical Access on campus

If you experience an issue with physical access anywhere on campus, please email: physicalaccess@strath.ac.uk where a member of Estates staff will be able to help.

Classroom Protocol

At the University we are committed to providing a safe learning environment where dignity is respected and discrimination or harassment, including cyber bullying does not occur on the basis of age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex, sexual orientation and socio-economic background. No student should intentionally be made to feel threatened or excluded from class participation.

You are reminded of your responsibility for the duration of your studies by showing respect to fellow classmates and staff. More information on the protocol is available at:

www.strath.ac.uk/studywithus/strathlife/whatitslikestudyingatuniversity/

Athena SWAN

The University currently holds a Bronze [Athena SWAN](#) award, recognising our commitment to advancing women's careers in science, technology, engineering, maths and medicine (STEMM) employment in academia.

The Athena SWAN Charter has been developed by the Equality Challenge Unit to encourage and recognise commitment to combating the under-representation of women in STEMM research and academia.

If you would like any additional information, please contact the Equality and Diversity office.

2.14 Students Complaints Procedure

The procedure for Appeal against decisions of the Board of Examiners is described in Section 5.8 of the Student Handbook.

If you are dissatisfied with any aspects of the University's Academic or Administrative Services and wish to make a complaint - information on the procedure is available at:

www.strath.ac.uk/media/ps/strategyandpolicy/FINAL_GuideForStudents.pdf

2.15 Availability of Resources

A number of learning resources are available for students who are either located on campus or on clinical placement. These include:

- Conventional library support - texts, books and reference materials
- Access to the support of a faculty librarian, (Faculty of Engineering)
- On-line learning materials
- Core sets of teaching materials and models.

Students will find they are fortunate to be in the geographically closest department to the University of Strathclyde Main Library which is also in the Curran Building and, indeed, occupies most of the building. Students can enjoy access to books, journals, study space and group work areas. PCs are available throughout the Library. Assistive technology is also available on all campus PCs, with a dedicated area on Level 2 of Library. Also included in the main library collection are the source journals for the specialist bibliographic database *The RECAL Legacy*.

All students are required to ensure they can access both on-line and conventional library resources. They will have induction sessions in the first year with the faculty librarian at the University and must register with Glasgow Caledonian University at the earliest opportunity to obtain access to their on-line blackboard facilities, as well as their library.

Athens Passwords

It is essential students obtain and keep updated an Athens password. The use of Athens Passwords allows students both at the University campus and on clinical placement to access bibliographic materials and then either directly access an on-line copy of a text or article or request this through library services.

On-line learning materials

The National Centre favours the use of the University's Moodle resource as an adjunct to face-to-face teaching. See <http://classes.myplace.strath.ac.uk/>

The E-learning environment allows students to access teaching notes and review media-rich content at a flexible time. Some courses will, in addition, use this resource to facilitate group on-line chats or discussion groups around a topic, as well as administer assessments and information on room timetabling for classes held out with the NCPO. Feedback from modules may also be posted on this Myplace site.

Further information is available at: <https://www.strath.ac.uk/professionalservices/is/>

Collections of Audio-Visual Materials

The National Centre has for many years captured audio-visual materials. These are organised, edited and utilised for content of internal teaching support. There are strict Ethical guidelines for patient images, video recordings and notes.

2.16 Data Protection

Your details will be collected and held in accordance with the universities Data Protection Policy

<https://www.strath.ac.uk/whystrathclyde/universitygovernance/accesstoinformation/dataprotection/>

3. COURSE INFORMATION

3.1 Background

One of the major recommendations of the Denny Report (The Future of the Artificial Limb Service in Scotland, HMSO, 1970) was that prosthetists should be given the necessary training and education to enable them to attain professional status. The prosthetist would then be able to play his part in patient rehabilitation as a full member of a clinic team. The Denny Report has had a profound influence on all aspects of training and education in prosthetics in Scotland. This responsibility was expanded to include the field of orthotics in 1974.

The National Centre for Training and Education in Prosthetics and Orthotics was established in 1972. In 2007 the Centre's name was revised and is now the National Centre for Prosthetics and Orthotics. The Centre remains based in the University of Strathclyde with associated facilities in rehabilitation centres and hospitals in the area. It is administered by the University authorities on behalf of the Scottish Government and the Scottish Health Service. One of the major responsibilities of the Centre is to supervise the professional training of prosthetists on behalf of the Scottish Health Service.

In 1973 a Higher Diploma Course in Prosthetics and Orthotics was established under the auspices of the Scottish Technical Education Council. The basic science subjects were provided by Glasgow College of Technology and the specialised subjects by the National Centre for Training and Education in Prosthetics and Orthotics, University of Strathclyde.

In 1977, the National Centre together with the South Western District of the Greater Glasgow Health Board established a Prosthetic and Orthotic service in the Southern General Hospital. In 1986, the University of Strathclyde instituted a four year Honours Degree course in Prosthetics and Orthotics in place of the Higher Diploma Course. The degree course has continued to develop in response to the needs of the Scottish Health Service. The course is equally relevant to the rest of the United Kingdom, member states of the European Union, and Internationally. Indeed, because of the total integration of theoretical, practical and clinical aspects, the course is particularly suitable for overseas students. The course content is continually scrutinised for suitability and relevance and a review of different aspects of the curriculum is virtually an on-going activity.

The profession of prosthetist/orthotist is a protected title and regulated by the Health and Care Professions Council (HCPC). The Centre was first approved following a visit in March 2002 by the HCPC and undergoes annual monitoring to maintain this approval as an education centre for prosthetists and orthotists to allow ongoing registration by its graduates with the HCPC.

In 2004 the BSc Honours programme was also accredited as a Category 1 training programme by the International Society for Prosthetics and Orthotics (ISPO). This accreditation was for 5 years and is an internationally recognized certification in the field of prosthetics and orthotics. Reinspections in 2009, 2014 and 2020 have re-accredited the National Centre at Category 1 level until 2025. On graduation all new graduates receive a separate ISPO certificate as well as their degree parchment.

In September 2007 a new revised BSc Honours programme began after approval by Senate in January 2007. This new programme followed 3 years work and consultation with many stakeholders and considers current teaching learning and assessment strategies while maintaining the emphasis of clinical training with real patients in all 4 years.

In August 2012, the National Centre and the Bioengineering Unit merged to become the new department of Biomedical Engineering.

3.2 Degree Course

The aim of the degree course is to provide students with the educational background and training which will enable them to become competent practitioners and to accept professional status and responsibility as prosthetists and orthotists.

The programme covers all aspects of education and training in both prosthetics and orthotics. It recognises that as there are so many common elements between prosthetics and orthotics it is educationally indefensible to separate them. The essential ingredients of the degree course are:

- (a) Academic studies
- (b) Practical clinical training
- (c) Clinical experience
- (d) Project and specialist modules

The first 3 years of the course are devoted to academic studies interlinked with practical training in patient assessment, prescription, casting, fitting, alignment, fabrication and outcome evaluation and review, in an holistic manner, to patients in the fields of prosthetics and orthotics. Training on the University premises during this time is with patients, who have volunteered as demonstration patients, within our clinical setting. In the second semester of 3rd year students complete a clinically related project (submission for ethical approval for these projects may be required early in the year). At this time, students will also choose a specialist advanced clinical module to enhance their professional profiles.

The 4th year clinical placements of the degree course are devoted to clinical experience within the hospital environment during which students are exposed to a structured broadening of their prosthetic and orthotic experience under appropriate supervision. Specific clinical competencies and assessment must be passed while on clinical placement.

3.3 Student Consent

During this course you will be required to be actively involved in a number of practical activities for which your informed consent is required. These activities are deemed extremely important to your learning experiences and for this reason your participation in these activities are compulsory. However, cultural and ethical issues will be respected at all times.

The opportunity to learn and practise clinical and technical skills prior to patient interaction is deemed essential to ensure you gain the optimal learning experience from the patient interactions and to ensure patient health and safety.

Additionally, an appreciation of the service users' experiences is essential to the process of developing the empathy and understanding of service users' needs. This will facilitate your development as a reflective and empathic healthcare professional.

3.4 Confidentiality

Compulsory tasks will include the following:-

Role play: - During these activities, participants act out the role of characters and scenarios based around a clinical theme. You may be asked to act out both the part of the health professional and of the service user (patient) during these exercises. This exercise may be video recorded on occasion to aid in the provision of effective feedback and analysis of your performance.

Physical Assessment of Peers: - This will involve you acting as both the clinician (carrying out the physical assessment on your peers) and patient (allowing your peer to undertake a physical assessment on you). These practical sessions will enable you to practise the following: identification of surface anatomy, palpation of underlying anatomical structures, checking the ranges of motion and integrity of joints, and checking muscle strengths. It may also involve visual observation of gait or instrumented analysis of gait.

Peer casting: - This will involve you acting as both the clinician (taking a cast of your peer) and patient (allowing your peer to take a cast of you).

Use of an orthosis: - The experience of wearing an orthosis for a range of activities will provide individuals with valuable insight into the effects on the functional and psychological experiences of patients. It also provides an important teaching activity in fine tuning these devices to optimise function and comfort.

Consent forms for these individual activities will be issued to you by the module coordinators at the beginning of the specific module and must be completed prior to participation in the activity.

If you have any personal objections or concerns these need to be highlighted to the course leader at the beginning of the module to allow any reasonable adaptations to be made if this is suitable and necessary for completion of any essential elements of the programme.

3.5 Student Clinical Dress/Personal Protective Equipment (PPE)

Students will be required to wear clinical dress, including safety shoes for all clinical and technical workshop sessions.

Clinical dress comprises of white tunic and white trousers and safety shoes for casting and plaster room sessions. AHP silver tunics with navy trousers and safety shoes are used for all other sessions. Please note that NHS Scotland require these tunics to have short sleeves due to their infection control policy. If culturally this is an issue for a student a slightly longer $\frac{3}{4}$ length sleeve tunic is available. This must be ordered in the first year and any subsequent replacement times are the responsibility of the individual student.

There is “a bare arm policy” that clinicians are required to adhere to, that complies with infection control across the NHS. This also applies to clinical work undertaken with patients in the National Centre, as well as for students on clinical placements. Where for religious reasons staff wish to cover their forearms during patient care activity, it is acceptable to wear disposable over-sleeves where gloves are used with strict adherence to hand and wrist washing before and after use.

It is the student’s responsibility to ensure they arrive with clean, ironed clinical dress when clinical activity is planned in the timetable.

Students have a locker in the changing areas to facility these clinical and technical activities.

3.6 Disclosure Scotland

It is a condition of entry to the course that students must complete the Application to Join PVG Scheme (Protecting Vulnerable Groups Scheme) with Disclosure Scotland.

All students will also be asked to complete a confidentiality agreement prior to placement.

All students should be careful when using any social media in relation to any areas of the programme with patient/client confidentiality. Further information is available at <https://www.hcpc-uk.org/standards/meeting-our-standards/communication-and-using-social-media/>

3.6 Fitness to Practise

Any student who is deemed to have acted in a manner unfit to practise may be asked to attend a fitness to practise panel. Detailed information of this procedure is available at:

https://www.strath.ac.uk/media/ps/strategyandpolicy/Student_Discipline_Procedure.pdf

4. REGULATIONS

After entering the University, you will progress from year to year based on your performance in the practical work and examinations in each class and/or on your continually assessed performance. The Departmental Regulations and General Regulations for progressing from year to year are detailed in the link below.

[Prosthetics & Orthotics.pdf \(strath.ac.uk\)](#)

5. ASSESSMENT AND FEEDBACK

Student assessments are designed and approved as an integral part of the class and course. A variety of methods are used as appropriate and students are informed in advance of the nature of the assessment. Ideally, required standards of achievement and credit values for each course and class are explicit, owned by all the staff and made known to students.

All departments take steps to ensure the authenticity of student work. They also have internal procedures for ensuring that, as well as reflecting the aims and objectives of the class and course, all assessments that contribute to a final award (including award of credits) continue to be fair, valid, reliable and set at the proper level. The University Marking Guide is included at Appendix B.

5.1 Plagiarism

The University regards plagiarism and collusion as extremely serious offences and instances may be referred to the Senate Discipline Committee. Penalties for such offences may range from discounting marks for the particular assignment/examination or for the whole diet of examinations to requiring that the student withdraw from the course in cases of deliberate, premeditated or repeated cheating.

Definitions:

PLAGIARISM is the offence of attributing someone else's work to your own name. Most commonly this means copying large sections, or even complete papers, from published sources and submitting them for assessment as part or all of a piece of coursework. Direct quotations, borrowed diagrams or data and opinions of authors may be used but they must be acknowledged as the work of others and properly referenced.

COLLUSION is the offence of submitting work as your own when it has been done jointly with another person or persons. In cases of doubt, such as teamwork assignments, students should be encouraged to consult with the lecturer who set the assignment.

Please familiarise yourself with the University Academic Dishonesty Policy.

<http://www.strath.ac.uk/sees/studentpolicies/policies/appealscomplaintsdiscipline/academicdishonestyguidance/>

5.2 Anonymous Marking

Anonymous marking is employed for all formal written examinations at undergraduate level and similar arrangements are beginning to be introduced for formal postgraduate examinations. Double marking is good practice for assessments that are not marked anonymously and for Honours Year assessments.

5.3 Pass Mark

A pass mark of 40% applies to **all coursework** and **examinations**. Credits will only be awarded for each subject when **both** elements have been passed. Progress from third to fourth year is at the discretion of the Course Director and dependent on the aggregate number and type of credits accumulated, together with a consideration of the marks obtained in third year classes.

5.4 Coursework Submission Policy

Students are required to submit coursework by the published submission date. Any work received after this date will be subject to penalties and reduced marks awarded.

Extensions

Before requesting an extension, it is advised that students read this section fully. The extension request requirements vary depending on the length of extension requested and the method by which the request is submitted. There is also some guidance on what might constitute grounds for an extension request to be granted.

Students requesting an extension to the deadline for a piece of coursework must apply via the extensions tool in Myplace. Further guidance about using this tool is contained under the heading [‘Myplace Extension Request’](#) below.

Please pay attention to the examples found under the Section 3 heading [‘Grounds for Extending the Deadline for Coursework Submission’](#) below. These are taken from the [Policy and Procedure on Extensions to Coursework Submission](#). The policy intends to be supportive of students, and staff will monitor students’ use of extensions in order to identify students who may require support. The policy provides examples of what might be grounds for granting an extension and what is unlikely to be grounds for the granting of an extension. The list does not try to cover every possible scenario so students should discuss with staff any circumstances that are negatively impacting their studies.

Extension requests will normally be made in advance of a coursework submission deadline. In exceptional cases, students may apply for an extension retrospectively.

Extension of less than seven calendar days

Requests for an extension of less than seven calendar days do not require formal supporting evidence (e.g., a doctor’s letter). However, students are encouraged to communicate to staff any circumstances that are negatively impacting their studies as early as possible, especially where other assessments or aspects of their studies are also impacted. This can be done by submitting a [Self-Certificate form on Pegasus](#).

Extension of longer than seven days

For extensions that are longer than seven days, it is essential that students complete a [‘Personal Circumstances Form’](#) and submit it directly to Student Business for their Faculty at: studentbusiness-engineering@strath.ac.uk within five working days of the agreed extension date. There is information about the Personal Circumstances Procedure [on the website](#).

Failure to submit evidence of medical or personal circumstances for extension requests of seven days or more could result in the extension request being rejected or revoked and/or any subsequent academic appeal being regarded as inadmissible.

Students should note that certified cases of medical and/or personal circumstances will be considered sympathetically and the rules will be applied in a caring manner. Where there are sensitivities or difficulties in obtaining evidence (for example, a death certificate), a compassionate approach will be taken. The rules are designed to be as clear as possible, to help students plan their work sensibly and ensure parity in the service provided to all students.

Grounds for Extending the Deadline for Coursework Submission

The list below does not try to cover every possible scenario but provides examples of what might be grounds for granting an extension and what is unlikely to be grounds for the granting of an extension. Students should not be discouraged from submitting a request if they do not see their situation described below.

Examples of Medical Circumstances

Medical conditions or illness, including physical and/or mental health problems that negatively impact a student's preparation for an assessment.

Examples of Personal Circumstances

- serious illness or death of a person close to the student
- family break-up
- being a victim of crime
- being in a serious car accident
- jury service
- significant relationship breakdown
- unexpected caring commitments
- homelessness
- Home Office requirements
- fire
- flood
- adverse weather conditions
- exceptional travel circumstances outwith a student's control which prevented them from meeting the published submission date
- other exceptional circumstances that can be reasonably considered to negatively impact a student's ability to submit coursework on time

Examples of Insufficient Grounds for an Extension

The following circumstances would not be acceptable grounds for granting an extension:

- poor planning and time management
- error made in understanding the published dates of assessment submissions
- having another assessment due on or around the same date
- minor IT issues such as computer failure
- failure of third parties to deliver the assessment
- holidays, social events, moving house, or any event planned in advance of the submission deadline
- failure to make alternative travel plans when disruptions were advised in advance

Myplace Extension Request Process

Instructions for the submission of an extension request via Myplace are below. [A version of these instructions with images of the screen to support the explanation is also available.](#)

1. Go to the Myplace site for the class in which you wish to request an extension to the deadline of a piece of coursework
2. Click on the assignment link for the piece of coursework. This will open a page containing information about the assignment, the status of your submission and the deadline
3. Click on the Extensions section and select 'Request Extension'
4. You will be required to fill in three parts of a form:
 - i. Select a reason from the dropdown list
 - ii. Propose a new deadline (date and time)
 - iii. Describe in more detail your reason for requesting an extension
5. Submit your extension request

You will receive a Myplace notice and an email to confirm that your request has been submitted. If you have downloaded the University's Mobile App and have logged in using your DS username, you will also receive a push notification on your device.

Your request will be considered, resulting in one of the following two outcomes:

1. Your extension request will be granted – either based on the date and time you proposed or based on an alternative date and time specified by the appropriate member of staff
2. Your extension request will not be granted*

The outcome of your extension request will be communicated to you via a Myplace notice and an email. If you have downloaded the University's Mobile App and have logged in using your DS username, you will also receive a push notification on your device.

If you submit an extension request and decide that you no longer require it, you can cancel the request up until the point at which it is approved. After it has been approved, you cannot cancel the request but you can, of course, submit the work in time for the original deadline.

*If your extension request is not granted and you would like to access support please contact your Advisor of Studies. For details of central University support services, please see the 'Support' section below.

Support

Disability and Wellbeing Service (including Student Counselling Service and Student Health)

Phone: 0141 548 3402

Email: disability-wellbeing@strath.ac.uk

Disability & Wellbeing Service

Room 4.36, Level 4,

Graham Hills Building

50 George Street

Glasgow G1 1QE

For more information visit the [Disability and Wellbeing Service webpage](#).

Study Skills Service

Phone: 0141 548 4064/4062

Email: studyskills@strath.ac.uk

Level 6

Livingstone Tower

26 Richmond Street

Glasgow G1 1XH

For more information visit the [Study Skills Service webpage](#).

Maths Skills Support Centre

Phone: 0141 548 3343

Room LT308

Livingstone Tower

26 Richmond Street

Glasgow G1 1XH

For more information visit: www.strath.ac.uk/studywithus/strathlife/academicsupport/

International Student Support

Phone: 0141 548 4273

Email: infoandadvice@strath.ac.uk

For more information visit the [International Student Support webpage](#).

Strathclyde Students' Union's The Advice Hub

Phone: 0141 567 5040

Email: strathunion.advice@strath.ac.uk

For location see [Strath Union's Advice Hub webpage](#).

Penalties for the Late Submission of Coursework

Coursework is deemed to be late when it is submitted after the published deadline without an agreed extension, and in the absence of personal circumstances.

The [Policy and Procedure on Late Submission of Coursework provides a detailed account of the policy and procedures for the late submission of coursework](#). You should read this document carefully, noting that there may be exceptions to the policy outlined for specific types of coursework, such as (but not limited to) group work or presentations. Staff will communicate any such instances to students. However, in all instances, the range and timing of penalties will be applied according to a commitment to fairness and supporting all students in their studies alongside agreed procedures. Staff will monitor the late submission of assessments in order to identify any students who may require support. For regular coursework, the Policy and Procedure on Late Submission of Coursework outlines the penalties to be applied, and these are summarised below.

Penalties for Late Submission

Coursework that is submitted late, but within seven calendar days of the published deadline date and time, will be subject to penalties, as shown in the table below. The table demonstrates the application of a sliding scale of penalties, where a late submission within 24 hours of the deadline will incur a penalty of 10% applied to the original mark, and for each subsequent 24 hour period, an additional 5% penalty will be applied to the original mark. The table also shows that the application of penalties will be capped for coursework that is of a Pass standard. Coursework submitted after seven calendar days of the published deadline date and time will receive a mark of zero. Students who can demonstrate that they faced exceptional circumstances on the deadline day, and who submit their coursework within 4 hours of the published date and time, will not have their coursework subject to penalties. This 4 hour period is called the 'grace period' – see below the table for further information.

Example	Day of submission	Penalties applied
1.	Coursework submitted after the deadline, student has an approved extension and submits within the approved extension period.	No penalty to be applied.
2.	Late submission on the day of the deadline (or approved extended deadline), student has communicated exceptional circumstances and is granted a grace period of up until four hours after the deadline.	No penalty to be applied.

3.	Late submission within one calendar day (less than 24 hours) of the deadline, student has no approved extension.	10 percentage point penalty applied to original mark, unless the penalty reduces the student's mark to below 40%, in which case the mark is capped at 40%.
4.	Late submission more than one calendar day (more than 24 hours) after the deadline but less than two full calendar days (less than 48 hours) after the deadline has expired, student has no approved extension.	15 percentage point penalty (10 points for first day, 5 points for second day or part day), unless the penalty reduces the student's mark to below 40% in which case the mark is capped at 40%.
6.	Late submission more than two full calendar days (longer than 48 hours) after the deadline but less than three calendar days (72 hours), student has no approved extension.	20 percentage point penalty (10 for first day, 5 for second day, 5 for third day or part day), applied to original mark, unless the penalty reduces the student's mark to below 40%, in which case the mark is capped at 40%
7.	Late submission more than three full calendar days (longer than 72 hours) after the deadline but less than four full calendar days (less than 96 hours), student has no approved extension.	25 percentage point penalty (10 for first day, 5 for second day, 5 for third day, 5 for fourth day or part day), applied to original mark, unless the penalty reduces the student's mark to below 40%, in which case the mark is capped at 40%
8.	Late submission more than four full calendar days (more than 96 hours) after the deadline but less than five full calendar days (less than 120 hours), student has no approved extension.	30 percentage point penalty (10 for first day, 5 for second day, 5 for third day, 5 for fourth day, 5 for fifth day or part day), applied to original mark, unless the penalty reduces the student's mark to below 40%, in which case the mark is capped at 40%
9.	Late submission more than five full calendar days (more than 120 hours) after the deadline but less than six full calendar days (less than 144 hours), student has no approved extension.	35 percentage point penalty (10 for first day, 5 for second day, 5 for third day, 5 for fourth day, 5 for fifth day, and 5 for sixth day or part day), applied to original mark, unless the penalty reduces the student's mark to below 40%, in which case the mark is capped at 40%.
10.	Late submission more than six full calendar days (more than 144 hours) after the deadline but less than seven full calendar days (less than 168 hours), student has no approved extension.	40 percentage point penalty (10 for first day, 5 for second day, 5 for third day, 5 for fourth day, 5 for fifth day, 5 for 6 th day and 5 for the 7 th part day), applied to original mark, unless the penalty reduces the student's mark to

		below 40%, in which case the mark is capped at 40%.
11.	Late submission more than seven full calendar days after the deadline. For example, a deadline was set for Midday on a Wednesday and a student submits an assessment after midday the following Wednesday	A mark of zero will be applied to the work.

Requesting the application of the grace period

If you experience unexpected circumstances before the time set on the day of the deadline and it results in a delay to your submission of less than four hours, you can request that the grace period is applied to your coursework submission via the late submissions tool in Myplace. If the reason provided is acceptable for use of the grace period, this will mean that a penalty is not applied to your mark.

Requests for the grace period to be applied must be submitted within 4 hours of the published date and time and no longer – we strongly suggest that you submit your request as soon as you have submitted your coursework. To request that the grace period is applied:

1. Submit your coursework
2. In the assignment page containing information about the status of your submission and the deadline, click on the Late Submissions section to expand it
3. From the 'Reason for grace period' dropdown list, select the reason that best describes why you are requesting the grace period
4. Submit your request

The grace period will be automatically applied to your submission. However, if it becomes apparent that the grace period has been misused, a member of staff may revoke it and apply the appropriate late penalty. [Instructions with images of the screen to support this explanation is also available.](#)

Where a penalty is applied in Myplace, you can view the grade awarded to your work, the late penalty deducted and the final grade received after the deduction of the penalty. You can do this by expanding the '*late submissions*' section on the assignment page, once the grades have been released. [Instructions with images of the screen to support this explanation is also available.](#)

Penalty for late submission	The penalty applied as a percentage
Performant grade	The mark you would have received if there was no penalty
Pass mark	The mark required to pass the assignment
Marks deducted	The number of marks deducted (not the percentage deducted)
Effective percentage point penalty	How many percentage points were deducted
Grade	The mark returned to you shows you your Performant Grade minus the Marks Deducted

In the case of coursework to be submitted through Myplace, issues with Myplace which prevent students from submitting their coursework before the deadline will not result in late penalties. In this situation, staff will amend the deadline to allow enough time for students to successfully upload and submit their coursework after the issue has been resolved.

If you think you are unlikely to meet a coursework deadline due to medical issues or personal circumstances, please [apply for an extension](#) as early as possible.

5.5 Application for Exemptions

Students who wish to apply for an exemption in any subject on the basis of previous qualifications should submit details of their relevant qualifications and detailed course content in writing to the Administration Office, by **Monday, 16 October 2023**. Applications will be considered by the relevant members of teaching staff and, if appropriate, presented to the Engineering Faculty Board of Studies for ratification. Students will be notified in writing of the outcome of their application.

5.6 Laboratory Reports

Practical work plays a significant part in your training. Every effort should be made to attend practical classes, as all laboratory reports are marked and make a significant contribution to the Final Course Grade. In contrast to many lectures, the training element cannot be caught up in the library afterwards.

As evidence of your understanding of practical work, some form of report is generally required. The precise details vary, but some general guidelines are outlined below:

1. Start with your name (legibly written), the name of the lecturer running the lab, the course title, and the date. This identifies the report should it become mislaid.
2. Title - use that given on the sheet detailing instructions for the lab.
3. Method - if requested in full, should be written in the past tense, passive voice, and third person. However, on most occasions, you will only be expected to note any alterations to the practical schedule.
4. Results - in most cases, this should include all collected data, not just averages. This is often described as "crude data" i.e. data not analysed. Use well designed, unambiguous tables, with all columns indicating their relevant units. Graphs can often be used to advantage to make data quickly understood.
5. Calculations - a separate section outlining the calculations involved may be appropriate.
6. Discussion - refer to any differences between your results and those of others, and try to account for them. Explain the results in the light of your knowledge. Draw conclusions, relating them to the hypothesis upon which the experiment was based. Discuss any improvements in the experiment were you to repeat it, and maybe the next experiment needed to pursue the investigation.
7. Conclusions - sometimes asked for separately from the discussion section.

(See 5.4 for Coursework Submission Policy)

5.7 Examination Boards

All students are expected to attend for examination at the University of Strathclyde at the dates and times posted on PEGASUS and on the Faculty Notice Board in the McCance Building.

After you have sat your examinations and all the papers have been marked, the Faculty convenes an Examination Board to ratify all of the results prior to the University notifying students of their own results.

There are two types of Examination Board: the Honours Board and the General Board.

The Honours Board meets in June, and reviews the performance of all fourth year students. A decision is made at this Board on which class of degree award should be made to each student.

The General Board of Examiners considers the performance of all students other than those in the final year. The General Board meets in June and September and analyses students' performance in all degree and resit examinations.

The Board makes one of four possible decisions regarding each student:

- (a) Clear pass: i.e. proceed to the next year with no resits
- (b) Proceed to the next year, but resit failed classes
- (c) Resit failed class(es) in August, after which a decision will be made to progress to the next year.
- (d) Withdraw from the course.

The General Board reconvenes in September, after the resit examinations. For each student taking resits, the Board again makes one of the decisions (a) to (d) above except that where resits are still required ((c) above) the Board's decision is now that the student be placed 'in suspension' for a year. A suspended student will be allowed to take resit examinations next Session, after which the Board will decide on progress to the next year of the course.

NB In reaching the decisions, the Board of Examiners are concerned to take into account any medical or other circumstances that may have adversely affected a student's performance. It is very important that the University is made aware of such circumstances in writing and where relevant with the production of a medical certificate. Students should provide information on adverse circumstances to the Administrative Office.

5.8 Student Appeals

Students wishing to appeal against a decision of the General Board of Examiners should write to the Faculty Officer (Engineering), McCance Building by the date specified in the results letter. Appeals are considered by the Faculty of Engineering's Appeals Committee, a body which is independent of the Board of Examiners and has the authority to overrule the decisions of the Board. That said, the Appeals Committee will only overrule the Board where it is satisfied that the Board were not fully aware of a student's circumstances when it made its decision – or where there is evidence that a decision made in relation to one student is inconsistent with those made in relation to others.

Students should note that appeals may be made against a **decision** of the Examination Board, but not against a **mark** awarded in a particular class. Where a student wishes to query a mark, s/he should speak directly to the Course Leader. If s/he fails to get a satisfactory response, s/he may take the matter up with the Director of the National Centre.

Students may also submit an appeal against a decision of the Honours Board. They should note, though, that Final Year Boards subject students' performance to very careful scrutiny and are assisted in this by at least one independent External Examiner. The Appeals Committee will therefore ask a Honours Board to reconsider its decision only where it believes that there are circumstances of which the Board were unaware and which may have influenced its decision. Appeals against a decision by a Honours Board should be lodged with the Faculty Officer as soon as possible after the Awards List is posted.

Students wishing advice on the submission of an appeal please see the link below:

<https://www.strath.ac.uk/studentlifecycle/appeals/>

5.9 Prizes and Awards

Students in first, second and third years who achieve an average summary mark of over 75% will be awarded a Dean's Certificate of Merit.

There are also cash prizes awarded annually:

Limbless Association - prizes awarded to the student in the First Year and the student in the Fourth Year with the best academic performance.

Orthotic Education and Training Trust Elaine Figgins Prize – prize awarded in Fourth Year for best clinical performance in orthotics.

5.10 Feedback

Dr Anthony McGarry (anthony.mcgarry@strath.ac.uk, extension 5868) is the Feedback Co-ordinator for NCPO. He will liaise with students year representatives at the staff student committee. He will also ensure all 4th years are aware of the National Student Survey (NSS).

6. MODULE DESCRIPTORS

The following pages contain descriptors for all the classes that are taught as part of the BSc (Hons) in Prosthetics and Orthotics. You should take time to familiarise yourself with the aims and objectives of each class prior to attending.

6.1 First Year Syllabus

	Page
94154 Principles of Prosthetic & Orthotic Design 1	27-29
94156 Introduction to Health Services Research	30-32
94157 Human Biological Sciences 1	33-35
BE104 Foundations for Inter-professional Practice	36-38
94161 Prosthetics & Orthotics Professional and Technical Skills	39-42
94204 Prosthetics and Orthotics Science 1	43-46

6.2 Second Year Syllabus

94205 Professional Skills for Healthcare 2	47-49
94206 Human Biological Sciences 2	50-52
94207 Principles of Prosthetic & Orthotic Design 2	53-56
94208 Prosthetics and Orthotics Science 2	57-60
BE203 Cleanliness Champions for the NHS (elective)	61-63

6.3 Third Year Syllabus

94303 Human Biological Sciences 3	64-65
94304 Principles of Prosthetic and Orthotic Design 3	66-68
94355 Prosthetics and Orthotics Sciences 3 incl Applied Research for Health Service Research	69-72
94405 Project	73-75
20 credits (1 class) chosen from:	
BE407 Orthotic Management of Neurological Conditions	76-78
BE408 Hip, Knee & Ankle Disarticulation Prosthetics	79-81
BE409 Management of the Diabetic Foot in Prosthetics & Orthotics	82-84
BE410 Lower Limb Prosthetic Design	85-87
BE411 Upper Limb Prosthetics	88-90
BE412 Clinical Governance	91-93
BE413 Orthotic Management of Spinal Deformity	94-97
BE414 Paediatric Prosthetics & Rehabilitation	98-100
BE415 Clinical Gait Analysis	101-104
BE432 The Assessment, Diagnosis and Management of Musculoskeletal Condition	105-108

6.4 Fourth Year Syllabus

94403 Prosthetics and Orthotics Clinical Placement 1	109-112
94404 Prosthetics and Orthotics Clinical Placement 2	113-116



MODULE DESCRIPTION FORM

DEPARTMENT OF BIOMEDICAL ENGINEERING

94154 Principles of Prosthetic and Orthotic Design 1

Module Registrar: Christopher Cox	Taught To (Course): Cohorts for whom class is compulsory		
Other Lecturers Involved: Dr Craig Childs, Suzanne Faulkner, Roy Bowers, Chris Cox and Dr Anthony McGarry.	Credit Weighting: 20	Semester: 1&2	
Assumed Prerequisites: Entry level qualifications, level 1, BSc (Hons) Prosthetics & Orthotics	Compulsory/ optional/ elective-class	Academic Level: 1	Suitable for Exchange: Y/N

Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):

Lecture	Tutorial	Coursework	Private Study	Total
54	26	30	90	200

Educational Aim

This course provides a basic grounding in the theory and application of the broad engineering sciences that underpins prosthetic and orthotic practice.

The module content is linked in sequence and nature to the requirements of the Prosthetic and Orthotic Science module and provides preparatory material allowing students to visualise and analyse specific clinical problems and situations. Students will also grasp the intellectual and practical foundations to understand how these same approaches are deployed in the broader field of engineering. Whilst the particular emphasis is upon lower-limb prosthetics and orthotics, techniques with general applicability are highlighted.

Students will study the knowledge, materials and methods required to give an engineers' perspective on prosthetics and orthotics systems and devices, their design and their interaction with the human body. The underlying assumption is that acquiring this perspective will strengthen the distinctive competence of the prosthetist/orthotist as an Allied Health Professional and thereby enhance the nature of their contribution to patient care. Students will also learned about the human gait cycle in this module.

Learning Outcomes

Students learn to recognise the human body - in both health and rehabilitation situations - represented as a non-linear, dynamic, engineering system with its own unique sensing systems, structures, capabilities and limitations. Although recognising that this mechanistic viewpoint has limitations, students learn to grasp the significance of this approach as a problem-solving process.

Students learn to predict the effects of force and motion and apply these insights in carrying out problem analysis, creative design, manufacture and assessment of prosthetic and orthotic devices. Consequences of material selections and assembly methods will be explored.

Students will learn to describe normal and pathological locomotion. They will also recognise how locomotion is measured and described as a basis for analysis.

Students learn to visualise physical configurations in terms of real materials, actual constraints and the practical limitations that govern the behaviour of prosthetic and orthotic structures - and indeed humans - in clinical situations.

Students learn to formulate meaningful mathematical models from fundamental principles rather than by rote learning. Specific examples from the clinical practice of lower-limb orthotics are used to illustrate the challenges of measurement, design and management of body-device interfaces, as well as the gap between theory and practice.

Students learn basic processes and strategies to gather information and analyse problems in relation to the spectrum of prosthetic and orthotic situations.

Syllabus

These subjects will be taught in 2 distinct sections:

Section 1 - Engineering Mechanics

Statics – Scalar and vector quantities, Summing and resolving forces, The concept of equilibrium, Moments, Static equilibrium accounting for moments, Resultant force and line of action, Free body diagrams, Analysis of stylised orthotic situations with static analysis of joint forces.

Dynamics - Kinematics of particles, Kinetics of particles, Kinematics of rigid bodies, energy, stress and strain.

Section 2 – Biomechanics

Human Movement - Introduction to gait analysis in normal locomotion.

Normal Gait and Pathological gait.

Lower Limb Prosthetic Biomechanics.

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

Principles of Assessment and Feedback

The University's Assessment and Feedback Policy can be found at: www.strath.ac.uk/staff/policies/academic/

Specific details relating to this class are as follows:-

Informal feedback will be provided at regular tutorial sessions primarily through verbal discussion with individuals or groups on tutorial exercises attempted in advance by students (note:- to receive this feedback students should participate in these tutorials but attendance is not mandatory).

Laboratory reports and class test results will be discussed with students.

Formal, summative feedback will be provided by the return of examination marks to students after assessment (note:- exam scripts will not be returned to students and no collective discussion of exam performance will be facilitated). Individual feedback on the exam may be arranged if appropriate.

Students are encouraged to collaborate in the calculations and models provided in the tutorial exercise and demonstration calculations provided during the course. However, it is emphasised that the analysis reports they submit must be entirely their own work – i.e. background research plus results they have personally generated and interpreted.

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

Section 1 – Engineering Mechanics

Assessed by examination

Examination			
Number	Month(s)	Duration	<i>Weighting</i>
1	December	2h	40%

Section 1 Mark (S1) A student who fails to attain 40% for the Section 1 Mark (S1), will be required to take a two-hour resit examination, covering all of Section 1 in July/August diet.

Section 2 – Biomechanics

Assessed by written coursework assignment or class test

Coursework	Topic	Month	<i>Weighting</i>
1	Human Movement	November	20%
2	Gait	March	20%
3	Lower limb Prosthetics	March	20%

A student who fails to attain 40% for the Section 2 mark (S2) will be required to undertake additional coursework, covering all of Section 2.

A student who attains 40% for Section 2 but less than 35% in any individual item of coursework will be required to complete additional coursework in which they failed.

The Summary Mark (SM) for PPOD 1 will be calculated as: $SM = (0.6 \times S1) + (0.4 \times S2)$

To gain a pass it is necessary to achieve:

- at least 40% for the Section 1 Mark (S1)
- at least 40% overall for the Section 2 Mark (S2)

Resit Assessment Procedures:

Section 1 Mark (S1) A student who fails to attain 40% for the Section 1 Mark (S1), will be required to take a two-hour resit examination, covering all of Section 1 in August.

A student who fails to attain 40% for the Section 2 mark (S2) will be required to undertake additional coursework, covering all of Section 2.

A student who attains 40% for Section 2 but less than 35% in any individual item of coursework will be required to complete additional coursework.

Recommended Reading

Gordon, JE Structures: Or why things don't fall down Penguin Books Ltd; New Ed edition (26 Sep 1991) ISBN-10: 0140136282

Perry, J, Gait Analysis: Normal and Pathological Function Publisher: SLACK Incorporated (30 Jun 1992) ISBN-10: 1556421923

Kirtley, C Clinical Gait Analysis: Theory and Practice Churchill Livingstone; 1 edition (12 Dec 2005) ISBN-10: 0443100098

Whittle, MW Gait Analysis: An Introduction Butterworth-Heinemann Ltd; 3Rev Ed edition (21 Nov 2001)

Additional Student Feedback

(Please specify details of when additional feedback will be provided)

Detail	Date
CW1	November
December Exam	January
CW2	March
CW3	April

Informal feedback will be provided at regular tutorial sessions primarily through verbal discussion with individuals or groups on tutorial exercises attempted in advance by students (note:- to receive this feedback students should participate in these tutorials but attendance is not mandatory).

