



## PROSTHETICS-ORTHOTICS

### ■ DEGREE OFFERED

Master of Prosthetics-Orthotics

### ■ PROGRAM DIRECTOR

Susan L. Kapp, M.Ed., C.P.O., L.P.O.

### FACULTY AND ACADEMIC INTERESTS

#### **Susan L. Kapp, Associate Professor**

B.S., Texas A&M University, 1979; C.P.O., Northwestern University, 1980, 1990; M.Ed., University of Texas at Brownsville, 2005  
Computer-aided design; computer-aided manufacture; new materials application.

#### **Fan Gao, Assistant Professor**

B.E., Beijing University of Aeronautics and Astronautics, 1996; M.S., Ph.D., Pennsylvania

State University, 2004, 2005

Hand biomechanics and motor control; orthopaedic biomechanics; muscle mechanics; development of rehabilitation device.

#### **Leslie Gray, Assistant Professor**

B.S., UT Southwestern Medical Center, 2002; M.Ed., University of Texas at Brownsville, 2007  
Lower-extremity prosthetic management; education technology.

#### **Miguel N. Mojica, Assistant Professor**

B.S., C.P.O., UT Southwestern Medical Center, 1987  
Orthotic management of the spine and upper extremity.

#### **William A. Carlton, Instructor**

C.O., Shelby State Community College, 1981; B.S., UT Southwestern Medical Center, 1983

#### **Misty Judson, Clinical Instructor**

B.S., UT Southwestern Medical Center, 2007

**Kirsten Tulchin, Clinical Instructor**

B.S., Trinity College, 1998; M.S., Marquette University, 2001

**Monica Schmieder, Assistant Clinical Instructor**

B.S., UT Southwestern Medical Center, 2008

■ **ADJUNCT FACULTY**

**Frank A.D. Gottschalk, Professor**

M.D., University of Witwatersrand, South Africa, 1970

**Mark W. Ashford, Clinical Instructor**

B.S., C.P., UT Southwestern Medical Center, 1984

**Donald R. Cummings, Clinical Instructor**

B.S., C.P., UT Southwestern Medical Center, 1984

**Kevin Felton, Clinical Instructor**

B.S., C.O., University of Washington, 1986

**John R. Ferguson, Clinical Instructor**

B.A., California State University, 1985; C.P., University of California, 1986; C.O., Northwestern University School of Medicine, 1991

**Cynthia R. Hooper, Clinical Instructor**

B.S., C.P.O., UT Southwestern Medical Center, 1994

**Donald E. Katz, Clinical Instructor**

B.S., C.O., UT Southwestern Medical Center, 1985

**Chris Lake, Clinical Instructor**

B.S., C.P.O., UT Southwestern Medical Center, 1995

**Alan T. Sheppard, Clinical Instructor**

B.S., C.P.O., UT Southwestern Medical Center, 1996

**Gary Strobel, Clinical Instructor**

A.A., Shelby State Community College, 1985

**Anna Marie Vasquez, Clinical Instructor**

B.A., Arkansas State University, 1975; C.P.O., Northwestern University, 1995

**OBJECTIVES**

The objectives of the Prosthetics-Orthotics program are to offer a solid knowledge base in related sciences and to teach the professional and technical skills necessary to meet the needs of

patients requiring either replacement of a partially or totally absent limb or fitting of a brace to a disabled spine or limb.

Graduates of the program function as active members of the health care team, collaborating with other health care professionals in rehabilitating people with chronic disabling illnesses, injuries or birth defects.

**REQUIREMENTS FOR ADMISSION**

The Admissions Committee of the Prosthetics-Orthotics program determines the admissibility of an applicant into the program in accordance with the quality of his or her credentials. An interview is required. In addition to the general admission requirements specified in the Student Information section of this catalog, applicants to the program must satisfy the following requirements.

- 1) Complete a bachelor's degree from a regionally accredited institution;
- 2) Complete the 37 semester hours of specific prerequisite courses (listed below);
- 3) Earn the minimum recommended cumulative and science GPA of 3.0 on a 4.0 scale;
- 4) Submit a Graduate Record of Examination score;
- 5) Have visited, shadowed, volunteered or worked in a prosthetic-orthotic clinic; and
- 6) Submit three letters of recommendation (instructor, employer, undergraduate adviser, volunteer experience or leadership position supervisor, other academic/research mentor).

