

Orthotics and Prosthetics Program

Course Descriptions for AY 2017-2018

Anatomical Sciences for O&P

OPANA 63101

Credit hrs: 3

Course Director: Ming Zhang, MD, PhD

Course Description:

- Anatomical Sciences for O&P is designed to provide the student an extensive background in the fundamentals of human anatomy. The course is presented in lecture, small group laboratory, and independent study format. Anatomic structures are reviewed in lecture. The student is then expected to locate, identify and explain the function and relationships of structures using cadavers, dissections, radiograph images, and static models. The course is structured to provide an anatomical basis for understanding the physical examination and structural changes associated with illness and injury of each major organ and body system.

Cultural Competency

OPCC-61401

Credit hrs: 1

Course Director: Carl Fasser, PA

Course Description:

- The course introduces students to issues surrounding cultural awareness and sensitivity pertaining to the diversity and uniqueness of populations to be encountered as health care practitioners and elsewhere through lectures, discussions, small group activities, and participation in community events. Specifically, the course explores personal bias, communication styles, belief systems, alternative health care practices, family roles, and the relationship of these issues to perceptions of culture, socioeconomic status, and provision of healthcare.

Health Behavioral Counseling

AHHBC 62201

Credit hrs: 2

Course Director: Beth Garland, PhD

Course Description:

- This course explores the theory and practice of counseling for health behavior change with a focus on application of Motivational Interviewing skills to cancer-related and other health-risk behaviors. The stages of behavior change are introduced using the framework of the Transtheoretical Model along with social learning theory. Elements of the therapeutic alliance and the principles of harm reduction are introduced along with socializing the patient to motivational health behavior change counseling. Modeling through role play is used to develop and refine a student's ability to identify risk, assess readiness for change, and offer messages designed to strengthen the patient's commitment to change. Observations of self-help and patient support group sessions are used to further socialize students to the degree to which individuals are committed to change. These experiences shall help the student develop an intimate understanding of the process of change and thereby increase empathy for patients attempting to improve their own health behaviors and adhere to challenging treatment regimens.

Biomechanics Fundamentals

OPBMF 62101

Credit hrs: 2

Course Director: Sally DiBello, MPO, CPO

Course Description:

- Biomechanics Fundamentals introduces the study and practice of evaluating and quantifying human movement through both simple and complex means. Biomechanics Fundamentals begins with an introduction to biomechanics as a discipline and explores application to human movements. Approaches include: static skeletal, muscular, and neurological considerations for human movement, dynamic force distribution, materials behavior, and lever arms. Presentations of clinical scenarios and corresponding biomechanical rationale for O&P intervention are the primary method. Skills pertaining to goniometric observations and linear and angular kinematic and kinetic calculations are also introduced. Biomechanics Fundamentals is part one of a two-part course.

Materials Science and Selection in O&P

OPMSS 62102

Credit hrs: 2

Course Director: Jared A. Howell, MS, CPO

Course Description:

- Materials Science and Selection for O&P begins with an introduction to the characterization and classification of materials in general. It then explores the materials specifically used in the construction of orthotic and prosthetic devices, both custom and pre-fabricated, and strategies of selecting from among them for specific clinical uses. Classifications and properties of metals, plastics, foams, leather, and other materials are introduced and linked to direct applications in devices and components in O&P. Choices for material properties are compared and contrasted. Numerous clinical and technical applications are exemplified throughout the course.

Foundations of O&P

OPFOP 62101

Credit hrs: 2

Course Director: Jared A. Howell, MS, CPO

Course Description:

- The Foundations of Orthotics and Prosthetics class is designed to provide an introduction to major themes covered during the didactic year of the program. Certain content from pre-requisite courses such as anatomical terms, essential kinesiology concepts, normal human gait, and commonly-applied statistical measures are reviewed to provide the framework for success in the didactic year. Scopes of Practice defined by the American Board for Certification in O&P (ABC), and educational and clinical program accreditation standards of the National Commission of Orthotics and Prosthetics Education (NCOPE) are explained and contextualized. Students learn lab safety, common materials selection, and other topics essential to the learning and practice of O&P. Students are introduced to concepts that recur throughout the curriculum such as an appreciation for evidence-based clinical practices, the role of research in modern practice, psychosocial factors affecting care, and cultural awareness.