Approved:

Course Director Signature:

Date of Last Modifications: 18/5/23

MODULE DESCRIPTION FORM

DEPARTMENT OF BIOMEDICAL ENGINEERING

94156 - Introduction to Health Services Research

Module Registrar: Roy Bowers	Taught To (Course): BSc P&O for whom class is compulsory		
Other Lecturers Involved: Dr Arjan Buis, Dr Michelle MacLean, Dr Tony McGarry, Dr Christine McMonagle, Alasdair Stewart & Karyn Ross	Credit Weighting: 20	Semester: 1	
Assumed Prerequisites: Standard entry requirements for Level 1, BSc (Hons) Prosthetics and Orthotics	Compulsory	Academic Level: 1	Suitable for Exchange: Y/N

Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):

Lecture	Tutorial	Laboratory	Groupwork	External	Online	Project	Assignments	Private Study	Total
33					67		20	80	200

Educational Aim

This module aims to provide students with knowledge and skills so that they may adopt systematic approaches to gathering and interpreting information from a wide range of sources. They should be able to integrate research evidence in to practice by applying the skills of critical appraisal. They should have an appreciation of research and critical evaluation. Further to this they should be able to understand the implications of ethics and underpinning moral concepts in relation to all aspects of healthcare.

Learning Outcomes

On completion of the module the student is expected to be able to

- LO1 understand the importance of ethics in a healthcare setting
- LO2 understand how to critically appraise scientific literature
- LO3 understand how to process and analyse data from scientific research
- LO4 understand the differences between qualitative and quantitative research

Syllabus

The module will teach the following:

- Applied examples incorporated into all areas of statistics teaching/learning
- Use of spreadsheets to manage data/statistics
- Role play as an effective, interactive learning opportunity
- Case studies and scenarios to ensure that the implication of ethics in practice is understood

There are three main elements within the module: Statistics, Research methodology, Ethics and Critical Appraisal

Statistics

Introduction: evidence-based practice and the use of statistics in the generalisation of results; government and official statistics; overview of statistical terminology in health research.

Exploratory data analysis: levels of measurement; graphical presentations and numerical summaries of health information; the use of an appropriate statistical software to summarise data both numerically and graphically.

Construction and interpretation of appropriate tables and graphs of experimental data.

Probability: probability rules; introduction to probability distributions; the Normal distribution.

Estimation: sampling distributions; standard errors; concept of point and interval estimation.

Hypothesis Testing: the Null and Alternative hypotheses; Type I and Type II errors; level of significance; power; p-values.

Research methodology

Research as a concept; qualitative and quantitative research; research design; use of Endnote referencing system, word management system for thesis writing, searching the literature; critical appraisal of the literature; writing professionally; levels and types of evidence.

Ethics relating to clinical practice

Ethics and morality in healthcare relating to informed consent and confidentiality.

Assessment of Learning Outcomes

Criteria

For each of the Module Learning Outcomes the following criteria will be used to make judgements on student learning:

LO1

C1 demonstrate an understanding of the importance of consent and confidentiality

C2 demonstrate an understanding of the principles of autonomy, beneficence, maleficence and justice

LO2

C1 demonstrate an understanding of critical appraisal

C2 demonstrate an understanding of the factors that impact negatively on quality of research studies

LO3

C1 demonstrate an understanding of statistical terminology, and of the role of statistics and health service research

C2 demonstrate an understanding of basic probability theory normal distribution.

C3 demonstrate ability to interpret and descriptively present experimental data

LO2

C1 demonstrate an understanding of qualitative research

C2 demonstrate an understanding of quantitative research

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

Principles of Assessment and Feedback

(within Assessment and Feedback Policy at: <https://www.strath.ac.uk/staff/policies/academic/>)

Please state briefly how these are incorporated in this module.

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

	Examinations			Courseworks		Projects		
	Number	Month(s)	Duration	Weighting	Number	Weighting	Number	Weighting
L/Outcomes					2	100%		
					LO1, LO2, LO3, LO4			

Indicate which learning outcomes (LO1, LO2 etc) are to be assessed by exam/coursework/project as required.

Coursework / Submissions deadlines (academic weeks):

Students must pass elements 1 and 2 of coursework

Courseworks issued (usually) week 3 and week 7, semester1, submission deadline during December examination period.

Resit Assessment Procedures:

Resubmission of coursework(s) prior to commencement of the August exam diet.

PLEASE NOTE:

Students must gain a summative mark of 40% to pass the module. Students who fail the module at the first attempt will be re-examined during the August diet. This re-examination will consist entirely of coursework. No marks from any previous attempts will be transferred to a new resit attempt.

Recommended Reading

*****Purchase recommended **Highly recommended reading *For reference**

*Altman, D.G. (2001) Practical Statistics for Medical Research, 3rd Ed., CRC Press.

*Batavia M (2001). Clinical research for health professionals: a user-friendly guide. – Boston: Butterworth-Heinemann.

*Bell J (2000). Doing your research project: a guide for first-time researchers in education and social science. /3rd ed.

- Buckingham: Open University, 2000

*Black N (1998). Health services research: a guide to best practice. – London: BMJ Books.

*Bland, M & Peacock, J. (2000) Statistical Questions in Evidence-Based Medicine, Oxford University Press.

*Biles, C.M. (1994) Statistics: A Health Sciences Orientation, W C Brown.

*Bowers, D (2002) Medical Statistics from Scratch, John Wiley.

*Bowling A, S Ebrahim eds. (2005). Handbook of health research methods: investigation, measurement and analysis.

– Maidenhead: Open University Press.

*Crombie IK (1996). The pocket guide to critical appraisal: a handbook for health care professionals. – London: Society for Research into Higher Education.

**Greenhalgh, T. (2001) How to Read a Paper: the Basics of Evidence-based Medicine, BMJ Publishing Group.

*Grbich C (1999). Qualitative research in health: an introduction. – London: Sage Publications.

*Hayes G (2001). Principles of clinical research./ 3rd ed. – Petersfield: Wrightson Biomedical Publishing Ltd.

*Ott, L & Longnecker, M (2001) An Introduction to Statistical Methods and Data Analysis, 5th Ed., Thomas Learning.

*Sim J (2000). Research in health care: concepts, designs and methods. – Cheltenham: Stanley Thornes Ltd.

*Thomas JR, Nelson JK, Silverman SJ, eds. ((2005). Research methods. – Champaign, Ill: Human Kinetics.

*Streiner DL, Norman GR (2003) PDQ statistics. BC Decker

Further Reading:

*Lim MSC, Hellard ME, Aitken CK (2005). The case of the disappearing teaspoons: longitudinal cohort study of the displacement of teaspoons in an Australian research institute. Br Med J; 331(24-31 December): 1498-1500

**Smith GCS, Pell JP (2003). Parachute use to prevent death and major trauma related to gravitational challenge: systematic review of randomised controlled trials. Br Med J; 327(20-27 December): 1459-1461

Additional Student Feedback

(Please specify details of when additional feedback will be provided)

Date	Time	Room No

Session:

Approved:

Course Director Signature: Roy Bowers

Date of Last Modifications: September 2021

MODULE DESCRIPTION FORM

DEPARTMENT OF BIOMEDICAL ENGINEERING

94157 Human Biological Sciences 1

Module Registrar: Mrs L Murray	Taught To (Course): Cohorts for whom class is compulsory / optional / elective		
Other Lecturers Involved: Dr C Robertson, Clinical Guest Lecturers and Research Staff	Credit Weighting: 20	Semester: 1 & 2	
Assumed Prerequisites: Entry qualifications	Compulsory/ optional / elective class	Academic Level: 1	Suitable for Exchange: Y/N

Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):

Lecture	Tutorial	Laboratory	Groupwork	External	Online	Project	Assignments	Private Study	Total
20	10				20			150	200

Educational Aim

This module aims to provide a student with the basic knowledge of cell biology, anatomical structures of the major body systems (with a focus on the musculoskeletal, integumentary and nervous systems), and their physiological functioning. This knowledge is fundamental to understand and to develop specific topics that will be taught later in the course.

Learning Outcomes

On completion of the module the student is expected to be able to

- LO1 Understand the levels of organisation of cells, tissues, organs and systems, and associated terminology.
- LO2 Describe the basic structure of a cell, and of bone, skin, muscle, and nerve cells and tissue, their interactions and how these relate to their functions in the human body.
- LO3 Describe the roles of the skeletal, integumentary, muscular, and nervous systems, and appreciate the importance of the control of (and co-ordination between) these systems.
- LO4 Understand the implications of specific diseases, pathologies or injuries on function, e.g. diabetes.

Syllabus

The module will teach the following:

Anatomy

- Terminology (anatomical terms, anatomical planes)
- Skeleton, bony landmarks and articulations (especially lower limb bones and joints)
- Key muscle groups, their origins and insertions (especially those acting around hip, knee and ankle)
- Structures of the central and peripheral nervous systems (brain, spinal cord, peripheral nerves)
- Skin (epidermis, dermis, subcutaneous structures)

Physiology

- Terminology associated with cells, tissues and organs
- Basic cell physiology (role of plasma membrane and key organelles of somatic cell, e.g. mitochondria)
- Skeletal physiology (role of skeletal system; bone development, bone turnover, fracture repair)
- Muscle physiology (role of muscle in movement; basis of skeletal muscle cell contraction)
- Integumentary system (role of skin and associated soft tissues in protection, thermal regulation, etc.)
- Nervous system (role of nervous system in communication between, and control of, other systems)
- Muscular system (different muscle cell/tissue types and their roles; force production; contraction types)

Pathophysiology

Introduction to the immune system (infection, inflammation, bacteria/viruses, and their impact on body)

Introduction to diabetes (effects of disease/pathology through interactions between immune and musculoskeletal systems)

Assessment of Learning Outcomes

Criteria

For each of the Module Learning Outcomes the following criteria will be used to make judgements on student learning:

- LO1 Understand the levels of organisation of cells, tissues, organs and systems, and associated terminology:
- C1 Classify tissues, organs and systems
 - C2 Describe characteristics of main tissues, organs and systems
 - C3 Qualitatively describe the relationship between structure and function in main body systems
- LO2 Describe the basic structure of a cell, and of bone, skin, muscle, and nerve cells and tissue, their interactions and how these relate to their functions in the human body:
- C1 Describe the basic features of a somatic cell, and functions of organelles and intracellular structures
 - C2 Describe the basic structure and function of bone tissue
 - C3 Describe the basic structure and function of muscle, skin and other soft tissues
- LO3 Describe the roles of the skeletal, integumentary, muscular, and nervous systems, and appreciate the importance of the control of (and co-ordination between) these systems.
- C1 Describe the structure and function of the skeletal system – bone development, turnover and repair.
 - C2 Describe the structure and function of the muscular system – muscle types, levels of organisation of muscle, the smallest contractile unit, the sliding-filament theory of muscle contraction, contraction types.
 - C3: Describe the structure and function of the integumentary system –epidermis, dermis and subcutaneous structures, skin functions for protection sensation, protection, temperature regulation.
 - C4: Describe the structure and function of the nervous system – brain, spinal cord, peripheral nerves; central/peripheral nervous system classification; autonomic/somatic nervous system classification.
 - C5: Describe the coordination between systems –control of movement; musculoskeletal health.
- LO4 Understand the implications of specific diseases, pathologies or injuries on function, e.g. diabetes.
- C1: Understand and describe the basic principles of disease processes - disorders of cell growth; processes of infection and inflammation.
 - C2: Understand and explain how skin, muscle and bone respond to trauma
 - C3: Demonstrate a knowledge of common disorders of the nervous system
 - C4: Demonstrate a basic understanding of the aetiology of diabetes - risk factors; key changes that occur in metabolic processes

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

Principles of Assessment and Feedback

(within Assessment and Feedback Policy at: <https://www.strath.ac.uk/staff/policies/academic/>)

Please state briefly how these are incorporated in this module.

The class uses MyPlace extensively, supported by the online learning and teaching platform 'Visible Body Courseware', with interactive quizzes ensuring that formative assessment has an impact on learning, as the student has the knowledge to close the gap between current and required performance. These quizzes provide adequate student-teacher reflection and discussions around students' learning.

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

	Examinations			Courseworks		Projects		
	Number	Month(s)	Duration	Weighting	Number	Weighting	Number	Weighting
L/Outcomes	3		60	100%				

Indicate which learning outcomes (L01, L02 etc) are to be assessed by exam/coursework/project as required.

Coursework / Submissions deadlines (academic weeks):

Resit Assessment Procedures:

2hr examination in August diet / Resubmission of coursework(s) prior to commencement of the August exam diet.

PLEASE NOTE:

Students must gain a summative mark of 40% to pass the module. Students who fail the module at the first attempt will be re-examined during the August diet. This re-examination will consist entirely of exam / coursework/viva. No marks from any previous attempts will be transferred to a new resit attempt.

Recommended Reading

*****Purchase recommended **Highly recommended reading *For reference**

**

Fundamentals of Anatomy and Physiology; 10th Edition, Frederic H Martini, Judi L Nath & Edwin F Bartholomew. Pearson Education ISBN-13: 9781292057217.

Additional Student Feedback

(Please specify details of when additional feedback will be provided)

Date	Time	Room No

Session:

Approved:

Course Director Signature:

Date of Last Modifications:

MODULE DESCRIPTION FORM

DEPARTMENT OF BIOMEDICAL ENGINEERING

BE104 Foundations for Inter-professional Practice

Module Registrar: Lorna Nimmo Glasgow Caledonian University	Taught To (Course): Cohorts for whom class is compulsory / optional / elective		
Other Lecturers Involved: Suzanne Faulkner and Sarah Day	Credit Weighting: 20	Semester: 1	
Assumed Prerequisites: None (standard entry requirements)	Compulsory/ optional / elective class	Academic Level: 1	Suitable for Exchange: Y/N

Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):

Lecture	Tutorial	Laboratory	Groupwork	External	Online	Project	Assignments	Private Study	Total
12	24						20	144	200

Educational Aim

This module aims to introduce students to current developments of policy and processes that direct the delivery of Health and Social care.

The module will enable students to identify key principles of partnership working through an awareness of the qualities and attributes of Health and Social care professionals.

The module will enable students to begin to develop an understanding of their professional identity and of others within the inter-professional team.

Learning Outcomes

On completion of the module the student is expected to be able to

- LO1 Describe the principles, rationale and benefits of inter-professional practice within health and social care delivery – from the perspectives of health and social care professionals and patient/ service users/ carers.
- LO2 Identify the core qualities required of health and social care professionals relating to effective inter-professional practice.
- LO3 Demonstrate effective collaboration within an inter-professional team.
- LO4 Demonstrate an understanding of the importance of practice wisdom through reflection.
- LO5 Recognise the psychological and sociological factors underpinning health and social care.

Teaching & Learning Strategy

This module will combine a number of key note lectures that will be complemented with a series of tutorials and independent study. Students will work in inter-professional groups to explore and apply the theories of communication, collaboration and teamwork.

A range of teaching and learning activities will be utilised to develop student learning and engagement, including role play, blended learning, directed teaching, experiential learning, small and large group activities, reflective learning, mind maps, group discussions and reflective activities. Practitioners, patients, service users and carers will be invited to present their perspective in relation to inter-professional practice.

(UK SPEC suggests no more than 4 learning outcomes per module. Statements must be broad and be syllabus free and link in with the intended learning outcomes on the programme specifications.)

Syllabus

The module will teach the following:
 What is/ why inter-professional education
 Drivers for inter-professional education /current policy in relation to integration of Health and Social Care practice
 Effective inter-professional practice
 Barriers to inter-professional practice
 Team working/partnership working
 Reflective learning and writing

Professional and regulatory bodies and codes of conduct. CPD, PDP, Life-long learning
 Respect, values, judgements and ethics
 Psychological and sociological perspectives of inter-professional practice

Assessment of Learning Outcomes

Criteria

For each of the Module Learning Outcomes the following criteria will be used to make judgements on student learning:

[Note: Criteria break the LO down into 'teachable' elements but do not become syllabus orientated i.e. no mention of CAD package names, components etc.]

LO1
 C1
 C2
 C3

LO2
 C1
 C2
 C3

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

Principles of Assessment and Feedback

(within Assessment and Feedback Policy at: <https://www.strath.ac.uk/staff/policies/academic/>)

Please state briefly how these are incorporated in this module.

Transferable Skills:

Use of technology to access information.
 Social, communication and interactions.
 Inter-personal skills.
 Self-awareness and self-management.
 Reflection.
 Team working.

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

	Examinations			Courseworks		Projects	
	Number	Month(s)	Duration	Number	Weighting	Number	Weighting
L/Outcomes				1	30%		
				presentation 1 essay	70%		

Indicate which learning outcomes (L01, L02 etc) are to be assessed by exam/coursework/project as required.

Assessment Methods:

This module will be assessed in a number of ways. The assessment methods will reflect the overall module aims, philosophy, contents, style of delivery and learning outcomes.

- Group poster presentation 30%
- 1500 word reflective coursework completed at the end of the module 70%.

At the end of week 41 following the formative assignments, the summative assignment (reflective coursework) will be submitted. This 1,500-word summary from the student's reflective portfolio should reflect the student's learning throughout and in completion of the module. The student should use all the information collected in the portfolio to demonstrate in the form of a summary what learning has been achieved. This should focus on the learning from the learning outcomes, specific areas of knowledge gain and any points of particular note. All aspects should be related to the identification of relevant literature including research findings and differing reports such as government papers. The student should highlight some method of reflection such as Gibb's cycle to discuss the salient points.

Coursework / Submissions deadlines (academic weeks):

An aggregate mark of 40% is required to pass the module. In addition to achieving an aggregate mark of 40% or greater, candidates must obtain a mark of 35% or greater in each of the coursework components. Students who fail a coursework will have an opportunity to resit the failed element up to a maximum of 3 attempts.

Resit Assessment Procedures:

Resubmission of coursework(s) prior to commencement of the August exam diet.

PLEASE NOTE:

Students must gain a summative mark of 40% to pass the module. Students who fail the module at the first attempt will be re-examined during the August diet. This re-examination will consist entirely of exam / coursework/viva. No marks from any previous attempts will be transferred to a new resit attempt.

Recommended Reading

***Purchase recommended	**Highly recommended reading	*For reference

**		
Main Text Books:		
Alott, M., & Robb, M., 1998. Understanding Health and Social Care-An Introductory Reader. London: Sage.		
Brooker, C., & Waugh, A., 2007. Foundations of Nursing Practice. Edinburgh: Mosby Elsevier.		
Burnard, P., 2002. Learning Human Skills. Oxford: Butterworth Heinemann.		
Davis,C., Findlay, L., & Bullmann, A., 2000. Changing Practice. London: Sage.		
Higgs, J., & Jones, M., 2000. Clinical Reasoning in the Health Professions, 2 nd ed. Oxford: Butterworth Heinemann.		
Hope, T., Savulescu, J., & Hendrick, J., 2003. Medical Ethics and Law – The Core Curriculum. Edinburgh: Churchill Livingston.		
Horner, N., 2006. What is social work? Context and perspectives, 2 nd ed. Exeter: Learning Matters.		
Jasper, M., 2003. Beginning Reflective Practice – Foundations in Nursing and Health. Cheltenham: Nelson Thorne.		
Lanoe, N., 2002. Ogiers Reading Research. London: Bailliere Tindall.		
Miller, C., Freeman, M., & Ross, N., 2001. Interprofessional Practice in Health and Social Care. London: Arnold.		
Messer, D., & Meldrum, C., 1995. Psychology for Nurses and Healthcare Professionals. London: Prentice Hall.		
Naidoo, J., & Wills, J., 2001. An Introduction to Health Studies. Hampshire: Palgrave.		
Parrott, L., 2006. Values and ethics in social work practice. Exeter: Learning Matters.		
Pearce, R., 2003. Profiles and Portfolios of Evidence – Foundations in Nursing and Health. Cheltenham: Nelson Thorne.		
Quinney, A., 2006. Collaborative social work practice. Exeter: Learning Matters.		
Robinson, J., & Elkan R., 1999. Health Needs Assessment. London: Churchill Livingstone.		
Thompson, N., 2005. Understanding social work. Basingstoke: Palgrave.		
Useful Websites:		
Scottish Health on the Web – NHS Scotland		www.show.scot.nhs.uk
Scottish Executive		www.scotland.gov.uk
The Cochrane Collaboration		www.cochrane.org
Evidence Based Medicine		www.cebm.net
Government information for carers		www.gov.uk/browse/disabilities/carers
Carers Connect Scotland		www.carersuk.org/scotland
Scottish Intercollegiate Guidelines Network		www.sign.ac.uk

Additional Student Feedback

(Please specify details of when additional feedback will be provided)

Date	Time	Room No

Session:

Approved:

Course Director Signature:
Date of Last Modifications:

MODULE DESCRIPTION FORM



DEPARTMENT OF BIOMEDICAL ENGINEERING

94161 Prosthetics and Orthotics Professional and Technical Skills

Module Registrar: Roy Bowers	Taught To (Course): Cohorts for whom class is compulsory		
Other Lecturers Involved: Christine McMonagle, Gemma McGinty, Gillian Swan, Martin Boyle, Bill MacKinnon and Guest Lecturers	Credit Weighting: 20	Semester: 1 & 2	
Assumed Prerequisites: None	Compulsory	Academic Level: 1	Suitable for Exchange: N

Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):

Lecture	Tutorial	Laboratory	Groupwork	External	Online	Project	Assignments	Private Study	Total
45	10	70					4	75	200 hrs

Educational Aim

This module aims to

In Professional Skills:

1. develop a patient-centred approach to the clinical practice of prosthetics and orthotics
2. develop the interpersonal and communication skills required to be able to effectively implement prosthetics and orthotics clinical and technical skills in a professional setting
3. develop the practice of self-awareness, self-appraisal, giving and receiving peer feedback, and the setting of personal and professional development objectives
4. develop the skills required to initiate and sustain lifelong learning

In Technical Skills:

1. Equip the student with basic practical skills that will be required to enable them to complete the later prosthetic and orthotic science modules.
2. Enable them to carry out the technical skills which are necessary within a clinical and technical prosthetic and orthotic service delivery setting.
3. Enable the student to develop the understanding and knowledge required for the selection, application, and modification of a wide range of technical skills for prosthetic and orthotic clinical practice.
4. Understand the considerations needed to prescribe and design medical devices within elements of clinical practice including finishing and modification of medical devices in line with Control of Substances Hazardous to Health (COSHH), www.hse.gov.uk/coshh/basics/assessment.htm Medical Devices Directive (MDD) www.gov.uk/guidance/medical-devices-conformity-assessment-and-the-ce-mark regulations, risk assessment, appropriate use of Personal Protective Equipment (PPE) and all appropriate Health and Safety management issues and also enabling them to demonstrate and practice efficient moving and handling skills

Learning Outcomes

On completion of the module the student is expected to be able to

In Professional Skills:

- LO1** understand the skills required for effective communication, and recognise the importance of this in clinical practice
- LO2** be able to work effectively with colleagues to obtain relevant orthotic, medical and social history from patients, and record in the form of a clinical note
- LO3** understand the concept of emotional intelligence and the importance of empathy and respect in clinical practice
- LO4** have an appreciation of models of disability including the International Classification of Functioning (ICF) framework

In Technical Skills:

- LO1** Develop an understanding of all the appropriate Health and Safety, CoSHH, PPE, Risk Assessments and have the ability to demonstrate and practice efficient moving and handling for clinical and technical settings.
- LO2** Develop an understanding and performance of basic skills required for the use of portable power tools, hand tools, machine tools and clinical measuring tools.

- LO3** Appreciate the planning, evaluation, self-assessment of a given exercise and of their own personal technical skills.
- LO4** Develop an understanding and have a basic skills level on the use of measurement and cutting, design, costing, materials and componentry, importance of waste disposal and making an informed decision on the use of materials and the process for the correct manufacture route.

Syllabus

The module will teach the following:

For Professional Skills

- Communication skills in a professional context
- interactive role-play with peer and patient feedback leading to the development of effective verbal, non-verbal and written communication, and listening skills
- interaction and discussion with volunteer patients in a pseudo-clinical environment
- structured discussion covering professional issues
- exposure to the roles of other professionals in the medical and allied health professional environment
- longitudinal use of a personal portfolio to facilitate collation and reflection on achievement and learning

For Technical Skills:

- Practical sessions demonstrating processes and procedures used with thermoplastics, thermosetting plastics, metals, leather, fixings, bonding and assembly.
- Group working to undertake exercises to encompass basic competencies and their related safety procedures and regulations (Health and Safety, risk assessment, COSHH, PPE)
- Design and planning of practical work enabling the student to produce a device that is presented and assessed at the end of the module
- Practical and tutorial sessions demonstrating moving and handling for patients and equipment.

Assessment of Learning Outcomes

Criteria

For each of the Module Learning Outcomes the following criteria will be used to make judgements on student learning:

For Professional Skills

LO1

- C1 demonstrate ability and confidence in communicating with demonstration patients
 C2 demonstrate ability in the practice of non-verbal communication and listening skills
 C3 demonstrate ability to paraphrase and reflect clinical information to confirm understanding

LO2

- C1 demonstrate ability to obtain relevant clinical information by open questioning, following obtaining informed consent
 C2 demonstrate ability to work collaboratively and effectively in small team with colleagues
 C3 demonstrate ability to produce accurate clinical notes

LO3

- C1 demonstrate self-awareness
 C2 demonstrate empathy and respect for clients and colleagues

LO4

- C1 demonstrate understanding of different models of disability

For Technical Skills

LO1

- C1 Demonstrate an understanding of all the appropriate Health and Safety, CoSHH, PPE, Risk Assessments
 C2 demonstrate and practice efficient moving and handling for clinical and technical settings.

LO2

- C1 demonstrate competence and ability to perform basic skills in the use of portable power tools, and hand tools
 C2 demonstrate competence and ability to perform basic skills in the use of portable machine tools
 C3 demonstrate competence and ability to perform basic skills in the use of clinical and measuring tools.

LO3

- C1 demonstrate ability to plan a given exercise of their own personal technical skills.
 C2 demonstrate ability to evaluate a given exercise of their own personal technical skills.
 C3 demonstrate ability to self-assess a given exercise of their own personal technical skills.

LO4

- C1 demonstrate competence and ability to perform basic skills in measurement, cutting, design, costing, materials and componentry
 C2 demonstrate an understanding of the importance of correct waste disposal
 C3 demonstrate informed decision making on the use of materials and the process for the correct manufacture route

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

Principles of Assessment and Feedback

(within Assessment and Feedback Policy at: <https://www.strath.ac.uk/staff/policies/academic/>)

Please state briefly how these are incorporated in this module.

Assessment and feedback activities are designed to foster student engagement, to support and measure students' attainment of knowledge, understanding, and transferable skills. Assessment criteria will be made explicit at the start of the module, including the purpose, weighting, and timing of assessment. Assessment tasks are appropriate to disciplinary and/or professional contexts.

Professional Skills

Performance in patient interview and a reflective essay on a patient contact session will be assessed.

Technical Skills

Continuous assessment and self-assessment will be used for the practical exercises. Written feedback will be provided two weeks after the practical exercise is complete. Students will be required to work together in pairs and self-assess their own work. A class test will also take place at the end of the module.

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

Professional Skills

	Examinations			Courseworks		Patient Interview		
	Number	Month(s)	Duration	Weighting	Number	Weighting	Number	Weighting
					1	50%	1	50%
L/Outcomes				LO1, LO2, LO3, LO4		LO1, LO2, LO3, LO4		

Indicate which learning outcomes (L01, L02 etc) are to be assessed by exam/coursework/project as required.

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

Technical Skills

	Examinations			Courseworks		Projects		
	Number	Month(s)	Duration	Weighting	Number	Weighting	Number	Weighting
	1	December	1 hour	30%	1	70%		
L/Outcomes	LO1, LO2, LO3, LO4			LO1, LO2, LO3, LO4				

Indicate which learning outcomes (L01, L02 etc) are to be assessed by exam/coursework/project as required

Coursework / Submissions deadlines (academic weeks):

For Professional Skills

The grade for the professional skills aspects of this module is taken from a reflective essay based on a clinical experience with volunteer patients (50%), and a practical role play experience with volunteer patients (50%). These assessments will take place in March.

For Technical Skills

Continuous assessment of Coursework. Summative feedback will be given within 2 weeks of this final submission.

The Assignment will cover all the learning outcomes that involve the risk assessment, health and safety and COSHH that has to be signed off by each individual student. Each assignment must be achieved at a minimum of 40% grade and the overall summary mark for coursework and class test be at least 40%.

All practical and class tests must be completed for a pass to be achieved in this module.

Calculation:

The grade for the technical skills aspect of this module is taken from: (Coursework x 70%) + (Class Test x 30%)

The final grade for the module is calculated from the professional skills aspects (50%) and the technical aspects (50%).

Attendance of moving and handling is compulsory and non-attendance will normally prohibit progression.

Resit Assessment Procedures:

Resubmission of coursework(s) prior to commencement of the August exam diet.

In professional skills, if a student fails one or both of the Role Play and/or Reflective Essay, then a re-sit opportunity will be offered, requiring a 40% pass. This will take place in Semester 2 of Year 1.

In technical skills, if a candidate fails to achieve 40% in assignment 1 and/or 40% in class test, re-sit coursework will be offered before the May Examination Board. Each coursework will be designed with an emphasis on the omitted or failed elements of the module

The re-sit will entail a 1 week practically assessed course. A 40% pass, mark must be achieved to allow progression to the next year of the programme.

PLEASE NOTE:

Students must gain a summative mark of 40% to pass the module. Students who fail the module at the first attempt will be re-examined before the May diet. This re-examination will consist entirely of coursework. No marks from any previous attempts will be transferred to a new resit attempt.

Recommended Reading

*****Purchase recommended **Highly recommended reading *For reference**

For Professional Skills:

- *Baggott, R. Health & Healthcare in Britain. Basingstoke: Palgrave Macmillan 2004
- *Beauchamp, T. L. and J. F. Childress. Principles of Biomedical Ethics. Oxford: Oxford University Press. 1983.
- *Brigley, S., et al. "Continuing education for medical professionals: A reflective model." Postgraduate Medical Journal 73.855 1997: 23-26.
- *Emanuel, E. J. and L. L. Emanuel. "Four models of the physician-patient relationship." Journal of the American Medical Association 267. 1992: 2221-26.
- *General Medical Council. Good Medical Practice. London: General Medical Council, 2001.
- *General Medical Council. Tomorrow's Doctors: Recommendations on Undergraduate Education. 2003.
- **Goleman, D. Emotional Intelligence: Why it can matter more than IQ. New York: Bantam Books, 1995
- **Goleman, D. Working with emotional intelligence. New York: Bantam Books. 1998
- *Pendleton, D. Schofield, T. Tate, P et al. The New Consultation: Developing Doctor-Patient Communication. Oxford University Press. Oxford. 2003
- *Pietroni, R. The Toolbox for Portfolio Development: a Practical Guide for the Primary Healthcare Team. Abingdon: Radcliffe Medical Press. 2001.
- *Schon, D. A. The Reflective Practitioner. London: Maurice Temple Smith Ltd, 2002.
- *Schwartz, L. S., P. E. Preece, and R. A. Hendry. Medical Ethics: a Case Based Approach. Edinburgh: Saunders, 2002.
- *Silverman, J., S. Kurtz, and J. Draper. Skills for Communicating With Patients. Oxon: Radcliffe Medical Press Ltd, 1998.
- *Vaccaro, P. J. "Time management tips that work." Family Practice Management 9.3. 2002: 64.

For Technical Skills

- **The module handbook, risk assessments and associated hand-outs for assignments are placed on University's virtual learning environment.
- **Please note - DVDs are the University's Learn on line portal. These must be viewed at the selected release dates and prior to the commencement of the associated exercise.

Additional Student Feedback

(Please specify details of when additional feedback will be provided)

Date	Time	Room No

Session:

Approved:

Course Director Signature: Roy Bowers

Date of Last Modifications: AUGUST 2021

MODULE DESCRIPTION FORM

DEPARTMENT OF BIOMEDICAL ENGINEERING

94204 - Prosthetics and Orthotics Science 1

Module Registrar: Dr Christine McMonagle (Introduction to Prosthetics and Orthotics Science) Laura Murray (Trans-tibial, Ankle Disarticulation and Partial Foot Prosthetics)	Taught To (Course): Cohorts for whom class is compulsory / optional / elective		
Other Lecturers Involved: Roy Bowers, Sarah Day and Gemma McGinty	Credit Weighting: 20	Semester: 2	
Assumed Prerequisites: 94161 Prosthetics and Orthotics Professional and Clinical Skills	Compulsory/ optional/ elective class	Academic Level: 2	Suitable for Exchange: Y/N

Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):

Lecture	Tutorial	Laboratory	Groupwork	External	Online	Project	Assignments	Private Study	Total
24 hrs	10 hrs	120 hrs					20 hrs	26 hrs	200 hrs

Educational Aim

This module aims to

Students should develop knowledge, understanding and clinical skills - (involving real patient experience) in the lower limb prosthetics and orthotics practice and patient management.

This module will be in two sections

1. An introduction to the practical clinical skills which underpin prosthetic and orthotic practice
2. Trans-tibial, ankle disarticulation and partial foot prosthetics

These courses will provide students with a knowledge and understanding of lower limb amputee rehabilitation and prosthetic management based on a patient-centred approach. Students will gain knowledge of basic and advanced clinical and technical aspects required to become a competent and professional lower limb prosthetics practitioner. Students will have a sound understanding of the clinical and technical aspects related to limb absence at all levels below the knee. Investigating the role of the prosthetist within the multidisciplinary team will be core to this. Cross-curricular, sequential links with other relevant and complementary modules will be established, for example Human Biological Sciences, Professional Skills for Healthcare, Principles of Prosthetics and Orthotics Design and Introduction to Health Service Research.

Learning Outcomes

Students will obtain a knowledge and understanding of:

- shape sensing technologies and techniques
- the principles of cast / shape modification
- the professional ethical and legal context of current practice and adherence to codes of professional conduct and practice within the clinical and workshop settings

Students will acquire and develop the skills which will enable them to:

- communicate effectively with their volunteer patients
- adopt a systematic approach to patient assessment: history taking, patient examination, visual gait analysis, setting of rehabilitation management goals
- utilise surface anatomy to identify underlying structures
- analyse and score gait using observation and software
- develop a critical enquiry approach when relating movement principles to patient examination
- critically appraise the rationale underpinning different management options
- become proficient in shape capture processes by hand using plaster of Paris; or using laser scanning and CAD-CAM technology
- become proficient in the modification of a positive plaster model by hand, or using PC software

Students will acquire and develop the key skills that will enable them to:

- think critically, problem solve, and engage in clinical reasoning
- acquire knowledge and understanding in the context of the subject
- manage their own and their colleagues time effectively
- engage in both independent and group working

- develop presentation skills
- develop social, interpersonal, communication, written, oral and listening qualities

Students will then develop a knowledge of prescription criteria for lower limb prostheses based on the needs of the patient including:

- the ability to carry out patient assessment and document findings
- socket design and shape concepts and their applications
- biomechanical principles of socket design
- component choice
- prosthetic limb materials
- fitting and alignment techniques
- cosmetic finishing manufacturing techniques

Become competent in a variety of current measurement, casting, modification, socket fitting, prosthetic alignment and data collection techniques.

Assess and recognise optimal prosthetic socket fit.

Recognise differences between normal and pathological gait and be able to demonstrate the ability to correct gait deviations.

Develop clinical and technical problem-solving skills.

Gain knowledge of :

The aetiology of amputation surgery, physiotherapy incorporating gait training and other allied health disciplines multidisciplinary working related to prosthesis user rehabilitation.

Become proficient in accessing, gathering, reviewing and appraising relevant and current literature in the field

Understand the role and applications of clinical audit and research related to lower limb prosthetics

Develop an appreciation of all aspects of rehabilitation and prosthetic service delivery within commercial and health service clinical settings.

Syllabus

The module will teach the following:

By strongly linking the strategy for teaching and learning to the sequence and depth of the principles of Prosthetics and Orthotics Design Module, students will immediately see the relevance of applying engineering principles to a deeper understanding of component design, socket fit and alignment concepts.

Insights into new and innovative techniques and technologies will be provided ensuring the student is made aware of current developments in the field.

The core curriculum will consist of:

Formal teaching with lectures.

Reinforcement of core knowledge through use of the virtual learning environment Myplace

Demonstration of clinical and technical skills followed by interactive participation and practice in a controlled clinical setting.

Reflection, information gathering, documentation and portfolio-keeping through self-study.

Problem solving and discussion in tutorial sessions.

Regular interaction with academic supervisors to discuss progress, provide feedback and review portfolio.

Continual assessment of clinical and technical components of the module.

Assessment of submitted written coursework based on a clinical experience with volunteer patients.

Assessment of Learning Outcomes

Criteria

For each of the Module Learning Outcomes the following criteria will be used to make judgements on student learning:

[Note: Criteria break the LO down into 'teachable' elements but do not become syllabus orientated i.e. no mention of CAD package names, components etc.]

LO1 Students will be assessed on their developing plaster skills. This incorporates both the shape capture techniques and plaster modification work

LO2 Students will be assessed on their professional abilities. Appropriate professional behaviour within a clinical setting with all staff and patient volunteers.

LO3 Application of theoretical knowledge or anatomy and physiology. Demonstrating the ability to locate relevant surface anatomy and complete thorough patient assessment. Assessment combines passive range of movement, muscle power testing and functional assessment via gait analysis.

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

Principles of Assessment and Feedback

(within Assessment and Feedback Policy at: <https://www.strath.ac.uk/staff/policies/academic/>)

Please state briefly how these are incorporated in this module.

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

	Examinations			Courseworks		Projects		
	Number	Month(s)	Duration	Weighting	Number	Weighting	Number	Weighting
L/Outcomes					2	50%		

Indicate which learning outcomes (L01, L02 etc) are to be assessed by exam/coursework/project as required.

Summary mark = 0.33M1 + 0.67 M2

M1= Introduction to POS1 %

M2 = transtibial prosthetics %

Introduction to P and O Science will be assessed by an online assessment and a group presentation

The practical elements of the transtibial class are assessed including a presentation and blog. The weighting of these elements will be confirmed when the class commences.

Coursework / Submissions deadlines (academic weeks):

Practical assessment and written assessment Introduction to P and O Science 1 Between weeks 8-11 Semester 1, and Week 3 Semester 2, Year 1.

NOTE: Prosthetics examination takes place in year 2

Resit Assessment Procedures:

3 hr examination in August resit diet (year 2)

PLEASE NOTE:

Students must gain a summative mark of 40% to pass the module. Students who fail the module at the first attempt will be re-examined during the August diet. This re-examination will consist entirely of exam. No marks from any previous attempts will be transferred to a new resit attempt.