■ **MASTER OF PROSTHETICS-ORTHOTICS PREREQUISITE COURSES**

	<b>HOURS</b>
Biology with lab (for science majors)	8
Human Anatomy and Physiology with lab	8
Physics with lab (for science majors)	8
Chemistry with lab (for science majors)	4
College Algebra or higher	3
Statistics	3
Psychology (Human Growth and Development or Abnormal)	3
<i>Total Credit Hours</i>	<i>37</i>
Recommended: Business Management, Ethics	

The prerequisite courses must be completed with a grade of C or better. Prerequisite courses are not offered at UT Southwestern. Classes begin in late May each year.

■ **ESSENTIAL FUNCTIONS**

In addition to essential functions for all students (see Entrance Requirements in the Student Information chapter), each student in the Prosthetics-Orthotics program must be able to:

- 1) Participate in supervised clinical activities for eight-hour days;
- 2) Demonstrate sufficient vision to perform such tasks as (but not limited to) interpreting a medical record, inspecting wounds and determining gait deviations;
- 3) Physically and visually utilize chemicals and power tools while following all appropriate safety precautions;
- 4) Demonstrate the physical capability to work in a prosthetics and orthotics laboratory for four-hour periods;
- 5) Demonstrate sufficient arm strength, balance, coordination and sensation to perform such activities as (but not limited to) patient casting, manual muscle testing, range-of-motion testing, and soft-tissue and bony evaluations.

**CURRICULUM**

The Prosthetics-Orthotics program curriculum leads to a master's degree with academic eligibility to take the certification examinations of the American Board for Certification in Orthotics and Prosthetics.

The faculty combines educational, professional and technical skills in a coordinated approach to the academic and clinical aspects of the student's education, offering an opportunity to attain the basic competencies necessary for an entry-level prosthetist and orthotist. Students also engage in research projects and community service as a part of their learning experience.

■ **PROGRAM OF INSTRUCTION**

**First Year**

<b>SUMMER</b>		<b>HOURS</b>
HCS 5308	Human Anatomy (Lecture)	3

HCS 5309	Human Anatomy Dissection Laboratory	3
HCS 5407	Human Physiology	4
HCS 5207	Introduction to Neuroscience	2
MPO 5101	Introduction to Laboratory Skills and Materials in Prosthetics and Orthotics	1
<i>Total</i>		<b>13</b>

**FALL**

MPO 5102	Clinical Evaluation Tools	1
HCS 5306	Introduction to Pathology	3
MPO 5203	Biomechanics of Human Movement I	2
MPO 5504	Orthotic Management of the Lower Limb I	5
MPO 5505	Prosthetic Management of the Lower Limb I	5
HCS 5106	Professional Development	1
<i>Total</i>		<b>17</b>

**SPRING**

MPO 5106	Biomechanics of Human Movement II	1
MPO 5407	Orthotic Management of the Lower Limb II	4
MPO 5308	Orthotic Management of the Spine	3
MPO 5409	Prosthetic Management of the Lower Limb II	4
HCS 5230	Health Care Research	2
<i>Total</i>		<b>14</b>

**Second Year**

<b>SUMMER</b>		<b>HOURS</b>
MPO 5310	Prosthetic Management of the Upper Limb	3
MPO 5411	Clinical Experience	4
MPO 5112	Clinical Research I	1
<i>Total</i>		<b>8</b>
<b>FALL</b>		
MPO 5313	Orthotic Management of the Upper Limb	3
MPO 5214	Interdisciplinary Aspects of Prosthetics and Orthotics	2
MPO 5115	Clinical Research II	1
MPO 5316	Contemporary Practice and Synthesis	3
<i>Total</i>		<b>9</b>
<i>Total Hours</i>		<b>61</b>

## GRADUATION REQUIREMENTS

A candidate for the degree of Master of Prosthetics-Orthotics must meet all the following requirements:

- 1) The student must demonstrate a high order of scholarly achievement in prosthetics-orthotics, including appropriate professional competencies. The program's Student Progress Committee determines whether adequate mastery has been acquired.
- 2) The student must complete satisfactorily a minimum of 61 semester hours at UT Southwestern School of Health Professions.
- 3) The student must discharge all financial obligations to the medical center. In the event of nonpayment, one or more actions may be taken by the dean: a) readmission may be denied; b) the student's grades and official transcript may be withheld; and c) the degree to which the student would otherwise be entitled may be withheld.
- 4) The student must maintain at least a 2.5 cumulative grade-point average, have no academic deficiencies and have no incompletes.
- 5) The student must complete the academic requirements listed on his or her degree plan, including completion of any academic deficiencies in prerequisite courses, by the times stated in the student's official letter of acceptance. The student is responsible for submitting official documentation of successful completion of the prerequisites to the Office of the Registrar.
- 6) The student must pay a graduation fee designated to partially offset the costs associated with diploma and diploma cover production, regalia and the commencement ceremony. All students completing a degree or certification must pay the fee whether they attend the commencement ceremony or not.