Physical Examination

OPPEX 63101

Credit hrs: 3

Course Director: Ashley Mullen, MSAT, CPO

Course Description:

- Physical Examination (PE) explores the full scope of a physical bodily exam in the context of the evaluation for and provision of clinical O&P services. Physical Examination has emphasis on manually determining the range of motion (ROM) and muscle strength (MMT) of major joints in the body with respect to typical presentation and common pathological conditions, inclusive of musculoskeletal, neurological, congenital, and developmental conditions. Students will develop an ability to perform a comprehensive physical examination in order to derive appropriate orthotic or prosthetic interventions.

Spinal & Cranial Orthotic Management

OPSCO 66101

Credit hrs: 6

Course Director: Joshua B. Utay, MEd, CPO

Course Description:

- Spinal & Cranial Orthotic Management covers a comprehensive range of orthotic management of the head and all spinal levels. Examples of devices include orthoses for the cervical, thoracic, lumbar, and sacral levels, alone and in combinations, cranial molding helmets, and face masks. Bony and muscle anatomy, surface anatomy, muscle physiology, kinesiology, and biometrics relative to the spine and head are covered in depth. Pathologies and conditions commonly treated with spinal orthoses are explored, historical orthotic approaches are reviewed, and modern treatment philosophies are covered in depth. Students learn about, observe, and then perform essential aspects of spinal and cranial orthotic care including patient assessment and communication, device design recommendation, measurement and casting, component and material selection, positive model optimization, device fabrication, device application and fitting principles, patient device training, device maintenance, and patient follow up. Importance of proper patient compliance is highlighted.

Upper Limb Orthotic Management

OPULO 64101

Credit hrs: 4

Course Director: Sally DiBello, MPO, CPO

Course Description:

- Upper Limb Orthotic Management covers a comprehensive range of orthotic management of all aspects of the upper limb. Examples of devices include orthoses for the shoulder, elbow, forearm, wrist, hand, thumb, and fingers. Bony and muscular anatomy, surface anatomy, muscle physiology, kinesiology, and biometrics relative to the upper limb are reviewed, and conditions commonly treated with upper limb orthoses are explored alongside their corresponding historical and contemporary approaches to orthotic intervention. Students learn about, observe, and then perform essential aspects of upper limb orthotic care including: patient assessment and communication, device design recommendation, measurement and casting, component and material selection, positive model optimization, device fabrication, device application and fitting principles, patient device training, device maintenance, and patient follow up.

Upper Limb Prosthetic Management

OPULP 68101

Credit hrs: 8

Course Director: Fanny D. Schulte, MEd, MS, CP

Course Description:

- Upper Limb Prosthetic Management covers a comprehensive range of prosthetic management of all amputation levels of the upper limb. Bony and muscular anatomy, surface anatomy, surgical amputation techniques, muscle physiology, kinesiology, and biometrics relative to the upper limb are covered in depth. Conditions resulting in upper limb amputation are explored, historical prosthetic devices and approaches are reviewed, and modern prosthetic philosophies and components are covered in depth. Students learn about, observe, and then perform essential aspects of upper limb prosthetic care including patient assessment and communication, device design recommendation, terminal device categorization and selection, measurement and casting, component and material selection, positive model optimization, device fabrication, prosthetic alignment and transfer, device application and fitting principles, patient device training, device maintenance, and patient follow up.

Pathophysiology for O&P

Credit hrs: 3

Course Director: Joshua B. Utay, M.Ed., CPO

OPPAT 63101

Course Description:

- Pathophysiology for O&P introduces to students the clinical procedures, conditions, and sequelae an orthotist / prosthetist evaluates and addresses most regularly. Conditions are introduced in groups organized by body system, body region, and corresponding likely orthotic / prosthetic intervention. This course explores the interrelated physiological links, clinical presentations, and biomechanical goals associated with these conditions illustrating the rationale for general orthotic / prosthetic intervention. Specific O&P treatment indications are explored in the corresponding core orthotic and/or prosthetic course.

