

Oklahoma State University Institute of Technology
Face-to-Face Common Syllabus
Fall 2017

OPT 2404 Transfemoral Prosthetics

Students cover the physical deficits that result from limb loss following transfemoral amputation. Levels of amputation, medical management, materials and components, and principles of fabrication, dynamic alignment are presented. Fabrication techniques, designs and component selection for various transfemoral amputations are given. Fluid control mechanisms and various other types of knee units are reviewed.

Course Purpose: The purpose of Transfemoral Prosthetics is to help the learner attain the knowledge and fabrication skills required to successfully fabricate transfemoral prosthesis.

Type of Course: (Theory/Lab).

Credit Hours: 4; Total hours of theory per semester: 25;
Total hours of lab for the semester: 75; Total hours of clinical per semester: 0.

Class Length: Full Semester

Class Format: Face-to-Face

Class Days and Times: Tuesday/Thursday 8:30 a.m. – 11:50 a.m.

Prerequisites: None

Instructor Name: Michael P. Madden

Instructor Phone: (918) 293-5320

Office: HTED; Lab

Instructor Email: mike.madden@okstate.edu

Contact: My preferred method of contact is e-mail. Please allow 24 - 48 hours to return your correspondence during the normal work week.

Instructor's Office Hours: Monday – Friday; 8:00 a.m. – 12:00 a.m.; 1:00 p.m.- 4:00 p.m.

School Name: Nursing and Health Sciences

Schools Main Phone: 918-293-5337

REQUIRED TEXT, REFERENCES, AND MATERIALS

Recommended: Shurr, Donald and John Michael. *Prosthetics and Orthotics*.

Sieg, Kay and Sandra Adams. *Illustrated Essentials of Musculoskeletal Anatomy*.

References: Wilson Jr., Bennett. *A Primer on Limb Prosthetics*.

Salter, Robert. *Textbook of Disorders and Injuries of the Musculoskeletal System*.

Visible Body: <http://www.visiblebody.com>

Materials: N/A

Uniform/Tools: *Optional*

Upon completion of the course, students should:

Objectives	Assessment Method
1.1 Identify bones of the lower extremity	Quiz, Final Exam (F)
2.2 Utilize forms to assemble orthotic and prosthetic devices to correct measurements	Lab Project (F)
4.1 Use all machinery as described in the Machine Lab Safety Manual	Instructor Observation (F)
4.2 Utilize the appropriate personal protective equipment while using tools and hazardous materials	Instructor Observation (F)
11.3 Summarize the characteristics of an ischial containment transfemoral socket	Mid-Term Exam (F)
12.2 Summarize the advantages and disadvantages of transfemoral suspension options	Quiz (F)
14.2 Summarize the characteristic of the major categories of prosthetic feet	Quiz, Final Exam (F)
14.3 Summarize the characteristics of the major categories of prosthetic knees	Quiz, Final Exam (F)
14.5 Assemble components for fabrication of a transfemoral prosthesis	Lab Project (F)
15.1 Bubble-form plastic over a prosthetic model with minimal wrinkles and artifacts	Lab Project (F)
15.2 Finish socket with negligible damage to plastic	Lab Project (F)
16.1 Establish correct coronal, sagittal, and transverse plane relationships between prosthetic components	Lab Project (F)
17.1 Select and apply prosthetic textiles to a lower extremity model	Lab Project (F)
17.2 Apply laminate to a prosthetic lay-up under vacuum	Lab Project (F)
17.3 Finish socket with negligible damage to lamination	Lab Project (F)

Aspects of the course objective assessments may be used in the university's assessment of student learning. If applicable, an asterisk (*) above indicates this course is used in the university assessment program.

(Please asterisk the assignment above if utilized for the assessment assignment.)