Recommended Reading

***Purchase recommended **Highly recommended reading *For reference

**

Introduction to Prosthetics and Orthotics Science

Text books

Smith DG, Michael JW and Bowker JH (eds): *Atlas of amputations and limb deficiencies: surgical, prosthetic and rehabilitation principles*. Rosemont IL: American Academy of Orthopaedic Surgeons.

Hsu J, Michael J, Fisk JR (eds). *Atlas of Orthoses and Assistive Devices*, Philadelphia PA: American Academy of Orthopaedic Surgeons.

Chris Kirtley. *Clinical Gait Analysis Theory and Practice*.

Magee D.J. *Orthopaedic Physical assessment*.

Jacquelin Perry. *Gait Analysis: Normal and Pathological Function*.

Broomhead P, Dawes D, Hale C, Lambert A, Shepard R and Quinlivan D (2003) 'Evidence based clinical Guidelines for physiotherapy management of adults with lower limb prostheses.' CSP, London.

Papers

Billock JN (1996) *Clinical evaluation and assessment principles in orthotics and prosthetics*. J Prosthet Orthot 8, 41-44.

Buis AWP, Blair A, Convery P ... [ET AL.] (2003) *Pilot study: data-capturing consistency of two trans-tibial casting concepts, using a manikin stump model: a comparison between the hands on PTB and hands-off ICECAST compact concepts*. Prosthet Orthot Int 27, 100-106.

Convery P, Buis AWP, Wilkie R ... [et al.] (2003) *Measurement of the consistency of patellar-tendon-bearing cast rectification*. Prosthet Orthot Int 27, 207-213.

Trans-tibial Ankle Disarticulation and Partial Foot Prosthetics

Text Books:

Krajbich J, Pinzur M.S, Potter BK, Stevens PM. *Atlas of Amputations and Limb Deficiencies: Surgical, Prosthetic, and Rehabilitation Principles* (2016)

Canadian Association of Prosthetists and Orthotists (1989) *Clinical aspects of lower extremity prosthetics, trans-tibial, Symes and partial foot amputations.*; Winnipeg, Canada: CAPO

May, BJ (1996) *Amputations and prosthetics: a case study approach* Philadelphia: FA Davis Company.

Radcliffe CW, Foort J. (1961) *The patellar-tendon-bearing below-knee prosthesis*. Berkeley: Biomechanics Laboratory, Department of Engineering, University of California, 1961.

NCPO Faculty (2007) *Trans-tibial Prosthetics: manual of handouts*. University of Strathclyde, Glasgow.

Seymour R (2002). *Prosthetics and orthotics, lower limb and spinal* - Philadelphia : Lippincott, Williams & Wilkins.

Papers (also see websites for published journals):

Boontje AH. (1980) *Major amputations of the lower extremity for vascular disease*. Prosthet Orthot Int 4, 87-89

Brown PW. (1970) *Rehabilitation of bilateral lower extremity amputees*. J Bone Joint Surg 52A, 687-700

Condie ME, Patel R, Blacoe J (2002). *A survey of lower limb amputee population in Scotland 1999*. Scottish Physiotherapy Amputee Rehabilitation Group (SPARG.), Rehabilitation Technology Information Service, (ReTIS.)

Convery P, Buis AWP, Wilkie R, Sockalingham S, Blair A, McHugh B, (2003) *Measurement of the consistency of patellar-tendon-bearing cast rectification*. Prosthet and Orthot Int, 27, 207-213.

Datta D, Nair PN, [et al.] (1992). *Outcome of prosthetic management of bilateral lower-limb amputees*. Disabil. Rehabil 14, 93-102.

Durance JP, Warren WK, [et al.] (1989). *Rehabilitation of below-knee amputees: factors influencing outcome and costs in three programmes*. Int. Disabil. Stud. 11, 127-132.

Fitzlaff G, Heim S (2002) *Lower limb prosthetic components, design, function and biomechanical Properties*. Verlag Orthopaedie-Technik, ISPO

Kapp S, Cummings D. *Trans-tibial amputation: prosthetic management*. In: *Atlas of limb prosthetics: surgical prosthetic, and rehabilitation principles*./2nd edition./edited by JH Bowker, JW Michael./ American Academy of Orthopaedic Surgeons-St. Louis: CV Mosby, 1992. p453-478

Kristinsson O (1993). *The ICEROSS concept: a discussion of a philosophy*. Prosthetics and Orthotics International 17, 49-55

Additional Reading:

There are several other current papers on the subject of trans-tibial amputation, prostheses, and amputee rehabilitation.

Simply enter the appropriate search terms, and the system will yield the results of the papers. This applies to journals only.

Details of books can be found by searching the library catalogue, ALICE

Online resources

Company Websites

- <http://www.northseaplastics.com><http://www.otto-bock.com/>
- <http://www.ottobock.com><http://www.blatchfords.co.uk/>
- <http://www.blatchfords.co.uk><http://www.ossur.com/>
- <http://www.ossur.com>
- <http://www.ortho-europe.com/>
- <http://www.rslsteeper.com/>

User Groups

- <http://www.limbless-association.org>
- <https://findingyourfeet.net/>

Demographics

- <http://www.limbless-statistics.org>

Additional Student Feedback

(Please specify details of when additional feedback will be provided)

Date	Time	Room No

Session:

Approved:

Course Director Signature:

Date of Last Modifications:

MODULE DESCRIPTION FORM

DEPARTMENT OF BIOMEDICAL ENGINEERING

94205 Professional Skills for Healthcare 2

Module Registrar: Gemma McGinty	Taught To (Course): BSC (Hons) Prosthetics and Orthotics cohort for whom class is compulsory		
Other Lecturers Involved: Roy Bowers, Dr Christine McMonagle, Laura Murray, and Guest Lecturers	Credit Weighting: 10	Semester: 1	
Assumed Prerequisites: 94161 Prosthetics and Orthotics Professional and Technical Skills	Compulsory	Academic Level: 2	Suitable for Exchange: N

Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):

Lecture	Tutorial	Laboratory	Groupwork	External	Online	Project	Assignments	Private Study	Total
30	12						9	49	100

Educational Aim

This module aims to

1. develop a patient-centred approach to the clinical practice of prosthetics and orthotics
2. enhance the interpersonal and communication skills required to be able to effectively implement prosthetics and orthotics clinical and technical skills in a professional setting
3. encourage exploration and appreciation of ethical and moral issues in relation to the provision of prosthetic and orthotic services within the wider healthcare context
4. further develop the practice of self-awareness, self-appraisal, giving and receiving peer feedback, and the setting of personal and professional development objectives
5. develop the skills required to initiate and sustain lifelong learning
6. develop an awareness of the role of other members of the clinical team and develop skills to be able to contribute effectively to clinical teams
7. develop an understanding of the role and requirements of the professional and regulatory bodies
8. develop the ancillary competencies required in a professional and academic setting

Learning Outcomes

On completion of the module the student is expected to be able to

- LO1 understand the importance of effective communication with service users, and the essential elements of professional behaviour
- LO2 understand the concept of emotional intelligence and the importance of empathy in clinical practice
- LO3 appreciate the key components of effective presentations

Syllabus

The module will teach the following:

- effective verbal, non-verbal and written communication,
- listening skills, appreciating the value of input from service users
- moral, ethical and professional issues
- the role of psychology in disability
- emotional intelligence, empathy, self-awareness, social awareness, self-management and social skills
- the roles of other professionals in the medical and AHP environment,
- issues relating to safeguarding the public and the protection of vulnerable groups
- career planning and career pathways in prosthetics and orthotics
- principles of clinical governance
- managing conflict and aggression
- shared decision making in practice

Assessment of Learning Outcomes

Criteria

For each of the Module Learning Outcomes the following criteria will be used to make judgements on student learning:

LO1

- C1 demonstrate an understanding of the key components of effective communication with service users, carers and colleagues
- C2 demonstrate an appreciation of the contribution of non-verbal communication and paralinguistics to effective communication with service users and others
- C3 demonstrate an understanding of the value of shared decision-making in clinical practice

LO2

- C1 demonstrate understanding of the concept of emotional intelligence, and its underpinning principles
- C2 demonstrate an understanding of the importance of empathy in clinical practice

LO3

- C1 demonstrate competence in constructing and delivering a presentation using PowerPoint or similar

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

Principles of Assessment and Feedback

(within Assessment and Feedback Policy at: <https://www.strath.ac.uk/staff/policies/academic/>)

Please state briefly how these are incorporated in this module.

Assessment and feedback practices are designed to promote effective student learning
 assessment and feedback practices are appropriate, fair, and transparent
 Assessment and feedback practices are clearly communicated at the start of the module.
 Assessment and feedback practices are continuously reviewed

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

	Examinations			Courseworks		Projects		
	Number	Month(s)	Duration	Weighting	Number	Weighting	Number	Weighting
L/Outcomes					2	100%		
					LO1, LO2, LO3			

Indicate which learning outcomes (L01, L02 etc) are to be assessed by exam/coursework/project as required.

Coursework / Submissions deadlines (*academic weeks*):

Presentation 50% + Essay 50%
 Presentation week 11, Essay during examination period.

Resit Assessment Procedures:

Resubmission of coursework(s) prior to commencement of the May exam diet.

PLEASE NOTE:

Students must gain a summative mark of 40% to pass the module. Students who fail the module at the first attempt will be re-examined during the August diet. This re-examination will consist entirely of coursework. No marks from any previous attempts will be transferred to a new resit attempt.

Recommended Reading

***Purchase recommended **Highly recommended reading *For reference

- *Beauchamp, T. L. and J. F. Childress. Principles of Biomedical Ethics. Oxford: Oxford University Press. 1983.
- *Brigley, S., et al. "Continuing education for medical professionals: A reflective model." Postgraduate Medical Journal 73.855 1997: 23-26.
- *Emanuel, E. J. and L. L. Emanuel. "Four models of the physician-patient relationship." Journal of the American Medical Association 267. 1992: 2221-26.
- *General Medical Council. Good Medical Practice. London: General Medical Council, 2001.
- *General Medical Council. Tomorrow's Doctors: Recommendations on Undergraduate Education. 2003.
- **Goleman, D. Emotional Intelligence: Why it can matter more than IQ. New York: Bantam Books, 1995
- **Goleman, D. Working with emotional intelligence. New York: Bantam Books. 1998
- *Pendleton, D. Schofield, T. Tate, P et al. The New Consultation: Developing Doctor-Patient Communication. Oxford University Press. Oxford. 2003

*Pietroni, R. The Toolbox for Portfolio Development: a Practical Guide for the Primary Healthcare Team. Abingdon: Radcliffe Medical Press. 2001.

*Schon, D. A. The Reflective Practitioner. London: Maurice Temple Smith Ltd, 2002.

*Schwartz, L. S., P. E. Preece, and R. A. Hendry. Medical Ethics: a Case Based Approach. Edinburgh: Saunders, 2002.

*Silverman, J., S. Kurtz, and J. Draper. Skills for Communicating With Patients. Oxon: Radcliffe Medical Press Ltd, 1998.

*Vaccaro, P. J. "Time management tips that work." Family Practice Management 9.3. 2002: 64.

Additional Student Feedback

(Please specify details of when additional feedback will be provided)

Date	Time	Room No
		Access to tutors is available at all times during the semester, so interim formative feedback will be provided as requested.

Session:

Approved:

Course Director Signature: Roy Bowers

Date of Last Modifications: August 2021

MODULE DESCRIPTION FORM

DEPARTMENT OF BIOMEDICAL ENGINEERING

94206 Human Biological Sciences 2

Module Registrar: Sarah Day	Taught To (Course): Cohorts for whom class is compulsory / optional / elective		
Other Lecturers Involved:	Credit Weighting: 20	Semester: 1 & 2	
Assumed Prerequisites: 94157 Human Biological Sciences 1	Compulsory/ optional/ elective class	Academic Level: 2	Suitable for Exchange: Y/N

Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):

Lecture	Tutorial	Laboratory	Groupwork	External	Online	Project	Assignments	Private Study	Total
55		29					18	98	200

Educational Aim

This module aims to provide knowledge of the aetiology and pathogenesis of congenital disorders, the physiology and pathophysiology of the nervous system, and the detailed anatomy of the upper limb and spinal column and cord.

Learning Outcomes

On completion of the module the student is expected to be able to

- LO1 Describe and identify the skeletal anatomy of the upper limb, its articulations, musculature, actions and surface anatomy
- LO2 Describe the structure and function of typical and atypical vertebrae, intervertebral joints, and muscles associated with the spinal column.
- LO3 Describe the processes by which the major tissues and organs develop in the embryo and understand the developmental mechanisms relating to development of the limbs and cardiovascular and nervous systems.
- LO4 Describe the normal and pathological structure, function and responses of the nervous system.

Syllabus

The module will teach the following:

Nervous System

Nerve cells and glial cells; response of peripheral nerve cells to damage; electrical properties of nerve cells; synaptic transmission (including skeletal neuromuscular junction); effect of pharmacological agents on synaptic and neuromuscular transmission.

Structure and function of proprioceptors (muscle spindles and tendon organs).

Ascending spinal cord pathways for somatosensation (including effects of complete and partial spinal transection).

Peripheral nervous system (comparison of somatic and autonomic systems).

Structure of brain; protective mechanisms; localisation of cortical function.

Motor pathways - functional consequences of disruption to pathways (direct trauma, spina bifida, poliomyelitis, multiple sclerosis, Charcot-Marie-Tooth disease); basal ganglia; degenerative disorders of basal ganglia and associated structures (Huntington's disease and Parkinson's disease); cerebellum (and consequences of cerebellar damage).

Cerebral vasculature including effects of hypoxia on brain tissue (with reference to cerebral palsy); cerebrovascular accident; effects of head injury on brain structure and function.

Detailed Structure of Upper Limb

Survey of structure and function of upper limb; detailed structure and function of bones and joints of the upper limb; revision of blood and nerve supply; musculature; surface anatomy.

Spinal Anatomy

Outline of structure and function of spinal column; detailed structure of vertebrae throughout the vertebral column; structure and function of intervertebral joints; musculature producing movement of vertebral column; surface anatomy; spinal cord structure and function.

Human Development

Genotype and phenotype; patterns of inheritance; autosomes; sex chromosomes and inheritance of gender; sex-linked inheritance; genes and the environment; development of embryonic tissues; limb development; genetic and congenital disorders: single gene disorders (e.g. achondroplasia), multifactorial inheritance disorders (e.g. clubfoot, congenital malformation of the hip); effects of teratogenic agents (e.g. radiation, drugs).

Assessment of Learning Outcomes

Criteria

For each of the Module Learning Outcomes the following criteria will be used to make judgements on student learning:

LO1

C1 Appropriate identification and description of skeleton, muscles, actions and surface anatomy

LO2

C1 Appropriate identification and description of skeleton, muscles, actions and surface anatomy

LO3

C1 Appropriate identification and description of embryo development and disorders

LO4

C1 Appropriate identification and description of the nervous system and pathologies

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

Principles of Assessment and Feedback

(within Assessment and Feedback Policy at: <https://www.strath.ac.uk/staff/policies/academic/>)

Please state briefly how these are incorporated in this module.

Assessment methods will be discussed and agreed with the class at the beginning of the semester. Timely, useful feedback will be given for each formative and summative assignment.

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

	Examinations / Class Test			Courseworks		Projects		
	Number	Month(s)	Duration	Weighting	Number	Weighting	Number	Weighting
	1	November	1	40%				
	2	March	1	40%				
	3	March	45 min	20%				
L/Outcomes	LO1, LO2			LO3, LO4				

Indicate which learning outcomes (LO1, LO2 etc) are to be assessed by exam/coursework/project as required.

A summary mark of a minimum of 60% will give exemption from the examination. Students must also achieve a minimum of 40% in the class tests to gain this exemption.

Coursework / Submissions deadlines (academic weeks):

The coursework may comprise a variety of styles including for example written work, oral presentation.

Resit Assessment Procedures:

2hr examination in August diet / Resubmission of coursework(s) prior to commencement of the August exam diet.

Students who fail to achieve a summary mark (SM1) of 60% must sit an examination. Students who fail to attain 40% in the May examination must resit the examination in August. In addition the student must achieve a minimum of 40% for the final summary mark (SM2) to allow progression.

Final Summary mark (SM2) = 0.5 SM1 + 0.5 SM2

Where SM1 = coursework and class test %

SM2 = examination %

PLEASE NOTE:

Students must gain a summative mark of 40% to pass the module. Students who fail the module at the first attempt will be re-examined during the August diet. This re-examination will consist entirely of exam. No marks from any previous attempts will be transferred to a new resit attempt.

Recommended Reading

***Purchase recommended **Highly recommended reading *For reference

**

MARTINI, FH, NATH, JL & BARTHOLOMEW, EF. Fundamentals of anatomy and physiology. / 10th edition. Pearson, 2015. or TORTORA, GJ, DERRICKSON, B. Principles of anatomy and physiology. / 13th edition. Wiley, 2011.

Additional Reading:

GANONG, WF. Review of medical physiology. / 24th edition. McGraw-Hill, 2012.

MARIEB, EN. & HOEHN, K. Human anatomy and physiology. / 10th edition. Pearson, 2015.

MARTINI, FH, TIMMONS MJ, & TALLITSCH, RB. Human anatomy. / 7th edition. Benjamin Cummings, 2011.

NOWAK TJ & HANDFORD AG. Pathophysiology. / 3rd edition. McGraw-Hill, 2003.

GROSSMAN, S. Porth's Pathophysiology. / 9th edition. Lippincott, 2013.

STONE RJ & STONE JA. Atlas of skeletal muscles. / 7th edition. McGraw Hill, 2011.

WIDMAIER EP, RAFF H & STRANG KT, Vander's Human Physiology / 12th edition. McGraw-Hill, 2010

Additional Student Feedback

(Please specify details of when additional feedback will be provided)

Date	Time	Room No

Session:

Approved:

Course Director Signature:

Date of Last Modifications:

MODULE DESCRIPTION FORM

DEPARTMENT OF BIOMEDICAL ENGINEERING

94207 Principles of Prosthetic and Orthotic Design 2

Module Registrar: Suzanne Faulkner	Taught To (Course): Cohorts for whom class is compulsory /optional/ elective		
Other Lecturers Involved: Roy Bowers, Dr Christine McMonagle, Dr Craig Childs, Dr Tony McGarry and Dr Phil Riches	Credit Weighting: 20	Semester: 1 & 2	
Assumed Prerequisites: 94154 Principles of Prosthetic and Orthotic Design 1	Compulsory/ optional/ elective class	Academic Level: 2	Suitable for Exchange: Y/N

Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):

Lecture	Tutorial	Laboratory	Groupwork	External	Online	Project	Assignments	Private Study	Total
46	20						15	119	200

Educational Aim

This module aims to build upon the basic grounding provided in 94154 PPOD I and uses the same philosophy.

The module content remains strongly linked in sequence and nature to the requirements of the Prosthetic and Orthotic Science 2 module and provides additional material allowing students to visualise and analyse specific clinical problems and situations. Students develop the intellectual and practical foundations to understand how these same approaches are deployed in the broader field of engineering.

Students learn to generalise the approaches and methodologies adopted in year one to a broader case set. These include a broader range of lower-limb orthotic examples and lower-limb prosthetic interfaces, designs and technologies.

Learning Outcomes

On completion of the module the student is expected to be able to

LO1 Joint Force Analysis

Continuing with the knowledge gained in PPOD 1 with regards to moments, students will develop knowledge and understanding with regards to calculating joint reaction forces at the knee and hip. The joint reaction forces are a combination of kinematics, ground reaction forces and muscular and ligament forces, students are required to calculate the joint reaction forces. This is made possible through knowledge and understanding relating to anatomical and biomechanical assumptions.

LO2 Tissue Mechanics

Describe the effects of mechanical load on tissues of the body, focusing on skin, muscle and bone tissue, and the relevance of this knowledge to prosthetic and orthotic management

LO3 Lower Limb Orthotic Biomechanics

Understand and describe the biomechanical effects of various pathologies on gait, and the effects of orthotic intervention on the gait cycle of those affected by pathology (kinetics and kinematics)

LO4 Lower limb prosthetics Biomechanics

With the same philosophy for learning established in PPOD1, students will develop both conscious and unconscious strategies to examine prosthetic and orthotic situations. As students build upon the techniques acquired in year one and start to explore lower-limb orthotics and prosthetics in more detail, they will gain awareness that they already have general purpose methodologies that can be applied to all clinical problem solving situations.

LO5 Stress and strain

Have an understanding of equilibrium and compatibility in relation to 2-dimensional stress and strain and be able to apply knowledge to problems involving the analysis of stress and strain in the context of elementary design of engineering components.

Syllabus

The module will teach the following:

By strongly linking the strategy for teaching and learning to the sequence and depth of the prosthetic and orthotic science modules, students will be working with specific examples that connect directly to clinical content. This format will instantly indicate relevance to the students but they will also be led to explore the general applicability of the same techniques and concepts

There will be a focus on lower-limb orthotics and lower-limb prosthetics – forces and their effects within biological and device structures and the implication of design choices on the quality of outcome

Macro effects – the consequence of changing the alignment of prosthetic and orthotic structures in relation to the body. Consequences of human movement on the body viewed as a mechanical system. External forces and moments and the effect on joints, ligamentous and muscular structures. Redundancy in the mechanical structures of the body. Assessment of bending and torsion in structures. Designing devices to resist dynamic loads. Sensitivity analysis, sources of error and consequences for design and analysis. Energy expenditure and impact on device design.

Micro effects – the effects of load on tissue; Biomechanics of the body-device interface. Behaviour of tissues over time; influence of age and pathology. Effect of common design philosophies on the body-device interface. General approaches and examination of specific situations for tissue management. Judging the quality of an interface. Interpreting interface systems from an engineering point of view.

Assessment of Learning Outcomes

Criteria

For each of the Module Learning Outcomes the following criteria will be used to make judgements on student learning:

LO1 Joint Force Analysis

- C1. Demonstrate and explain the mechanical and anatomical assumptions required to simplify calculations that relate to joint force analysis.
- C2. Demonstrate knowledge and understanding of static equilibrium to calculate joint forces.
- C3. Calculate static joint forces at the knee and hip.

LO2 Tissue Mechanics

- C1. Describe the effect of load on skin, muscle and bone tissue
- C2. Understanding of cause, categorisation and management of pressure ulcers
- C3. Understanding of structure and function of muscle, actions of muscle, length-tension relationship and force-velocity relationship
- C4. Describe the mechanical properties of bone, effect of aging on bone, fracture classification, healing and management, and principles of osseointegration

LO3. Lower Limb Orthotic Biomechanics

- C1. Knowledge of normal gait kinetics and kinematics
- C2. Knowledge of lower limb muscle function throughout the gait cycle
- C3. Knowledge of the effects of upper motor neurone and lower motor neurone conditions on gait kinetics and kinematics
- C4. Knowledge of the direct and indirect biomechanical effects of orthoses on gait kinetics and kinematics

LO4 Lower limb prosthetics Biomechanics

LO5 Stress and strain

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

Principles of Assessment and Feedback

(within Assessment and Feedback Policy at: <https://www.strath.ac.uk/staff/policies/academic/>)

Please state briefly how these are incorporated in this module.

Informal feedback will be provided at regular tutorial sessions primarily through verbal discussion with individuals or groups on tutorial exercises attempted in advance by students (note:- to receive this feedback students should participate in these tutorials but attendance is not mandatory).

Solutions to selected tutorial questions are presented and discussed in the tutorial sessions.
Laboratory reports and results and discussed with students.

Formal, summative feedback will be provided by the return of examination marks to students after assessment (note: -exam scripts will not be returned to students and no collective discussion of exam performance will be facilitated). Individual feedback on the exam may be arranged if appropriate.

Students are encouraged to collaborate in the calculations and models provided in the tutorial exercise and demonstration calculations provided during the course. However, it is emphasised that the analysis reports they submit must be entirely their own work – i.e. background research plus results they have personally generated and interpreted.

Students are encouraged to collaborate in the calculations and models provided in the tutorial exercise and demonstration calculations provided during the course.

Coursework and Exemption from Examination

The coursework may comprise a variety of styles including, for example, calculations and written work. It will be designed to encourage regular revision. Class tests will normally be completed in a classroom environment under examination type conditions

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

Examinations				Courseworks		Projects	
Number	Month(s)	Duration	<i>Weighting</i>	Number	<i>Weighting</i>	Number	<i>Weighting</i>
1	May	3		1 class test	20%		
				2 class test	20%		
				3 written	20%		
				4 written	20%		
L/Outcomes							

Indicate which learning outcomes (L01, L02 etc) are to be assessed by exam/coursework/project as required.

The Coursework Summary mark (CW) will be calculated as:

$$CW = (CW1 + CW2 + CW3 + CW4 + CW5) / 5$$

A coursework summary mark of 50% or more will give exemption from the examination. Students must also achieve a minimum of 40% of the total mark in each individual coursework to gain this exemption.

For those students who achieve exemption, the final summary mark (SM) will be calculated as:

$$SM = CW$$

Coursework / Submissions deadlines (*academic weeks*):

Resit Assessment Procedures:

3 hr examination in August diet

Students who fail to achieve exemption must sit a three-hour examination in May.

The final summary mark (SM) is then calculated as:

$$SM = 0.5 \times CW + 0.5 \times EX$$

Where CW = Coursework Summary Mark %

EX = May Examination Mark %

Students who fail to attain 40% in the May examination must resit the examination in August and attain at least 40% to achieve progression.

PLEASE NOTE:

Students must gain a summative mark of 40% to pass the module. Students who fail the module at the first attempt will be re-examined during the August diet. This re-examination will consist entirely of exam / coursework. No marks from any previous attempts will be transferred to a new resit attempt.

Recommended Reading

***Purchase recommended **Highly recommended reading *For reference

In addition to reading for Year 1

Frankel, V.H; Nordin, M.L

Basic biomechanics of the skeletal system

Published by Lea and Febiger (September 1980)

ISBN-10: 081210708X

*Gere JM; Timoshenko, SP

Mechanics of Materials

Brooks Cole; 6Rev Ed edition (15 Dec 2003)

ISBN-10: 0534417930

*Hearn, EJ

Mechanics of Materials: an introduction to the mechanics of elastic and plastic deformation of solids and structural materials.

Butterworth Heinemann, 3rd edition (9 Jul 1997)

ISBN-10: 0750632658

Benham, PP; Crawford, RJ; Armstrong, CG

Mechanics of engineering materials

Prentice Hall; 2nd edition (11 Mar 1996)

ISBN-10: 0582251648

Gordon, JE

The science of strong materials (or why you don't fall through the floor.

Pelican Books. Princeton University Press; Rev Ed edition (17 Aug 2008)

ISBN-10: 0691125481

Applied Mechanics by J Hannah & MJ Hillier, 3rd Edition, Longman Scientific & Technical, 1995 ISBN 0-582-25632 1

Fitzlaff, G, Heim S

Lower limb prosthetic components: design, function and biomechanical properties

ISPO, (2002 Verlag Orthopaedie-technik Dortmund).

ISBN 3-9807268-6-X

Additional Student Feedback

(Please specify details of when additional feedback will be provided)

Date	Time	Room No

Session:

Approved:

Course Director Signature:

Date of Last Modifications:

MODULE DESCRIPTION FORM

DEPARTMENT OF BIOMEDICAL ENGINEERING

94208 Prosthetics and Orthotics Science 2

Module Registrar: Dr Tony McGarry (TF, KD and HD), Suzanne Faulkner, Chris Cox (FO), Roy Bowers (AFO), Karyn Ross (KAFO)	Taught To (Course): Cohorts for whom class is compulsory / optional / elective		
Other Lecturers Involved: Dr Christine McMonagle, Sarah Day, Laura Murray	Credit Weighting: 60	Semester: 1 & 2	
Assumed Prerequisites: 94204 Prosthetics and Orthotics Science 1	Compulsory/ optional / elective class	Academic Level: 2	Suitable for Exchange: Y/N

Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):

Lecture	Tutorial	Clinical	Groupwork	External	Online	Project	Assignments	Private Study	Total
72		420					24	84	600 hrs

Educational Aim

This module aims to provide students with a knowledge and understanding of lower limb prosthetic and orthotic rehabilitation and management based on a patient centred approach. Students will gain knowledge of the basic and advanced clinical and technical requirements of becoming a competent and professional practitioner. Cross-curricular, sequential links with other relevant and complementary modules will be established, for example human biological sciences, professional skills for healthcare, principles of prosthetic and orthotic design, and health services research.

This module consists of 420 clinical hours and will equip the student with knowledge skills and understanding in the areas of lower limb prosthetics and orthotics. This will be supplemented by additional self-directed reflection activities to a total of 600 hours.

Learning Outcomes

On completion of the module the student is expected to be able to

- LO1 demonstrate effective communication skills with patients and colleagues and be able to establish rapport and empathy in a controlled clinical setting
- LO2 develop a knowledge of prescription criteria for lower limb prostheses and lower limb orthoses based on the needs of the patient.
- LO3 recognise differences between normal and pathological gait and be able to demonstrate the ability to identify and correct gait deviations.
- LO4 develop clinical and technical problem-solving skills
- LO5 become proficient in accessing, gathering, reviewing and appraising relevant and current literature in the field
- LO6 understand the role and applications of clinical audit and research related to lower limb prosthetics and orthotics

For lower limb prosthetics these will include:

Prosthetic rehabilitation and management of patients mainly with

- trans-femoral amputation level
- with theoretical lectures and practical demonstrations on the following amputation levels:
- trans-pelvic, hip disarticulation;
- knee disarticulation;
- congenital abnormalities in the lower limb

Also:

- Pathology, aetiology and surgical techniques of amputation
- the ability to carry out patient assessment and document the findings
- socket design and shape concepts and their applications
- biomechanical principles of socket design
- component choice and knee controls
- prosthetic limb materials
- manufacturing techniques
- introduction to prescription criteria
- Physiotherapy and gait training following amputation

Students will:

- become competent in a variety of current measurement, casting, modification, socket fitting, prosthetic alignment and data collection techniques
- assess and recognise optimal prosthetic socket fit
- gain knowledge of the aetiology of amputation surgery, physiotherapy incorporating gait training and other allied health disciplines related to amputee rehabilitation
- develop an appreciation of all aspects of amputee rehabilitation and prosthetic service delivery

For lower limb orthotics these will include:

Knowledge of the application of orthotics in the following areas of practice:

- footwear (including stock and bespoke);
- foot orthotics;
- ankle-foot orthotics;
- knee orthotics;
- knee ankle-foot orthotics;
- hip knee ankle-foot orthotics (including hip guidance orthoses, and reciprocating gait orthoses);
- hip orthotics.

Also:

- the ability to carry out patient assessment and document findings
- orthotic design and concepts and their applications
- biomechanical principles of orthotic design
- component choice
- material selection
- manufacturing techniques and processes
- become competent in a variety of current measurement, casting, modification, fitting, alignment and data collection techniques
- assess and recognise optimal orthotic fit and function
- gain knowledge of the aetiology of relevant pathologies, surgery, conservative management options and adjunct therapies such as physiotherapy and other allied health interventions related to rehabilitation
- develop an appreciation of all aspects of rehabilitation care pathways and orthotic service delivery within health service and commercial settings

(UK SPEC suggests no more than 4 learning outcomes per module. Statements must be broad and be syllabus free and link in with the intended learning outcomes on the programme specifications.)

Syllabus

The module will teach the following:

A patient based experiential learning approach within clinical and technical settings will be used.

Throughout the programme cross-curricular links will be highlighted to ensure that students develop a deep learning approach to device design, fit and alignment.

Insights into new and innovative techniques and technologies within the field will be covered to ensure students are made aware of current and future developments.

The core curriculum will include:

- formal teaching using lectures
- reinforcement of core knowledge through the use of online materials
- demonstration of clinical and technical skills followed by interactive participation and practice in a controlled clinical setting
- reflection, information gathering, documentation and portfolio-keeping through self-study
- problem solving and discussion in tutorial sessions
- regular interaction with academic supervisors to discuss progress, provide feedback and review portfolio
- ongoing formative feedback of clinical and technical components of the module
- assessment of coursework on completion of module

Assessment of Learning Outcomes

Criteria

For each of the Module Learning Outcomes the following criteria will be used to make judgements on student learning:

[Note: Criteria break the LO down into 'teachable' elements but do not become syllabus orientated i.e. no mention of CAD package names, components etc.]

LO1

C1

C2

C3

LO2
C1
C2
C3

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

Principles of Assessment and Feedback

(within Assessment and Feedback Policy at: <https://www.strath.ac.uk/staff/policies/academic/>)

Please state briefly how these are incorporated in this module.

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

	Examinations			Courseworks		Projects		
	Number	Month(s)	Duration	Weighting	Number	Weighting	Number	Weighting
L/Outcomes	2		3 hrs	50%	4	50%		

Indicate which learning outcomes (L01, L02 etc) are to be assessed by exam/coursework/project as required.

Coursework / Submissions deadlines (academic weeks):

Practical work combined with varied class assignments (including written report formats, paper critiques/essays, case presentations and group presentations) for each of the four modules. A minimum of 3 modules from the 4 must be passed for the credits of this module to be awarded.

All coursework must have a minimum pass mark grade of 35% and the combined summary mark for coursework must be 40% or above.

Attendance is required at all clinical sessions.

Two final written examinations will be sat; one in January (PO Science Paper A in lower limb prosthetics) and one in May (PO Science Paper B lower limb orthotics)

Resit Assessment Procedures:

--hr examination in August diet / Resubmission of coursework(s) prior to commencement of the August exam diet.

Resit examination in August resit examination diet.

Resit coursework will be assigned as appropriate in the August/September as part of the resit examination procedures. A pass in this element is requires prior to progression to the next year of the programme. Each coursework element may be written for each student independently depending on the practical area failed and must be passed before proceeding to the third year.

PLEASE NOTE:

Students must gain a summative mark of 40% to pass the module. Students who fail the module at the first attempt will be re-examined during the August diet. This re-examination will consist entirely of exam / coursework/viva. No marks from any previous attempts will be transferred to a new resit attempt.

Recommended Reading

***Purchase recommended **Highly recommended reading *For reference

**

Anderson M H. A Manual of lower extremity orthotics. Springfield ILL: CC Thomas; 1972.

Barsby P, Ham R, Lumley C. Amputee management – a handbook. London: Kings College School; 1995.

Bowker P, Condie DN, Bader DL, Pratt DJ. Biomechanical basis of orthotic management. Oxford: Butterworth-Heinemann; 1993.

Bunch WH, Keagy DD. Principles of orthotic treatment. St. Louis, MO: CV Mosby; 1976.

Condie ME, Patel R, Blacoe J (2002). A survey of lower limb amputee population in Scotland 1999. Scottish Physiotherapy Amputee Rehabilitation Group (SPARG.), Rehabilitation Technology Information Service, (ReTIS.)

Hsu J, Michael J, Fisk JR. Atlas of Orthoses and Assistive Devices. : American Academy of Orthopaedic Surgeons. 4th Ed. Philadelphia: Mosby/Elsevier; 2008.

Kostiuk JP. Amputation surgery and rehabilitation: the Toronto experience. New York: Churchill Livingstone; 1981.

May, BJ (1996) Amputations and prosthetics: a case study approach Philadelphia: FA Davis Company

Murdoch G, Donovan RG. Amputation surgery and lower limb prosthetics. Oxford: Blackwell Scientific Publications; 1988.

Radcliffe CW, Foort J. The patellar-tendon-bearing below-knee prosthesis. Berkeley: Biomechanics Laboratory, Department of Engineering, University of California; 1961.

Redhead RG, Day HJB, Marks LN, Lachman SL. Prescribing lower limb prostheses. London: Disablement Services Authority; 1991.

Redford JB. Orthotics etcetera. 3rd ed. Baltimore: Williams & Wilkins; 1980.

Sanders GT. Lower limb amputations - a guide to rehabilitation. Philadelphia, PA: FA Davis; 1986.
 Seymour R. Prosthetics and orthotics, lower limb and spinal - Philadelphia : Lippincott, Williams & Wilkins; 2002.
 Smith DG, Michael JW and Bowker JH. Atlas of amputations and limb deficiencies: surgical, prosthetic and rehabilitation principles. Rosemont Il: American Academy of Orthopaedic Surgeons; 2004.
 Troup IM, Wood MA. Total care of the lower limb amputee.- London: Pitman Books; 1982.
 Vitali M, Robinson KP, Andrews BG. Amputations and prostheses. 2nd ed. London: Bailliere Tindall; 1986.
 Wu KK. Foot orthoses: principles and clinical applications. Baltimore: Williams & Wilkins; 1990.

Papers and websites for other published journals will also be detailed within each PO module in order that this is kept current and relevant.

Canadian Association of Prosthetists and Orthotists; 1989.

Clinical aspects of lower extremity orthotics. - Oakville Ontario: CAPO; 1990.

World Wide Web information sites:

www.oandp.org/jpo/

www.proquest.com/products-services/medline_ft.html

www.europepmc.org

www.ncbi.nlm.nih.gov/pubmed/

Demographic information:

www.limbless-statistics.org/

Additional Student Feedback

(Please specify details of when additional feedback will be provided)

Date	Time	Room No

Session:

Approved:

Course Director Signature:

Date of Last Modifications:

MODULE DESCRIPTION FORM

DEPARTMENT OF BIOMEDICAL ENGINEERING

BE203 Cleanliness Champions for the NHS

Module Registrar: Suzanne Faulkner	Taught To (Course): Cohorts for whom class is compulsory / optional / elective		
Other Lecturers Involved: Suzanne Faulkner	Credit Weighting: 10	Semester: 2	
Assumed Prerequisites: N/A	Compulsory/ optional/ elective class	Academic Level: 2	Suitable for Exchange: Y/N

Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):

Lecture	Tutorial	Laboratory	Groupwork	External	Online	Project/Portfolio	Assignments	Private Study	Total
60	4					12	12	16	

Educational Aim

This module aims to promote the prevention and control of infection through Cleanliness Champions for the NHS. The core competencies will enable the student to promote the prevention and control of infection through their roles as Cleanliness Champion when working in an NHS environment. (such as a clinical placement)

The Core Competencies are:

- Identifying assessing and managing risk associated with infection
- Breaking the Chain of Infection (taking actions)
- Applying the SCIPs (Standards of Infection Control Precautions) consistently
- Adhering to local and National policies
- Awareness of audit as a tool
- Demonstrating accountability and responsibility within the scope of their role
- Promoting patient safety

Learning Outcomes

On completion of the module the student is expected to be able to

- LO1 Implement the role of the cleanliness champion in promoting a safety culture in your organisation.
- LO2 Describe the core principles known as Standards of Infection Control Precautions (SICPs) of infection prevention and control.
- LO3 Explain the reasons for adhering to policies and procedures relating to infection prevention and control.
- LO4 Describe the chain of infection and demonstrate an understanding of the interventions necessary to prevent and control infection (break the chain)
- LO5 Demonstrate positive role modelling by promoting safe care practices and a safe environment for patients.

(UK SPEC suggests no more than 4 learning outcomes per module. Statements must be broad and be syllabus free and link in with the intended learning outcomes on the programme specifications.)