Principles of Professional Practice

OPPPP 63201

Credit hrs: 3

Course Director: Jared A. Howell, MS, CPO

Course Description:

- This course conveys and applies modern administrative and documentation principles related to the provision of comprehensive prosthetic and orthotic care. It introduces students to professional issues related to contemporary clinical practice and exposes them to proper terminology for use in the medical and healthcare field. Practice and business management topics and resources are also addressed in this course complete with input from regional practice / thought leaders.

Clinical Skills Development

OPCSD 61101

Credit hrs: 1

Course Director: Jared A. Howell, MS, CPO

Course Description:

- This course is designed to provide directed, pre-clinical training to students during the didactic year in order to ensure proper achievement of baseline clinical competencies prior to entering the clinical phase of their training. The course is a practical assessment course which includes a series of sequenced, graded clinical interactions designed to develop clinical skills related to: patient interaction and bed side manner, proper physical assessment,

interviewing skills, formulation of a treatment plan, proper follow-up, ethical care, and adherence to sound social and business practices. Although graded assessments occur throughout the coursework, this course culminates in an Objective Skill Clinical Examination, or OSCE. The OSCE is a high-stakes exam that assess each of the basic competencies through a series of simulated clinical experiences. OSCE exams are video-recorded through simulation laboratories allowing students the opportunity to view their own interactions and learn from the experiences.

Health Research Methods

Credit hrs: 2

Course Director: Melissa Suter, PhD

OPHRM 62201

Course Description:

- This course introduces the participant to research methods used in clinical and community-based research, evidence-based practices used to evaluate potential treatment alternatives, and critical evaluation of current published literature. The course uses lectures, practice exercises and online activities to involve the learner in research proposal development and the interpretation of research performed by others. Assignments assist in learner application and reinforcement of information presented during lecture and the text and articulate knowledge gained promoting constructive criticism and critical reflection.

Medical Ethics

OPETH 62201

Credit hrs: 2

Course Director: Jennifer Blumenthal-Barby

Course Description:

- Medical Ethics course focuses the development of ethical principles and standards in the practice of medicine and other types of healthcare delivery. It has emphasis in case-based scenarios and discussion groups to effectively teach and model ethical principles. This course has three components: (1) lectures, (2) small group sessions, and (3) clinical ethics rounds, and it combines students from multiple disciplines to ensure the fullest breadth and depth of clinical care is covered.

Advanced Biomechanics and Clinical Measures

OPABM 73202

Credit hrs: 3

Course Director: Ashley Mullen, MSAT, CPO

Course Description:

- Advanced Biomechanics and Clinical Outcomes continues the study and practice of evaluating and quantifying human movement through simple and complex means begun in Biomechanics Fundamentals. Established, “low-tech,” clinically-relevant measures and clinical outcomes instruments that individual practitioners may perform on a regular basis with minimum initial investment begin this course. Both quantitative and qualitative varieties are explored, including surveys. Students also gain experience evaluating novel instruments not yet validated for use in O&P. Biomechanical principles and clinical O&P concepts are applied to gait / movement studies of moderate- to high-tech approaches, up to and including fully-equipped motion-analysis laboratory. Application of fundamental biomechanical principles to clinical practice is accomplished through presentation of clinical scenarios and corresponding biomechanical rationales for orthotic and/or prosthetic intervention.

Pedorthic Management

OPPED 64101

Credit hrs: 4

Course Director: Ashley H. Mullen, MSAT, CPO

Course Description:

- Pedorthic Management covers orthotic management of the foot and ankle. Devices covered are those distal to the malleoli. Examples of devices include therapeutic shoes, accommodative foot orthoses, functional foot orthoses, and subtalar control foot orthoses (UCBL FO's). The course provides an overview of custom shoewear, as well as shoe modifications. Bony, muscular, and neurological anatomy is reviewed, along with pathological conditions of the foot and ankle. Foot and lower limb pathologies, kinesiology, gait analysis, and orthotic treatment are explored in depth. Students learn about, observe, and then perform essential aspects of pedorthic management, including patient evaluation and initial assessment, impression taking, device design, positive model modification, material selection, device fitting, device modification, and patient outcome assessment.