COURSE ACTIVITIES

In this course students will:

- Participate in lectures and class discussion
- Understand and implement ALL safety procedures within O/P lab
- Participate in reading and research assignments
- Interact with guest speakers
- Complete Trans Femoral fabrication with variations safely and expediently
- Determine appropriate material selection and componentry selection.
- Complete project assignments
- Demonstrate professional behavior in lab situations.
- Participate in Oral presentations
- Give attention to differing designs, materials and components available in Prosthetic fabrication.
- Consider Lab and Machinery safety in relation to fabrication of Transfemoral prosthetics.
- Use Vertical Alignment Jig and associated tools relating to transfers and completion of Transfemoral designs.
- Grasp appropriate bench alignment in relation to available prosthetic knees/feet.
- Prepare and complete negative mold into positive model.
- Modify positive plaster models as dictated by specific criteria.
- Construct transfemoral prostheses in keeping with techniques and principles of fabrication presented.
- Demonstrate appropriate inventory control of the lab.
- Demonstrate ability to determine differing lay up constructs in socket fabrication.
- Understand properties of materials and components relating to patient size and activity levels.

- Practice appropriate adjustment and repair techniques to transfemoral prosthesis.
- Demonstrate appropriate check out of prosthesis prior to delivery.

EVALUATION - GRADES WILL BE BASED ON THE QUALITY AND COMPLETION OF THESE TASKS: (NOTE-Please indicate the course specific evaluations.)

30%..... *Quizzes/Tests*

60%*Fabrication Projects**

10%.....*Homework and Research (if assigned)*

OSUIT Grading Scale	
A =	90%-100%
B =	80%-89%
C =	70%-79%
D =	60%-69%
F =	59% & below

*Grades include adherence to safety procedures and cleaning up after each lab day.

*The student’s grade for this assignment will be used in the university’s assessment of student learning. A 70% competency or higher receives a Pass rating. This Pass/Fail rating is independent of the student’s course grade.

Daily and/or weekly quizzes, small weekly assignments and similar type projects: Normal return time to student by next class meeting or no later than one (1) week.

Extensive assignments, large lab projects, extensive quizzes, exams and similar type projects: Normal return time to students in one (1) to two (2) weeks.

RECOMMENDED STUDENT COMPETENCIES/SKILLS

Student success will be enhanced by familiarity with hand and power tools, the ability to read measurements in both imperial (foot/inches) and metric units, and working knowledge of electronic communication programs and techniques such as Microsoft Word and file download and attachment processes.

AUTHORIZED TOOLS

Students may use any/all course materials, including books and notes, while participating in classroom activities. All quizzes and written assignments are to be completed independently; no collaboration with classmates is permitted and any instance of such will be considered academic dishonesty.

LATE WORK

All work (projects, reports and presentations) must be submitted by 11:50 a.m. on the day it is due. Due dates for work are on your outline, so there should be no surprises. Late work will be penalized 5% for every day it is late. Work is considered late after 11:50 a.m. on the day it is due unless I advise you otherwise, or you have an excused absence on the due date. No tests,

assignments, presentations or papers will be accepted after 3 days of original due dates. I reserve the right to modify this policy depending on individual circumstances.

TESTING

Tests may be administered in person or online through D2L. Please make arrangements in advance if you know you will miss a scheduled test. The availability of make-up exams for unexcused absences will be at the instructor's discretion.

CLASSROOM AND LAB CONDUCT

An instructor or member of the OSUIT staff must be present when students are working in the lab. Only students in the program are allowed in the lab. Use of the machine labs is not allowed until students complete the Lab and Machine Safety Checkout. Professional behavior is expected in the classroom and the labs at all times. Use of profane and sexually based language will not be tolerated.

Students may wear scrubs or casual clothing appropriate for working in the lab. No open toed shoes, high heels or sandals are allowed. All shirts must have sleeves. No ties, long necklaces or any other potentially dangerous items that could cause injury to the student or others are allowed in the lab. Hair longer than the collar must be tied back while working in the lab.

DRESS CODE (REQUIRED)

Field trips, seminars and guest speakers: Casual Professional

For women, this means blouses and pants, skirts or dresses. The hemlines of dresses and skirts must fall below the knee. Blouses must have sleeves and cover the midriff (no tube tops, t-shirts, tank tops or transparent fabrics). For men, this means slacks and sport shirts (no sleeveless shirts or t-shirts). For both sexes, casual dress shoes are required (no sandals). No head covers are allowed.

Lab: Scrubs or casual clothing. Shirts must have sleeves. Closed toe shoes required. No head covers.