Syllabus

The module will teach the following:

- Unit 1 Introduction
- Unit 2 The Chain of Infection
- Unit 3 Hand Hygiene
- Unit 4 Personal Protective Equipment (PPE)
- Unit 5 Safe Use and Disposal of Sharps

- Unit 6 Maintenance of a Clean Healthcare Environment
- Unit 7 Safe Management of Waste and Linen
- (Unit 8 Occupational Health Hygiene- for information only)
- Unit 9 The Role of the Cleanliness Champion and its Impact on the Patient Experience

This module will enable the promotion of the prevention and control of infection in a role as a Cleanliness Champion as is in line with current NHS Scotland policies. This will be a desirable outcome to achieve prior to a clinical placement at a NHS Board across Scotland, as written into the Practice Placement agreements between the University and the NHS Scotland Health Boards and their staff.

Assessment of Learning Outcomes

Criteria

For each of the Module Learning Outcomes the following criteria will be used to make judgements on student learning:

[Note: Criteria break the LO down into 'teachable' elements but do not become syllabus orientated i.e. no mention of CAD package names, components etc.]

- LO1 Implement the role of the cleanliness champion in promoting a safety culture in your organisation.
 - C1 Unit 2
 - C2 Unit 3
 - C3 Unit 9
- LO2 Describe the core principles known as Standards of Infection Control Precautions (SICPs) of infection. prevention and control
 - C1 Unit 4
 - C2 Unit 5
 - C3 Unit 9
- LO3 Explain the reasons for adhering to policies and procedures relating to infection prevention and control.
 - C1 Unit 6
 - C2 Unit 7
- LO4 Describe the chain of infection and demonstrate an understanding of the interventions necessary to prevent and control infection (break the chain)
 - C1 Unit 7
 - Unit 9
- LO5 Demonstrate positive role modelling by promoting safe care practices and a safe environment for patients.
 - C1 Unit 7
 - C2 Unit 9

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

Principles of Assessment and Feedback

(within Assessment and Feedback Policy at: <https://www.strath.ac.uk/staff/policies/academic/>)

Please state briefly how these are incorporated in this module.

Each module has a MCQ self-assessment test at the end- and the end of the whole module a Folder of Evidence of Learning will be submitted. This allows for reflective practice and assessment. This will develop the student in their independent learning and help promote these improvements both within the University clinical and technical environments, as well as on clinical placements. Each Unit of the programme has self-evaluation activities that will enable the learner to evaluate their own abilities and progression. The module leader will keep progress monitoring of each module to check students remain on track in the timeframes required for completion.

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

	Examinations			Courseworks		Project/Reflective Essay		
	Number	Month(s)	Duration	Weighting	Number	Weighting	Number	Weighting
L/Outcomes					8		1 Unit 9 FEL (Activities 1-4)	

Indicate which learning outcomes (L01, L02 etc) are to be assessed by exam/coursework/project as required.

Coursework / Submissions deadlines (academic weeks):

8 Online MCQ tests will be available on myplace to be taken at the end of sections 1-8 of learning; All require to be passed prior to the final written FEL can be submitted following Unit 9. The final FEL- Folder of Evidence of Learning for unit 9 shall be submitted for evaluation through myplace on or before the Friday of week 11 of semester 2.

Resit Assessment Procedures:

--hr examination in August diet / Resubmission of coursework(s) prior to commencement of the August exam diet.
(delete as appropriate)

If the student fails any MCQ they should reattempt it until a 100% pass is achieved- If the final FEL is not passed- then a further reflective essay will be the resit assessment to be submitted the Friday prior to the August resit week.(also posted on myplace)

PLEASE NOTE:

Students must gain a summative mark of 40% to pass the module. Students who fail the module at the first attempt will be re-examined during the August diet. This re-examination will consist entirely of exam / coursework / viva *(delete as appropriate)*. No marks from any previous attempts will be transferred to a new resit attempt.

Recommended Reading

*****Purchase recommended **Highly recommended reading *For reference**

**

Learn Pro community website registration and access is mandatory.

Additional Student Feedback

(Please specify details of when additional feedback will be provided)

Date	Time	Room No

Semester 2 – via e-mail

The learn, pro website has interactive feedback sections to aid learning throughout the module – student should complete these sections prior to completing the myplace evaluations.

Session:

Approved:

Course Director Signature:

Date of Last Modifications:

MODULE DESCRIPTION FORM

DEPARTMENT OF BIOMEDICAL ENGINEERING

94303 Human Biological Sciences 3

Module Registrar: Christopher Cox	Taught To (Course): Cohorts for whom class is compulsory		
Other Lecturers Involved: Dr Phil Riches and Dr Helen Mulvana	Credit Weighting: 10	Semester: 2	
Assumed Prerequisites: 94 206 Human Biological Sciences 2	Compulsory/ optional/ elective class	Academic Level: 3	Suitable for Exchange: Y/N

Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):

Lecture	Tutorial	Laboratory	Groupwork	External	Online	Project	Assignments	Private Study	Total
0	2	0	0	0	10	0	1	76	100

Educational Aim

This module aims to provide knowledge of the structure and functioning of skeletal muscle tissue. The effects of exercise on the respiratory, cardiovascular and skeletal muscle systems will be considered. Students will develop an understanding of the pathophysiological changes underlying conditions affecting locomotion. Selected pathologies of particular relevance to prosthetic and orthotic practice will be covered in depth, including stroke and contractures.

Learning Outcomes

The students will be able to:

- (i) relate the structure of skeletal muscle cells to their function;
- (ii) understand the process of muscle contraction and relate different contractile properties to muscle fibre type;
- (iii) appreciate the adaptation of the cardiovascular, respiratory and skeletal muscle systems to exercise;
- (iv) understand the physiology of exercise and appreciate the relevance to training and rehabilitation;
- (v) understand the aetiology and pathophysiology of key disorders affecting locomotion;
- (vi) describe the different sub-types of stroke in terms of risk factors, aetiology, symptoms and pathophysiology;
- (vii) understand the aetiology and pathophysiology of locomotor systems, disuse atrophy and contractures.

Syllabus

Muscle Physiology

Skeletal muscle tissue; structure of skeletal muscle fibres; contraction and relaxation of skeletal muscle fibres; the neuromuscular junction; muscle metabolism; control of muscle tension; types of skeletal muscle fibres

Pathophysiology of Locomotor System

Pathophysiology of bone: disuse atrophy; localised and general osteoporosis; osteomyelitis; osteomalacia; Paget's disease.
Pathophysiology of joints: osteoarthritis and rheumatoid arthritis; response to injury and deformity.
Pathophysiology of muscle: muscular disease; response to injury; ischaemia; paralysis.

Stroke: Predisposing factors; ischaemic stroke (transient ischaemic attack, subclavian steal, thrombotic stroke, embolic stroke, lacunar infarcts); haemorrhagic stroke; symptoms of stroke; motor, sensory and cognitive deficits.

Discuse Atrophy/Contractures: Fine structure of muscle in disuse atrophy; expression of genes associated with the regulation of skeletal muscle mass; degenerative changes. Selected conditions that can cause contractures (e.g. muscular dystrophy, myasthenia gravis, rigid spine syndrome).

Better understand the adaptation of the cardiovascular, respiratory and skeletal muscle systems to exercise

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

Principles of Assessment and Feedback

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

	Examinations/Class Test			Courseworks		Projects	
	Number	Month(s)	Duration	Number	<i>Weighting</i>	Number	<i>Weighting</i>
L/Outcomes							

Coursework / Submissions deadlines (*academic weeks*):

The coursework will comprise of a class test assessing knowledge learned from the all previous lectures.

Resit Assessment Procedures:

Recommended Reading

MARTINI, FH, NATH, JL & BARTHOLOMEW, EF. Fundamentals of anatomy and physiology. / 10th edition. Pearson, 2015.
 TORTORA, GJ, DERRICKSON, B. Principles of anatomy and physiology. / 13th edition. Wiley, 2011
 GANONG, WF. Review of medical physiology. / 24th edition. McGraw-Hill, 2012.
 MARIEB, EN. & HOEHN, K. Human anatomy and physiology. / 10th edition. Pearson, 2015.
 MARTINI, FH, TIMMONS MJ, & TALLITSCH, RB. Human anatomy. / 7th edition. Benjamin Cummings, 2011.
 NOWAK TJ & HANDFORD AG. Pathophysiology. / 3rd edition. McGraw-Hill, 2003.
 GROSSMAN, S. Porth's Pathophysiology. / 9th edition. Lippincott, 2013.
 STONE RJ & STONE JA. Atlas of skeletal muscles. / 7th edition. McGraw Hill, 2011.
 WIDMAIER EP, RAFF H & STRANG KT, Vander's Human Physiology / 12th edition. McGraw-Hill, 2010.

Additional Student Feedback

(Please specify details of when additional feedback will be provided)

Date	Time	Room No
		Online

Session:

Approved:

Course Director Signature:

Date of Last Modifications: 12/9/21

MODULE DESCRIPTION FORM

DEPARTMENT OF BIOMEDICAL ENGINEERING

94304 Principles of Prosthetic and Orthotic Design 3

Module Registrar: Sarah Day	Taught To (Course): Cohorts for whom class is compulsory / optional / elective		
Other Lecturers Involved: Arjan Buis, Suzanne Faulkner, Chris McCormick	Credit Weighting: 10	Semester: 1	
Assumed Prerequisites: 94207 Principles of Prosthetic and Orthotic Design 2	Compulsory/ optional / elective class	Academic Level: 3	Suitable for Exchange: Y/N

Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):

Lecture	Tutorial	Laboratory	Groupwork	External	Online	Project	Assignments	Private Study	Total
22	13						12	53	100

Educational Aim

This module aims to develop the skills of students to recognise and respond to the trends that shape prosthetics and orthotics. There are two strands to this.

Firstly, by using a case study approach, which examines the most recent innovations in prosthetics and orthotics, students can typically see a fusion of sensing, computer-based measurement, advanced control and materials technologies.

Secondly by learning to scan and analyse trends in materials, engineering design, measurement and control concepts, computing and even health policy, students will explore the frontiers of their field and learn to recognise opportunities that will potentially shape the future of their profession.

Learning Outcomes

On completion of the module the student is expected to be able to

- LO1 To understand and critically examine the principles of control theory and reflect upon the application of those principles to prosthetic and orthotic components.
- LO2 To visualise and calculate the biomechanical forces exerted to the spine and associated structures.
- LO3 To use engineering skills developed so far to predict the point of failure of a material subjected to complex loading.
- LO4 Understand the principles related to the mechanics of solids is extended to the mechanics of fluids with a view to appreciating their role in the operation of prosthetic devices such as hydraulic swing phase controls.

Syllabus

The module will teach the following:

- Modelling the spine and analysis of the effectiveness of orthotic and relevant surgical approaches.
- Analysis of the special challenges of upper limb prosthetics and orthotic design.
- Control theory specific to prosthetic/orthotic applications.
- Theories of component failure.
- Fluid Mechanics and applications.

The following topics will be taught:

Linking both published and unpublished studies and literature, the students learn to critically appraise a range of components and systems that claim excellence in prosthetic and orthotic design. The approach will require direct measurement and/or access to prepared case materials for in-depth analysis. Students learn to assess device features and benefits and appraise the available evidence on effectiveness.

Students learn to scan available resources such as literature databases and the Internet for trends that will impact the field.

These trends may include regulatory issues such as sustainability in design, infection control issues, lifecycle design concepts, trends in population health or demographics, emerging technologies such as nanotechnology or implantable, smart sensors.

Assessment of Learning Outcomes

Criteria

For each of the Module Learning Outcomes the following criteria will be used to make judgements on student learning:

LO1

- C1 Understanding the mechanism of body power and external power
- C2 Critical evaluation of control systems with reference to published studies
- C3 Calculation and comparison of efficiency

LO2 To visualise and calculate the biomechanical forces exerted to the spine and associated structures.

- C1 Calculating corrective forces in a spinal orthosis
- C2 Understanding the biomechanics of lifting, with reference to the spinal structures

LO3

- C1 Using elastic failure theories to predict failure
- C2 Calculating stress and strain in given scenarios

LO4

- C1 Understanding hydrostatics and conservation law
- C2 Calculating the flow of fluid and how this relates to prosthetic/orthotic applications

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

Principles of Assessment and Feedback

(within Assessment and Feedback Policy at: <https://www.strath.ac.uk/staff/policies/academic/>)

Please state briefly how these are incorporated in this module.

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

	Examinations				Courseworks		Projects	
	Number	Month(s)	Duration	Weighting	Number	Weighting	Number	Weighting
	1	January	2		1. Upper Limb Biomechanics And Control Concepts 2. Spinal Mechanics 3. Theories of Failure 4. Fluid Mechanics	25% 25% 25% 25%		
L/Outcomes					1=LO1, 2=LO2, 3=LO3, 4=LO4			

Indicate which learning outcomes (LO1, LO2 etc) are to be assessed by exam/coursework/project as required.

The Summary Mark (SM) for PPOD 3 will be calculated as:

$$SM = (CW1 + CW2 + CW3 + CW3 + CW4)/4$$

To gain a pass by continuous assessment, it is necessary to achieve a summary mark of least 40% and at least 35% in each individual item of coursework.

Students who fail to attain a pass by continuous assessment will be required to undertake an examination in the December exam diet. The examination will be of 2 hours duration (covering the entire PPOD 3 course).

On passing the examination, the student will be awarded the credits for the course but the original summary mark (SM) achieved by continuous assessment will be used in the calculation which determines the level of degree awarded.

Coursework / Submissions deadlines (*academic weeks*): 5, 6,11

Resit Assessment Procedures:

2hr examination in August diet

PLEASE NOTE:

Students must gain a summative mark of 40% to pass the module. Students who fail the module at the first attempt will be re-examined during the August diet. This re-examination will consist entirely of exam.

Recommended Reading

Convery P. Orthoses for head and neck in Biomechanical Basis of Orthotic Management. Ed.Bowker P, Condie DN, Bader D, Pratt D, 219-233
Chase A, Percy M, Bader D. Spinal Orthoses in Biomechanical Basis of Orthotic Management. Ed.Bowker P, Condie DN, Bader D, Pratt D, 234-252
Fryer CM. Body-powered components in Atlas of Limb Prosthetics : surgical, prosthetic, and rehabilitation principles / American Academy of Orthopaedic Surgeons Ed. Bowker JH, Michael JW. Publ.Mosby .107-131
Heckathorne CW. Components for adult externally powered systems in Atlas of Limb Prosthetics : surgical, prosthetic, and rehabilitation principles / American Academy of Orthopaedic Surgeons Ed. Bowker JH, Michael JW. Publ.Mosby. 151-174
Childress DS Control of limb prostheses in Atlas of Limb Prosthetics : surgical, prosthetic, and rehabilitation principles / American Academy of Orthopaedic Surgeons Ed. Bowker JH, Michael JW. Publ.Mosby .175-1
Sears HH. Trends in upper-extremity prosthetics development in Atlas of Limb Prosthetics : surgical, prosthetic, and rehabilitation principles / American Academy of Orthopaedic Surgeons Ed. Bowker JH, Michael JW. Publ.Mosby. 345-356
Gordon JE. Structures: Or why things don't fall down. Penguin Books Ltd; New Ed edition (26 Sep 1991)
ISBN-10: 0140136282
Dorf, RC; Bishop, RH, Modern Control Systems, Prentice Hall; 9th edition (15 Aug 2000), ISBN-10: 0130306606

Additional Student Feedback

(Please specify details of when additional feedback will be provided)

Date	Time	Room No

Session:

Approved:

Course Director Signature:

Date of Last Modifications:

MODULE DESCRIPTION FORM

DEPARTMENT OF BIOMEDICAL ENGINEERING

94355 Prosthetics and Orthotics Science 3 with Applied Health Service Research

Module Registrar: Karyn Ross (Case Studies), Karyn Ross (AHSR), Suzanne Faulkner (Spinal), Sarah Day and Dr Christine McMonagle (ULPO)	Taught To (Course): Cohorts for whom class is compulsory / optional / elective		
Other Lecturers Involved: Dr Arjan Buis and Dr Tony McGarry	Credit Weighting: 40	Semester: 1	
Assumed Prerequisites: 94205 Prosthetics and Orthotics Science 2 and 94156 Introduction to Health Services Research	Compulsory/ optional / elective class	Academic Level: 3	Suitable for Exchange: Y/N

Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):

Lecture	Tutorial	Laboratory	Groupwork	External	Online	Project	Assignments	Private Study	Total
25	30	165					30	150	400

Educational Aim

This module aims to

- Upper Limb Prosthetics and Orthotics (all levels)
- Spinal Orthotics (all levels)
- Case Studies (clinical experience of casting and rectification of KAFO's assessing complex patients in preparation for orthotic clinical placement; preparation for prosthetic clinical placement including microprocessor knee and ankles, osteointegration, advanced shape capture and socket designs)
- Applied Health Services Research (statistics, research ethics and research methodology)

Learning Outcomes

On completion of the module the student is expected to be able to

LO1 Upper Limb Prosthetics and Orthotics

Treatment of patients with upper limb amputation and absence; effective patient and colleague communication skills; patient rapport and empathy in a controlled clinical setting; prescription criteria for upper limb prostheses and orthoses.

LO2 Spinal Orthotics

Treatment of patients with spinal pathology including skeletal deformity; prescription criteria for spinal and cervical orthoses.

LO3 Case Studies

Prosthetic/orthotic management of complex multi-level clinical challenges; treatment care pathways to deliver short and long term rehabilitation aims; holistic approach to treatment.

LO4 Applied Health Service Research

Statistics, ethics and research methodology in an allied health service context; creative thinking and problem analysis; writing professionally for projects or publications.

Syllabus

The module will teach the following:

Upper Limb Prosthetics and Orthotics

Evidence base underpinning clinical practice; effective communication skills; assessment and prescription principles; measurement casting/shape capture; fitting and alignment; critical appraisal of clinical outcomes for the common levels of upper limb amputation and absence using a patient based experiential learning approach.

Spinal Orthotics

Evidence base underpinning clinical practice; effective communication skills, assessment and prescription principles; an understanding of measurement casting/shape capture; fitting and alignment; critical appraisal of clinical outcomes for relevant spinal pathology and skeletal deformity.

Case Studies

Evidence base underpinning clinical practice, assessment and prescription principles; measurement casting/shape capture; fitting and alignment; critical appraisal of clinical outcomes; short and long term rehabilitation aims; development of treatment care pathways; and short and long term rehabilitation aims for complex multi-level clinical challenges by adopting a holistic approach to treatment and a patient based experiential learning approach.

Applied Health Services Research

Statistics; Hypotheses Testing: single sample parametric and non-parametric tests; two independent sample parametric and non-parametric tests; parametric and non-parametric paired testing.

Research ethics; Bias in research; practitioner bias; research governance in the UK; ethics and permissions; sponsorship; risk management.

Research methodology; develop an awareness of the process of creative thinking and problem analysis, develop an awareness of responsible research and innovation.

Assessment of Learning Outcomes

Criteria

For each of the Module Learning Outcomes the following criteria will be used to make judgements on student learning:

LO1 ULPO

- C1 demonstrate understanding of the principles of prosthetic/orthotic management of the upper limb
- C2 demonstrate clinical skill in management of patients with upper limb conditions requiring prosthetic/orthotic treatment
- C3 demonstrate knowledge and understanding of prescription criteria for upper limb prostheses and orthoses

LO2 SO

- C1 demonstrate understanding of the principles of orthotic management of spinal conditions
- C2 demonstrate knowledge and understanding of prescription criteria for spinal and cervical orthoses
- C3 demonstrate knowledge of adjunct treatment modalities in the management of spinal conditions

LO3 Case Studies

- C1 demonstrate knowledge, understanding and clinical skills in the management of patients with complex orthotic challenges
- C2 demonstrate knowledge and understanding of adjunct treatment modalities and the role of the multidisciplinary clinical team in the management of patients with complex clinical challenges
- C3 demonstrate knowledge and understanding of in the management of advanced prosthetic techniques and componentry

LO4 Applied Health Service Research

- C1 demonstrate the ability to develop a written research proposal
- C2 demonstrate the ability to analyse datasets

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

Principles of Assessment and Feedback

(within Assessment and Feedback Policy at: <https://www.strath.ac.uk/staff/policies/academic/>)

Please state briefly how these are incorporated in this module.

Principles of assessment and feedback are incorporated into this module. At the beginning of each subsection the students are involved with the discussion around timing and weighting of elements of feedback and assessment and their decisions are taken into consideration. Peer assessment is assessed and used within this module. Student self-assessment and reflection is also a key element of this module- and online paperwork is available for PDP to be completed for this module.

Help clarify what good performance is. Expectation will be clearly explained to the class; classroom lectures and examples will provide exemplar information required for projects. Two projects are provided; feedback from the first will be provided in advance of second project submission

Encourage 'time and effort' on challenging learning tasks. Project deadlines are evenly dispersed in the semester to minimise burden on time commitments.

Deliver high quality feedback information that helps learners self-correct. Project feedback will be provided in timely manner (before next deadline/examination). Students will be made aware of their performance and standing before next assessments.

Encourage interaction and dialogue around learning (peer and teacher-student). Use of Moodle and peer assessment will be used as part of the case studies. Students will evaluate each other's presentations.

Facilitate the development of self-assessment and reflection in training. Online quizzes (optional) will be provided to allow students to gauge their preparedness for the exam.

Give choice in the topic, method, criteria, weighting or timing of assessments. Students will have the opportunity to select their topic of choice. Given make-up of the student population, students may wish to focus on different weightings- which will be discussed at the beginning of sections

Involve students in decision-making about assessment policy and practice. Midterm and end-of-term class evaluations allow students to express concerns about assessment policy and practice to registrar.

Support the development of learning communities. Group work and small-group discussions are routine part of practical sessions, as well as preparation for presentations.

Encourage positive motivational beliefs and self-esteem. Progressively challenging clinical work (with timely feedback); opportunities for self-assessment; and ability to perform self-directed study in design. All these should help encourage positive motivation.

Provide information to teachers that can be used to shape teaching

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

Examinations				Courseworks		Projects	
Number	Month(s)	Duration	Weighting	Number	Weighting	Number	Weighting
1		2	37.5%	1 UPLO	12.5%		
				2 SO	12.5%		
				Case Studies	12.5%		
				2 (AHSR)	25%		
				Total 7	62.5%		
L/Outcomes							

Indicate which learning outcomes (L01, L02 etc) are to be assessed by exam/coursework/project as required.

Coursework / Submissions deadlines (academic weeks):

There will be assessments for each section as follows:

UPPER LIMB PROSTHETICS AND ORTHOTICS

1. ULPO Presentation week 4
2. ULPO course test week 6

SPINAL ORTHOTICS

1. Report submission (first draft) week 5
2. Course test submission week 8

CASE STUDIES

1. Case study (written) week 10
2. Online class test week 11

AHSR

1. Submission of a report based on Responsible Research and Innovation for submission week 6.
2. Analysis of data set for submission week 11
3. Both elements of AHSR coursework must be passed (40%)

Resit Assessment Procedures:

---hr examination in August diet / Resubmission of coursework(s) prior to commencement of the August exam diet.

Failed coursework elements must be resubmitted prior to June examination board.

The final degree examination PO Science Paper C (spinal orthotics, upper limb prosthetics and orthotics, case studies and KAFO and LLP) will be in the December of third year and all the module coursework must be passed. The resit examination will be in the May diet of examinations prior to the clinical examinations in the June and must be passed prior to being allowed to progress to sit oral clinical examinations.

PLEASE NOTE:

Students need to gain a summative mark of 40% to pass the module. Students who fail the module at the first attempt will be re-examined during the August diet. This re-examination will consist entirely of exam / coursework.

PLEASE NOTE:

Students must gain a summative mark of 40% to pass the module. Students who fail the module at the first attempt will be re-examined during the August diet. This re-examination will consist entirely of exam / coursework / viva. No marks from any previous attempts will be transferred to a new resit attempt.

Recommended Reading

***Purchase recommended **Highly recommended reading *For reference

**

PO Science 3

Hsu J, Michael J, Fisk JR (eds). Atlas of Orthoses and Assistive Devices, Philadelphia PA: American Academy of Orthopaedic Surgeons 2008

Malick MH. Manual on dynamic hand splinting with thermoplastic materials: low temperature materials and techniques./ 2nd edition.- Pittsburgh, PA: Harmorville Rehabilitation Center, 1982.

Malick MH. Manual on management of the burn patient: including splinting, mould and pressure technique.- Pittsburgh, PA: Harmorville Rehabilitation Center, 1982.

Malick MH. Manual on static hand splinting: new materials and techniques./ 5th edition.- Pittsburgh, PA: Harmorville Rehabilitation Center, 1985.

Anderson MH. Upper extremity orthotics. Springfield ILL: CC Thomas, 1965 (reprint 1970).

Meier RH Comprehensive management of the upper limb amputee./ edited by DJ Atkins.- New York: Springer-Verlag, 1989.

Wynn ParrY CB. Rehabilitation of the hand./ 3rd edition.- London: Butterworth, 1981.

AHSR

Altman, D.G. (2001) Practical Statistics for Medical Research, 3rd Ed., CRC Press

Batavia M (2001). Clinical research for health professionals: a user-friendly guide. – Boston: Butterworth-Heinemann.

Bell J (2000). Doing your research project: a guide for first-time researchers in education and social science. /3rd ed. Buckingham: Open University, 2000

Black N (1998). Health services research: a guide to best practice. – London: BMJ Books.

Bland, M & Peacock, J. (2000) Statistical Questions in Evidence-Based Medicine, Oxford University Press.

Biles, C.M. (1994) Statistics: A Health Sciences Orientation, W C Brown.

Bowers, D (2002) Medical Statistics from Scratch, John Wiley.

Bowling A, S Ebrahim eds. (2005). Handbook of health research methods: investigation, measurement and analysis. Maidenhead: Open University Press.

Crombie IK (1996). The pocket guide to critical appraisal: a handbook for health care professionals. – London:

Greenhalgh, T. (2001) How to Read a Paper: the Basics of Evidence-based Medicine, BMJ Publishing Group.

Grbich C (1999). Qualitative research in health: an introduction. – London: Sage Publications.

Hayes G (2001). Principles of clinical research./ 3rd ed. – Petersfield: Wrightson Biomedical Publishing Ltd.

Ott, L & Longnecker, M (2001) An Introduction to Statistical Methods and Data Analysis, 5th Ed., Thomas Learning.

Sim J (2000). Research in health care: concepts, designs and methods. – Cheltenham: Stanley Thornes Ltd.

Streiner DL, Norman GR (2003) PDQ statistics. BC Decker

Thomas JR, Nelson JK, Silverman SJ, eds. ((2005). Research methods. – Champaign, Ill: Human Kinetics.

Further Reading:

Lim MSC, Hellard ME, Aitken CK (2005). The case of the disappearing teaspoons: longitudinal cohort study of the displacement of teaspoons in an Australian research institute. Br Med J; 331(24-31 December): 1498-1500

Smith GCS, Pell JP (2003). Parachute use to prevent death and major trauma related to gravitational challenge: systematic review of randomised controlled trials. Br Med J; 327(20-27 December): 1459-1461

Additional Student Feedback

(Please specify details of when additional feedback will be provided)

Date	Time	Room No

Session:

Approved:

Course Director Signature:

Date of Last Modifications:

MODULE DESCRIPTION FORM

DEPARTMENT OF BIOMEDICAL ENGINEERING

94405 Project

Module Registrar: Dr Tony McGarry	Taught To (Course): Cohorts for whom class is compulsory /optional/ elective		
Other Lecturers Involved: Roy Bowers, Dr Arjan Buis, Christopher Cox, Sarah Day, Suzanne Faulkner, Christine McMonagle, Laura Murray Karyn Ross, and External/Supervisors as designated	Credit Weighting: 40	Semester: 1	
Assumed Prerequisites: 94 403 Prosthetics/Orthotics Clinical Placement 1 94 404 Prosthetics/Orthotics Clinical Placement 2	Compulsory/ optional/ elective class	Academic Level: 4	Suitable for Exchange: Y/N

Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):

Lecture	Tutorial	Laboratory	Groupwork	External	Online	Project	Assignments	Private Study	Total
						Registrar/ Supervisor contact 40	60	300	400

Educational Aim

This module aims to

This project is intended to develop the skills of critical appraisal, analysis, review of the literature and presentation skills at Level 4 of the BSc (Hons) Prosthetics and Orthotics degree programme, reflecting the honours nature of the course and the maturation of the student into a professional prosthetist/orthotist.

Projects may consist of a literature review and additionally may involve experimental design. Students may choose from a staff/stakeholder generated project list or may generate a project topic in conjunction with an appropriate staff member.

Evidence based practice is an essential element of the everyday professional profile of the prosthetist/orthotist. Practitioners must be able to identify, source, critically appraise, review and understand the implications of the published literature or experimental research on a chosen clinical topic for patients in their care.

Depending on the project selected, students will be allocated a member of staff as their internal supervisor. Staff may arrange a further external supervisor (clinical or industrial partners) if appropriate and agreed by the module registrar.

The objective of this project is to provide the student with experience of identification and synthesis of evidence to validate health care treatment with regards to clinical conditions requiring prosthetic or orthotic treatment. Additionally, projects may help to further develop and enhance the clinical, technical and professional evidence base required in prosthetics and orthotics. The aim is to utilise the generic and transferable skills contained within the Applied Health Service Research Module in third year, specifically literature review, analytical skills, and scientific writing.

Learning Outcomes

On completion of the module the student is expected to be able to

- LO1 Students are required to demonstrate competence in the following areas: ethics, literature review, project methodology, structured scientific writing, poster presentation and oral (viva) presentation of the project.
- LO2 Students should be able to apply appropriate analytical methods to data analysis, critically evaluate the results of their own research and that of others and assess specify and address the safety and ethical issues associated with any work they are engaged in.
- LO3 Meetings between project supervisor and student associated with all aspects of project work also play a crucial role in facilitating the intellectual capability of the student.

(UK SPEC suggests no more than 4 learning outcomes per module. Statements must be broad and be syllabus free and link in with the intended learning outcomes on the programme specifications.)

Syllabus

The module will teach the following:

Commitment:

This module carries a credit value of 40 and as such is regarded as a significant piece of work. This implies that the whole project will require a minimum of 400 hours of study by the student. Please note this equates to 10 weeks of full time work on behalf of the undergraduate student registered for the module.

Selection of project:

A list of staff/ stakeholder generated projects will be available to all students with assigned supervisors. The student will then choose three project areas of interest and rank them in order of preference (1, 2, and 3). A written justification of the student's reasons and interest in the project must be provided (up to 100 words only).

There is also an option for a 'student self-generated project' from the student's own ideas. In this case, the student is required to write out a proposal and MUST approach a suitable internal supervisor with the written proposal prior to the deadline of project choice submissions. Failure to approach and agree a supervisor prior to this deadline will result in immediate rejection of the project.

Where students choose to submit a student generated project this will be automatically be given highest rank in order of preference (1). Students must also choose two additional staff generated projects and rank them in order of preference (2 and 3).

Students do not submit project choices by the deadline a project will have a project allocated. Late submissions will not be considered.

A selection process will then take place, led by the class registrar. Every student should be aware that it may not be possible to have a project based on their first choice of topic area. A meeting of supervisors will be arranged to set the selection criteria for each project.

Ethics:

Students MUST be aware that any projects involving and investigating human beings require ethical approval from the University Ethics Committee (UEC). Students need to factor the additional time required for this into their project. If human subjects are to be involved, ethical approval MUST be obtained prior to January 2016. If a project which requires ethical approval has not been approved a new project will be allocated.

Assessment of Learning Outcomes

Criteria

For each of the Module Learning Outcomes the following criteria will be used to make judgements on student learning:

[Note: Criteria break the LO down into 'teachable' elements but do not become syllabus orientated i.e. no mention of CAD package names, components etc.]

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

Principles of Assessment and Feedback

(within Assessment and Feedback Policy at: <https://www.strath.ac.uk/staff/policies/academic/>)

Please state briefly how these are incorporated in this module.

Interim feedback and formative assessment

This will be provided at the midpoint of the project by a member of teaching staff.

Part 1: Project submission: Journal Paper -

Students are required to produce your project submission in the form of a journal paper. Your project may be a literature review or also involve some experimental work or data collection. Different submission regulations exist for projects that involve experimental elements or those which depend are literature reviews.

The journal paper submission will be marked by two internal examiners, interview the student in the form of a viva voce examination.

The University Marking Guide for Assessments will be used to grade each dissertation.

Part 2: Poster

Students are required to submit a poster presentation summarising their project. This will be marked alongside the project. The poster should include key findings highlighted during the project. The poster will effectively be an abstract of the project and is intended to provide an effective overview of the evidence on the particular topic of the project. The final submission will also be assessed for overall presentation, clarity, use of scientific language, inclusion of diagrams/illustrations and references.

Part 2 b) Oral presentation

Students will be asked give a 10-minute presentation of their poster. This will be followed by twenty minutes of questions.

Summary Mark

Summary mark = (0.5 x journal paper) + (0.5 x Poster presentation)

Poster presentation = (0.3xviva) + (0.2xposter)

Students must attain a mark of at least 40% in the project written submission and in the poster presentation.
Students must normally attain a summary mark of at least 40%

Stakeholder Event

All 4th students will be expected to present their poster at an annual NCPO stakeholder event held in May each year (date to be confirmed at the start of each module). A number of projects on a range of appropriate topics will be chosen by staff to deliver a short oral presentation on the day.

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

Examinations				Courseworks		Projects	
Number	Month(s)	Duration	Weighting	Number	Weighting	Number	Weighting
				1. Journal paper	50%		
				2. Poster	20%		
				3. Oral presentation / viva	30%		
L/Outcomes							

Indicate which learning outcomes (L01, L02 etc) are to be assessed by exam/coursework/project as required.

Coursework / Submissions deadlines (academic weeks):

Information on submission deadlines will be circulated at the start of the module. Students are requested to submit 2 hard copies plus one electronic version (my place upload) to the administration office. Printing of the journal paper is the responsibility of the students. Soft binding is available in the Andersonian Library.

Resit Assessment Procedures:

--hr examination in August diet / Resubmission of coursework(s) prior to commencement of the August exam diet. Students who fail any component of the assessment are required to resit that element.

PLEASE NOTE:

Students must gain a summative mark of 40% to pass the module. Students who fail the module at the first attempt will be re-examined during the August diet. This re-examination will consist entirely of exam / coursework / viva. No marks from any previous attempts will be transferred to a new resit attempt.

Recommended Reading

***Purchase recommended **Highly recommended reading *For reference

**

Dependent of subject area chosen/allocated

Individual staff members publications around recent areas of research study will be available for students to view.

To be approved.

Additional Student Feedback

(Please specify details of when additional feedback will be provided)

Date	Time	Room No

Session:

Approved:

Course Director Signature:

Date of Last Modifications:

MODULE DESCRIPTION FORM

DEPARTMENT OF BIOMEDICAL ENGINEERING

BE407 Orthotic Management of Neurological Conditions

Module Registrar: Roy Bowers	Taught To (Course): BSc (Hons) Prosthetics and Orthotics cohorts for whom class is optional		
Other Lecturers Involved: Guest Lecturers	Credit Weighting: 20	Semester: 2	
Assumed Prerequisites: 94303 Human Biological Sciences 3 94304 Principles of Prosthetics and Orthotics Design 3 94355 Prosthetic and Orthotic Science 3 with Applied Health Service Research	Optional class	Academic Level: 4	Suitable for Exchange: Y/N

Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):

Lecture	Tutorial	Laboratory	Groupwork	External	Online	Project	Assignments	Private Study	Total
35	15						50	100	200

Educational Aim

This module aims to

1. present a multidisciplinary and patient-centred approach to the orthotic management of neurological conditions
2. enable students to synthesise knowledge of the role of lower limb orthoses in the management of neurological conditions
3. review the available evidence base for orthotic intervention in neurological conditions
4. develop a detailed knowledge of the biomechanics of pathological gait in neurological conditions, and the direct and indirect biomechanical effects of orthoses in addressing these
5. explore the interaction between biomechanics and neurology
6. develop an appreciation of the effects of shortened biarticular muscles and abnormalities of muscle tone on rehabilitation
7. present current best practice on the importance of tuning ankle-foot orthoses
8. develop an understanding of the roles of physiotherapy in the management of neurological conditions
9. develop an understanding of the role of pharmacology in the management of increased muscle tone
10. encourage and develop problem-solving and the ability to evaluate outcomes of treatment in a clinical setting

Learning Outcomes

On completion of the module the student is expected to be able to

- LO1 Understand the presentation, clinical features and natural history of common neurological conditions, including stroke, cerebral palsy, multiple sclerosis, and traumatic brain injury
- LO2 Appreciate the role of lower limb orthoses in the management of common neurological conditions, and understand the indications for and limitations of different types of lower limb orthoses
- LO3 Appreciate the importance of correct casting positions for ankle-foot orthoses in order to accommodate muscle shortening and abnormalities of tone, and understand the importance of tuning ankle-foot orthoses to optimise knee and hip kinetics and kinematics
- LO4 Appreciate the value of and interdependence of the different forms of clinical intervention, for example orthotics, physiotherapy, surgery and pharmacology

Syllabus

The module will teach the following:

- formal teaching
- self-directed learning
- multidisciplinary clinical sessions illustrating patient assessment, treatment planning, orthosis prescription and evaluation and assessment of outcome demonstration of the value of gait analysis in clinical setting

Assessment of Learning Outcomes

Criteria

For each of the Module Learning Outcomes the following criteria will be used to make judgements on student learning:

LO1

- C1 demonstrate understanding of appropriate assessment techniques for patients with neurological disorders
- C2 demonstrate ability to describe clinical characteristics of common neurological conditions
- C3 demonstrate ability to describe the natural history of various common neurological conditions

LO2

- C1 demonstrate understanding of the prescription criteria for different types of lower limb orthosis
- C2 demonstrate understanding of the important design characteristics of different lower limb orthoses to ensure they are fit for purpose
- C3 demonstrate understanding of the limitations of lower limb orthoses and the requirements for other interventions

LO3

- C1 demonstrate ability to relate casting position to the findings of patient assessment
- C2 demonstrate understanding of the biomechanical effects of pathology and orthotic intervention
- C3 demonstrate ability to identify correct/incorrect alignment of orthosis

LO4

- C1 demonstrate understanding of the role of surgery in the management of neurological conditions
- C2 demonstrate understanding of the role of physiotherapy in the management of neurological conditions
- C3 demonstrate understanding of the role of pharmacology in the management of neurological conditions

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

Principles of Assessment and Feedback

(within Assessment and Feedback Policy at: <https://www.strath.ac.uk/staff/policies/academic/>)

Please state briefly how these are incorporated in this module.

Assessment criteria will be made explicit and will be provided at the start of the module

Interim formative feedback will be provided in a timely manner (before next deadline/examination).

'Action points' will be provided along with the normal feedback they receive-- this would help students identify what they should do next time, what to prioritise, and ultimately how to improve their performance. This will also impact on their honours project work which is undertaken in semester 2.

Students will be encouraged in class to give each other feedback on presentations in relation to published criteria.

Class evaluations allow students to express concerns about assessment policy and practice to module registrar.

Students will be required to work together in small groups and small-group discussions will be a routine part of all sessions.