## COURSE DESCRIPTIONS

See other departmental listings in this catalog for descriptions of courses that do not begin with the prefix MPO.



### **MPO 5101 INTRODUCTION TO LABORATORY SKILLS AND MATERIALS IN PROSTHETICS AND ORTHOTICS**

#### **1 SEMESTER HOUR**

This course introduces equipment and tools used in the fabrication of prostheses and orthoses. Proper safety techniques and operating procedures in the laboratory environment are stressed. Prosthetic and orthotic material characteristics are introduced.

### **MPO 5102 CLINICAL EVALUATION TOOLS**

#### **1 SEMESTER HOUR**

This course provides an overview of clinical evaluation tools commonly used to develop treatment plans and assess outcomes for patients with orthopaedic and neurologic impairments. Students have the opportunity to become proficient in selected measurement techniques and evaluation tools through lecture, lab and clinical experience.

### **MPO 5106 BIOMECHANICS OF HUMAN MOVEMENT II**

#### **1 SEMESTER HOUR**

This course is a continuation of MPO 5203 and is designed to develop a fundamental understanding

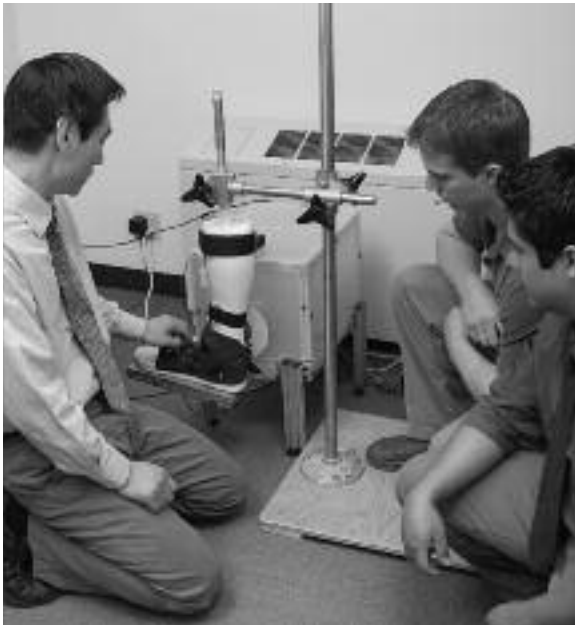
of the anatomical, neuromuscular and biomechanical principles of human movement. Emphasis is on the importance of mechanical principles in relation to analysis of the human body at rest and in motion, in both normal and pathological conditions.

**MPO 5112 CLINICAL RESEARCH I**  
**1 SEMESTER HOUR**

Students, with an assigned faculty mentor, develop a project proposal to answer a defined clinical question. The project may be an in-depth literature review or an experimental research pilot project. Students also may be assigned to ongoing projects. This course focuses on identifying and critically analyzing the literature, using skills learned in the HCS 5230 course. Guidelines for research involving human subjects also are covered.

**MPO 5115 CLINICAL RESEARCH II**  
**1 SEMESTER HOUR**

This course is a continuation of MPO 5112. Students summarize their findings to form conclusions to their clinical questions. This capstone project results in a final scientific paper summarizing the project and a formal presentation to develop communication skills further.



**MPO 5203 BIOMECHANICS OF HUMAN MOVEMENT I**  
**2 SEMESTER HOURS**

This course is designed to develop a fundamental understanding of the anatomical, neuromuscular and biomechanical principles of human movement. Emphasis is on the importance of mechanical principles in relation to analysis of the human body at rest and in motion, in both normal and pathological conditions.

