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

OPT 1204: UPPER EXTREMITY PROSTHETICS

An examination of the anatomy, pathologies, and biomechanics of the upper limb in order to understand the functional needs of the upper extremity amputee. Topics include management of transradial and transhumeral amputation, suspension and harnessing principles, body-powered and myoelectric control systems, and prosthetic design criteria. Students will develop skills in material and component selection, prosthetic alignment, and fabrication. Theory/Lab. (An additional $300 charge for lab and material fees applies to this course.)

Course Purpose:
The purpose of Upper Extremity Prosthetics is to help the learner attain the knowledge and fabrication skills required to successfully fabricate transradial and transhumeral prostheses.

Type of Course: Theory/Lab
Credit Hours: 4
Total clock hours of theory per semester: 25;
Total clock hours of lab per semester: 75;
Total clock hours of clinical per semester: 0.

Class Length: Semester (15 weeks)
Class Days and Times: T/R; 1:00p.m. - 4:20p.m.
Prerequisites: N/A

Instructor Name: Jennifer Block **Instructor Phone:** (918) 293-5324
Office: Orthotics and Prosthetic Bldg., Room 132D
Instructor Email: jblock@okstate.edu
Contact: My preferred method of contact is email. Please allow 24-48 hours to return your correspondence during the normal work week.

Instructor's Office Hours: M/W/F, 8:30a.m.-10:00a.m.

School Name: Nursing and Health Sciences **School Main Phone:** 918-293-5337

REQUIRED TEXT, REFERENCES, AND MATERIALS

Texts: Sieg, Kay and Sandra Adams. ***Illustrated Essentials of Musculoskeltal Anatomy.***

References (Optional): Wilson Jr., Bennett. ***A Primer on Limb Prosthetics.***
Salter, Robert. ***Textbook of Disorders and Injuries of the Musculoskeletal System.***
Shurr, Donald and John Michael. ***Prosthetics and Orthotics.***

Materials: Provided by Orthotic and Prosthetic Technologies Program
Uniform/Tools: Safety glasses

Estimated Cost for Materials: $250
Estimated Cost for Uniform/Tools: $5.00
Optional Resources: N/A

Upon completion of the course, students should:

Course Objectives	Assessment of Objectives
Identify anatomy of the upper extremity	Final Exam (F)
Utilize forms to assemble prosthetic devices to correct measurements	Lab Project (F)
Utilize the appropriate personal protective equipment while using tools and hazardous materials	Instructor Observation (F)
Identify the parts and functions of a Northwestern Figure 8 harness	Quiz (F)
Construct a Northwestern Figure 8 harness	Lab Project (F)
Summarize the characteristics of the major categories of upper extremity terminal devices	Quiz (F)
Bubble-form plastic over a prosthetic model with minimal wrinkles and artifacts	Lab Project (F)
Align transradial and transhumeral prostheses	Lab Project (F)
Fabricate transradial and transhumeral prostheses with varying suspension options	Lab Project (F)
Laminate a prosthetic 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 assignment is used in the university assessment program.

COURSE ACTIVITIES

In this course students will:

- Participate in class discussions of anatomy, biomechanics, and pathology of the upper extremity.
- Complete readings and homework assignments.
- Demonstrate appropriate safety behaviors for equipment, materials, chemicals, and machinery.
- Recognize differing designs, materials and components available in prosthetic fabrication.
- Select appropriate material and components for various upper extremity prosthetic designs.
- Align various upper extremity prosthetic designs.
- Modify positive plaster models as dictated by specific project criteria.
- Execute cosmetic finishing for various upper extremity prosthetic designs
- Demonstrate appropriate inventory control of the lab.
- Participate in discussions regarding professional responsibilities and scopes of practice in the orthotic industry.
- Practice safe appropriate lab and equipment procedures.

EVALUATION - GRADES WILL BE BASED ON THE QUALITY AND COMPLETION OF THESE TASKS:

OSUIT
Grading Scale

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

Grade Calculation

Your grade will be calculated in the following manner:

20% Quizzes*
- UE Anatomy
- Terminal Devices/Wrist Units
- Figure 8 Harness

40% Fabrication Projects*
- TR Dual Wall Laminated Socket w/Flexible Hinges
- Figure 8 Harness
- TR Dual Wall Laminated Socket w/Single-Pivot Hinges
- TH Laminated Prosthesis

15% Homework and Participation

25% Exams*
- Mid-term
- Final

Total 100%

*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 (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, homework and presentations) must be submitted **at the beginning of class** on the day it is due. Due dates for projects and homework are on your outline, so there should be no surprises. Late submissions of assignments and projects will be accepted within one week, with 10% deducted for each day late. No late work will be accepted after one week without prior arrangements. Work is considered late after the start of class on the day it is due unless I advise you otherwise, or you have an excused absence on the due date. 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.

OTHER LAB AND CLASSROOM POLICIES

Punctuality

Class begins at 1:00p.m. and roll is taken at that time. If you are not in class when roll is taken, you will be counted absent in accordance with the OSUIT attendance policy. If you arrive late, it is your responsibility to check with me and make sure your presence in class has been recorded. Punctuality is a professional skill required by both employers and our program. Consequently, excessive tardiness can affect your grade. If you are tardy three times, that will be counted as an absence. Please be on time to both lectures and open laboratory work sessions.

Cell Phones

Use of cell phones in class is not allowed. This includes both lecture classes and open laboratory time. Please turn your cell phone to silent or vibrate during the entire class. Do not leave a lecture to make or receive calls unless it is an emergency. If you need to make or receive a call during laboratory time, please step outside the lab to do so.