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

	Presentation			Courseworks		Projects		
	Number	Month(s)	Duration	Weighting	Number	Weighting	Number	Weighting
	1		30 minutes	50%	1	50%		
L/Outcomes	LO1,2,3,4				LO1,2,3,4			

Indicate which learning outcomes (LO1, LO2 etc) are to be assessed by exam/coursework/project as required.

Coursework / Submissions deadlines (academic weeks):

Report due on week 11. Presentation due in examination period.

Precise dates will be confirmed at the beginning of the module.

Resit Assessment Procedures:

Resubmission of coursework(s) prior to commencement of the August exam diet.

Resit assignment in the form of additional coursework will be given.

PLEASE NOTE:

Students must gain a summative mark of 40% to pass the module. Students who fail the module at the first attempt will be re-examined during the August diet. This re-examination will consist entirely of coursework. No marks from any previous attempts will be transferred to a new resit attempt.

Recommended Reading

***Purchase recommended **Highly recommended reading *For reference

**

1. *Best Practice Statement – Use of ankle-foot orthoses following stroke. NHS Quality Improvement Scotland, 2009.
2. *Bowers RJ, "Non-articulated Ankle-foot Orthoses", in Condie ME, Campbell JH, Martina JD, (eds). Report of a consensus conference on the orthotic management of stroke patients, Copenhagen: ISPO, 87 - 94. 2004
3. *Bowers RJ, Ross K. "A review of the effectiveness of lower limb orthoses used in cerebral palsy" in Morris C, Condie DN, (eds) Recent developments in healthcare for cerebral palsy; implications and opportunities for orthotics, Copenhagen: ISPO, 235-297, 2009
4. *Condie ME, Bowers R.J. "Lower Limb Orthoses for Persons with Stroke", in Hsu J, Michael J, Fisk (eds). Atlas of Orthoses and Assistive Devices, American Academy of Orthopaedic Surgeons, 2008
5. **Condie ME, Campbell J, Martina J: Report of a consensus conference on the orthotic management of stroke patients. Copenhagen, ISPO, 2004.
6. **Meadows, C B. "The influence of polypropylene ankle-foot orthoses on the gait of cerebral palsied children". PhD Thesis, University of Strathclyde, Glasgow, UK, 1984.
7. *Meadows CB, Bowers RJ, Owen E. "Biomechanics of the Hip, Knee and Ankle" in Hsu J, Michael J, Fisk (eds). *Atlas of Orthoses and Assistive Devices*, American Academy of Orthopaedic Surgeons 2008
8. **Morris C, Condie DN, (eds) Recent developments in healthcare for cerebral palsy; implications and opportunities for orthotics, Copenhagen: ISPO, 2009
9. *Morris C, Bowers R, Ross K, Stevens P, Phillips D. (2011) "Orthotic management of cerebral palsy: Recommendations from a consensus conference". *NeuroRehabilitation* 28, 37-46
10. **Owen E. 'Shank angle to floor measures' and tuning of 'Ankle-foot orthosis footwear combinations' for children with cerebral palsy, spina bifida and other conditions. MSc thesis. Glasgow: University of Strathclyde, 2004
11. *Sheehan G (ed). *Spasticity Rehabilitation*. Churchill Communications Europe Ltd. 1998
12. *Winter DA: *Biomechanics and motor control of human movement*. 2nd edition. New York: John Wiley & Sons, 1990

Additional Student Feedback

(Please specify details of when additional feedback will be provided)

Date	Time	Room No
		*

Session: Access to tutors is available at all times during the semester, so interim formative feedback will be provided as requested.

Approved:

Course Director Signature:

Date of Last Modifications: August 2021

MODULE DESCRIPTION FORM

DEPARTMENT OF BIOMEDICAL ENGINEERING

BE408 Hip, Knee and Ankle Disarticulation Prosthetics

Module Registrar: Gemma McGinty	Taught To (Course): Cohorts for whom class is compulsory / optional / elective		
Other Lecturers Involved: Dr Tony McGarry, Sarah Day and Laura Murray	Credit Weighting: 20	Semester: 2	
Assumed Prerequisites: 94204 Prosthetic & Orthotic Science 1 94208 Prosthetic & Orthotic Science 2 94355 Prosthetic & Orthotic Science 3 with Applied Health Service Research	Compulsory/ optional/ -elective class	Academic Level: 4	Suitable for Exchange: Y/N

Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):

Lecture	Tutorial	Laboratory	Groupwork	External	Online	Project	Assignments	Private Study	Total
10	20	10				50	40	70	200

Educational Aim

This module aims to build on the introduction to ankle, knee and hip disarticulation prosthetics studied in P&O science 1,2 and 3. Lower limb disarticulation levels are rare in clinical practice and this module will aim to provide you with clinical exposure to these patients along with knowledge of the clinical and technical skills to become a competent and professional practitioner. This module will also aim to build on your understanding of lower limb biomechanics and socket designs in general which will aid in your understanding of all of the levels of lower limb amputation.

The module will build on the cross-curricular links with other relevant and complimentary modules, for example human biological sciences, professional skills for healthcare, principles of prosthetic and orthotic design, and health services research.

This module consists of appropriate clinical hours and will equip the student with knowledge skills and understanding in the areas of ankle, knee and hip disarticulation prosthetics. This will be supplemented by additional self-reflection activities to a total of 200 hours.

Learning Outcomes

The objective of this module is to provide the student with experience of management of patients requiring treatment at the hip, knee and ankle disarticulation levels, and to further develop the clinical, technical and professional knowledge and skills required of a prosthetist/orthotist. Learning objectives are as follows:

- LO1 Through effective patient and colleague communication skills will be able to establish good patient rapport and empathy in a controlled clinical practice setting. Develop a knowledge of prescription criteria for hip, knee and ankle prostheses based on the needs of the patient
- LO2 Knowledge and understanding of hip, knee and ankle disarticulation prosthetic design
- LO3 Access, gather, review and appraise relevant and current literature in the field
- LO4 Expand their knowledge of prosthetic component design and develop a knowledge of a range of socket designs and their applications

Syllabus

The module will teach the following:

- Causes and surgical management of hip, knee and ankle disarticulations
- Prosthetic management of persons with hip, knee and ankle disarticulations
- Physiotherapy and clinical assessment techniques
- Contemporary prosthetic component systems
- Gait and video analysis techniques

Assessment of Learning Outcomes

Criteria

For each of the Module Learning Outcomes the following criteria will be used to make judgements on student learning:

LO1	Through effective patient and colleague communication skills will be able to establish good patient rapport and empathy in a controlled clinical practice setting. Develop a knowledge of prescription criteria for hip, knee and ankle prostheses based on the needs of the patient.
C1	Demonstrate through competency in prosthetic clinics, awareness of a range of assessment techniques and clinical conditions supported by a clinical supervisor.
LO2	Knowledge and understating of Hip, knee and ankle prosthetic design.
C1	Demonstrate through clinical studies reports of patients assessed during clinical practice sessions a knowledge of the biomechanical principles of disarticulation socket design.
LO3	Access, gather, review and appraise relevant and current literature in the field
C1	Demonstrate competency in conducting a literature review on a relevant topic
C2	Demonstrate a knowledge of the aetiology of disarticulation surgical techniques
LO4	Expand their knowledge of prosthetic component design and develop a knowledge of a range of socket designs and their applications.
C1	Demonstrate knowledge gained from clinical practice sessions and previous clinical placements in tutorial sessions.

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

Principles of Assessment and Feedback

(within Assessment and Feedback Policy at: <https://www.strath.ac.uk/staff/policies/academic/>)

Please state briefly how these are incorporated in this module.

Provision of better definitions of academic requirements before a learning task using carefully constructed criteria sheets and performance level definitions. Expectation will be clearly explained to the class; two assessments are provided; feedback from the first will be provided in advance of second assessment.

Project deadlines are evenly dispersed in the semester to minimise burden on time commitments. A proforma is provided for the coursework so that required content is defined.

Coursework formative and summative feedback will be provided in timely manner (before next deadline/examination). Students thereby will be made aware of their performance and standing before the next and final assessment.

'Action points' will be provided along with the normal feedback they receive-- this would help students identify what they should do next time, what to prioritise, and ultimately how to improve their performance. This will also impact on their honours project work which is undertaken in semester 2.

Midterm and end-of-term class evaluations allow students to express concerns about assessment policy and practice to registrar.

Small-group discussions are routine part of all sessions.

The tasks and assessment are structured to become progressively challenging (with timely feedback). Initially relevant literature is provided to the students for critical appraisal, but thereafter students must source the relevant literature pertaining to a newly defined topic to support the case study which is presented.

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

	Examinations/Presentation			Courseworks		Projects		
	Number	Month(s)	Duration	Weighting	Number	Weighting	Number	Weighting
L/Outcomes	1		20 mins	40%	1	60%		
	LO1			LO2, LO3				

Indicate which learning outcomes (LO1, LO2 etc) are to be assessed by exam/coursework/project as required.

Coursework / Submissions deadlines (academic weeks):

Coursework submission Week 9. Presentations week 10.

The timing of coursework in specific weeks will depend on timetabling

Resit Assessment Procedures:

—hr examination in August diet / Resubmission of coursework(s) prior to commencement of the August exam diet.

Where any student fails to complete the module assessment successfully a resit assignment of 3500 words will be set.

PLEASE NOTE:

Students must gain a summative mark of 40% to pass the module. Students who fail the module at the first attempt will be re-examined during the August diet. This re-examination will consist entirely of exam / coursework/viva. No marks from any previous attempts will be transferred to a new resit attempt.

Recommended Reading

*****Purchase recommended **Highly recommended reading *For reference**

**

Ankle Disarticulation

Bowker JH. Partial foot and Symes amputation: an overview. Clin Prosthet Orthot, 1988, 12, 10-13
 Davidson WH, Bohne WH. The Syme amputation in children. J Bone Joint Surg, 1975, 57A, 905-909
 Harris RI. Syme amputation: the technical details essential for success. J. Bone Joint Surg. 1956, 38B, 614-632
 Malcolm-Smith NA. Symes and his amputation. Surg J R Coll Surg Edinb Ire, 2004, 2, 91-98
 Pinzur MS, Stuck RM, Sage R. et al. Syme ankle disarticulation in patients with diabetes. J Bone Joint Surg, 2003, 85A, 1667-1672
 Pinzur MS, Wolf B, Havey RM. Walking pattern of midfoot and ankle disarticulation amputees. Foot Ankle Int, 1997, 18, 635-638
 Siev-Ner I, Heim M, Warshavski M. et al. A review of the aetiological factors and results of trans-ankle (Syme) disarticulations. Disabil Rehabil, 2006, 28, 239-242
 Yu GV, Schinke TL, Meszaros A. Symes amputation: a retrospective review of 10 cases. Clin Podiatr Med Surg, 2005, 22, 395-427.

Knee Disarticulation

Cull DL, Taylor SM, Hamontree SE et al. A reappraisal of a modified through-knee amputation in patients with peripheral vascular disease. Am J Surg, 2001, 182, 44-48
 Liguist E. The knee unit dilemma with respect to the knee disarticulation procedure. In: Amputation surgery and lower limb prosthetics./ edited by G. Murdoch and R. Donovan. – Oxford: Blackwell Scientific, 1988. 192-196
 Majeski J. Modified supracondylar amputation of the femur. Am Surg, 2004, 70, 265-267
 Nellis N, Van De Water J. Through-the-knee amputation: an improved technique. Am Surg, 2002, 68, 466-469
 Oberg K. Knee mechanisms for through-knee prostheses. Prosthet Orthot Int. 1983, 7, 107-112
 Pinzur MS, Bowker JH. Knee disarticulation. Clin Orhop, 1999, 361, 23-28
 Stark G. Overview of knee disarticulation. J Prosthet Orthot, 2004, 16, 130-137

Hip Disarticulation

Fernandez A, Formigo J. Are Canadian prostheses used? A long term experience. Prosthet Orthot Int. 2005, 29, 177-181
 Lehneis HR. Hip disarticulation and hemi-pelvectomy prosthetics design with hip-knee control system mechanism. Orthop Tech Q. 2005, IV, 1-4

Additional Student Feedback

(Please specify details of when additional feedback will be provided)

Date	Time	Room No

Session:

Approved:

Course Director Signature:

Date of Last Modifications:

MODULE DESCRIPTION FORM

DEPARTMENT OF BIOMEDICAL ENGINEERING

BE409 Management of the Diabetic Foot in Prosthetics and Orthotics

Module Registrar: Suzanne Faulkner	Taught To (Course): Cohorts for whom class is compulsory / optional / elective		
Other Lecturers Involved: Guest Lecturers	Credit Weighting: 20	Semester: 2	
Assumed Prerequisites: 94403 Prosthetics/Orthotics Clinical Placement 1 94404 Prosthetics/Orthotics Clinical Placement 2	Compulsory/ optional/- elective class	Academic Level: 4	Suitable for Exchange: Y/N

Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):

Lecture	Tutorial	Laboratory	Groupwork	External	Online	Project	Assignments	Private Study	Total
35	15						50	100	200

Educational Aim

This module is suitable for students who foresee their future in either prosthetics or orthotics. Diabetes is a pathology prevalent in both prosthetics and orthotic clinics. In this module students will gain enhanced in depth knowledge relating to this patient group.

This module aims to

1. Provide practical experience of the management of diabetic patients in both prosthetics and orthotics.
2. Enhance the students understanding of the psychological aspects of living with diabetes through motivational interviewing and understanding the principles underpinning cognitive behavioural therapy.
3. Develop an understanding of the roles of key members of the multidisciplinary diabetic foot team with a focus on podiatry and diagnostic radiology.
4. Enhance knowledge of the biomechanics of the foot, foot amputation, the remaining foot, therapeutic amputation, limb amputation, prosthetics and the post-operative relieving orthoses.
5. Review the available literature on pressure relieving orthoses and the application of the varieties of total contact or wound healing casts.
6. Enhance the students' ability to recognise and classify active foot ulceration. This will include identification of vascular insufficiency, neurological deficit, significant foot deformity, trauma, increased pressures, and the extent and degree of infection. Understand the importance of diagnosis of the acute Charcot foot.
7. Develop an understanding of the causes of painful diabetic peripheral neuropathy, the signs and symptoms of painful diabetic peripheral neuropathy and the typical progression of painful diabetic peripheral neuropathy.
8. Enhance the students' knowledge of biomechanical risk factors relating to friction, shear and pressure risk resulting in the ability to alter prescription appropriately.
9. Develop the students' understanding of prescription footwear, and footwear adaptations considering all risk factors utilising appropriate materials.
10. Enhance students' problem solving skills using reflection and self-assessment to evaluate clinical outcomes.

Learning Outcomes

On completion of the module the student is expected to be able to

- LO1 Understand and describe the diagnosis, pathogenesis and clinical presentation of diabetes with particular focus on the feet.
- LO2 Display in-depth knowledge of the range of interventions (orthotic and/or prosthetic) in the management of patients with diabetes. This includes proving evidence and rationale for treatment options prescribed.
- LO3 Demonstrate an ability to understand the psychological problems associated with this patient group through the use of cognitive behavioural therapy, in addition to communicating effectively utilising motivational interviewing.
- LO4 Demonstrate knowledge of the role of the multidisciplinary team in the management of patients with diabetes in a prosthetics and orthotic clinical setting.

(UK SPEC suggests no more than 4 learning outcomes per module. Statements must be broad and be syllabus free and link in with the intended learning outcomes on the programme specifications.)

Syllabus

The module will teach the following:

The curriculum will convey the learning outcomes specified through:

- Blended learning
- Self-directed learning

Attendance and participation at multidisciplinary clinical sessions

Assessment of Learning Outcomes

Criteria

For each of the Module Learning Outcomes the following criteria will be used to make judgements on student learning:

[Note: Criteria break the LO down into 'teachable' elements but do not become syllabus orientated i.e. no mention of CAD package names, components etc.]

- LO1 Understand and describe the diagnosis, pathogenesis and clinical presentation of diabetes.
- C1 Demonstrate knowledge of peripheral neuropathy, painful peripheral neuropathy.
- C2 Demonstrate a working knowledge of HbA1c (glycated haemoglobin) levels and their importance in relation to developing diabetes-related complications.
- C3 Demonstrate the ability to recognise and classify active foot ulceration, including identification of vascular insufficiency, neurological deficit, significant foot deformity, trauma, increased pressures, in addition to the extent and degree of infection.
- LO2 Demonstrate knowledge and an appreciation of the range of interventions (orthotic and or prosthetic) in the management of patients with diabetes. This includes proving evidence and rationale for treatment options prescribed.
- C1 Demonstrate understanding of indications and contraindications with regards to appropriate shape capture techniques and prescription options.
- C2 Demonstrating the ability to apply appropriate pressure relieving orthoses, including the application of the varieties of total contact or wound healing casts.
- C3 Formulate a prescription for footwear and prosthesis where appropriate considering all risk factors, utilising appropriate materials.
- LO3 Demonstrate an ability to understand the psychological problems associated with this patient group through the use of cognitive behavioural therapy, in addition to communicating effectively utilising motivational interviewing.
- C1 Assess the individual's understanding of the information that you have given them, and where necessary confirm the main areas that contribute to their risk of ulceration.
- C2 Demonstrate through motivational interviewing the ability to assess the individuals understanding and reinforce the benefits of good glycaemic control, self-care and monitoring to prevent complications.
- C3 Understand the theory behind cognitive behavioural therapy (CBT) and demonstrate an ability to incorporate this into clinical practice.
- LO4 Demonstrate knowledge of the role of the multidisciplinary team in the management of patients with diabetes in a prosthetics and orthotic clinical setting.
- C1 Attendance and participation in multidisciplinary diabetic foot and/or prosthetic clinics.
- C2 Demonstrate knowledge of the biomechanics of foot amputation, limb amputation, prosthetics and the post-operative rehabilitation process including the importance of multidisciplinary team working.
- C3 Demonstration of understanding different radiological and non-radiological methods of assessment resulting in the ability to interpret radiological reports.

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

Principles of Assessment and Feedback

(within Assessment and Feedback Policy at: <https://www.strath.ac.uk/staff/policies/academic/>)

Please state briefly how these are incorporated in this module.

There will be an opportunity for students to choose the topic that their literature review will be based on, thus giving the students some control over their own learning, encouraging ownership and increase motivation.

The use of formative online tests will be utilised to identify areas that require clarification in tutorial sessions.

Students will be required to take part in peer assessment prior to submission of written work, students will receive formative feedback on this before summative assessment. This will provide an opportunity to students to 'close the gap' in their learning prior to summative assessment.

Students will be required to produce a reflective piece of work on their learning; this will be a useful task for students while at the same time providing indication of the students' ability to critique their own work.

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

L/Outcomes	Examinations/Presentation			Courseworks		Projects		
	Number	Month(s)	Duration	Weighting	Number	Weighting	Number	Weighting
	1		30 mins	50%	1	50%		
	LO1,2,3,4			LO1,2,3,4				

Indicate which learning outcomes (L01, L02 etc) are to be assessed by exam/coursework/project as required.

Coursework / Submissions deadlines (*academic weeks*):

Information relating to the self-selected topic for the literature review, the presentation and clinical sessions will be distributed at the start of the module.

Resit Assessment Procedures:

--hr examination in August diet / Resubmission of coursework(s) prior to commencement of the August exam diet.

A written piece of coursework will be given for submission in August.

PLEASE NOTE:

Students must gain a summative mark of 40% / 50% to pass the module. Students who fail the module at the first attempt will be re-examined during the August diet. This re-examination will consist entirely of exam / coursework / viva. No marks from any previous attempts will be transferred to a new resit attempt.

Recommended Reading

***Purchase recommended **Highly recommended reading *For reference

**

1. Armstrong DG, Short B, Espensen EH. (2002) 'Technique for fabrication of an "instant total-contact cast" for treatment of diabetic foot ulcers'. *American Journal of Podiatric Medical Association*, 92 pp. 405-408
2. Botek G, Anderson MA, Taylor R. (2010) 'Charcot neuroarthropathy: an often overlooked complication of diabetes'. *Cleveland Clinic Journal of Medicine*, 77(9) pp.593-599.
3. Dorresteijn J, Kriegsman DMW, Assendelft WJJ, Valk GD. (2012) 'Patient education for preventing diabetic foot ulceration'. *Cochrane Database of Systematic Reviews*. Wiley.
4. Edwards J, Stapley S. (2010) 'Debridement of diabetic foot ulcers'. *Cochrane Database of Systematic Reviews*. Wiley.
5. Elftman N. (2005) 'Management of the Neuropathic Limb', *Journal of Prosthetics and Orthotics*. 17 (4) pp. 4-27.
6. Game FL, R. J. Hinchliffe RJ, Apelqvist J, Armstrong DG. (2012) 'A systematic review of interventions to enhance the healing of chronic ulcers of the foot in diabetes'. *Diabetes/Metabolism Research and Reviews*. 28(Suppl 1) pp. 119-141.
7. Gailey R. (2003) 'Keeping the sound limb sound: Foot Issues for Amputee's with Diabetes'. *In Motion*. 13 (2).
8. Glasoe, W,M. Yack H,J. Saltzman C,L. (1999) 'Anatomy and Biomechanics of the First Ray', *Physical Therapy*, 79 (9) pp. 854-859.
9. Andrews KL (2011) 'The at-risk foot: what to do before and after amputation'. *Journal of Vascular Nursing*. 29 pp 120-123
10. Lewis J, Lipp A. (2013) 'Pressure relieving interventions for preventing and treating diabetic foot ulcers'. *Cochrane Database of Systematic Reviews*. Wiley.
11. Rathur H, Boulton AJM. (2007) 'The diabetic foot'. *Clinics in Dermatology*. 25, pp. 109-120.
12. Schoonmaker L. (1998) 'Rehabilitation and prosthetic intervention pathways in managing the dysvascular patient'. *Journal of Prosthetics and Orthotics*, 10(4) pp. 82-84.
13. Scottish Intercollegiate Guidelines Network. (2007) 'Management of diabetes, a national clinical guideline. (SIGN Guideline no. 116). Edinburgh. Available from url: <http://www.sign.ac.uk>
14. Turner J (2010) 'The use of cognitive behavioural therapy in diabetes care: a review and case study'. *Journal of Diabetes Nursing*, 14 (3) PP. 86-92.
15. Verity S, Sochocki M, Embil JM. (2008) 'Treatment of Charcot foot and ankle with a prefabricated removable walker brace and custom insole'. *Foot and ankle surgery*, 14 pp. 26-31.

Additional Student Feedback

(Please specify details of when additional feedback will be provided)

Date	Time	Room No

Session:

Approved:

Course Director Signature:

Date of Last Modifications:

MODULE DESCRIPTION FORM

DEPARTMENT OF BIOMEDICAL ENGINEERING

BE410 Lower Limb Prosthetic Design

Module Registrar: Dr Tony McGarry	Taught To (Course): Cohorts for whom class is compulsory / optional / elective		
Other Lecturers Involved:	Credit Weighting: 20	Semester: 2	
Assumed Prerequisites: 94403 Prosthetics/Orthotics Clinical Placement 1 94404 Prosthetics/Orthotics Clinical Placement 2	Compulsory/ optional/ elective class	Academic Level: 4	Suitable for Exchange: Y/N

Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):

Lecture	Tutorial	Laboratory	Groupwork	External	Online	Project	Assignments	Private Study	Total
30	24	20					46	80	200

Educational Aim

This module aims to

The module builds on the introduction to prosthetics socket design, components and materials studied in PO science 1, 2 and 3. Students will gain knowledge of advanced clinical and technical aspects required to become a competent and professional practitioner. The module will build on the cross-curricular links with other relevant and complimentary modules, for example human biological sciences, professional skills for healthcare, principles of prosthetic and orthotic design, and health services research. This module consists of appropriate clinical hours and will equip the student with knowledge skills and understanding in the areas lower limb prosthetics. This will be supplemented by additional self-reflection activities to a total of 200 hours.

Learning Outcomes

On completion of the module the student is expected to be able to

- LO1 Ascertain and critically appraise relevant evidence for use in prosthetic prescription
- LO2 Understand and organise factors that influence prosthetic prescription

Syllabus

The module will teach the following:

- demonstrate effective patient and colleague communication skills and be able to establish patient rapport and empathy in a controlled clinical setting
- develop a knowledge of prescription criteria for lower limb prostheses based on the needs of the patient
- develop clinical and technical problem solving skills
- access, gather, review and appraise relevant and current literature in the field
- demonstrate their ability to carry out patient assessment and document the findings
- develop a knowledge of socket design and their applications
- develop a knowledge of the biomechanical principles of prosthetic socket design
- Component testing techniques
- assess and recognise optimal prosthetic socket fit
- expand their knowledge of the prosthetic component design
- consider the influence of aesthetics and cosmesis on user acceptance

Assessment of Learning Outcomes

Criteria

For each of the Module Learning Outcomes the following criteria will be used to make judgements on student learning:

- LO1 Ascertain and critically appraise relevant evidence for use in prosthetic prescription
 C1 Produce a report based on available evidence
 C2 Design appropriate prosthetic prescription pathways +/- matrices
 C3 Present and justify prescription choices in relation to lower limb prosthetic design
 C4 Revise and test pathways following assessment of lower limb prosthetic users
- LO2 Understand and organise factors that influence prosthetic prescription
 C1 Produce a report based on available evidence
 C2 Design appropriate prosthetic prescription pathways +/- matrices
 C3 Present and Justify prescription choices in relation to lower limb prosthetic design
 C4 Revise and test pathways following assessment of lower limb prosthetic users

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

Principles of Assessment and Feedback

(within Assessment and Feedback Policy at: <https://www.strath.ac.uk/staff/policies/academic/>)

Please state briefly how these are incorporated in this module.

Encourage interaction and dialogue around learning (peer and teacher-student).

All students are encouraged to interact and present their opinions in relation to prosthetic prescription.

Involve students in decision-making about assessment policy and practice

Assessment criteria are discussed and agreed in the introductory lecture. An average of student's peer grading is used in the final presentation. This constitutes 10% of the final presentation mark.

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

	Examinations				Courseworks		Projects	
	Number	Month(s)	Duration	Weighting	Number	Weighting	Number	Weighting
L/Outcomes	1		30 mins	50%	1	50%		

Indicate which learning outcomes (L01, L02 etc) are to be assessed by exam/coursework/project as required.

Coursework / Submissions deadlines (academic weeks):

Practical work, oral presentation and submission of coursework dates will be given at the beginning of the module.

Resit Assessment Procedures:

---hr examination in August diet / Resubmission of coursework(s) prior to commencement of the August exam diet.

Resit assignment will be given for submission in August.

PLEASE NOTE:

Students must gain a summative mark of 40% / 50% (delete as appropriate) (BSc / MSci) to pass the module. Students who fail the module at the first attempt will be re-examined during the August diet. This re-examination will consist entirely of exam / coursework / viva. No marks from any previous attempts will be transferred to a new resit attempt.

Recommended Reading

***Purchase recommended **Highly recommended reading *For reference

**

- CARROLL, K., RHEINSTEIN, J. & POLLARD, E. 2013. Chapter 21: Understanding Prosthetic Feet. In: LUSARDI, M., DUANE CORTES A, VIOSCA E, HOYOS JV, SANCHEZ-LACUESTA J (1997) Optimisation of the Prescription for Trans-tibial Amputees. *Prosthetics and Orthotics International*, Vol 21 (3), p168-174
- ROMO H. Prosthetic Knees. *Phys Med Rehab Clin*, 2000, 11, 3, 595-607.
- FISHMAN S, Edelstein JE, Krebs D...(et al). Icelandic-Swedish-New York above-knee prosthetics sockets: paediatric experience. *J Pediatr Orthop* 1987 **38**, 449-452
- JENDRZEJCZYK DJ. Flexible socket systems. *Clin Prosthet Orthot* 1985 **9**, (1), 27-30.
- JORGE, M. & NIELSON, C. (eds.) *Orthotics & Prosthetics in Rehabilitation*. 3 ed. St. Louis, Missouri: Elsevier.
- KAPP, S. 1999. Suspension systems for prostheses. *Clinical Orthopaedics and Related Research*, 55-62.
- KAPP, S. & FERGASON, J. 2004. Chapter 39: Transtibial Amputation: Prosthetic Management. In: SMITH, D., MICHAEL, J. & BOWKER, J. (eds.) *Atlas of Amputations and Limb Deficiencies Surgical, Prosthetic, and Rehabilitation Principles*. 3 ed. Rosemont, IL: AAOS.
- KAPP, S. & MILLER, J. A. 2009. Lower limb prosthetics. *Care of the combat amputee*. Washington, DC: Borden Institute.

KNAPP, D. 2013. Chapter 23: Transtibial Prosthetics. *In: LUSARDI, M., JORGE, M. & NIELSON, C. (eds.) Orthotics and prosthetics in rehabilitation.* Missouri: Elsevier Health Sciences.

KOGLER, G. 2013. Chapter 6: Materials and Technology. *In: LUSARDI, M., JORGE, M. & NIELSON, C. (eds.) Orthotics and prosthetics in rehabilitation.* Missouri: Elsevier Health Sciences.

LINDE HVD, GEERTZEN JHB, HOFSTAD CJ, LIMBEEK JV, POSTEMA K. Prosthetic prescription in the Netherlands: An observational study. *Prosthetics and Orthotics International.* 2003;27(3):170-8.

MENARD MR, MCBRIDE ME, SANDERSON DJ, MURRAY DD (1992) Comparative Biomechanical Analysis of Energy Storing Prosthetic Feet. *Arch Phys Med Rehabil*, Vol 73 (5), p451-458

MICHAEL, J. W. 2004. Chapter 33: Prosthetic Suspensions and Components. *In: SMITH, D., MICHAEL, J. & BOWKER, J. (eds.) Atlas of Amputations and Limb Deficiencies Surgical, Prosthetic and Rehabilitation Principles.* 3 ed. Rosemont, IL: AAOS.

RADCLIFFE, C. W., FOORT, J., INMAN, V. T. & EBERHART, H. D. 1961. *The patellar-tendon-bearing below-knee prosthesis*, Biomechanics Laboratory, University of California.

REDHEAD, R. G., DAY, H. J. B., MARKS, L. J. & LACHMANN, S. L. 1991. *Prescribing lower limb prostheses*, London, London : Disablement Services Authority.

Additional Student Feedback

(Please specify details of when additional feedback will be provided)

Date	Time	Room No

Session:

Approved:

Course Director Signature:

Date of Last Modifications:

MODULE DESCRIPTION FORM

DEPARTMENT OF BIOMEDICAL ENGINEERING

BE411 Upper Limb Prosthetics

Module Registrar: Sarah Day	Taught To (Course): Cohorts for whom class is compulsory / optional / elective		
Other Lecturers Involved:	Credit Weighting: 20	Semester: 2	
Assumed Prerequisites: 94355 Prosthetic and Orthotic Science 3 with applied health service research	Compulsory/ optional/ elective class	Academic Level: 4	Suitable for Exchange: Y/N

Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):

Lecture	Tutorial	Laboratory	Groupwork	External	Online	Project	Assignments	Private Study	Total
14	20	12				50	40	64	200

Educational Aim

This module aims to encourage a deeper level of critical analysis within upper limb prosthetics, building on the skills and knowledge gained in Prosthetic and Orthotic Science 3.

Students will gain knowledge of advanced clinical and technical aspects required to become a competent and professional practitioner. The module will build on the cross-curricular links with other relevant and complimentary modules, for example human biological sciences, principles of prosthetic and orthotic design, and health services research. This module will consider socket design, component prescription and control strategies for proximal upper limb amputation levels, as well as emerging technologies and their clinical relevance to the field of upper limb prosthetics.

The module consists of lectures, tutorials and clinical sessions. Students will undertake further investigative reading in areas relevant to patient care and emerging technology.

Learning Outcomes

On completion of the module the student is expected to be able to

- LO1 Understand the functional, technical and cosmetic properties of emerging technologies, and their use within upper limb prosthetics
- LO2 Display competencies in the prescription and application of a variety of control systems and related technologies.
- LO3 Understand the different socket designs suitable for proximal amputation levels, including material choice and trimlines.

(UK SPEC suggests no more than 4 learning outcomes per module. Statements must be broad and be syllabus free and link in with the intended learning outcomes on the programme specifications.)

Syllabus

The module will teach the following:

Emerging technology and control systems, including multi-articulating prosthetic hands
Cosmetic coverings
Electric elbow joints
Trans-humeral, shoulder disarticulation and forequarter socket design
Socket design for congenital deformity

Assessment of Learning Outcomes

Criteria

For each of the Module Learning Outcomes the following criteria will be used to make judgements on student learning:

[Note: Criteria break the LO down into 'teachable' elements but do not become syllabus orientated i.e. no mention of CAD package names, components etc.]

LO1	Understand the functional, technical and cosmetic properties of emerging technologies and their use within upper limb prosthetics.
C1	Describe the functional, technical and cosmetic properties of emerging technologies.
C2	Make comparisons between emerging technologies and existing technology.
C3	Consider the prescription criteria for new technologies.
LO2	Display competencies in the prescription and application of a variety of control systems and related technologies.
C1	Describe the different control options available and their use.
C2	Design suitable prosthetic systems for patients with proximal upper limb absence.
LO3	Understand the different socket designs suitable for proximal amputation levels and congenital deformities, including material choice and trimlines.
C1	Conduct an investigative review of literature based on a specific clinical presentation.
C2	Describe the condition, functional loss and biomechanical considerations.
C3	Design suitable prosthetic systems for patients with proximal upper limb absence.

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

Principles of Assessment and Feedback

(within Assessment and Feedback Policy at: <https://www.strath.ac.uk/staff/policies/academic/>)

Please state briefly how these are incorporated in this module.

Students will complete 2 summative assignments for which they will receive timely feedback. These activities will encourage student engagement and support their attainment of knowledge, understanding, and transferable skills. Students will participate in group activities to encourage peer support and dialogue and will be given choice in the topic to be assessed. The assessments will highlight any gaps in knowledge for both the student and tutor so that further teaching and learning can be conducted in this area.

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

	Examinations			Courseworks		Projects		
	Number	Month(s)	Duration	Weighting	Number	Weighting	Number	Weighting
L/Outcomes					1. presentation	50%		
					2. Essay	50%		
					LO1, LO2, LO3			

Indicate which learning outcomes (L01, L02 etc) are to be assessed by exam/coursework/project as required.

Coursework / Submissions deadlines (academic weeks):

Assessment 1 - Week 7, Assessment 2 - Week 10

Resit Assessment Procedures:

---hr examination in August diet / Resubmission of coursework(s) prior to commencement of the August exam diet.

Additional coursework will be required.

PLEASE NOTE:

Students must gain a summative mark of 40 to pass the module. Students who fail the module at the first attempt will be re-examined during the August diet. This re-examination will consist entirely of exam / coursework/viva. No marks from any previous attempts will be transferred to a new resit attempt.

Recommended Reading

***Purchase recommended **Highly recommended reading *For reference

**

Schnur D, Meier RH. (2014) Amputation Surgery. Phys Med Rehabil Clin N Am. 2014 Feb;25(1):35-43.

Cheesborough JE, Souza JM, Dumanian GA, Bueno RA Jr. Targeted muscle reinnervation in the initial management of traumatic upper extremity amputation injury. Hand (N Y). 2014 Jun;9(2):253-7.

Hargrove LJ, Lock BA, Simon AM. Pattern recognition control outperforms conventional myoelectric control in upper limb patients with targeted muscle reinnervation. Conf Proc IEEE Eng Med Biol Soc. 2013;2013:1599-602.

Dosen S1, Cipriani C, Kostić M, Controzzi M, Carrozza MC, Popović DB. Cognitive vision system for control of dexterous prosthetic hands: experimental evaluation. J Neuroeng Rehabil. 2010 Aug 23;7:42.

Otr OV1, Reinders-Messelink HA, Bongers RM, Bouwsema H, Van Der Sluis CK. The i-LIMB hand and the DMC plus hand compared: a case report. *Prosthet Orthot Int.* 2010 Jun;34(2):216-20.
Muzumdar A., et al (2004) *Powered Upper Limb Protheses, Control, Implementation and Clinical Application.* Germany. Springer-Verlag Berlin Heidelberg.
Dykes W.G et al (1998) *Shoulder Prosthetics, A Clinical and Technical Guide for Prosthetists, Clinicians, Therapists and Technicians.* Scotland. The National Centre for the Training and Education of Prosthetics and Orthotics, University of Strathclyde.

Additional Student Feedback

(Please specify details of when additional feedback will be provided)

Date	Time	Room No

Session:

Approved:

Course Director Signature:

Date of Last Modifications:

MODULE DESCRIPTION FORM

DEPARTMENT OF BIOMEDICAL ENGINEERING

BE412 Clinical Governance

Module Registrar: Laura Murray	Taught To (Course): Cohorts for whom class is compulsory / optional / elective		
Other Lecturers Involved: Guest Lecturers	Credit Weighting: 20	Semester: 2	
Assumed Prerequisites: 94204 Prosthetics and Orthotics Science 1 94208 Prosthetics and Orthotics Science 2 94355 Prosthetics and Orthotics Science 3 with Applied Health Services Research	Compulsory/ optional/ elective class	Academic Level: 4	Suitable for Exchange: Y/N

Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):

Lecture	Tutorial	Laboratory	Groupwork	External	Online	Project	Assignments	Private Study	Total
30	20						50	100	200

Educational Aim

This module aims to inform participants about the ideas and principles behind the concept of clinical governance. This will be done through the use of the Information Governance Training Tool (IGTT) where the following areas will be covered:

- Introduction to information governance (same as IGTT)
- The importance of good clinical record keeping (same as IGTT)
- Clinical information systems
- eHealth the future direction
- The language of health, clinical coding and terminology
- Why patient safety is important

Learning Outcomes

On completion of the module the student is expected to be able to

- LO1 Understand the core principles of clinical governance, and be aware of the relevant references and documents in this area.
- LO2 Understand the practical and clinically relevant lessons on improving healthcare services from current national and international work, and construct an idea for a simple clinical audit.
- LO3 Appreciate the current literature and construct a guideline for the care of a patient group with a particular condition.
- LO4 Discuss the implications of clinical governance for prosthetic and/or orthotic services.

Syllabus

The module will teach the following:

- Accountability and patient care.
- Openness and transparency of decision making in the health services.
- Effective management of performance.
- The function and role of the individual role practitioner.
- The function and role of the wider health organisation.
- The importance of engendering a learning environment as an integral part of health services.

Clinical Governance

- Clinical Governance and the National Health Service.
- Evidence based practice.
- Risk management.
- User involvement.
- Clinical effectiveness and clinical audit.
- Clinical performance indicators.

The Bristol inquiry: illustrating a health service which failed its patients.