Lecture classroom: Scrubs or casual clothing. No head covers.

Internship: Scrubs or dress as dictated by your internship site.

SYLLUBUS ATTACHMENT

View the Syllabus Attachment, which contains other important information, by visiting http://osuit.edu/center/student_syllabus_information

OPT 2404: Transfemoral Prosthetics
Course Schedule
Tues/Thurs 8:30 a.m. – 11:50 a.m.

9/7	Course Guidelines Lower Limb Anatomy Bony structures Landmarks Amputation levels Lower Limb Pathology	Lecture Lecture Lecture
9/12	Lower Limb Anatomy Muscles of the Thigh Transfemoral Model Transfemoral Model Fabrication: Open Lab	Lecture Lecture/Demo Lab
9/14	Transfemoral Model due Transfemoral Socket Designs IC Socket Principles IC Landmarks and Modifications Check Socket Fabrication Check Socket Fabrication: Open Lab	Project due Lecture Lecture/Demo Lab
9/19	Quiz Review Transfemoral Components Check Socket Fabrication: Open Lab	Lecture Lecture/Demo Lab
9/21	Lower Limb Anatomy/Pathology Quiz Check Socket due Transfemoral Socket Lamination Materials / Lay-up PVA Bags Capping/Sheet PVA Transfemoral Socket: Open Lab	Quiz Project due Lecture/Demo Lab
9/26	Transfemoral Biomechanics Transfemoral Socket: Open Lab	Lecture Lab
9/28	Prosthetic Feet Transfemoral Socket: Open Lab	Lecture Lab
10/3	Transfemoral Alignment Attaching the 3-Prong Adapter Transfemoral Socket: Open Lab	Lecture Lecture/Demo Lab
10/5	Cosmetic Finishing 2 nd Lamination: Open Lab	Lecture/Demo Lab

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10/10	Transfemoral Suspension 2 nd Lamination: Open Lab	Lecture Lab
10/12	Assembly of TF Prosthesis 2 nd Lamination: Open Lab Assembly of TF Prosthesis: Open Lab	Lecture/Demo Lab Lab
10/17	TF Project II Overview Assembly of TF Prosthesis: Open Lab Transfemoral Model Fabrication: Open Lab	Lecture Lab Lab
10/19	IC TF Prosthesis Due Quiz Review Transfemoral Model Fabrication: Open Lab	Project Due Lecture Lab
10/24	Flexible Inner Socket with Valve Flexible Inner Socket: Open Lab	Lecture/Demo Lab
10/26	Prosthetic Knees Single axis vs. Poly-axial Mechanical vs. Fluid Flexible Inner Socket: Open Lab	Lecture Lab
10/31	Transfemoral Gait Deviations Inner Socket Lamination: Open Lab Inner Socket Lamination: Open Lab	Lecture Lab Lab
11/2	Mid-Term Exam Review Outer Socket Lamination: Open Lab	Lecture Lab
11/7	Mid-Term Exam Outer Socket Lamination: Open Lab	Exam
11/9	Assembly of TF Prosthesis: Open Lab	Lab
11/14	Suction Socket Prosthesis Due Principles of Knee Disarticulation Knee Disarticulation Model Fabrication	Project Due Lecture Open Lab
11/16	Pelite Liner Fabrication Knee Disarticulation Model Fabrication KD Pelite Liner Fabrication: Open Lab	Lecture/Demo Open Lab Lab

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Tues/Thurs 8:30 a.m. – 11:50 a.m.

11/21	Knee Disarticulation Model Fabrication	Lab
11/23	Thanksgiving Break	
11/28	Final Exam Review	Lecture
	KD Pelite Liner Fabrication: Open Lab	Lab
11/30	KD Socket Lamination: Open Lab	Lab
12/5	KD Socket Lamination: Open Lab	Lab
12/7	Final Exam	Exam
12/12	KD Socket Lamination: Open Lab	Lab
	Knee Disarticulation Project Due	Project Due (end of class)
12/14	KD Prosthesis Disassembly	Lab
	Lab Clean-up	Lab

**** Schedule is subject to change at the instructor's discretion ****