**MPO 5214 INTERDISCIPLINARY ASPECTS OF PROSTHETICS AND ORTHOTICS**  
**2 SEMESTER HOURS**

This course covers medical, psychological and social conditions and needs of the patient requiring orthotic or prosthetic management. It expands on topics presented in other prosthetic-orthotic courses and includes experts in related fields. Topics include ethics, the interdisciplinary team concept, gerontology, wound care, pain management and co-morbidities affecting care. An integral part of this course is a review of classic and current literature, with respect to evidence-based practice models.

**MPO 5308 ORTHOTIC MANAGEMENT OF THE SPINE**  
**3 SEMESTER HOURS**

This course provides a comprehensive study of short- and long-term spinal orthotic patient management. It includes evaluation, treatment-plan formulation, biomechanics and orthotic design for the spine. Fabrication and fitting of selected orthoses are presented.

**MPO 5310 PROSTHETIC MANAGEMENT OF THE UPPER LIMB**  
**3 SEMESTER HOURS**

This course provides a comprehensive study of the short- and long-term upper-limb prosthetic patient management. It includes evaluation, treatment-plan formulation, biomechanics and prosthetic design. Fabrication and fitting of selected prostheses are presented.

**MPO 5313 ORTHOTIC MANAGEMENT OF THE UPPER LIMB**  
**3 SEMESTER HOURS**

This course provides a comprehensive study of short- and long-term upper-limb orthotic patient management. It includes evaluation, treatment-

plan formulation, biomechanics and orthotic design. Fabrication and fitting of selected orthoses are presented.

**MPO 5316 CONTEMPORARY PRACTICE AND SYNTHESIS**

**3 SEMESTER HOURS**

This course presents prosthetic and orthotic practice within the context of current health care. Three distinct areas of focus are presented: practice management, advanced technology, and clinical reasoning and synthesis. It emphasizes documentation and coding skills and includes regulations related to reimbursement by federal, state and private payers, patient confidentiality, quality assurance and accountability, health care economics, marketing, codes of professional responsibilities, and licensure and certification. It also covers professional organizations, international service, and life-long personal and professional development. Resumé development and interviewing skills for securing a residency position are included. This course also builds on current prosthetic and orthotic design principles by introducing additional available technologies and research trends. It includes computer-aided design, myoelectric prosthetic and orthotic control, functional electrical stimulation, micro-processor-controlled joints, management of the high-activity individual, advanced prosthetic socket design and suspension, complex orthotic gait and device design, targeted reinnervation, and osseointegration. This course is offered in the final semester to further prepare the student for the role of prosthetic-orthotic resident. Prior course work is synthesized and facilitated through patient interaction, case studies and other means to enhance patient management and problem-solving skills.

**MPO 5407 ORTHOTIC MANAGEMENT OF THE LOWER LIMB II**

**4 SEMESTER HOURS**

This course provides a comprehensive study of short- and long-term lower-limb orthotic patient management and proximal to the knee. It includes evaluation, treatment-plan formulation, biomechanics and orthotic design. Fabrication and fitting of selected orthoses are presented.

**MPO 5409 PROSTHETIC MANAGEMENT OF THE LOWER LIMB II**

**4 SEMESTER HOURS**

This course provides a comprehensive study of short- and long-term lower-limb prosthetic patient management at and proximal to the knee. It includes evaluation, treatment-plan formulation, biomechanics and prosthetic design. Fabrication and fitting of selected prostheses are presented.

**MPO 5411 CLINICAL EXPERIENCE**

**4 SEMESTER HOURS**

This course provides the opportunity to apply learned skills during a multi-week clinical experience. It may occur in a general practice setting or a specialty practice such as upper-limb prosthetics, pediatrics, acute management, Department of Defense facility or Veterans Administration facility.

**MPO 5504 ORTHOTIC MANAGEMENT OF THE LOWER LIMB I**

**5 SEMESTER HOURS**

This course provides a comprehensive study of short- and long-term lower-limb orthotic patient management distal to the knee. It includes evaluation, treatment-plan formulation, biomechanics and orthotic design. Fabrication and fitting of selected orthoses are presented, including material characteristics. International standards and product failure also are discussed.

**MPO 5505 PROSTHETIC MANAGEMENT OF THE LOWER LIMB I**

**5 SEMESTER HOURS**

This course provides a comprehensive study of short- and long-term lower-limb patient management distal to the knee. It includes evaluation, treatment-plan formulation, biomechanics and prosthetic design. Fabrication and fitting of selected prostheses are presented, including material characteristics. International standards and product failure also are discussed.