The core curriculum will address the specific learning outcomes by means of:

- Formal teaching
- Self-directed learning
- Peer assessment

Demonstration of the value of clinical governance in the core curriculum will address the specific learning outcomes by means of:

- Formal teaching
- Self-directed learning
- Multidisciplinary clinical sessions illustrating patient assessment, treatment planning, orthosis prescription and evaluation and assessment of outcome
- Demonstration of the value of gait analysis in clinical setting
- Clinical setting

Assessment of Learning Outcomes

Criteria

For each of the Module Learning Outcomes the following criteria will be used to make judgements on student learning:

- | | |
|-----|---|
| LO1 | Understand the core principles of clinical governance, and be aware of the relevant references and documents in this area. |
| C1 | Demonstrate an understanding of clinical governance through a literature review of a current topic within the field of Clinical Governance. |
| C2 | Demonstrate ability to describe clinical governance and its relevance to clinical practice. |
| LO2 | Understand the practical and clinically relevant lessons on improving healthcare services from current national and international work, and construct an idea for a simple clinical audit |
| C1 | Demonstrate ability to review literature in this area |
| C2 | Demonstrate ability to plan a simple clinical audit |
| LO3 | Appreciate the literature and construct a guideline for the care of a patient group with a particular condition. |
| C1 | Demonstrate ability to review literature in this area. |
| C2 | Present a guideline for care of a patient group with a particular condition that relates to prosthetic and/or orthotic care. |
| LO4 | Discuss the implications of clinical governance for prosthetic and/or orthotic services. |
| C1 | Peer assessed debate on current clinical governance issues in the NHS. |
| C2 | Self-assessment through reflective practice and essay. |

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

Principles of Assessment and Feedback

(within Assessment and Feedback Policy at: <https://www.strath.ac.uk/staff/policies/academic/>)

Please state briefly how these are incorporated in this module.

Assessment criteria will be made explicit and will be provided at the start of the module.

Interim formative feedback will be provided in a timely manner (before next deadline/examination).

Students will be required to work together in small groups and small-group working will be a routine part of the presentation element of the assessment.

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

	Examinations/Presentation			Courseworks		Projects		
	Number	Month(s)	Duration	Weighting	Number	Weighting	Number	Weighting
	1		20 mins	33.3%	2	66.7% (33.3% each)		
L/Outcomes	LO1,2,3,4			CW1-literature review peer assessment (LO1,2,3,4) CW2-reflective essay (LO1,2,3,4)				

Indicate which learning outcomes (L01, L02 etc) are to be assessed by exam/coursework/project as required.

Coursework / Submissions deadlines (*academic weeks*):

Week 8 semester 2 peer assessed literature review (1000 words) and reflective essay (1000 words), and presentation week 10 semester 2.

Resit Assessment Procedures:

--hr examination in August diet / Resubmission of coursework(s) prior to commencement of the August exam diet.

Where any student fails to complete the module assessment successfully, a resit assignment, of about 3000 words in length, will be set which specifically addresses the areas of weakness in the first submission.

PLEASE NOTE:

Students must gain a summative mark of 40% to pass the module. Students who fail the module at the first attempt will be re-examined during the August diet. This re-examination will consist entirely of exam / coursework/viva . No marks from any previous attempts will be transferred to a new resit attempt.

Recommended Reading

***Purchase recommended **Highly recommended reading *For reference

**

Clinical Governance literature through a literature search of NHS documents.

Web based learning through eICE website.

This web site has seven free e-learning modules:

- Introduction to information governance (same as IGTT) Governance Training Tool (IGTT)
- The importance of good clinical record keeping (same as IGTT)
- Clinical information systems
- eHealth the future direction
- The language of health, clinical coding and terminology
- Why patient safety is important

eICE - Embedding Informatics in Clinical Education

eice@hscic.gov.uk

www.cln.nhs.uk/eice

The e-learning modules are also available as free apps from [iTunes](#) and [Google Play Store](#) (search for 'eICE'). All learners can use the app alongside the e-learning on the website.

Additional Student Feedback

(Please specify details of when additional feedback will be provided)

Date	Time	Room No

Session:

Approved:

Course Director Signature:

Date of Last Modifications:

MODULE DESCRIPTION FORM

DEPARTMENT OF BIOMEDICAL ENGINEERING

BE413 Orthotic Management of Spinal Deformity

Module Registrar: Karyn Ross	Taught To (Course): BSc Hons in Prosthetics and Orthotics		
Other Lecturers Involved: Roy Bowers and Guest Lecturers	Credit Weighting: 20	Semester: 2	
Assumed Prerequisites: 94403 Prosthetics/Orthotics Clinical Placement 1 94404 Prosthetics/Orthotics Clinical Placement 2	Optional	Academic Level: 4	Suitable for Exchange: Y

Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):

Lecture	Tutorial	Laboratory	Groupwork	External	Online	Project	Assignments	Private Study	Total
32	6	10	0	0	0	0	42	110	200

Educational Aim

This module aims for the student to acquire the knowledge and understanding of the sciences which underpin the orthotic management of common spinal deformities. In addition, they will formulate and analyse treatment protocol for management of these patient groups.

Specifically this module aims to:

1. Present a multidisciplinary and patient-centred approach to the orthotic management of spinal deformity.
2. Enable students to synthesise and analyse their knowledge of the role of spinal orthoses in the management of neuromuscular and idiopathic scoliosis and spinal injuries.
3. Review the available evidence base for orthotic management of scoliosis
4. Present current best practice on the management of neuromuscular and idiopathic scoliosis.
5. Develop an understanding of the roles of physiotherapy in the management of spinal deformity/injury.
6. Develop an understanding of the role of pharmacology in the management of tone associated with spinal deformity/injury.
7. Develop an understanding on the role of surgery in the management of spinal deformity/injury.

Learning Outcomes

Material covered in Human Biological Science and Principles of Prosthetics and Orthotic Design relating to the spine will be referred to briefly, but it is assumed the student already has an adequate knowledge base and understanding of these subject areas:

Human Biological Science - anatomy and pathologies associated with spinal deformity
Principles of Prosthetics and Orthotic Design - biomechanics related to spinal deformity
Spinal Orthotics (94355)

On completion of the module the student is expected to be able to

- LO1 Recognise the presentation, clinical features and natural history of neuromuscular and idiopathic scoliosis and spinal injury and be familiar with patient assessment techniques including the analysis of X-rays to identify deformity and blueprint orthosis design.
- LO2 Identify and appraise the principles of orthotic management, the role and design of spinal orthoses in the management of scoliosis and spinal injury and the roles of adjunct therapies and surgery.
- LO3 Appraise the roles of orthotics, physiotherapy and surgery in the management of scoliosis and spinal injury and the value of and interdependence of the different forms of clinical intervention.
- LO4 Appraise literature pertaining to the use of spinal orthoses for management of scoliosis and spinal injury.

Syllabus

The core curriculum will address the specific learning outcomes by means of:

- formal teaching, and self-directed learning
- attending a multidisciplinary clinical session

The module will teach the following:

- Identification and appraisal of the principles of orthotic management of neuromuscular and idiopathic scoliosis.
- Evaluation of the use and design of spinal orthoses for neuromuscular and idiopathic scoliosis.
- The undertaking of systematic patient assessment, resulting in the formulation of functional loss and objective setting.
- Analysis of spinal X-rays to identify deformity and blue print orthosis design.
- Formulation of a prescription based on orthotic design principles.
- Evaluation of spinal casting, rectification and manufacturing techniques.
- Assessment of orthosis fit and function.
- Identification and appraisal of materials and manufacturing processes used in spinal orthotics.
- Awareness of the role of physiotherapy in the management of neuromuscular and idiopathic scoliosis.
- Awareness of the role of surgery in the management of neuromuscular and idiopathic scoliosis.
- Critical appraisal of literature pertaining to the use of spinal orthoses for management of spinal deformity.

Assessment of Learning Outcomes

Criteria

For each of the Module Learning Outcomes the following criteria will be used to make judgements on student learning:

- | | |
|-----|---|
| LO1 | Recognise the presentation, clinical features and natural history of neuromuscular and idiopathic scoliosis and spinal injury and be familiar with patient assessment techniques including the analysis of X-rays to identify deformity and blue print orthosis design. |
| C1 | Demonstrate understanding of the clinical presentation of neuromuscular and idiopathic scoliosis and spinal injury. |
| C2 | Demonstrate understanding of the assessment of neuromuscular and idiopathic scoliosis and spinal injury. |
| C3 | Demonstrate knowledge and understanding of X-ray analysis to identify and quantify scoliosis and to blueprint the design of a Boston style scoliosis brace. |
| LO2 | Identify and appraise the principles of orthotic management and the role and design of spinal orthoses in the management of scoliosis and spinal injury. |
| C1 | Demonstrate understanding of the principles of orthotic management of scoliosis and spinal injury |
| C2 | Demonstrate knowledge and understanding of prescription criteria for spinal orthoses used in the management of scoliosis and spinal injuries. |
| LO3 | Appraise the roles of orthotics, physiotherapy and surgery in the management of scoliosis and spinal injury and the value of and interdependence of the different forms of clinical intervention. |
| C1 | Demonstrate understanding of the principles of managing complex spinal deformity and injury which often involves multi-level clinical challenges. |
| C2 | Demonstrate knowledge of adjunct treatment modalities in the management of complex multi-level clinical challenges. |
| C3 | Demonstrate an understanding of the role of the multidisciplinary clinical team in the management of scoliosis and spinal injury. |
| LO4 | Identify and appraise literature pertaining to the use of spinal orthoses for management of scoliosis and spinal injury. |
| C1 | Demonstrate the ability to critically appraise literature. |
| C2 | Demonstrate the ability to develop a study to investigate the efficacy of spinal bracing. |

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

Principles of Assessment and Feedback

(within Assessment and Feedback Policy at: <https://www.strath.ac.uk/staff/policies/academic/>)

Please state briefly how these are incorporated in this module.

Provision of better definitions of academic requirements before a learning task using carefully constructed criteria sheets and performance level definitions. Expectation will be clearly explained to the class; two assessments are provided; feedback from the first will be provided in advance of second assessment.

Project deadlines are evenly dispersed in the semester to minimise burden on time commitments. A proforma is provided for the coursework so that required content is defined.

Coursework formative and summative feedback will be provided in timely manner (before next deadline/examination). Students thereby will be made aware of their performance and standing before the next and final assessment.

'Action points' will be provided along with the normal feedback they receive-- this would help students identify what they should do next time, what to prioritise, and ultimately how to improve their performance. This will also impact on their honours project work

which is undertaken in semester 2.

Midterm and end-of-term class evaluations allow students to express concerns about assessment policy and practice to registrar. Small-group discussions are routine part of all sessions.

The tasks and assessment are structured to become progressively challenging (with timely feedback).

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

	Examinations/ Case Study Presentation			Courseworks		Projects		
	Number	Month(s)	Duration	Weighting	Number	Weighting	Number	Weighting
L/Outcomes	0				CW1	50%	0	
					LO2,LO3,LO4			
L/Outcomes					CW2	50%		
					LO4			

Indicate which learning outcomes (L01, L02 etc) are to be assessed by exam/coursework/project as required.

Coursework / Submissions deadlines (academic weeks):

Coursework 1: critical appraisal of literature (week 5)

Coursework 2: develop a study protocol to investigate the efficacy of spinal bracing (week 10)

Resit Assessment Procedures:

Resubmission of coursework(s) prior to prior to the undergraduate honours board.

PLEASE NOTE:

Students must gain a summative mark of 40% to pass the module. Students who fail the module at the first attempt will be re-examined prior to the honours board. This re-examination will consist entirely of coursework. No marks from any previous attempts will be transferred to a new resit attempt.

Recommended Reading

***Purchase recommended **Highly recommended reading *For reference

BOOKS:

**Moe's Textbook Of Scoliosis And Other Spinal Deformities, 3edition by John E.; Winter MD, Robert B.; Bradford MD, David S.; Ogilvie MD, James W. Lonstein MD

ISBN 13: 9780721655338

ISBN 10: 0721655335

WEBSITES:

**<http://www.srs.org/>

***<http://www.britscoliosissoc.org.uk/>

***<http://www.sauk.org.uk/>

***<http://www.bostonbrace.com/>

**<https://www.spinecor.com/>

**<https://www.dmorthotics.com/>

**<https://www.jobskin.co.uk/>

Additional Reading:

Idiopathic Scoliosis

*Manual for the Boston Scoliosis Brace Course: Children's Hospital, Boston MA, 10th edition, March 1985.

*Dickson RA, et al: The pathogenesis of idiopathic scoliosis. JBJS 66-B:8-15, 1984.

*Edgar MA: To brace or not to brace? JBJS 67-B: 173-174, 1985.

*Glancy J: A new Orthotic concept in the non-operative treatment of idiopathic scoliosis. Orthot Prosthet 32(4) 15-31, 1978.

*Mehta MH: The rib-vertebra angle in the early diagnosis between resolving and progressive infantile scoliosis. JBJS 54B:230-243, 1972

*Riseborough EJ, Herndon JH, Scoliosis associated with neuromuscular diseases, in Scoliosis and other deformities of the axial skeleton, 1975

U *den A, Willner S: The effect of lumbar flexion and Boston thoracic brace on the curves in Idiopathic Scoliosis. Spine 8:846 - 850, 1983.

Neuromuscular Scoliosis

*Letts M; Brathborne D; Yamashita T; Nichol B; Keeler A: Soft Boston orthosis in management of neuromuscular scoliosis: a preliminary report. JPO 12(4): 470-4, 1992.

*Noble-Jamieson CM; Heckmat JZ; Dubowit V; Silverman M: Effects of posture and spinal bracing on respiratory function in neuromuscular disease. Archives of Disease in Childhood. 61(2): 178-81, 1986.

*Terjessen T; Lange J; Steen H: Treatment of scoliosis with spinal bracing in quadriplegic cerebral palsy. Devel Med Child Neuro. (42): 448-454, 2000.

*Miller A; Temple T; Miller F: Impact of orthoses in the rate of scoliosis progression in children with cerebral palsy. JPO 16(3): 332-335, 1996.

*Muller EB; Nordwall A: Brace treatment of scoliosis in children with myelomeningocele. Spine 19(2):151-155, 1994.

Kyphosis

*Bradford DS, Moe JN, Montalvo FJ, Winter RB: Scheuermann's kyphosis and roundback deformity: Results of Milwaukee brace treatment. JBJS 56A: 740-758, 1974

*Keim HA: Kyphosis and lordosis in The Adolescent Spine, 2nd edition, 1982

*Kling TF, Hensiger RN: Scheuermann's disease: natural history, current concepts and management, in Dickson R, Bradford

*DS (eds): Management of Spinal Deformities 1984

*Montgomery SP, Erwin WE: Scheuermann's kyphosis - Long-term results of Milwaukee Brace Treatment. Spine 6:5 -12, 1981

Additional Student Feedback

(Please specify details of when additional feedback will be provided)

Date	Time	Room No

Session:

Approved:

Course Director Signature:

Date of Last Modifications:

MODULE DESCRIPTION FORM

DEPARTMENT OF BIOMEDICAL ENGINEERING

BE414 Paediatric Prosthetics and Rehabilitation

Module Registrar: Laura Murray	Taught To (Course): Cohorts for whom class is compulsory / optional / elective		
Other Lecturers Involved: Guest lecturers	Credit Weighting:	Semester:	
Assumed Prerequisites: 94 204, 94208 and 94355	Compulsory/ optional/ elective class	Academic Level:	Suitable for Exchange: Y/N

Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):

Lecture	Tutorial	Laboratory	Groupwork	External	Online	Project	Assignments	Private Study	Total
15	15	10				50	40	70	200

Educational Aim

This module aims to build on the introduction to prosthetics socket design, components and materials studied in PO science 1, 2 and 3. Students will gain knowledge of advanced clinical and technical aspects required to become a competent and professional practitioner. The module will build on the cross-curricular links with other relevant and complimentary modules, for example human biological sciences, professional skills for healthcare, principles of prosthetic and orthotic design, and health services research. This module consists of lectures and self-study with knowledge, skills and understanding in the areas of upper and lower limb paediatric prosthetics. This will be supplemented by additional self-reflection activities to a total of 200 hours.

Learning Outcomes

On completion of the module the student is expected to be able to

- LO1 Through effective patient and colleague communication skills will be able to establish patient and parent rapport and empathy in a controlled clinical setting. Develop a knowledge of prescription criteria for upper and lower limb prostheses based on the needs of the patient.
- LO2 Knowledge of a range of acquired and congenital deficiencies.
- LO3 Access, gather, review and appraise relevant and current literature in the field of paediatric prosthetics and rehabilitation. Including the role of the MDT in rehabilitation.
- LO4 Expand their knowledge of prosthetic component design and develop a knowledge of a range of socket designs and their applications.

Syllabus

The module will teach the following:

- Causes and surgical management of congenital deficiency and childhood amputations
- Psychology of disability in childhood
- Paediatric prosthetic rehabilitation
- Prosthetic management of the lower limb deficient child
- Prosthetic management of the upper limb deficient child
- Growing up with a disability: A user's perspective

Assessment of Learning Outcomes

Criteria

For each of the Module Learning Outcomes the following criteria will be used to make judgements on student learning:

LO1	Knowledge of a range of acquired and congenital deficiencies.
C1, 2	Demonstrate through clinical studies report, self-directed research and external lectures.
LO2	Access, gather, review and appraise relevant and current literature in the field.
C1, 2	Competency in conducting a literature review on a relevant paediatric topic.
LO3	Expand their knowledge of prosthetic component design and develop a knowledge of a range of socket designs and their applications. Develop a knowledge or prescription criteria for upper and lower limb prostheses based on the needs of the patient.
C1,2	Demonstrate understanding of the role of the MDT within paediatric rehabilitation and the specific requirements of a prosthesis for this group

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

Principles of Assessment and Feedback

(within Assessment and Feedback Policy at: <https://www.strath.ac.uk/staff/policies/academic/>)

Please state briefly how these are incorporated in this module.

Provision of better definitions of academic requirements before a learning task using carefully constructed criteria sheets and performance level definitions. Expectation will be clearly explained to the class; two assessments are provided; feedback from the first will be provided in advance of second assessment.

Project deadlines are evenly dispersed in the semester to minimise burden on time commitments. A proforma is provided for the coursework so that required content is defined.

Coursework formative and summative feedback will be provided in timely manner (before next deadline/examination). Students thereby will be made aware of their performance and standing before the next and final assessment.

'Action points' will be provided along with the normal feedback they receive - this would help students identify what they should do next time, what to prioritise, and ultimately how to improve their performance. This will also impact on their honours project work which is undertaken in semester 2.

Midterm and end-of-term class evaluations allow students to express concerns about assessment policy and practice to registrar.

Small-group discussions are routine part of all sessions.

The tasks and assessment are structured to become progressively challenging (with timely feedback). Initially relevant literature is provided to the students for critical appraisal, but thereafter students must source the relevant literature pertaining to a newly defined topic to support the case study which is presented.

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

	Examinations/Presentation			Courseworks		Projects		
	Number	Month(s)	Duration	Weighting	Number	Weighting	Number	Weighting
	1		20 mins	60	1	40		
L/Outcomes	LO1, LO2, LO3			LO2, LO3				

Indicate which learning outcomes (LO1, LO2 etc) are to be assessed by exam/coursework/project as required.

Coursework / Submissions deadlines (academic weeks):

Week 7 and 9
Presentations: Week 10

Resit Assessment Procedures:

---hr examination in August diet / Resubmission of coursework(s) prior to commencement of the August exam diet.

Where any student fails to complete the module assessment successfully a resit assignment of 3500 words will be set for submission in August.

PLEASE NOTE:

Students must gain a summative mark of 40% to pass the module. Students who fail the module at the first attempt will be re-examined during the August diet. This re-examination will consist entirely of exam / coursework / viva. No marks from any previous attempts will be transferred to a new resit attempt.

Recommended Reading

***Purchase recommended **Highly recommended reading *For reference

**

Winkelman W.W. Rotationplasty. Ortho Clin of North America, Vol 27, No.3, July 1996
Krajbich J.I. Modified Van Nes Rotationplasty in the treatment of malignant neoplasms in the lower extremities of children. Clin Orthop. No. 262, January 1991, pp. 74-77
Bryant PR, Pandian G. Acquired limb deficiencies in children and young adults. Arch Phys Med Rehabil, 2001, Vol. 82 (Suppl 1), pp S3-S8.
Cummings DR. Paediatric prosthetics: current trends and future possibilities. Phys Med Rehabil Clin North Am. 2000, Vol. 11, pp. 653-679
Birch JG, Walsh SJ et al. Syme amputation for the treatment of fibular deficiency: an evaluation of long-term physical and psychological functional status. J Bone Joint Surg. 1999, Vol. 81a pp. 1511-1518
Krebs DE, Edelstein JE, Thornby MA, Prosthetic management of children with limb deficiencies. Phys Ther. 1991, Vol 71, pp. 920-934.
Alman BA, Krajbich JI, Hubbard S. Proximal femoral focal efficiency: results of rotationplasty and syme amputation. J Bone Joint Surg Am, 1995, Vol 77 (12), pp 1876-1882.
Koman LA, Meyer LC, Warren FH. Proximal femoral focal deficiency: a 50 year experience. Dev Med Child Neurol, 1982, Vol 24 (3), pp. 344-355.
Birch JG et al. Syme amputation for the treatment of fibular deficiency. J Bone Joint Surg Am, 1999, Vol 81A (11), pp. 1511-1518.
Herring JA et al. Syme amputation. An evaluation of physical and psychological function in young patients. J Bone Joint Surg., 1980, Vol 68A, (4), pp. 573-578.
Kruger LM, Talbot RD. Amputation and prostheses as definitive treatment in congenital absence of the fibula. J. Bone Joint Surg Am, 1961, Vol 43A, (5), pp. 625-699.
Oppenheim WL. Fibular deficiency and the indications for Syme's amputation. Prosth Orthot Int, 1991, Vol 15, pp. 131-136.

Additional Student Feedback

(Please specify details of when additional feedback will be provided)

Date	Time	Room No

Session:

Approved:

Course Director Signature:

Date of Last Modifications:

(Updated May 2018)

MODULE DESCRIPTION FORM

DEPARTMENT OF BIOMEDICAL ENGINEERING

BE 415 Clinical Gait Analysis

Module Registrar: Dr Andrew Kerr	Taught To (Course): Cohorts for whom class is compulsory / optional / elective		
Other Lecturers Involved: Guest Lecturers	Credit Weighting: 20	Semester: 2	
Assumed Prerequisites: 94403 Prosthetics/Orthotics Clinical Placement 1 94404 Prosthetics/Orthotics Clinical Placement 2	Compulsory/ optional/- elective class	Academic Level: 4	Suitable for Exchange: Y/N

Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):

Lecture	Tutorial	Laboratory	Groupwork	External	Online	Project	Assignments	Private Study	Total
30					20		60	90	200

Educational Aim

This module aims to

1. To give candidates an appreciation of methods and levels of accuracy of currently available gait assessment techniques ranging from the simple to the sophisticated, or inexpensive to costly. The advantages and limitations of each will be explored.
2. To help students to develop an awareness and practical understanding of the interpretation of the data and its relevance to clinically observed conditions.

Learning Outcomes

On completion of the module the student is expected to be able to

LO1

Knowledge Based Objectives

The course will facilitate development of knowledge and understanding of:

- kinematic analysis of gait
- kinetic analysis and force transducers
- analysis of muscle actions and joint forces
- 2-dimensional and 3-dimensional gait analysis laboratory systems
- outcome measures used in gait analysis

LO2

Skills Based Objectives

On completion of the course, you should be able to:

- identify appropriate methods of gait analysis
- structure analysis of information and data
- Interpret a gait analysis report using 2-dimensional and 3-dimensional gait systems
- undertake critical reflection on a subject's gait

Syllabus

The module will teach the following:

Section One

Aims, objectives and methods of gait analysis

Section Two

Normal & pathological gait

Section Three

Kinematic Analysis

- Temporal parameters of gait
- Joint angular movements during gait
- Presentation of data
- Methods and equipment

Section Four

- Kinetic Analysis
- Pressure measurement
- Analysis of joint moments and forces

Section 5

Gait analysis applications in the rehabilitation of clinical populations

Assessment of Learning Outcomes

Criteria

For each of the Module Learning Outcomes the following criteria will be used to make judgements on student learning:

LO1

Knowledge-based Objectives

A pass in all of the following is required to pass the module:

- C1 3-D laboratory report
- C2 Oral presentation based on 2-D laboratory
- C3 Reflective essay of around 1500 words

LO2

Skills-based Objectives

Attendance at the following sessions is mandatory in order to pass the module:

- C1 2-D and 3-D gait laboratory experiences
- C2 Oral presentation of gait laboratory findings
- C3 Rehabilitation service provider laboratory experience

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

Principles of Assessment and Feedback

(within Assessment and Feedback Policy at: <https://www.strath.ac.uk/staff/policies/academic/>)

Please state briefly how these are incorporated in this module.

The following will underpin the student teaching and learning experience:

- Assignment criteria issued at beginning of module.
- Negotiation and agreement with students on assignment submission deadlines.
- Summative feedback provided to students during early and mid stages of the module.
- Interaction and dialogue encouraged through the use of Myplace communication and online forums.
- Student self-assessment and reflection actively encouraged.
- Student-peer-teacher feedback opportunities provided throughout and on completion of module.
- Pastoral support and guidance provided by module registrar throughout module by email and meetings

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

	Examinations			Courseworks		Projects	
	Number	Month(s)	Duration	Weighting	Number	Weighting	Number
				1	50%		
				2	50%		
L/Outcomes				LO1 and LO2			

Indicate which learning outcomes (LO1, LO2 etc) are to be assessed by exam/coursework/project as required.

Coursework / Submissions deadlines (academic weeks):

March and April, Semester 2.

Resit Assessment Procedures:

--hr examination in August diet / Resubmission of coursework(s) prior to commencement of the August exam diet.

A resit assignment will be set to specifically address the areas of weakness in the first submission of the respective coursework failed.

PLEASE NOTE:

Students must gain a summative mark of 40% to pass the module. Students who fail the module at the first attempt will be re-examined during the August diet. This re-examination will consist entirely of exam / coursework/viva. No marks from any previous attempts will be transferred to a new resit attempt.

Recommended Reading

*****Purchase recommended **Highly recommended reading *For reference**

Baker R. 2005. Gait analysis methods in rehabilitation. *Journal of Neuroengineering and Rehabilitation* 2006, 3.

Codamotion. 2013. Codamotion Solutions-Systems [Online]. Available: <http://www.codamotion.com/technology-overview.html>

Carse B, Bowers RJ, Meadows BC. & Rowe PJ. 2011. Visualisation to enhance biomechanical tuning of ankle-foot orthoses (AFOs) in stroke: study protocol for a randomised controlled trial. *Trials*, 12.

Castro J, Medina-Carnicer R, Galisteo A. Design and evaluation of a new three-dimensional motion capture system based on video. *Gait & posture*. 2006;24(1):126-9.

Duffy C, Hill A, Cosgrove A, Corry I, Mollan R, Graham H. Three-dimensional gait analysis in spina bifida. *Journal of Pediatric Orthopedics*. 1996;16(6):786-91.

Ehara Y, Fujimoto H, Miyazaki S, Mochimaru M, Tanaka S, Yamamoto S. Comparison of the performance of 3D camera systems II. *Gait & Posture*. 1997;5(3):251-5.

Eng J, Winter D. Kinetic analysis of the lower limbs during walking: what information can be gained from a three-dimensional model? *Journal of Biomechanics*. 1995;28(6):753-8.

Gage J. Gait analysis: An essential tool in the management of cerebral palsy. *Clinical Orthopaedics and Related Research*. 1993(288):126-34.

Harvey A, Gorter J. Video gait analysis for ambulatory children with cerebral palsy: Why, when, where and how! *Gait & Posture*. 2011;33(3):501-3.

** Hillman, SJ, Donald, SC, Herman, J, McCurrach, E, McGarry, A, Richardson, AM & Robb, JE 2010. Repeatability of a new observational gait score for unilateral lower limb amputees. *Gait & Posture*, 32, 39,45

Kawamura C, de Moraes Filho M, Barreto M, de Paula Asa S, Juliano Y, Novo N. Comparison between visual and three-dimensional gait analysis in patients with spastic diplegic cerebral palsy. *Gait & Posture*. 2007;25(1):18-24.

Kaufman K. Future Directions in Gait Analysis. *RRDS Gait Analysis in the Science of Rehabilitation*. Baltimore, MD: Department of Veterans Affairs. p. 85-112.

** Kerr & Rowe (2019) *An introduction to human movement and biomechanics*, Elsevier, ISBN-10 - 0702062367

McDermott A, Bolger C, Keating L, McEvoy L, Meldrum D. Reliability of three-dimensional gait analysis in cervical spondylotic myelopathy. *Gait & Posture*. 2010;32(4):552-8.

Miller S. *Enhancing Clinic Efficiency*. Philadelphia.

Motek-Medical. 2014. CAREN [Online]. Available: <http://www.motekmedical.com/products/caren/>

Ong AML, Hillman SJ, Robb JE. 2008. Reliability and validity of the edinburgh visual gait score for cerebral palsy when used by inexperienced observers. *Gait and Posture*, 28, 323-326.

Papić V, Zanchi V, Cecić M. Motion analysis system for identification of 3D human locomotion kinematics data and accuracy testing. *Simulation Modelling Practice and Theory*. 2004;12(2):159-70.

Patrick J. Case for gait analysis as part of the management of incomplete spinal cord injury. *Spinal Cord*. 2003;41(9):479-82.

Perry, J. 2010. *Gait analysis: normal and pathological function*, Thorofare, NJ, Thorofare, NJ : SLACK.

Read H, Hazlewood M, Hillman S, Prescott R, Robb J. Edinburgh visual gait score for use in cerebral palsy. *Journal of Pediatric Orthopedics*. 2003;23(3):296-301.

** Richards J. The measurement of human motion: A comparison of commercially available systems. *Human Movement Science*. 1999;18(5):589-602.

** Whittle M. Clinical gait analysis: A review. *Human Movement Science*. 1996;15(3):369-87.

Additional Student Feedback

(Please specify details of when additional feedback will be provided)

Date	Time	Room No

Session:

Approved:

Course Director Signature:

Date of Last Modifications:

MODULE DESCRIPTION FORM

DEPARTMENT OF BIOMEDICAL ENGINEERING

BE432 The Assessment, Diagnosis and Management Musculoskeletal (MSK) Conditions

Module Registrar: Chris Cox	Taught To (Course): BSc (Hons) Prosthetics and Orthotics cohorts for whom class is optional		
Other Lecturers Involved: Guest Lecturers	Credit Weighting: 20	Semester: 2	
Assumed Prerequisites: 94303 Human Biological Sciences 3 94304 Principles of Prosthetics and Orthotics Design 3 94355 Prosthetic and Orthotic Science 3 with Applied Health Service Research	Optional class Y	Academic Level: 4	Suitable for Exchange: Y/N

Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):

Lecture	Tutorial	Laboratory	Groupwork	External	Online	Project	Assignments	Private Study	Total
30	10	20					50	90	200

Educational Aim

To gain a more in-depth understanding of how the foot and ankle structures interact with each other when loaded during walking or running activities. This class will explore the interaction between abnormal foot and ankle biomechanics and foot and ankle pathology.

This class aims to build on the student's existing knowledge of foot and ankle biomechanics and understanding of pathologies. It will build on this by focusing more on key pathologies and appropriate treatment plans. The class will have a number of practical classes which will be complemented by formal lectures and tutorials to get the best out of each student.

This module will focus on the assessment, diagnosis and treatment of foot and ankle pathologies and evaluate in more depth key foot orthotic design features that can be used to treat these conditions. It will also develop a deeper understanding of the roles of other interventions that are used in combination with orthotic intervention in the management of musculoskeletal foot and ankle conditions in line with the current evidence base.

Learning Outcomes

A general objective of the class will be to deepen the students' understanding of key principles that underpin foot and ankle biomechanics and how these might influence treatment options for musculoskeletal foot and ankle pathologies.

LO1 Evaluate the fundamental concepts of foot and ankle function during the gait cycle.

LO2 Recognise when to use key clinical tests to help aid diagnosis to treat foot and ankle musculoskeletal pathologies.

LO3 Combine the knowledge of functional anatomy and biomechanics to inform a patient-centred treatment plan for prescribing an orthosis to rehabilitate musculoskeletal foot and ankle pathologies.

LO4 Be able to consider other appropriate treatment options for foot and ankle pathologies for non-orthotic pathways to rehabilitate musculoskeletal foot and ankle pathologies.

Syllabus

The module will teach the following areas which which will be delivered with a mixture of formal teaching and practical teaching:

Evolution of biomechanics theory used to prescribe foot orthoses.

Gait: focusing on the foot and ankle and key events that increase the load on key structures within the foot and ankle

Foot and ankle x-ray interpretation.

The use of prefabricated foot orthoses.

The use of custom foot orthoses.

Inaccuracies and misconceptions

Tissue stress theory

Foot orthotic troubleshooting.

Lecture & Practical session – Key assessment tips of the lower limb with a focus on the foot and ankle.

Lecture & Practical session - The assessment, diagnosis and holistic management forefoot conditions.

Lecture & Practical session - The assessment, diagnosis and holistic management midfoot conditions.

Lecture & Practical session - The assessment, diagnosis and holistic management rearfoot conditions.

The role of the multidisciplinary team in the holistic management of foot and ankle pathologies.

The role of strength and conditioning programmes in the management of foot and ankle pathologies.

Lecture & Practical session – varying shape capture techniques with a focus on alternate slipper cast techniques which are pathology specific

Practical session – Rectification – inverted balance, everted balance, Blake inverted design, Medial Kirby skive technique.

These sessions will help develop a better knowledge of prescription criteria in the holistic management of foot and ankle pathologies individualised to the needs of the patient while developing clinical reasoning skills.

Assessment of Learning Outcomes

Criteria

For each of the Module Learning Outcomes the following criteria will be used to make judgements on student learning:

LO1 Evaluate the fundamental concepts of foot and ankle function during the gait cycle

C1 Demonstrate the ability to identify normal/average foot and ankle function during the gait cycle.

C2 Demonstrate the ability to identify pathological foot and ankle function during the gait cycle.

LO2 Recognise when to use key clinical tests to help aid diagnosis to treat foot and ankle musculoskeletal pathologies

C1 Demonstrate the ability to evaluate the clinical presentation of common foot and ankle musculoskeletal foot and ankle pathologies.

C2 Students should demonstrate when to use key clinical tests to help assist in the diagnosis of musculoskeletal pathologies based on the clinical presentation.

C3 The student should be able to select the diagnostic clinical test that is appropriate for the presenting condition.

LO3 Combine the knowledge of functional anatomy and biomechanics to inform a patient-centred treatment plan for prescribing an orthosis to rehabilitate musculoskeletal foot and ankle pathologies.

C1 Demonstrate understanding of indications and contraindications regarding appropriate prescription choices. This includes key design features for orthotic interventions, both prefabricated and custom-made designs.

C2 Demonstrate knowledge regarding the effect of corrective force application to reduce the stress on various soft tissue structures that may be adversely affected by high tissue loads.

C3 Formulate a prescription for orthotic intervention in the holistic management of foot and ankle pathology.

C4 Justify prescription choices in relation to musculoskeletal foot and ankle pathologies.

LO4 Be able to consider other appropriate treatment options for foot and ankle pathologies for non-orthotic pathways to rehabilitate musculoskeletal foot and ankle pathologies.

C1 Evaluate indications and contraindications regarding other treatment plans that may include first-line interventions, footwear advice, weight advice, strength and condition programmes, stretching, shockwave and injection therapy.

LO1–LO4 will be assessed by means of a class test which will ask students questions on the full module.

LO1–LO4 will also be assessed in a written class test using a scenario-based clinical assignment that will assess the ability of the student to list and describe the appropriate clinical tests required to help assist with diagnosis and the treatment plan based on the diagnosis.

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

Principles of Assessment and Feedback

(within Assessment and Feedback Policy at: <https://www.strath.ac.uk/staff/policies/academic/>)

Assessment criteria will be made explicit and will be provided at the start of the module.

Informal feedback will be provided at regular practical clinical sessions primarily through verbal discussions with the class tutor.

Informal feedback will be provided at regular tutorial sessions primarily through verbal discussion with the class tutor.

Guidance on appropriate interventions of various foot and ankle pathologies will be discussed in lectures/tutorial sessions.

Formal, summative feedback will be provided by the return of class test marks to students after the assessment.

Individual feedback on performance can be arranged if appropriate.

Immediate feedback will be provided following the on-line class test assessment.

Individual feedback on the class tests can be arranged if appropriate.

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

	Examinations			Courseworks		Projects		
	Number	Month(s)	Duration	Weighting	Number	Weighting	Number	Weighting
					1	30%		
					1	70%		
L/Outcomes				LO1,2,3,4,				

Indicate which learning outcomes (L01, L02 etc) are to be assessed by exam/coursework/project as required.

Coursework / Submissions deadlines (academic weeks):

The online class test will be scheduled for week 8. This will be a number of questions on the taught content from the module.

The scenario-based clinical assignment will be scheduled for week 10. Assess the ability of the student to list and describe the appropriate clinical tests required to help assist with diagnosis and formulate a treatment plan.

Precise dates will be confirmed at the beginning of the module.

Resit Assessment Procedures:

Resit assignments in the form of additional coursework will be given.

All coursework resit attempts will be required to be submitted during the August resit diet.

PLEASE NOTE:

Students must gain a summative mark of 40% to pass the module. Students who fail the module at the first attempt will be re-examined during the August diet. This re-examination will consist entirely of coursework. No marks from any previous attempts will be transferred to a new resit attempt.

Recommended Reading

***Purchase recommended **Highly recommended reading *For reference

Book

**Albert, S.F., Curran, S.A. and FCPodMed, F.F.P.M., 2018. *Lower Extremity Biomechanics: Theory and Practice Volume 1*. Bipedmed, LLC.

*Kirby KA: Volume I Foot and Lower Extremity Biomechanics: A Ten Year Collection of Precision Intricast Newsletters. Precision Intricast, Inc., Payson, Arizona,

* Kirby KA: Volume II Foot and Lower Extremity Biomechanics: A Ten Year Collection of Precision Intricast Newsletters. Precision Intricast, Inc., Payson, Arizona,

* Kirby KA: Volume III Foot and Lower Extremity Biomechanics: A Ten Year Collection of Precision Intricast Newsletters. Precision Intricast, Inc., Payson, Arizona,

* Kirby KA: Volume IV Foot and Lower Extremity Biomechanics: A Ten Year Collection of Precision Intricast Newsletters. Precision Intricast, Inc., Payson, Arizona,

* Perry J. Gait analysis: normal and pathological function 1992. New Jersey, SLACK Inc. Terminology of Human Walking From North American Society for Gait and Human Movement 1993 and AAOP Gait Society 1994

Publications

** Dananberg, H.J., 2000. Sagittal plane biomechanics. American diabetes association. *Journal of the American Podiatric Medical Association*, 90(1), pp.47-50.

**Fuller, E.A. and Kirby, K.A., 2007. Subtalar joint equilibrium and tissue stress approach to biomechanical therapy of the foot and lower extremity. *Lower Extremity Biomechanics: Theory and Practice*

**Hicks, J.H., 1953. The mechanics of the foot: I. The joints. *Journal of anatomy*, 87(Pt 4), p.345

** Kirby KA: *Subtalar joint axis location and rotational equilibrium theory of foot function*. JAPMA, 91(9):465-488, 2001.