Lower Limb Orthotic Management I

OPLOA 65201

Credit hrs: 5

Course Director: Sally DiBello, MPO, CPO

Course Description:

- Lower Limb Orthotic Management I (LLO I) includes orthotic management of all aspects of the lower limb below the knee. Devices explored in depth include the large number of variants of ankle-foot orthoses (AFO's) used regularly in modern lower-limb, orthotic practice. Bony and muscular anatomy, surface anatomy, muscle physiology, kinesiology, weight-bearing strategies, and biometrics relative to the foot and ankle and gait are covered in depth. Conditions commonly treated with footwear and orthoses of the feet and/or ankles are explored, historical orthotic approaches are reviewed, and modern treatment philosophies are covered in depth. Students learn about, observe, and then perform essential aspects of foot and ankle orthotic care including patient assessment and communication, device design recommendation, measurement and casting, component and material selection, positive model optimization, device fabrication, device application and fitting principles, gait deviation detection and diagnosis, patient device training including shoe wear, device maintenance, and patient follow up.

Lower Limb Orthotic Management II

OPLOB 66202

Credit hrs: 6

Course Director: Sally DiBello, MPO, CPO

Course Description:

- Lower Limb Orthotic Management II (LLO II) covers the comprehensive range of orthotic management of all aspects of the lower limb involving the knee joint and points proximal. This course integrates principles of bracing the lower limb below the knee (LLO I) as indicated. Bony and muscular anatomy, surface anatomy, muscle physiology, kinesiology, weight-bearing strategies, and biometrics relative to the knee and hip and gait are covered in depth. Pathologies and conditions commonly treated with orthoses of the hip and knee are explored, historical orthotic approaches are reviewed, and modern treatment philosophies are covered in depth. Students learn about, observe, and then perform essential aspects of lower limb orthotic care including patient assessment and communication, device design recommendation, measurement and casting, component and material selection, positive model optimization, device fabrication, device application and fitting principles, gait deviation detection and diagnosis, patient device training including shoe wear, device maintenance, and patient follow up.

Lower Limb Prosthetic Management I

OPLPA 68201

Credit hrs: 8

Course Director: Joshua B. Utay, M.Ed., CPO

Course Description:

- Lower Limb Prosthetic Management I (LLP I) covers a comprehensive range of prosthetic management of amputation levels of the lower limb through the tibia and points distal. Bony and muscular anatomy, surface anatomy, muscle physiology, kinesiology, and biometrics relative to the lower limb are covered in depth. Conditions resulting in lower limb amputation are explored, historical prosthetic approaches to transtibial prosthetics practice are reviewed, and modern transtibial prosthetic devices, components, and philosophies are covered in depth. Students learn about, observe, and then perform essential aspects of transtibial prosthetic care (and points distal) including patient assessment and communication, K-Level evaluation and designation, device design recommendation, measurement and casting, component and material selection, positive model optimization, device fabrication, prosthetic alignment and transfer, device application and fitting principles, gait deviation detection, patient device training, gait considerations, device maintenance, volume management, and patient follow up. LLP I also covers prosthetic feet of all kinds, partial foot management, and bilateral amputee management.

Lower Limb Prosthetic Management II

OPLPB 65202

Credit hrs: 5

Course Director: Fanny Schulte, MEd, MSOP, CPO

Course Description:

- Lower Limb Prosthetic Management II (LLP II) covers the comprehensive range of prosthetic management of amputation levels of the lower limb at the knee and points proximal. Bony and muscular anatomy, surface anatomy, surgical amputation techniques, muscle physiology, kinesiology, and biometrics relative to the lower limb are reviewed as applicable. Pathologies and conditions resulting in lower limb amputation are reviewed, historical approaches to transfemoral prosthetics practices are reviewed, and modern transfemoral prosthetic philosophies, components, and methods are covered in depth. Students learn about, observe, and then perform essential aspects of knee-disarticulation and proximal lower limb prosthetic care including patient assessment and communication, K-Level designation, device design recommendation, measurement and casting, component and material selection, positive model optimization, device fabrication, prosthetic alignment and transfer, device application and fitting principles, gait deviation detection, patient device training, gait considerations, device maintenance, volume management, and patient follow up. LLP II also covers knee and hip units, including microprocessor controlled devices and bilateral / multiple amputee management.