Lab Conduct

An instructor or member of the OSUIT staff must be present when students are working in the lab. No work of any kind may occur in the labs during lunch or before/after classes unless an instructor is present. Only students in the program are allowed in the lab. Students must complete their Machine Safety Checkout before using the lab for the first time.

Students may wear scrubs or casual clothing appropriate for working in the lab. No open toed shoe wear, 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.

Homework and Research

You will be required to conduct light research in order to complete some of the homework assignments. Please make certain that you are familiar with OSUIT's online databases and journals, and the process for conducting searches within our system. If you need help with conducting online research, please make an appointment with Jenny Duncan in the library. She is glad to help.

Dress Code
Field trips, seminars and guest speakers: Casual professional (no jeans, shirts with collars).
Lecture classroom: Scrubs or casual clothing. Shirts must have sleeves and cover the midriff.
Fabrication Lab: Scrubs or casual clothing. Shirts must have sleeves and cover the midriff.
Closed toe shoes required.

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

COURSE OUTLINE
See attached schedule.

OPT 1204: Upper Extremity Prosthetics
Tuesday/Thursday: 1:00-4:20p.m.

	Topic	**Activity**
9/7	Course Guidelines	Lecture
	Upper Limb Anatomy	Lecture
	Bones	
	Landmarks	
	Machine Safety	Lecture
9/12	Upper Limb Anatomy	Lecture
	Planes of Motion	
	Muscles of the Forearm and Hand	
	Upper Limb Pathology	Lecture
	Amputation Levels	
	Transradial Model	Lecture/demo
	Transradial Model Fabrication: Open Lab	Lab
9/14	Transradial Socket Designs	Lecture
	Test Socket Fabrication	Lecture/demo
	Test Socket Fabrication: Open Lab	Lab
9/19	Terminal Devices/Wrist Units	Lecture
	Test Socket Fabrication: Open Lab	Lab
9/21	**Test Socket Due**	**Project due**
	Transradial Socket Lamination	Lecture/demo
	Materials	
	Lay-up	
	Transradial Socket Lamination: Open Lab	Lab
9/26	**UE Anatomy Quiz**	**Quiz**
	Transradial Socket Lamination: Open Lab	Lab
9/28	Transradial Alignment	Lecture/demo
	Double-wall Lamination	Lecture/demo
	Foaming and Shaping	
	Outer Lamination	
	Transradial Socket Lamination: Open Lab	Lab
10/3	**Transradial Socket Lamination Due**	**Project due**
	Transradial Suspension	Lecture
	Flexible Hinges	
	Figure 8 Harness	
	Outer Lamination/Harnessing: Open Lab	Lab

OPT 1204: Upper Extremity Prosthetics
Tuesday/Thursday: 1:00-4:20p.m.

10/5	Transradial Cabling and Humeral Cuff	Lecture/demo
	Outer Lamination/Harnessing: Open Lab	Lab
10/10	**Terminal Devices/Wrist Units Quiz**	**Quiz**
	Outer Lamination/Harnessing: Open Lab	Lab
10/12	**Outer Lamination**	**Project Due**
	Humeral Cuff/Transradial Cabling: Open Lab	Lab
10/17	Midterm Exam Review	Lecture
	Overview of Single Pivot Hinges	Lecture
	Single Pivot Hinges Fabrication Alignment Joint Spacer	Lecture/demo
	Humeral Cuff/Transtibial Cabling: Open Lab	Lab
	Single Pivot Hinges Model: Open Lab	Lab
10/19	**Figure 8 Harness Quiz**	**Quiz**
	Flexible Hinges Prosthesis Due	**Project Due**
	Single Pivot Hinges Model: Open Lab	Lab
10/24	Upper Limb Anatomy Muscles Proximal to Elbow	Lecture
	SPH Inner Lamination: Open Lab	Lab
10/26	**Mid-Term Exam**	**Exam**
	HW Assigned: Prosthetic Principles	Lecture
	SPH Inner Lamination: Open Lab	Lab
10/31	Single Pivot Hinges Fabrication Contouring Outer Lamination	Lecture/demo
	SPH Foaming: Open Lab	Lab
11/2	Single Pivot Hinges: Open Lab	Lab
11/7	**HW Due: Prosthetic Principles**	**Homework Due**
	SPH Outer Lamination: Open Lab	Lab
11/9	**Single Pivot Hinges Due**	**Project Due**
	Transhumeral Amputation Socket Design Suspension	Lecture
	TH Model Fabrication	Lecture/Demo

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Tuesday/Thursday: 1:00-4:20p.m.

11/14	TH Socket Fabrication TH Model Fabrication: Open Lab	Lecture/Demo Lab
11/16	TH Lamination: Open Lab	Lab
11/21	TH Lamination: Open Lab	Lab
11/23	**Thanksgiving Holiday**	**No Class**
11/28	TH Harness and Cable System TH Harness/Cable: Open Lab	Lecture/Demo Lab
11/30	TH Harness/Cable: Open Lab	Lab
12/5	UE Prosthetics Final Exam Review TH Prosthesis Assembly: Open Lab	Lecture Lab
12/7	Assembling the TH Prosthesis TH Harness and Cable System: Open Lab	Lecture/Demo Lab
12/12	**UE Prosthetics Final Exam** TH Harness and Cable System: Open Lab	**Exam** Lab
12/14	**TH Prosthesis Due** Project Breakdown and Cleaning	**Project Due (End of Class)** Lab

Schedule is subject to change at instructor discretion.