* Kirby KA: Rotational equilibrium across the subtalar joint axis. JAPMA, 79: 1-14, 1989.

** Kirby, K.A., 1992. The medial heel skive technique. Improving pronation control in foot orthoses. *Journal of the American Podiatric Medical Association*, 82(4), pp.177-188.

* Kirby KA, Green DR: Evaluation and Nonoperative Management of Pes Valgus, pp. 295-327, in DeValentine, S.(ed), *Foot and Ankle Disorders in Children*. Churchill-Livingstone, New York, 1992.

** Lundgren, P., Nester, C., Liu, A., Arndt, A., Jones, R., Stacoff, A., Wolf, P. and Lundberg, A., 2008. Invasive in vivo measurement of rear-, mid-and forefoot motion during walking. *Gait & posture*, 28(1), pp.93-100

** McPoil TG, HuntGC, *Evaluation and management of foot and ankle disorders: Present problems and future directions*. *Journal of Orthopaedic and Sports Physical Therapy*1995; 21(6): 381-388

*Nester, C.J., 2009. Lessons from dynamic cadaver and invasive bone pin studies: do we know how the foot really moves during gait?. *Journal of Foot and Ankle Research*, 2(1), pp.1-7.

Additional Student Feedback

(Please specify details of when additional feedback will be provided)

Date	Time	Room No

Session:

Approved:

Course Director Signature:

Date of Last Modifications:

(Updated May 2018)

MODULE DESCRIPTION FORM

DEPARTMENT OF BIOMEDICAL ENGINEERING

94403 Prosthetics and Orthotics Clinical Placement 1

Module Registrar: Dr Christine McMonagle	Taught To (Course): Cohorts for whom class is compulsory / optional / elective		
Other Lecturers Involved: Roy Bowers, Chris Cox, Sarah Day, Suzanne Faulkner, Dr Tony McGarry, Laura Murray, Karyn Ross, Gemma McGinty and Clinical Supervisors at clinical sites	Credit Weighting: 60	Semester: 1 st placement in Semester 1	
Assumed Prerequisites: 94 355 Prosthetics and Orthotics Science 3 with Applied Health Service Research 94 304 Principles of Prosthetic and Orthotic Design 3 94 303 Human Biological Sciences	Compulsory/ optional/ elective class	Academic Level: 4	Suitable for Exchange: Y/N

Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):

Lecture	Tutorial	Laboratory	Groupwork	External	Online	Project	Assignments	Private Study	Total

Supervised Clinical Placement	Clinical Examinations	Total
597 hrs in Orthotics or 597 hrs in Prosthetics * *Supervised placement hours are subject to change due to Covid-19	3 hrs	600 (Orthotic or Prosthetics)

Educational Aim

This module aims to

Students in 4th year are required to undertake two periods of clinical placement; one in prosthetics and one in orthotics. Each for a minimum of 4 months with the addition of a further one month extension if all learning outcomes through either procedure based assessments or clinical competencies are not completed and at the discretion of the clinical supervisor (but up to a maximum of 8 months if a further 4 month placement is required). Students are placed in approved clinical facilities under the direction of a designated supervisor

The objective of these clinical placements is to provide the student with experience of management of clinical conditions requiring prosthetic or orthotic treatment, and to further develop the clinical, technical and professional skills required in a prosthetist/orthotist.

Learning Outcomes

On completion of the module the student is expected to be able to

LO1 The specific learning outcomes which must be achieved include:

Part 1a:

Professional autonomy and accountability:

The students ability to practice within ethical boundaries and in a non-discriminatory manner

Be able to maintain confidentiality, understand the importance of and be able to obtain informed consent

Under appropriate supervision exercise a professional duty of care and a fitness to practice in both prosthetics and orthotics

LO2 Recognise and manage effective self-management of workload

Part 1b:

Be able to work in partnership with other professionals, support staff, service users, their relatives and carers. Be able to contribute effectively and work as a multidisciplinary team member

Demonstrate effective communication throughout the continued care of a service user and demonstrate effective and appropriate skills in caring out this communication

Be able to identify and assess a patient's health care needs within the professional boundaries

- LO3 Part 2a
Demonstrate the ability of gathering and understanding of the use of information
Demonstrate the selection, use and further awareness of appropriate assessment techniques and be able to analyse and evaluate this information as required.
- LO4 Part 2b
Be able to use research, reasoning and problem solving skills within the clinical setting
Demonstrate the ability to make professional judgements
Be able to follow and evaluate management plans including the setting of timescales
Be able to maintain records appropriately
- LO5 Part 2c
Be able to critically evaluate the impact and response to your own actions as a practitioner
By monitoring and reviewing on going planned activity and modify this accordingly
Understand and be able to comply with the principles of quality control and quality assurance
- LO6 Part 3
Show a knowledge and understanding of professional principles within prosthetics and orthotics and express and translate these into actions through a variety of approaches of practice and be able to select and modify these to meet the needs of an individual.

The Procedure based assessment will assess the student's clinical competencies on placement in the following areas:
Patient assessment and examination/ casting & cast modification / fitting and alignment/patient review
Within both areas of clinical practice (prosthetics and orthotics)

(UK SPEC suggests no more than 4 learning outcomes per module. Statements must be broad and be syllabus free and link in with the intended learning outcomes on the programme specifications.)

Syllabus

The module will teach the following:

Students are expected to cover the following elements during the placement: patient assessment techniques, prescription principles, casting and rectification skills, workshop technical skills, fitting and alignment skills, clinical note keeping, communication skills, health and safety considerations, as well as personal development planning

Assessment of Learning Outcomes

Criteria

For each of the Module Learning Outcomes the following criteria will be used to make judgements on student learning:

[Note: Criteria break the LO down into 'teachable' elements but do not become syllabus orientated i.e. no mention of CAD package names, components etc.]

- LO1 Examination:
At the end of each clinical placement the student is required to attend the National Centre to a clinical examination, in either prosthetics or orthotics, each with two written theory based stations and four clinical stations. Each written station consists of a negative marked multiple choice section and a short answer section. Each clinical station taking the form of a viva voce examination by two examiners. The areas covered are:
- C1 Prosthetics
Clinical Stations
Trans-tibial prosthetics assessment and prescription
Trans-femoral prosthetics assessment and prescription
Lower limb prosthetic socket design / alignment / gait
Upper limb prosthetics
- C2 Written Stations
Hip, knee and ankle disarticulations and partial foot
Trans-tibial and trans-femoral checkout procedures
- C3 Orthotics
Clinical Stations
Patient assessment and prescription
Neuromuscular
Degenerative diseases, traumatic lesions and miscellaneous conditions
Foot problems and footwear
- C4 Written Stations
Spinal Orthotics
Upper Limb Orthotics
- LO2 Supervisor's assessment:
C1 Students will undertake 6 procedure based assessments
Students will also be assessed in their clinical competencies in the following areas in both prosthetics and orthotics clinical practice in line with the Health and Care Professions Councils Standards of Proficiency:

Professional conduct Professional ethics LO3 <u>Summary Mark</u> C1 The summary mark is computed as follows: Summary mark = Total mark for 4 clinical and 2 written stations/6 1. students must attain a pass in the supervisor's assessment 2. students are normally expected to attain a mark of <u>at least 40%</u> in the clinical examination and pass at least three of the four clinical stations.

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

Principles of Assessment and Feedback

(within Assessment and Feedback Policy at: <https://www.strath.ac.uk/staff/policies/academic/>)

Please state briefly how these are incorporated in this module.

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

Examinations				Courseworks		Projects	
Number	Month(s)	Duration	Weighting	Number	Weighting	Number	Weighting

Examinations			
Number	Month(s)	Duration	Weighting
6 x procedure based continuous assessment of clinical competencies	January May	Continuous assessment	Compulsory pass

L/Outcomes

Indicate which learning outcomes (L01, L02 etc) are to be assessed by exam/coursework/project as required.

Coursework / Submissions deadlines (academic weeks):

Information on coursework submission deadlines will be circulated at the start of each module.

Resit Assessment Procedures:

--hr examination in August diet / Resubmission of coursework(s) prior to commencement of the August exam diet.
(delete as appropriate)

Students who fail any procedure based assessment are required to re sit that element. Clinical placements will normally be of 4 months (17 weeks) duration with compulsory attendance. If it is clear at the 3 months period that the student will not achieve all the learning outcomes and satisfy all the standards of practice, the clinical supervisor may decide in conjunction with the department to extend the placement by one month, (at the discretion of the placement provider), or to recommend a resit placement. If the performance of the student is very poor, the practice educator can request to terminate the student's placement. A decision regarding any termination will be made in discussions with the university and student.

If the placement is not completed successfully (not all clinical competencies and procedure based assessments passed), then a further resit placement up to 4 months will be required. Students are required to complete the 6 procedure based assessments and the clinical competencies in their new placement.

If the clinical examination is failed the full examination must be retaken at the next organised clinical examinations.

PLEASE NOTE:

Students must gain a summative mark of 40% to pass the module. Students who fail the module at the first attempt will be re-examined during the August diet. This re-examination will consist entirely of exam / coursework/viva. No marks from any previous attempts will be transferred to a new resit attempt.

Recommended Reading

***Purchase recommended **Highly recommended reading *For reference

**

PEARCE, R. Profiles and portfolios of evidence. Cheltenham: Nelson Thornes, 2003. ISBN 0-7487-7123-9
Hsu J, Michael J, Fisk JR (eds). *Atlas of Orthoses and Assistive Devices*, Philadelphia PA: American Academy of Orthopaedic Surgeons
DN Condie, DL Bader, DJ Pratt. (edited by P Bowker) *Biomechanical Basis of Orthotic Management.* -Oxford: Butterworth-Heinemann, 1993.
CAPO 1991 Clinical aspects of lower limb prosthetics: trans-tibial, Symes and partial foot amputation.-Oakville Ontario:
CAPO, 1990 Clinical aspects of lower extremity orthotics. – Oakville Ontario.
LUSARDI NIELSEN. *Orthotics and Prosthetics in Rehabilitation.* Butterworth Heinman 2000.
Check all formatting for consistency

Additional Student Feedback

(Please specify details of when additional feedback will be provided)

Date	Time	Room No

Session:

Approved:

Course Director Signature:

Date of Last Modifications:

MODULE DESCRIPTION FORM

DEPARTMENT OF BIOMEDICAL ENGINEERING

94404 Prosthetics and Orthotics Clinical Placement 2

Module Registrar: Dr Christine McMonagle	Taught To (Course): Cohorts for whom class is compulsory / optional / elective		
Other Lecturers Involved: Roy Bowers, Chris Cox, Sarah Day, Suzanne Faulkner, Dr Tony McGarry, Laura Murray, Karyn Ross, Gemma McGinty and Clinical Supervisors at clinical sites	Credit Weighting: 60	Semester: 2 nd placement in Semester 2	
Assumed Prerequisites: 94 403 Prosthetics/Orthotics Clinical Placement 1	Compulsory/ optional/ elective class	Academic Level: 4	Suitable for Exchange: Y/N

Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):

Lecture	Tutorial	Laboratory	Groupwork	External	Online	Project	Assignments	Private Study	Total
Supervised Clinical Placement			Clinical Examinations			Total			
597 hrs in Orthotics or 597 hrs in Prosthetics *			3 hrs			600 (Orthotic or Prosthetics)			
*Supervised placement hours are subject to change due to Covid-19									

Educational Aim

This module aims to provide the student with experience of management of clinical conditions requiring prosthetic or orthotic treatment, and to further develop the clinical, technical and professional skills required in a prosthetist/orthotist

Students in 4th year are required to undertake two periods of clinical placement; one in prosthetics and one in orthotics. Each for a minimum of 4 months with the **possible** addition of a further one month extension if all learning outcomes through either procedure based assessments or clinical competencies are not completed and at the discretion of the clinical supervisor (but up to a maximum of 8 months if a further 4 month placement is required). Students are placed in approved clinical facilities under the direction of a designated supervisor

Learning Outcomes

On completion of the module the student is expected to be able to

- LO1 The specific learning outcomes which must be achieved include:
Part 1a:
Professional autonomy and accountability:
The students ability to practice within ethical boundaries and in a non-discriminatory manner
Be able to maintain confidentiality, understand the importance of and be able to obtain informed consent
Under appropriate supervision exercise a professional duty of care and a fitness to practice in both prosthetics and orthotics
- LO2 Recognise and manage effective self-management of workload
Part 1b:
Be able to work in partnership with other professionals, support staff, service users, their relatives and carers. Be able to contribute effectively and work as a multidisciplinary team member
Demonstrate effective communication throughout the continued care of a service user and demonstrate effective and appropriate skills in caring out this communication
Be able to identify and assess a patient's health care needs within the professional boundaries
- LO3 Part 2a
Demonstrate the ability of gathering and understanding of the use of information
Demonstrate the selection, use and further awareness of appropriate assessment techniques and be able to analyse and evaluate this information as required.

- LO4 Part 2b
Be able to use research, reasoning and problem solving skills within the clinical setting
Demonstrate the ability to make professional judgements
Be able to follow and evaluate management plans including the setting of timescales
Be able to maintain records appropriately
- LO5 Part 2c
Be able to critically evaluate the impact and response to your own actions as a practitioner
By monitoring and reviewing on going planned activity and modify this accordingly
Understand and be able to comply with the principles of quality control and quality assurance
- LO6 Part 3
Show a knowledge and understanding of professional principles within prosthetics and orthotics and express and translate these into actions through a variety of approaches of practice and be able to select and modify these to meet the needs of an individual.

The Procedure based assessment will assess the student's clinical competencies on placement in the following areas:
Patient assessment and examination/ casting & cast modification / fitting and alignment/patient review
Within both areas of clinical practice (prosthetics and orthotics)

(UK SPEC suggests no more than 4 learning outcomes per module. Statements must be broad and be syllabus free and link in with the intended learning outcomes on the programme specifications.)

Syllabus

The module will teach the following:

Students are expected to cover the following elements during the placement: patient assessment techniques, prescription principles, casting and rectification skills, workshop technical skills, fitting and alignment skills, clinical note keeping, communication skills, health and safety considerations, as well as personal development planning

Assessment of Learning Outcomes

Criteria

For each of the Module Learning Outcomes the following criteria will be used to make judgements on student learning:

[Note: Criteria break the LO down into 'teachable' elements but do not become syllabus orientated i.e. no mention of CAD package names, components etc.]

- LO1 Examination:
At the end of each clinical placement the student is required to attend the National Centre to a clinical examination, in either prosthetics or orthotics, each with two written theory based stations and four clinical stations. Each written station consists of a negative marked multiple choice section and a short answer section. Each clinical station taking the form of a viva voce examination by two examiners. The areas covered are:
- C1 Prosthetics
Clinical Stations
Trans-tibial prosthetics assessment and prescription
Trans-femoral prosthetics assessment and prescription
Lower limb prosthetic socket design / alignment / gait
Upper limb prosthetics
- C2 Written Stations
Hip, knee and ankle disarticulations and partial foot
Trans-tibial and trans-femoral checkout procedures
- C3 Orthotics
Clinical Stations
Patient assessment and prescription
Neuromuscular
Degenerative diseases, traumatic lesions and miscellaneous conditions
Foot problems and footwear
- C4 Written Stations
Spinal Orthotics
Upper Limb Orthotics
- LO2 Supervisor's assessment:
C1 Students will undertake 6 procedure based assessments
Students will also be assessed in their clinical competencies in the following areas in both prosthetics and orthotics clinical practice in line with the Health and Care Professions Councils Standards of Proficiency:
Professional conduct
Professional ethics

LO3 Summary Mark

C1 The summary mark is computed as follows:

Summary mark = Total mark for 4 clinical and 2 written stations/6

1. students must attain a pass in the supervisor's assessment
2. students are normally expected to attain a mark of at least 40% in the clinical examination **and** pass at least three of the four clinical stations.

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

Principles of Assessment and Feedback

(within Assessment and Feedback Policy at: <https://www.strath.ac.uk/staff/policies/academic/>)

Please state briefly how these are incorporated in this module.

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

Examinations				Courseworks		Projects	
Number	Month(s)	Duration	<i>Weighting</i>	Number	<i>Weighting</i>	Number	<i>Weighting</i>

Examinations			
Number	Month(s)	Duration	<i>Weighting</i>
6 x procedure based continuous assessment of clinical competencies	January May	Continuous assessment	Compulsory pass
L/Outcomes			

Indicate which learning outcomes (L01, L02 etc) are to be assessed by exam/coursework/project as required.

Coursework / Submissions deadlines (*academic weeks*):

Information on coursework submission deadlines will be circulated at the start of each module.

Resit Assessment Procedures:

---hr examination in August diet / Resubmission of coursework(s) prior to commencement of the August exam diet. (*delete as appropriate*)

Students who fail any procedure based assessment are required to re sit that element. Clinical placements will normally be of 4 months (17 weeks) duration with compulsory attendance. If it is clear at the 3 months period that the student will not achieve all the learning outcomes and satisfy all the standards of practice, the clinical supervisor may decide in conjunction with the department to extend the placement by one month, (at the discretion of the placement provider), or to recommend a resit placement. If the performance of the student is very poor, the practice educator can request to terminate the student's placement. A decision regarding any termination will be made in discussions with the university and student.

If the placement is not completed successfully (not all clinical competencies and procedure based assessments passed), then a further resit placement up to 4 months will be required. Students are required to complete the 6 procedure based assessments and the clinical competencies in their new placement.

If the clinical examination is failed the full examination must be retaken at the next organised clinical examinations.

PLEASE NOTE:

Students must gain a summative mark of 40% to pass the module. Students who fail the module at the first attempt will be re-examined during the August diet. This re-examination will consist entirely of exam / coursework/viva. No marks from any previous attempts will be transferred to a new resit attempt.

Recommended Reading

***Purchase recommended **Highly recommended reading *For reference

**

PEARCE, R. Profiles and portfolios of evidence. Cheltenham: Nelson Thornes, 2003. ISBN 0-7487-7123-9
Hsu J, Michael J, Fisk JR (eds). *Atlas of Orthoses and Assistive Devices*, Philadelphia PA: American Academy of Orthopaedic Surgeons
DN Condie, DL Bader, DJ Pratt. (edited by P Bowker) *Biomechanical Basis of Orthotic Management.* -Oxford: Butterworth-Heinemann, 1993.
CAPO 1991 Clinical aspects of lower limb prosthetics: trans-tibial, Symes and partial foot amputation.-Oakville Ontario:
CAPO, 1990 Clinical aspects of lower extremity orthotics. – Oakville Ontario:
LUSARDI NIELSEN. *Orthotics and Prosthetics in Rehabilitation.* Butterworth Heinman 2000.
Check all formatting for consistency

Additional Student Feedback

(Please specify details of when additional feedback will be provided)

Date	Time	Room No
Students will obtain feedback from practice educators throughout the placement	Formal reports with written feedback for students will be completed a 1 month, 2 months and 4 months.	

Session:

Approved:

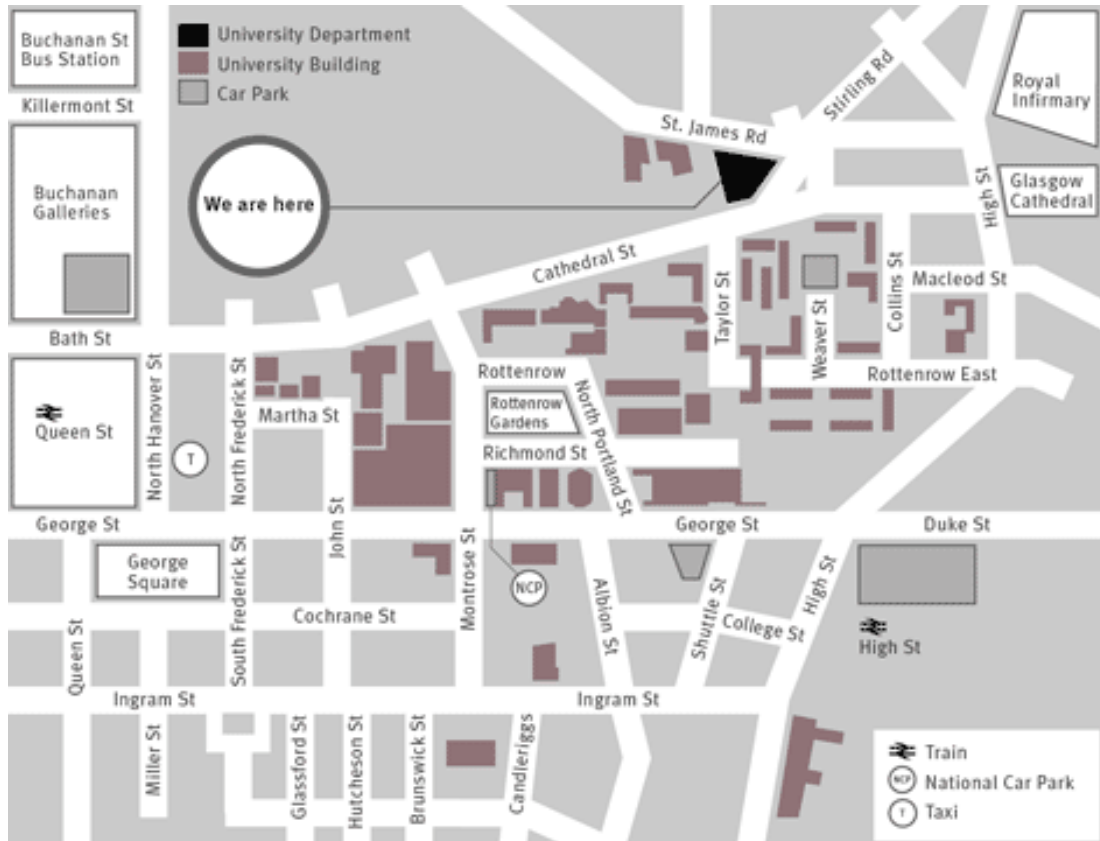
Course Director Signature:

Date of Last Modifications:

APPENDIX A

External Map

National Centre for Prosthetics and Orthotics



APPENDIX B

University Marking Guide

University Marking Guide for Undergraduate Programme

Consistency of marking is an important issue for students and staff. The following is minimal guidance for staff to follow when setting their own marking criteria. The percentage descriptors however must remain consistent across the University.

The guidance is the basis for the University's marking structure for individual undergraduate assignments and modules, for essays, coursework, projects and examinations as well as for overall awards. Marks should be returned using the percentage scale below, taking account of the performance descriptor at each band which is underlined. The bullet point lists are indicative of performance at each level.

Exceptionally, where percentage marks cannot be provided (e.g. for professional competence assessments of student teachers), marks may be returned on a satisfactory/unsatisfactory basis subject to approval by the Associate Deputy Principal (Education).

To meet the requirements of the University's Assessment and Feedback Policy, staff shall provide students with the supplementary assessment criteria used to consider their attainment of an assessment's intended learning outcomes.

Please check the link for up-to-date version. <http://www.strath.ac.uk/staff/policies/academic/>

%	Descriptor
80 - 100	<u>Outstanding demonstration of learning outcomes:</u> <ul style="list-style-type: none"> - wide, appropriate knowledge and understanding (and where appropriate effective project work) including insight and originality - evidence of reading and thought beyond programme/assignment materials - appropriate use of references and exemplars - an outstanding standard of writing and communication and/or presentation
70 - 79	<u>Excellent demonstration of learning outcomes:</u> <ul style="list-style-type: none"> - wide, appropriate knowledge and understanding (and where appropriate effective project work) including insight or originality - evidence of reading and thought beyond programme/assignment materials - appropriate use of references and exemplars - an excellent standard of writing and communication and/or presentation
60 - 69	<u>Comprehensive demonstration of learning outcomes:</u> <ul style="list-style-type: none"> - wide appropriate knowledge and understanding (and where appropriate effective project work) with only occasional lapses in detail - evidence of reading and thought beyond programme/assignment materials - a high standard of writing and communication
50 - 59	<u>Satisfactory demonstration of learning outcomes:</u> <ul style="list-style-type: none"> - sound knowledge and understanding of essential material (and where appropriate essential project skills) - general accuracy with occasional mistakes and/or uncoordinated use of information
40 - 49	CLASSES AT LEVELS 1-4 <u>Limited demonstration of learning outcomes:</u> <ul style="list-style-type: none"> - basic knowledge and understanding (and where appropriate basic project skills) - omissions and/or weaknesses of presentation and/or logic and/or evidence
30 - 39	<u>Inadequate demonstration of learning outcomes:</u> <ul style="list-style-type: none"> - some relevant information and limited understanding (and where appropriate some project work completed under supervision) - omissions and/or weaknesses of presentation and/or logic and/or evidence - lack of familiarity with the subject of assessment and/or assessment vehicle

20 – 29	<u>Weak demonstration of learning outcomes:</u> - a few key words, phrases or key ideas - extensive omissions and/or weaknesses of presentation and/or logic and/or evidence - serious errors - inadequate evidence of learning or inadequate project work
1 - 19	<u>Minimal performance in learning outcomes:</u> - serious errors - extensive omissions and/or weaknesses of presentation and/or logic and/or evidence - deficient evidence of learning or deficient evidence of project work
0	No relevant work submitted for assessment

APPENDIX C

Safety for the Students at the National Centre

Area Safety Convener: Mrs Laura Murray (0141 548 3929)

Departmental Safety Regulations are issued to all students at the start of each new session and should be read in full. The advice and direction of members of staff must be followed in matters of safety. The following points are of particular importance.

1. Students must begin a course of anti-tetanus injections BCG (Mantoux) and Hepatitis B vaccinations. Anti-tetanus can be arranged through your own doctor however vaccinations and tests Mantoux and Hepatitis B will be arranged by the department for all other students.
2. Never work in workshops, plaster room or clinic rooms without the presence of a supervisory member of staff.
3. Personal Protective Equipment (PPE) including the recommended clothing must be worn in the workshops. There must be no loose clothing (headscarves must be secured within PPE) and laboratory coats, if worn, must be buttoned. Long hair must be securely tied back off the face, hairnets are available if required (ask technician in charge). Safety shoes are provided and must be worn at all times in the workshop areas. Students must not wear any body rings or jewellery.
4. Full use must be made of the PPE available. This includes, where necessary, gloves and pre work cream. Face masks and protective goggles of the appropriate type must be worn when working with machine tools or in any operation causing dust or flying particles. Members of staff will ensure that you are protected by the proper use of dust extraction, machine guards and extraction hoods.
5. Students must keep their work place clean and tidy.
6. Always ensure you have appropriate supervision as outlined in the departmental safety regulations (section D6 (v)) when working with machinery. Students must not be in workshop or machine shop without supervision.
7. Any spillage must be reported to a member of staff.
8. Skin or eye contact with any substance must be reported immediately to a member of staff.
9. Broken tools and cables must be reported to a member of staff.
10. Hands must be washed before leaving workshops and clinical areas in accordance with NHS Education Scotland Regulations.
11. Smoking is not permitted within the University buildings.
12. Foodstuffs or drinks are not permitted in workshop, plaster room and clinical areas. Refreshments can be made available to patients in clinic rooms if required.
13. The instructions of fire wardens must be obeyed during fire alarms. Students will vacate the building in an orderly manner and congregate at the muster station directly outside the main entrance keeping a safe distance from the building. Students must not return for belongings, coats etc.
14. Any accident, however slight, or any occurrence liable to lead to an accident, must be reported to a member of staff. S1 Form will be completed. The situation will be investigated and any changes in processes will be made as required to protect staff and students.
15. Students should always use common sense in matters of safety, and must never indulge in horseplay.
16. The National Centre complies with the Management of Health & Safety at Work Regulations, 1999, and the Provision and Use of Work Equipment Regulations, 1998. There are many documents to be used and referred to in conjunction with the Prosthetics and Orthotics Science programme. COSHH (Control of Substances Hazardous to Health) reports are provided in each workshop for all chemicals and substances students will handle during their course of study. Risk assessments for any new clinical or workshop procedures will be also issued. Students will be expected to confirm receipt of the risk assessment by signature, and comply with any information detailed in the document.
17. Latex – Potential for Health Problems Natural latex rubber is present in many medical and other products, including latex gloves, because it provides health workers with a high degree of protection from many micro-organisms.

The National Centre has withdrawn the use of latex gloves from the department however it is important to raise awareness of the risks of latex as you may come across latex on your placement. It is important also to be aware of patients having latex allergies.

There has been a steady increase in the number of reported cases of asthma and skin complaints attributed to latex in recent years. Latex exposure can lead to a number of health problems in people sensitive to it:-

Irritation – symptoms include redness, soreness, dry or cracked skin in areas exposed to latex. These symptoms resolve completely once contact with latex ceases.

Type 1 allergic reaction – symptoms include a localised or generalised rash, inflammation of mucous membranes in the nose, red and swollen eyes with discharge or asthma-like symptoms. This is an allergic response to the extractable latex proteins and occurs almost immediately on contact. In rare cases it may result in a very severe reaction known as anaphylactic shock.

Type IV allergic reaction – symptoms include dermatitis and itching and oozing red blisters, usually localised to the hands and arms. These occur between 10-24 hours after exposure and can get worse over the next 72 hours.

The amount of latex exposure needed to produce sensitisation is unknown. Once a person is sensitised further exposure to latex will cause symptoms to recur.

You can help us by following specific guidance we will give you on the use of gloves and in following good hygiene practices, such as washing hands after suing gloves. Note that pre work creams should not be used in conjunction with latex gloves as they may increase the penetration of allergens.

APPENDIX D

Moving and Handling

In order to comply with current legislation, all students must be trained in appropriate moving and handling regulations and techniques. This training is delivered in accordance with the relevant guidance and codes of practice published by the Health and Safety Executive (HSE), and other professional bodies, including the Royal College of Nursing (RCN), the Chartered Society of Physiotherapy (CSP) and Greater Glasgow Health Board (GGHB).

All Students Please Note:

As a result all students must attend three compulsory three-hour long sessions in “Moving and Handling” prior to patient contact in first year. Failure to complete this programme will result in exclusion from any patient contact. The Moving and Handling co-ordinator for undergraduate students is Ms Gillian Swan Tel: 0141 548 3928. If a student does not attend a compulsory session they will be liable for costs to arrange supplementary sessions outwith the NCPO by the contracted services carrying out this training.

Then NCPO has no obligation to organise or run this extra training and it would be the students own responsibility.

There will also be compulsory revision sessions in 3rd year prior to commencing clinical placement.

Specific information and documentation relating to the course and its content will be issued as appropriate.

APPENDIX E

Staff List

Undergraduate Course Director/Principal Teaching Fellow

Roy Bowers, *Prosthetist/Orthotist, MBAPO, MISPO*

Senior Teaching Fellows

Sarah Day, *MSc, BSc (Hons), MSc, PGDip, Prosthetist/Orthotist, MISPO*

Anthony C McGarry, *PhD, BSc (Hons), PGDip, Prosthetist/Orthotist, MBAPO, HEA, MISPO*

Karyn Ross, *BSc (Hons), Prosthetist/Orthotist, MBAPO, HEA, MISPO*

Teaching Fellows

Christopher Cox, *BSc (Hons) Prosthetist/Orthotist, MBAPO*

Suzanne Faulkner, *BSc (Hons), MSc, Prosthetist/Orthotist MBAPO, MISPO*

Gemma McGinty, *BSc (Hons) Prosthetist/Orthotist, MBAPO, MISPO*

Christine McMonagle, *PhD, MSc, BSc (Hons) Prosthetist/Orthotist, MBAPO, MISPO, FHEA*

Laura Murray, *BSc (Hons) Prosthetist/Orthotist, MISPO*

Alana Stevenson, *BSc (Hons) Prosthetist/Orthotist*

Examination Co-ordinator

Roy Bowers

Administrator

Linda Gilmour

Prosthetics/Orthotics Technicians

Martin Boyle

William MacKinnon

Richard McGinty

Gillian Swan

APPENDIX F

Faculty Policy on Teaching and Learning

The Faculty of Engineering adheres to all the University academic policies and procedures that can be found at <http://www.strath.ac.uk/staff/policies/academic>

In addition the Faculty has an excellent reputation for innovation in teaching and learning and examples of this can be found in all Departments. In 2004 the Faculty had extensive consultations with students drawn from the majority of Departments and this has resulted in the following Faculty policies being endorsed by the Board of Study for implementation in academic year 2006-07 onwards.

1. Departments should ensure coursework is returned to students within the semester and ideally within 2 weeks from the submission date.
2. Worked examples to past examination papers should be provided
3. Myplace learning online materials should continue to be developed and staff should be encouraged to undertake training and move to wider usage.
4. Industrial lectures should be quality checked and only included where the material is clearly related to course content.
5. Industrial visits should be focused on application, clearly structured with explicit expectations and outcomes, and subject to evaluation.

APPENDIX G

First Year Timetable

Semester 1 – 11 September 2023 – 18 December 2023

	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00
Monday	← 94157 Human Biological Sciences 1 →					← 94154 Principles of Prosthetic and Orthotic Design 1 →			
Tuesday						← 94156 Introduction to Health Services Research →			
Wednesday	← 94154 Principles of Prosthetic and Orthotic Design 1 →								
Thursday	← 94161 Professional and Technical Skills →					← BE104 Foundations for Interprofessional Practice →			
Friday	← Technical Skills →								
	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00

Semester 2 – 15 January 2024 - 17 May 2024

	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00
Monday	← 94204 Prosthetics & Orthotics Science 1 →								
Tuesday	← 94204 Prosthetics & Orthotics Science 1 →								
Wednesday	94154 Principles of Prosthetic and Orthotic Design 1								
Thursday	← 94154 Principles of Prosthetic and Orthotic Design 1 →					← 94161 Professional and Technical Skills →			
Friday	← 94204 Prosthetics & Orthotics Science 1 →					← 94157 Human Biological Sciences 1 →			
	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00

APPENDIX H

Second Year Timetable

Semester 1 – 11 September 2023 - 18 December 2023

	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00
Monday	← 94205 Professional Skills for Healthcare 2 →					← 94208 Prosthetics and Orthotics Science 2 →			
Tuesday	← 94207 Principles of Prosthetic and Orthotic Design 2 →					← 94206 Human Biological Sciences 2 →			
Wednesday	← 94208 Prosthetics and Orthotics Science 2 →								
Thursday	← 94208 Prosthetics and Orthotics Science 2 →								
Friday	← 94208 Prosthetics and Orthotics Science 2 →								
	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00

Semester 2 – 15 January 2024 - 17 May 2024

	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00
Monday	← Elective/Self Study →				← 94208 Prosthetics and Orthotics Science 2 →				
Tuesday	← 94207 Principles of Prosthetic and Orthotic Design 2 →					← 94206 Human Biological Sciences 2 →			
Wednesday	← Prosthetics and Orthotics Science 2 →								
Thursday	← 94208 Prosthetics and Orthotics Science 2 →								
Friday	← 94208 Prosthetics and Orthotics Science 2 →								
	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00

APPENDIX I

Third Year Timetable

Semester 1 – 11 September 2023 - 18 December 2023

	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00
Monday	Prosthetics and Orthotics Science 3								
Tuesday	Prosthetics and Orthotics Science 3								
Wednesday	Prosthetics and Orthotics Science 3								
Thursday	Principles of Prosthetic and Orthotic Design 3					Applied Health Services Research			
Friday	Human Biological Sciences 3					Self-Study			
	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00

Semester 2 – 15 January 2024 - 17 May 2024

Project and Advanced Clinical Modules

94 405 Project

20 credits (1 class) chosen from:

BE407 Orthotic Management of Neurological Conditions

BE408 Hip, Knee & Ankle Disarticulation Prosthetics

BE409 Management of the Diabetic Foot in Prosthetics & Orthotics

BE410 Lower Limb Prosthetic Design

BE411 Upper Limb Prosthetics

BE412 Clinical Governance

BE413 Orthotic Management of Spinal Deformity

BE414 Paediatric Prosthetics & Rehabilitation

BE415 Clinical Gait Analysis

BE432 The Assessment, Diagnosis and Management of Musculoskeletal Condition

APPENDIX J

Fourth Year Timetable

Semester 1 - 21 August 2023 – 22 December 2023 – Clinical Placement

Semester 2 – 15 January 2024 – 17 May 2024 – Clinical Placement

APPENDIX K

Programme Assessment and Attendance Regulations

Programme Assessment Regulation (including attendance regulations)

1. University Assessment and attendance regulations apply except where Programme Assessment Regulations are prescriptive.
2. Programme Assessment Regulations apply to all modules irrespective of the number of credits allocated.
3. The minimum length of study is 4 years. The maximum period of study within which a student must complete the programme is normally 6 years. This period includes the successful completion of all assessments. In the situation where a student is not in attendance at the University, the maximum break from the programme is normally 1 academic year.
4. Students are expected to attend all classes, clinical sessions, laboratory/workshop sessions and clinical placements. Where a student has unauthorised absence of, or in excess of 20% of a module he/she may be required to retake the module with attendance prior to undertaking any further clinical modules or proceeding to the next level of the programme. Unauthorised absence in more than one module may result in the student being required to withdraw from the programme. This regulation applies to all compulsory modules of the programme.
5. Students on the programme are required to successfully complete the modules identified in the BSc Honours Prosthetics and Orthotics Programme specification.
6. For modules assessed by coursework and examination the overall pass mark for the module will be 40% subject to the attainment of normally a summary mark of 40% in each of the coursework and examination elements of the assessment; in cases where the coursework comprises two or more separate pieces of work, the 35% minimum attainment will normally apply to every piece of coursework; in cases where the examination comprises two or more separate components, the 35% minimum attainment will apply to every component of the examination. This regulation applies to all modules documented in the module descriptors.
7. Compensation for a failure in a single module, where a student has passed modules at any one level, will not normally apply to any compulsory professional modules as deemed compulsory by the Department.
8. Normally all modules must be passed to allow progression to succeeding levels of the Programme. However, at the discretion of the examination Board, progression will be allowed where a student has failed up to 20 modular points. Students who are permitted to carry a module as the Examination Board considers necessary and will be required to re-enter the assessment in that module at the next normal occasion, or as agreed by the examination board. The carried modules must be passed to allow further progression.
9. Students who, at second diet of examination, fail to pass compulsory module(s) at one level may be asked to withdraw from the programme or, at the discretion of the Examination Board may be allowed to repeat the assessment(s). The Examination Board will normally require such candidates to attend the University and undertake the module(s) as attached students.
10. Students who do not pass coursework or examinations in the third year should normally resubmit/resit and pass the module prior to being allowed to commence a clinical placement.

11. Submission of the Honours project is compulsory. The submitted Honours project must comply with project and programme guidelines. Failure to submit an Honours project at either diet will normally result in the student being ineligible for an award in Prosthetics and Orthotics and consequently, registration with the Health and Care Professions Council.
12. Failure at any level 4 module at second diet will normally result in the award of an unclassified degree (BEng Engineering Studies or equivalent) and will result in the student being ineligible for an award in Prosthetics and Orthotics and consequently, registration with the Health and Care Professions Council.
13. In determining the level of award of BSc (Honours) the following assessments from the compulsory and optional modules are weighted and used from second, third and fourth years: (Level 2 modules x20%) + (Level 3 modules x 30%) +(level 4 modules 50%)
Both Clinical Placements 94 403 and 94 404 and Clinical Examinations must be passed in line with department regulations prior to the award of BSc (Hons) Prosthetics and Orthotics.
Classification for the honour's award is as follows:

First Class	70-100%
Second Class (Upper Division)	60-69%
Second Class (Lower Division)	50-59%
Third Class	40-49%
Failure	below 40%

A candidate should normally:

- Have reached that standard or higher on a minimum of three elements
- Have attained a pass mark in all modules. A failure in any non-clinical module will normally result in the award of Second Class (lower division) or Third Class Honours. A failure in any clinical module will count as a failure and a BEng in Engineering Studies degree (or equivalent) will be awarded.