Advanced Topics in Orthotics and Prosthetics

OPADT 71201

Credit hrs: 1

Course Director: Jared A. Howell, MS, CPO

Course Description:

- This course is designed to introduce students to advanced concepts in the practice of prosthetics and orthotics and to provide a forum for discussing emerging technologies and the latest applicable research. While this course has some advanced concepts that are covered on a regular basis, much of the content is established as trends and technologies change. Curriculum covers advanced topics that supplement and build on content gained in core basic science coursework. This course draws on strengths from clinical faculty, and outside guest lecturers.

O&P Research I

OPORA 62101

Credit hrs: 2

Course Director: Melissa Suter, PhD

Course Description:

- O&P Research I (OPR I) continues the efforts from Health Research Methods for O&P on developing and executing the research project. Students are expected to work with their research advisor(s) to independently organize research planning, data collection, data analysis, and manuscript preparations. The class is assembled at the mid-point of the semester for progress checks and group discussions about research topics and projects. Critiques by fellow students and instructors / mentors are performed resulting in direct feedback for each project. Students gather again at the end of the semester to submit the required deliverables of the project and discuss project progress with advisors and current and adjacent class cohorts.

Clinical Rotation I

OPCRA 77101

Credit hrs: 7

Course Director: Ashley H. Mullen, MSAT, CPO

Course Description:

- The focus of Clinical Rotation I is technical skills. These skills related to traditional hand skills, including casting and impression taking, mold modification, device fabrication, device assessment, and device adjustment. The clinical site assignment for this course will serve to meet a pre-determined portion of the program requirements for exposure to adult, geriatric, and pediatric patient populations, as well as to private, public, and institutionally owned practices. The didactic portion of the course will be a series of conference calls, webinars, and online discussions through Blackboard and other online platforms, and interaction with third-year students. Technical Scenario case questions will be answered and discussed weekly, as well as lecture content on technical skills. The students will be assessed through technical projects completed during the rotation participation in course discussions and online collaborations, and an in-person assessment related to their clinical rotation at the end of the rotation. They will also be required to submit goals, reflection on the completion of those goals, and case logs.

Clinical Rotation II

OPCRB 77102

Credit hrs: 7

Course Director: Ashley H. Mullen, MSAT, CPO

Course Description:

- The focus of Clinical Rotation II will be patient assessment and the generation of a treatment plan. Students will be guided through strategies of patient assessment, including history and physical assessment, and will discuss the resulting implications on a treatment plan. The clinical site assignment for this course will serve to meet a pre-determined portion of the program requirements for exposure to adult, geriatric, and pediatric patient populations, as well as to private, public, and institutionally owned practices. The didactic portion of the course will be a series of conference calls, webinars, and online discussions through Blackboard and other platforms, and interaction with third-year students. Patient evaluation and treatment plan case questions will be answered and discussed weekly, as well as lecture content on clinical decision-making and patient evaluation. The students will be assessed through documentation and reflection of assessment and plan development experiences completed during the rotation, participation in course discussions and online collaborations, and an in-person assessment related to their clinical rotation at the end of the rotation. They will also be required to submit goals, reflection on the completion of those goals, and case logs.

O&P Research II

OPORB 62202

Credit hrs: 2

Course Director: Melissa Suter, PhD

Course Description:

- O&P Research II continues efforts from OPR I on the individual research projects. Midway through, students present progress on their projects and preliminary results to classmates and mentors. Critiques and suggestions are offered on statistical analyses and results sections by students and faculty. Students individually gather remaining data, compute results, and construct remaining sections with mentors. Students gather one more time at the end of the semester to submit the required elements of the project and for class presentation of project progress to current and adjacent class cohorts.