14. A student may be required to withdraw from the programme if he/she is deemed by the Board of Study via the appropriate Faculty Senior Officer to be unprofessionally suitable or guilty of professional misconduct. A student who fails to demonstrate appropriate standards of professionalism, either at University or in the clinical environment, may be considered to be professionally unsuitable. A student who is considered to have demonstrated professional misconduct will be one who:-
 - a. Has failed to meet the criteria of the British Association of Prosthetists and Orthotists guidelines and Health Care Professions Council standards of conduct, performance and ethics.
 - b. Has been considered guilty of an act, practice or breach of conduct that contravenes the British Association of Prosthetists and Orthotists guidelines and Health and Care Professions Council standards of conduct, performance and ethics.
 - c. Engages in behaviour that brings the profession into disrepute or any other act as referred to in the Disciplinary Procedure of the University Calendar.
15. Due to the requirements of the professional body there will be no aegrotat awards of BSc (Hons) Prosthetics and Orthotics.
16. Students who are awarded a BSc (Hons) Prosthetics and Orthotics degree are eligible to apply for registration from the Health and Care Professions Council and membership of the British Association of Prosthetists and Orthotists.

APPENDIX L

Programme Specification

PROGRAMME SPECIFICATION

Name of Subject: Prosthetics and Orthotics	
1. Programme Title:	BSc (Honours) Prosthetics and Orthotics
2. Awarding Institution/Body:	University of Strathclyde
3a Teaching Institution:	University of Strathclyde & Glasgow Caledonian
3b Work-based Learning:	Combination of experiences at University of Strathclyde and at Teaching Hospitals and Specialist Centres in Prosthetics and Orthotics
4. Credit Definition of Award:	BSc Hons-SCQF Level 10 (SHE Level H) 480 Credits (=240 ETS) including a minimum of 180 SCQF at Level 10 (SHE Level H) There are no intermediate exit points for this specific subject area.
5. Programme Accredited by:	Health Care Professions Council (HCPC) Education Committee 2009
6. Final Awards:	BSc (Honours) Prosthetics and Orthotics
7. UCAS Code:	B984
8. QAA Benchmark Statement:	Health Care Programmes–Prosthetics and Orthotics 2001
9. Date of PS preparation/revision:	December 2008/September 2012/September 2014
10. Education Aims of Programme:	<ul style="list-style-type: none"> • Provide all students with the knowledge, practical and intellectual skills for a career as a prosthetist/ orthotist • Develop student competence in applying clinical skills to the practice of prosthetics and orthotics • Develop student critical and analytical abilities in relation to the practice of prosthetics and orthotics • Provide students with the skills to adapt and respond positively to a changing clinical environment • Develop problem-based learning skills and the transferable skills to prepare the student for productive graduate employment • Develop the student's interpersonal skills • Provide training and education accredited by the Health and Care Professions Council Education validation committee • Provide opportunities for students to learn in a multidisciplinary health care environment • Assist students to develop the skills required for both autonomous practice and team working
11. Intended Learning Outcomes – <i>the programme provides opportunities for students to develop and demonstrate knowledge and understanding, skills, qualities and other attributes in the following areas:</i>	<p><u>Knowledge and Understanding</u></p> <p>A1 the applied sciences which underpin prosthetic and orthotic practice</p> <p>A2 therapeutic programmes based on applied physical medicine and rehabilitation</p> <p>A3 the professional ethical and legal context of current practice and adhere to codes of professional conduct and practice</p> <p>A4 health promotion and the factors which influence health and well-being</p> <p>A5 wider context of health and social care</p> <p>A6 formulate, implement and evaluate applied physical medicine and rehabilitation programmes and appropriate care pathways</p> <p>A9 how to evaluate prosthetic and orthotics intervention in relation to the needs of different groups and in different models of health care provision</p> <p>A10 your own learning needs and the learning needs of others and, engage in the process of personal and professional development as an independent learner</p>

Teaching, Learning and assessment methods used to enable outcomes to be achieved and demonstrated

Lecturers; Tutor-led tutorials; Student presentations; Problem-based learning assessment Coursework; Written examinations (MCQ's, SAQ's); Student presentations; Oral critiques (individual and group);

Essay presentations – demonstrating basic competence in research methodology & practical knowledge.

Skills and other attributes

Intellectual skills

B1 adopt systematic approaches to gathering, interpreting, analysing and evaluating information from a variety of sources

B2 gain a comprehensive understanding of the relationship and scope of theory to practice

B3 critically appraise evidence in relation to prosthetic and orthotic practice

B4 implement effective prosthetic and orthotic management and justify selected client management

B5 critically appraise the reasoning underpinning clinical decisions

B6 apply appropriate outcome measures in order to evaluate prosthetic and orthotic within the context of different models of health care provision

B7 to critically evaluate your own prosthetic and orthotic practice

B8 engage in research and critical evaluation

B9 appraise the social, political and resource issues in health care

B10 engage in continuous professional development

Teaching, learning and assessment methods used to enable outcomes to be achieved and demonstrated

Lectures; Demonstrations; Problem-based learning (patient interaction)

Assessment

Written examinations; practical examinations; Coursework; Case study analysis; Essay/Report of clinical experience

Professional Practice Skills

You will acquire and develop the practical skills which will enable you to:

C1 demonstrate and practice efficient moving and handling skills

C2 be proficient in practical skills and client assessment

C3 analyse human movement

C4 be skilled in the selection, application and modification of a wide range of prosthetic and orthotic practice

C5 develop a critical enquiry approach when relating movement principles to client examination

C6 be able to plan, design, implement and modify appropriate prosthetic and orthotic assessment strategies

Teaching, learning and assessment methods used to enable outcomes to be achieved and demonstrated

Patient based problem solving; clinical placements; lectures; seminars; tutorials

Assessment

Clinical examinations; Clinical essay/report; Clinical supervisor assessment; written examination

Transferable/Key Skills

You will acquire and develop the key life skills that will enable you to:

D1 think critically, problem solve, and engage in clinical reasoning

D2 acquire knowledge and understanding in the context of the subject

D3 identify learning styles and develop personal learning strategies

D4 manage own and others time effectively

D5 engage in both independent and group working

D6 develop self-marketing and presentation skills

D7 utilise labour market information effectively

D8 achieve effective information retrieval and IT skills

D9 apply statistical and numerical skills

D10 develop your social, interpersonal and communication skills, written, oral and listening

D11 plan and conduct research and projects

Teaching, Learning and assessment methods used to enable outcomes to be achieved and demonstrated

Transferable/Key Skills are incorporated within modules and related to relevant assessments methods as appropriate. Please refer to details in the student handbook or in each module descriptor.

12. Programme structures and requirements, levels, modules, credits and awards

The course is conducted over four years full-time. The first three years of the course are devoted to academic studies inter-linked with practical training in the fitting and fabrication of prosthetic and orthotic devices. The second semester in the third year involves a project based assignment within the rehabilitation field of prosthetics and orthotics. Time in the third and fourth years of the honours degree course is devoted to clinical practice placement within the clinical placement environment during which students undertake a structured broadening of their prosthetic and orthotic experience under supervision. Progress from year to year is based on performance in the practical work and examinations in each class or on continually assessed performance. To qualify for the award of the degree a student must have no fewer than 480 credits. To include a minimum of 60 credits at level 3 and 180 credits at level 4. The final assessment of the Degree of BSc with Honours in Prosthetics and Orthotics is based on performance in

- (i) the first diet of degree examinations in the second year of the course.
- (ii) the first diet of degree examinations in the third year of the course.
- (iii) laboratory and project work in the third and fourth years.
- (iv) Clinical placements in Prosthetics and Orthotics in fourth year

1 st Year	BE104	Foundations for Interprofessional Practice	Level 1	20 Credits	
	94 157	Human Biological Sciences 1	Level 1	20 Credits	
	94 154	Principles of Prosthetic and Orthotic Design 1	Level 1	20 Credits	
	94 156	Introduction Health Services Research	Level 1	20 Credits	
	94 161	Professional and Technical Prosthetics and Orthotics Skills 1	Level 1	20 Credits	
	94 204	Prosthetics & Orthotics Science 1	Level 2	20 Credits	
2 nd Year	94 208	Prosthetics & Orthotics Science 2	Level 2	60 Credits	
	94 206	Human Biological Sciences 2	Level 2	20 Credits	
	94 207	Principles of Prosthetic and Orthotic Design 2	Level 2	20 Credits	
	94 205	Professional Skills for Healthcare 2	Level 2	10 Credits	
			Elective Classes		10 Credits
3 rd Year	94 355	Prosthetics & Orthotics Science 3 (including Health Service Research)	Level 3	40 Credits	
	94 303	Human Biological Sciences 3			
	94 304	Principles of Prosthetic and Orthotic Design 3			
	94 405	Project	Level 4	40 Credits	
			Optional Classes 20 credits chosen from		
	BE 407	Orthotic Management of Neurological Conditions	Level 4	20 Credits	
	BE 408	Hip, Knee & Ankle Disarticulation Prosthetics	Level 4	20 Credits	
	BE 409	Management of the Diabetic Foot	Level 4	20 Credits	
	BE 410	Lower Limb Prosthetic Design	Level 4	20 Credits	
	BE 411	Upper Limb Prosthetics	Level 4	20 Credits	
	BE 412	Clinical Governance	Level 4	20 Credits	
	BE 413	Orthotic Management of Spinal Deformity	Level 4	20 Credits	
	BE 414	Paediatric Prosthetics and Rehabilitation	Level 4	20 Credits	
	BE 415	Clinical Gait Analysis	Level 4	20 Credits	
BE 432	The Assessment, Diagnosis and Management of Musculoskeletal Conditions	Level 4	20 Credits		
4 th Year	94 403	Prosthetics & Orthotics Clinical Placement Clinical training	600 hours Level 4	60 Credits	
	94 404	Prosthetics & Orthotics Clinical Placement Clinical training	600 hours Level 4	60 Credits	

Details of all modules, progression requirements and details of assessments are published in a comprehensive Student Handbook provided to all students and available at the Department Website.

1. **Support for Students and their Learning**

- "Day One" Induction programme for the course; covering Health and Safety, introduce course guide & learning objectives
- Introductory Prosthetic and Orthotic clinical and technical skills - Prosthetic/orthotic science
- Staff: Student ratio for Prosthetics and Orthotics clinical teaching of 1:8
- Custom clinic rooms, workshops and machine shops
- Dedicated teaching and learning space within the Department
- Preparation of teaching and learning materials; clinical photography and audio/visual programme generation; resources for multi-media teaching preparation
- Gait analysis laboratory - specialised equipment for monitoring forces, pressures, limb motions during locomotion
- Networked areas with student access to faculty intranet and Web based learning materials
- Clinical practice placements supported by clinical practice placement supervisors and a clinical practice placement co-ordinator within clinical sites
- Close collaboration between the University and hospital clinical sites via the University clinical practice placement co-ordinator and teaching staff.
- Clinical practice placement co-ordinator and team of staff makes regular contact with the clinical practice placements to support and collaborate with students and the clinical practice supervisors
- Staff-student committee
- Individual student counselling
- Access to the student support services
- Access to the enhancement and experience services (SEES).

2. **Criteria for Admission**

Candidates must be able to satisfy the general admissions requirements of the University of Strathclyde and of the National Centre for Prosthetics and Orthotics in one of the following ways:
School/College Leavers who have reached 17.5 years on admission

- SCE Higher grade
Four passes at AAAB or AABBB including Mathematics at B, and either Physics or Biology (preferred subjects). Under qualified applicants from 6th year are advised to take CSYS or GCE Advanced Level rather than to upgrade existing Highers.
- GCE Advanced Level
Three passes at ABB or ABC, including Mathematics, and either Physics and /or Biology are preferred subjects.

Mature and Overseas Students

- Are considered on an individual basis
- Access courses: - Validated access courses in appropriate subjects are considered
- Summer school in Mathematics may be set as a condition of entry if Maths level not adequate

Additional requirements

- Second year entry is not offered.
- Exemption from certain classes will be granted in exceptional circumstances for appropriately qualified students.
- Students should commence a programme of Hepatitis B immunisation
- Declaration of disclosure of any criminal convictions including those outstanding.
- All suitable candidates will be asked for interview prior to any offers being made.
- Candidates are expected to have organised an experience /visit to a prosthetic and orthotic facility.

3. **Methods for evaluation and improving the quality and standards of teaching and learning**

Mechanisms for review and evaluation of teaching, learning, assessment, the curriculum and outcome standards

Timetable of module reviews (including student feedback questionnaires)

Periodic accreditation visits by HCPC Education Board (under Standard of Education and Training guidelines)

Faculty of Engineering Reviews

ISPO Category 1 accreditation and review
 External Examiner Reports
 Regular visits and assessments of clinical practice placement centres and clinical practice supervisors
 ISO 9001 Quality System
 Staff Appraisal
 Graduate and Employer Audit Questionnaires
Committees with responsibility for monitoring and evaluating quality and standards
 Staff/Student Committee
 Departmental Teaching Learning Committee
 Faculty Teaching and Learning Forum
 Academic Staff Committee
 Clinical Practice Placement Committee
 Management Review Committee (ISO Quality Review)
 Faculty Academic Committee
 Board of Examiners
Mechanisms for gaining student feedback on the quality of teaching and their learning experience
 Staff/Student Committee
 Student Evaluation Questionnaires reported back to Staff/Student committee
 Audit of graduate and employer experience (18months-post graduation)
Staff development priorities include
 Staff Appraisal and Institutional staff development courses
 Training Diary supporting Continuing Professional Development

4. **Regulations of Assessment**

Assessment rules & honours classification

Assessment details for each module are provided in the Student Course Guide and these are given to all students on Day One.

To qualify for the award of the degree a student must have accumulated no fewer than 480 credits. The final assessment of the degree of BSc with Honours is based on performance in:

- The first diet of degree examinations in the second year of the course
- The first diet of degree examinations in the third year of the course
- Laboratory and project work in the second and third years of the course
- The third year prosthetic and orthotic individual project
- The third year optional class
- Clinical practice performance in fourth year of the course
- The fourth year prosthetic and orthotic oral examinations following clinical placement.

Summary of grades, marks and their interpretation for honours degree

- A pass mark of 40% applies to all course work and examinations and the credits attached to an individual class are awarded for a mark of 40% and over. Progress from third to fourth year is at the discretion of the Head of Department and dependent on the aggregate number and type of credits accumulated, together with a consideration of the marks obtained in third year classes. In the first and second years a summery mark of 60% or greater in the Human Biological sciences will allow exemption for the final written examination.

<u>Marks</u>	<u>Interpretation</u>
70% - 100%	First Class performance
60% - 69%	Second Class Upper Division
50% - 59%	Second Class Lower Division
40% - 49%	Third Class
Less than 39%	Fail

Role of External Examiners (Visiting Examiners)

Visiting examiners are appointed by the University on the advice of the Head of Department and academic staff. Two examiners are appointed from the academic or clinical field of prosthetics and orthotics

External examiners approve examination scripts, review course work, may examine all examination scripts and attend the Board of Examiners meetings.

5. **Indicators of Quality and Standards**

- Course validation by the Health and Care Professions Council in March/April 2002 & Revalidation of revised programme February 2009. Last approved 2014.
- Course validated by annual monitoring by HCPC April 2014.

- Faculty Review conducted in 2009.
- International Society for Prosthetics and Orthotics (ISPO) Category 1 accreditation achieved August 2004 revalidation of programme 2006 re-approval 2009, 2014 and 2020. Re-approval planned 2025.
- Accreditation and review of clinical practice placement sites by clinical practice placement co-ordinator.
- Limbless Association Prizes awarded by charitable organisation for best overall students' achievements in first and fourth year of the course.
- Steeper Group Prize awarded for best prosthetic clinical performance for clinical examination.
- OETT Prize awarded for best orthotic clinical performance for clinical examination.
- Dean's certificate of merit awarded to students on the course.
- Investors in People kitemark.

Please note. This specification provides **a concise summary** of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes advantage of the learning opportunities that are provided. **More detailed information** on the specific learning outcomes, indicative content and the teaching, learning and assessment methods of each study unit or module can be found in the current student handbook. The accuracy of the information contained in this document is reviewed by the University and may be checked within the independent review processes undertaken by the Quality Assurance Agency.

Key sources of information about the course can be found in:

- <http://www.strath.ac.uk/courses/undergraduate/prostheticsorthotics/>
- University of Strathclyde Prospectus <https://www.strath.ac.uk/studywithus/prospectus/>
- QAA Benchmark Statement Health Care Programmes – Prosthetics and Orthotics 2001
- <https://www.qaa.ac.uk>

APPENDIX M

Assessment Mapping

Assessment Procedures for the BSc (Hons) Programmes in Prosthetics and Orthotics for years 1, 2, 3 and 4.

This document provides a mapping of the assessment for each module across the four years of the programme:

- The number and types of assessment activities
- A brief description of each activity (including duration of test, word count etc)
- Weighting of each activity as a percentage of the overall mark for the module
- Timing of each assessment activity within the module (e.g. week 4, semester 2)
- Specific activities which must be passed to complete the module
- Any course works which may lead to an exemption from the final exam
- A detailed breakdown of resit procedures if appropriate

A table is provided detailing the assessment and progression through the modules. More detailed description of the assessment methods of each individual module will also be provided at the start of each module (including module handbooks). These will be available to students at the beginning of each module.

Assessment and Progression through modules BSc (Hons) Prosthetics and Orthotics 1st Year

Module Descriptor	Assessment Activities	Description	Weighting of activity	Timing of each assessment activity	Requirements to pass	Exemption	Re sit Procedure
Foundations for Inter-professional Practice	2 assessments	Group Presentation (15 mins) based on given scenario (Relative contribution of group is self assessed by group) Essay 1,500 words Referencing Exercise	50% 50%	Semester 1, Wk 12 Note at GCU semester start dates may differ-please check with module leader	40% pass Each section must have a minimum grade of 35% and an average grade of 40% or above to pass this module	No final exam No exemptions granted	Resubmission of a further reflective essay of the same length and assessment criteria as the first attempt in August diet
Principles of Prosthetic and Orthotic Design 1	4 course works Final exam	See module descriptors (written exam of 2hours)	See module descriptor	Semesters 1+2 January	To pass must achieve summary mark of 40% in coursework and also final exam mark of 40% Must achieve 35% minimum in each coursework	No exemptions granted	Candidates who do not achieve a coursework mark of 40%, or 40% pass final examination, must re sit either element or both by the resit August Examination Board to allow progression to the next year of the programme.
Introduction to Health Services Research	3 assessment activities	a) Write a critical review of a scientific journal article b) Laboratory based analysis of a presented data set	50% 50%	Semester 1 Exam Period Semester 1 Exam Period	Students must pass both elements a) and b) of the coursework with a minimum of 40%.	No final exam No exemptions granted	Candidates who do not achieve a coursework mark of 40% on both elements must re sit either element or both subsequent to the exam board decisions, re-sit/resubmit coursework and laboratory examination will take place prior to the Resit/August Examination Board to allow progression to the next year of the programme.
Human Biological Sciences 1	4 class tests 3 coursework Final exam	Short written questions, MCQs and label the diagram questions for 1 hour duration for each assessment under examination conditions in a class room setting Written work essays and MCQs and short notes Also carried out under Exam conditions in a laboratory First section label anatomy diagrams Second section MCQs Third section 10 short note questions out of 14	60% (M1) 40% (M2) SM1= 0.6 M1+ 0.4M2 1 st section 20% 2 nd section 30% 3 rd section 50%	Semester 1, Wk 6 Semester 1 , Wk 12 Semester 2, Wk 6 Semester 2, Wk 12 Semester 1, Wk 4 Semester 1, Wk 8 Semester 2, Wk 8 May first diet exam August 2 nd Diet	The student must pass the anatomy section of the examinations with a pass mark of 40%. In addition the student must achieve a minimum of 40% for the final summary mark (SM2) to allow progression. (SM2) = 0.5 SM1 + 0.5 SM2 SM2 = examination %	A coursework summary mark of 60% gives exemption from final exam .Students must also pass each class test (minimum of 40%) to gain this exemption	Students who fail to gain a Summary Mark SM1 of 40% will have to sit additional coursework Students who do not gain a 40% in May exam must re sit in August. The student must also ensure they pass both the examination and the anatomy section of the examination with a pass marks of 40% to allow progression to the next year of the programme.

Module Descriptor	Assessment Activities	Description	Weighting of activity	Timing of each assessment activity	Requirements to pass	Exemption	Re sit Procedure
Professional and Technical Skills	Technical Skills 4 assessed activities: practical exercises and associated mapping documentation in written/diagrammatic form is used as the assessments	Practical Projects: Shoe Horn Foam liner/ lamination Insoles AFO composite model (practical and written, design relating to map and specifications)	15% 15% 20% 50%	Semester 1, Wk 2 Semester 1, Wk 4 Semester 1, Wk 6 Semester 1, Wk 12	All 4 assignments are individually assessed. Students must achieve an average of 40% for assignments 1-4	No final exam, No exemptions granted	Resit coursework week/exercise will be offered following the May examination Board. This will reflect the elements of the course that have been failed and will normally occur prior to the August resit Board and 40%pass mark must be achieved
Professional Skills for Health Care 1	Professional Skills 2 assignments	Reflective essay patient sessions Word count 1500 Practical –role play exercise with patients to assess verbal and non verbal communication skills	50% 50%	Semester 2, Wk 11 Semester 2, Wk tbc	40% pass in both elements of coursework, overall summary mark of 40% or above	No final exam No exemptions granted	Resubmission of each failed coursework elements to gain a mark of 40% in both as appropriate normally following May diet examination
Prosthetics and Orthotics Science 1	Introduction to Prosthetics and Orthotics Science 1: 3 assessed exercises Trans-tibial Prosthetics PO SCIENCE Paper A (Lower Limb Prosthetics) in first exam diet Year 2	Casting exercise Modification exercise Oral presentation on patient assessment Skills Cast Modification Socket fit and alignment Critique Knowledge and Understanding Written communication on patient experience Paired presentation Professionalism and attitude (Continual assessment)	35% 35% 30% 60% 10% 10% 10% 30% 20% 10% 10% 20% Final mark 0.33x Introduction to POScience and 0.67x Transstibial prosthetics	Semester 2, Wk 1 Semester 2, Wk 1 Semester 2, Wk 3 Semester 2 weeks 11+12	Attendance is compulsory on all days. Students must attain a minimum of 40% of total mark. Coursework Summary mark of 40% must be achieved for this element	No final exam No exemptions granted No exemptions granted	Remedial practical sessions are offered on any individual component that is missed through sickness/ ill health or for remedial work related to core competencies where the summary mark is less than 40%. A 40% pass must then be achieved. Remedial/resit practical sessions are offered on any individual component that is missed through sickness/ ill health or for resit/ remedial course work related to core competencies where the summary mark is less than 40%. A 40% pass must then be achieved. 40% pass must be achieved or resit attempt in August of second year examination and a 40 % pass to allow progression to the next year of study.

Assessment and Progression through modules BSc (Hons) Prosthetics and Orthotics 2nd Year

Module Descriptor	Assessment Activities	Description	Weighting of activity	Timing of each assessment activity	Requirements to pass	Exemption	Re sit Procedure
Professional Skills for Health Care 2	2 assignments	Public speaking presentation Reflective essays	50% 50%	Semester 1, Wk 11 Semester 1, Exam Period	The student must pass each element of the coursework with a grade of 40%	No final exam No exemptions granted	Students who do not gain a 40% in both course works must re submit and achieve 40% in both prior to the resit August Examination Board to allow progression to the next year of the programme.
Human Biological Sciences 2	4 class tests 2 Course works Final exam	Short written questions, MCQs and label the diagram questions for 1 hour duration for each assessment under examination conditions in a class room setting Written work essays and MCQs and short notes Also carried out under Exam conditions in a laboratory First section label anatomy diagrams Second section MCQs Third section 10 short note questions out of 14	60% (M1) 40% (M2) SM1= 0.6M1 + 0.4 M2 1 st section 20% 2 nd section 30% 3 rd section 50%	Semester 1, Wk 6 Semester 1, Wk 12 Semester 2, Wk 6 Semester 2, Wk 12 Semester 1, Wk 8 Semester 2, Wk 8	The student must achieve a minimum of 40% for the final summary mark (SM2) to allow progression. (SM2) = 0.5 SM1 + 0.5 SM2 SM2 = examination%. In addition the student must achieve a minimum of 40% for the anatomy section of the examinations and a pass mark of 40% overall in the final examination mark to allow progression.	A summary mark of a minimum of 60% will give exemption from the examination. Students must also achieve a minimum of 40% in each of the class tests to gain this exemption.	Students who fail to achieve a summary mark of 40% must successfully complete additional coursework. Students who do not gain a 40% in May exam must re sit in August and achieve 40% to allow progression to the next year of the programme.
Principles of Prosthetic and Orthotic Design 2	9 Coursework's Final exam	1. Lower Limb Prosthetics Biomechanics 2. Metals 3. Polymers 4. Design 5. Tissue mechanics 6. Joint Force Analysis 7. Lower Limb Orthotics Biomechanics 8. Connections Students must answer 5 questions,	see module descriptor	www.strath.ac.uk/timetables/	In order to be exempt from the examination the candidate must achieve an overall module summary mark of 50% or more. Students who do not achieve this must also pass the end of session examination in May	No exemptions granted	Candidates who do not achieve a summary pass mark, or a pass mark in the coursework and final examination, will be offered opportunity to re sit the coursework and/or the examination in August Diet- and must achieve 40% in both areas to allow progression to the next year of the programme.

Module Descriptor	Assessment Activities	Description	Weighting of activity	Timing of each assessment activity	Requirements to pass	Exemption	Re sit Procedure
Prosthetics and Orthotics Science 2 Part A Lower Limb Prosthetics	Trans-femoral, Knee disarticulation and Hip Disarticulation Prosthetics course work 6 practical assessments	Overall performance and progression in each of the practical elements listed below will be assessed over the 6 clinical experiences Skills Practical Assessment Cast Modification Manufacture Socket fit Alignment Communication skills Professionalism and attitude (Continual assessment) Knowledge and Understanding Written examination +Essay 1,500 word essay	50% practical clinical module	Semester 1, Wk 9	Attendance is compulsory on all days. Students must attain a minimum of 40% of total mark in both the practical clinical element and the final examinations of each area of PO science practice. Coursework Summary mark of 40% must be achieved for this practical element.	No exemption granted from final exam	Remedial/resit practical sessions are offered on any individual component that is missed through sickness/ ill health or for resit/ remedial course work related to core competencies where the summary mark is less than 40%. A 40% pass must then be achieved.
	Final Exam	PO SCIENCE Paper A (Lower Limb Prosthetics)	50% final written examination	Semester 1 Weeks 8 & 9 January Examination Diet	This element is also assessed as a written formal essay questions 3 out of 5 essay questions as section B of Paper A Prosthetics and Orthotic Science in January diet of second year. 40% must be achieved		
Part B Lower Limb Orthotics	Foot Orthotics and Footwear course work	Skills Practical Assessment Cast Modification Manufacture Fit/Alignment Communication skills Professionalism and attitude (Continual assessment) Knowledge and Understanding Group Critique –oral presentation of patient to peers and 2 staff Pathology based essay. 1,500 -2,000 words	80% including group critique 20%	Semester 2 Week 2+3	Attendance is compulsory on all days. Students must attain a minimum of 40% of total mark in both the practical clinical element and the final examinations of each area of PO science practice. Coursework Summary mark of 40% must be achieved for these practical elements.	No exemptions granted	Resit examination offered in PO Science final examinations Paper A in August Diet Paper B in August Diet Both are 5 essay/short note questions out of 8. A student must achieve 40%in both examinations to allow progression to the next year of the programme.
Part B Lower Limb Orthotics (continued)	Ankle Foot Orthotics course work	Skills Practical Assessment Cast Modification, Manufacture, Fit/ Alignment Communication skills, attitude	15% 15% 15%	Semester 2 Weeks 7	Attendance is compulsory on all days. Students must attain a minimum of 40% of total mark in both the practical clinical element and the final examinations of	No exemptions granted	Remedial/resit practical sessions are offered on any individual component that is missed through sickness/ ill health or for resit/ remedial course work related to core

		and professional behaviour (Continual assessment)	15%		each area of PO science practice.		competencies where the summary mark is less than 40%. A 40% pass must then be achieved.
		Knowledge and Understanding assessed by oral presentation of patient experience (using video or photographic evidence) with 2 staff individually assessing each student.	20%		Coursework Summary mark of 40% must be achieved for these practical elements.		
		Problem based learning exercise within group on various patient scenarios 1,500 -2,000 words	20%				
	Knee Ankle Foot Orthotics (including KO/HO/HKAFO/RGO) coursework	Practical Assessment Cast Modification Manufacture Fit/ Alignment Communication skills Professionalism and attitude (Continual assessment)	80%	Semester 2 Week 12			
		Class test (exam style questions completed under examination conditions)	20%				
	Final exam	PO Science Paper B (Lower Limb Orthotics) 5 out of 8 short note or essay Questions in May Examination diet.	50% from all practical clinical module + 50% final written examination	May Examination Diet	This element is also assessed as a written formal essay questions 5 out of 8 questions of Paper B (lower limb Orthotics) Prosthetics and Orthotic Science Examination in May diet of second year. 40% must be achieved		40% pass must be achieved or resit attempt in August of second year examination and a 40 % pass to allow progression to the next year of study.

Assessment and Progression through modules BSc (Hons) Prosthetics and Orthotics 3rd Year

Module Descriptor	Assessment Activities	Description	Weighting of activity	Timing of each assessment activity	Requirements to pass	Exemption	Re sit Procedure
Human Biological Sciences 3	2 class tests 2 course works Final exam (January)		60% (M1) 40% (M2) SM1= 0.6M1 + 0.4 M2	Semester 1 Wk, 7 Semester 1. Wk 12 Semester 1, Wk 4 Semester 1, Wk 10	The student must achieve a minimum of 40% for the final summary mark (SM2) to allow progression. (SM2) = 0.5 SM1 + 0.5 SM2 <i>SM2 = examination%</i>	A summary mark of a minimum of 60% will give exemption from the examination. Students must also achieve a minimum of 40% in each of the class tests to gain this exemption.	Students who fail to achieve a summary mark (SM1) of 60% must sit an examination in January. Students who fail to attain 40% in this AND fail to achieve a final summary mark of 40% will be prevented from beginning clinical placement and must re-sit the examination in August to allow progression.
Principles of Prosthetic and Orthotic Design 3	3 Course works Resit exam (January)	1. Upper limb biomechanics and control concepts 2. Spinal biomechanics 3. Theories of failure fluid 33% mechanics	3 coursework at 33% each	www.strath.ac.uk/timetables/	Students must achieve an overall module summary mark of 40% failure to do so will require student to sit a January 2 hour examination.	No exemption granted	Students who fail to achieve a summary pass mark (SM1) of 40% or a pass mark in January examinations may be offered an opportunity to resit in May/ June Diet
Applied Health Services Research	2 course works	Students should prepare for ethical submission of a given research study Analyse a given data set, interpret and formally write up a results section.	40% 60%	Semester 1 Wk 12 Semester 1, Wk 10		No final exam No exemptions granted	Subsequent to the exam board decisions, re-sit/resubmit coursework will take place when appropriate
Prosthetic and Orthotics Science 3 Coursework 3 sections:	Spinal Orthotics Upper Limb Prosthetics and Orthotics Assessment activities Case Studies	Group presentation Cervical report/assignment Practical Assessment: ULO Group Presentation Trans-Radial Myoelectric casting, modification and fitting plus essay, 1,500 words. Written Assessment: Class Test Holistic Patient assessment and treatment /prescription options presented (presented for peer review.) 3 station clinical examination one orthotics one prosthetics and one written technical OSCE	50% 50% 10% 90%	Semester 1 Week 3 Semester 1 Wk 5 Wk 7/8 Semester 1, Wk 9 Semester 1 Week 12	Attendance is compulsory on all days. Students must attain a minimum of 40% of total mark in both the practical clinical element and the final examinations of each area of PO science practice. Coursework Summary mark of 40% must be achieved for these practical elements.	No exemptions granted	Remedial/resit practical sessions are offered on any individual component that is missed through sickness/ ill health or for resit/ remedial course work related to core competencies where the summary mark is less than 40%. A 40% pass must then be achieved.

Final Examination	Paper C (Spinal Orthotics and Upper Limb Prosthetics and Orthotics and Case Studies)		50% from all practical clinical modules + 50% final written examination		This element is also assessed as written formal essay questions 5 out of 8 questions of Paper C (Spinal Orthotics and Upper limb Orthotics and Prosthetics) Prosthetics and Orthotic Science 3 Examination in January diet of third year. 40% must be achieved		40% pass must be achieved or resit attempt in August of third year examination and a 40 % pass to allow progression to the next year of study.
Honours Project	Individual dissertation/project With oral presentation/viva Poster Presentation	Project thesis: marked by two examiners a panel will interview the student in the form of a viva voice examination. Poster presentation: Dissertations and posters will also be assessed for overall presentation, clarity, use of scientific language, inclusion of diagrams/illustrations and references. Students are required to submit a poster presentation summarising their project. This will be marked alongside the project. The poster should include key findings highlighted during the project. The poster will effectively be an abstract of the project and is intended to provide an effective overview of the evidence on the particular topic of the project.	80% 20%	May examination period of 4 th year These will be part of the department's graduate show in May/June of the fourth year.	A pass of 40% must be achieved to be awarded the named Honours degree of allow progression to the 5 th Year masters exit route. The University Marking Guide for Assessments will be used to grade each dissertation.	No exemptions granted	Resubmission of the individual project and second oral examination to defend work of project required with a pass mark of 40% in order to graduate with a named degree award.
1 module at Level 4 from Optional list	2 assignments (dependent on optional module chosen)	Coursework related to subject area within optional module chosen In the form of: Written essay, short note questions, critical appraisals and experimental data analysis oral presentation	100% course works (from summary of 2 course works dependent on module chosen)	Semester 2 (weeks dependent on module chosen)	40% pass minimum in all elements of course work with grades of 40% (dependent on optional module chosen)	No exemptions granted	40% pass must be achieved or resit coursework submissions by August examination board and a 40 % pass summary mark in each module to allow award of named degree.

Assessment and Progression through modules BSc (Hons) Prosthetics and Orthotics 4th Year

Module Descriptor	Assessment Activities	Description	Weighting of activity	Timing of each assessment activity	Requirements to pass	Exemption	Re sit Procedure
Clinical Placement	Supervisors assessment	Formative at weeks 4 and 8 Summative at 4 months	Pass/fail	End of 4 month clinical placement	All core competencies MUST be completed to pass clinical placement	No exemptions granted	Extension of 1 month at supervisors' request, to complete all clinical competencies and meet learning outcomes. A further 4 month placement is available so the remaining outstanding clinical competencies can be completed to achieve ALL learning outcomes of placement. This then allows progression to graduate subject to all course regulations being met. Following exam Board decision Resits must be of all 6 clinical exam stations at the next attempt of the appropriate clinical examination 40% must be achieved to graduate with named award.
	Competency based clinical assessments	Optional extension of 1 month can be requested by Clinical Placement supervisor at 3 months interval and approved by HEI at 3 months stage to extend first placement to 5 months to ensure student meets all learning outcomes. Portfolio formative feedback with clinical tutor.	Pass/Fail	End of clinical placement			
	Portfolio		Formative	1 months, 2 month and 4 months.	4 out of 6 stations of examination must be passed and summary mark of 40% must be achieved to pass this element of the assessment in both Prosthetics and Orthotics. 3 out of 4 stations.		
	Clinical Examination 3 rd year and 4 th year	4 stations with 2 external examiners 20 minute each and 2 written theory stations in each discipline.	Each station graded from 0-100% 40% Pass	Biannual Clinical Examinations June of 3 rd year January of 4 th Year			

For details of Prosthetics/Orthotics Clinical Placements 94 403 and 94 404 please refer to Clinical Placement documentation for further detail

TIMETABLE 2023 – 2024

	SEMESTER 1											SEMESTER 2																																										
	0	1	2	3	4	5	6	7	8	9	10	11	1	2	3	4	5	6	7	8	9	10	11																															
	Sept			October				November				December				January			February				March				April			May				June			July				August				September									
	11	18	25	2	9	16	23	30	7	14	21	27	4	11	18	25	1	8	15	22	29	5	12	19	26	4	11	18	25	1	8	15	22	29	6	13	20	27	3	10	17	24	1	8	15	22	29	5	12	19	26	2	9	16
BSc YR 1	Mon: AM HBS – PM PPOD Tues: AM HBS PM IHRS Wed: AM PPOD Thur: AM Technical Skills PM FIP Fri: All Day PO Technical skills											EXAMS	HOLIDAY	Mon: All Day PO Science Tues: All Day PO Science Wed: AM PPOD Thur: AM PPOD – PM Professional Skills Fri: AM PO Science PM HBS											HOLIDAY	EXAMS	HOLIDAY											RESIT EXAMS																
																																							PO Professional & Technical skills											Intro PO LLP TT/AD/PF				
	BSc YR 2	Mon: AM Prof Skills – PM PO Science Tues: AM PPOD – PM HBS Wed: AM PO Science Thur: All Day PO Science Fri: All Day PO Science											EXAMS	HOLIDAY	Mon: AM Elective/Self Study PM PO Science Tues: AM PPOD – PM HBS Wed: AM PO Science Thur: All Day PO Science Fri: All Day PO Science											HOLIDAY	EXAMS	HOLIDAY											RESIT EXAMS															
		LLP TT/AD/PF/TF/KD/HD													LLP TF LLO FO/AFO/KAFO																																							
BSc YR 3	Mon: All Day PO Science Tues: All Day PO Science Wed: AM PO Science Thur: AM PPOD – PM AHSR Fri: PM PO Science											EXAMS	HOLIDAY	INDIVIDUAL TIMETABLES Project + 1 Optional Advanced Clinical Class											HOLIDAY	RESIT EXAMS																												
	ULP/O																																																					
	SO			Case Studies																																																		
BSc YR 4	CLINICAL PLACEMENT 1 Monday, 21 August 2023 – Friday, 22 December 2023 Clinical Exams: Prosthetics and Orthotics - January 2024											Clinical Exams	CLINICAL PLACEMENT 2 Monday, 15 January 2024 – Friday, 17 May 2024 Clinical Exams: Prosthetics and Orthotics - May 2024											Clinical Exams	GRADUATION TBC																													

For up dated timetable and room information please check <http://www.strath.ac.uk/timetables/>