Clinical Rotation III

OPCRC 77203

Credit hrs: 7

Course Director: Ashley H. Mullen, MSAT, CPO

Course Description:

- The general focus of Clinical Rotation III will be practice management, specifically issues related to contemporary practice and insurance, billing, ethical practice, office management, ancillary professionals, and the experience of orthotic and prosthetic care. The clinical site assignment for this course will serve to meet a pre-determined portion of the program requirements for exposure to adult, geriatric, and pediatric patient populations, as well as to private, public, and institutionally owned practices. The course will be a series of conference calls, webinars, and online discussions through Blackboard and other web platforms, and interaction with first-year students. Practice management questions will be answered and discussed weekly, as well as lecture content and guest speakers on business management, insurance practices, coding, and billing. The students will be assessed through assignments related to evaluation and analysis of their clinic's practice management, participation in course discussions and online collaborations, and an in-person assessment related to their clinical rotation at the end of the rotation. They will also be required to submit goals, reflection on the completion of those goals, and case logs.

Clinical Rotation IV

OPCRD 77204

Credit hrs: 7

Course Director: Ashley H. Mullen, MSAT, CPO

Course Description:

- The general focus of Rotation IV will be special patient populations, specifically highlighting high levels of care for unique populations and general care for commonly seen patient populations in both orthotic and prosthetic practice. The discussion of these populations will range from pathologies to cultural and demographic backgrounds that may have implications on orthotic and prosthetic care. The clinical site assignment for this course will serve to meet a pre-determined portion of the program requirements for exposure to adult, geriatric, and pediatric patient populations, as well as to private, public, and institutionally owned practices. The course will be a series of conference calls, webinars, and online discussions through Blackboard. Case questions will be answered and discussed weekly, as well as lecture content from recognized experts in special patient populations. The students will be assessed through assignments related to patient populations, participation in course discussions and online collaborations, and an in-person assessment related to their clinical rotation at the end of the rotation. They will also be required to submit goals, reflections, and case logs.

O&P Research III

OPORC 62103

Credit hrs: 2

Course Director: Melissa Suter, PhD

Course Description:

- O&P Research III contains the last milestones of the research project, including creation, polishing, and presenting posters and written manuscripts. This class then meets periodically when students present their work to each other and faculty for critique. Upon approval by their Research Advisor, students prepare posters of their projects to display at the annual Allied Health Research Day in November attended by numerous members of multiple health care professions from around the region. Final master's papers are due by the end of the semester.

Clinical Rotation V

OPCRE 77105

Credit hrs: 7

Course Director: Ashley H. Mullen, MSAT, CPO

Course Description:

- The general focus of Rotation V will be professional advancement in orthotics and prosthetics. Content covered by the course will include skill development in personal professional advancement, as well as advanced topics in orthotic and prosthetic care, including cutting-edge technology and considerations for future developments. The course will be a series of conference calls, webinars, online discussions through Blackboard, and interaction with first-year students. Students will be required to submit assignments related to career development, such as an updated resume and cover letter, participate in a mock interview, and generate conversation on technological advancements in the field. The students will be assessed through assignments related to career development and considerations for future practice in orthotics and prosthetics, participation in course discussions and online collaborations, and an in-person assessment related to their clinical rotation at the end of the rotation. They will also be required to submit goals, reflections, and case logs.

Clinical Rotation VI

OPCRF 77106

Credit hrs: 7

Course Director: Ashley H. Mullen, MSAT, CPO

Course Description:

- The general focus of Rotation VI will be leadership in orthotics and prosthetics, on both the micro and macro levels. Content will include professional involvement and advocacy, as well as curriculum related to leadership within a clinic setting. The goal of this course is to familiarize students with avenues to increase their involvement in the profession and their impact on those around them in a professional setting. By the end of the second week of the rotation, students will establish goals for the rotation with their preceptor. Those goals will be submitted to the course director and reviewed at the midpoint and end of the rotation. The goals will address the competencies the preceptor expects the student to obtain by the end of the rotation, as well as any areas identified by the student. The course will be a series of conference calls, webinars, online discussions through Blackboard, and interaction with first-year and second-year students. The students will also share videos and presentations through blackboard. Students will participate in guest lecture experiences with local and national leaders in the field. The students will be assessed through assignments related to evaluation and analysis of their clinic's practice management, participation in course discussions and online collaborations, and an in-person assessment related to their clinical rotation at the end of the rotation. They will also be required to submit goals, reflections, a case log, and documentation of the completion of all of their NCOPE clinical competencies.