Instructor Name: Michael Brncick
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Office Location: T1061
Office Telephone: 815-280-2219
Office Hours: M-R 8:00 – 9:00 AM; 11:45 AM – 12:45 PM

Course Description:
The course is designed to provide students with the knowledge and skills necessary to fabricate transtibial prostheses. Impression procedures, interface materials, foot and ankle mechanisms, alignment and transtibial design variations will be covered.

IAI number: N/A

Credit and Contact Hours
- Credit Hours 4
- Lecture/Demonstration 2
- Lab/Studio/Clinical 4

Prerequisites:
OPT 100

Books, Supplies, and Supplementary Materials
- Required Textbooks/Reading list
  No text required. Materials provided by program director
- Supplementary texts/materials
  All supplementary materials developed and provided by program director
- Other resources utilized:
  Curriculum from Northwestern University’s Prosthetic Orthotic Center

Methods of Instruction:
- Lecture
- Laboratory
- Clinical Rotations
- iCampus assignments

Student Learning Outcomes
1. Gather the necessary tools, instruments and materials to fabricate various transtibial prostheses
2. Select proper materials for a given transtibial prosthesis intervention
3. Fabricate various types of transtibial prostheses with skill and accuracy including bench alignment
4. Identify anatomical landmarks necessary to fabricate transtibial prostheses
5. Modify transtibial casts for proper contours, alignment and biomechanical effect
6. Describe and discuss various trim line options for transtibial prostheses
7. Assist a clinician with impression techniques and adjustments to transtibial prostheses
General Education Student Learning Outcomes

Students must be able to:
- Math: Calculate percentages, perform metric to English conversions, apply linear measurements with respect to human anatomy, perform basic geometric right angle lay out.
- English and language skills: Communicate verbal and written concepts in a clinical and laboratory environment.

Graded Assignments and Policies

Graded Assignments:
Laboratory projects are separated into technical and clinical sections. Each project is graded according to category. Quizzes and exams are given throughout the course. Attendance is taken and counted as part of the grade.

The following schedule is an estimate of the work that will be included in the final point total; should items be eliminated the same percentages will stand for the adjusted point total. The student’s grade is based on the individuals completed and corrected work.

Grading Policy

<table>
<thead>
<tr>
<th>Assignments</th>
<th>Number</th>
<th>Points</th>
<th>Total</th>
<th>Grading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class Projects</td>
<td>7</td>
<td>10</td>
<td>70</td>
<td>A</td>
</tr>
<tr>
<td>Quizzes</td>
<td>5</td>
<td>20</td>
<td>100</td>
<td>B</td>
</tr>
<tr>
<td>Final Written</td>
<td>1</td>
<td>50</td>
<td>50</td>
<td>C</td>
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<tr>
<td>Final Project</td>
<td>1</td>
<td>50</td>
<td>50</td>
<td>D</td>
</tr>
<tr>
<td>Class Participation</td>
<td>1</td>
<td>10</td>
<td>10</td>
<td>F</td>
</tr>
</tbody>
</table>

Major Tests and Quizzes:
Student performance will be evaluated throughout the semester through the use of section quizzes; project evaluation check lists; midterm and final exams.

Classroom Policies and Procedures

A. General Information

Students must become familiar with the lab safety rules and abide by those rules. Students who are unable to follow the safety rules will not be allowed to continue in the program.

Complete all assignments and projects in a timely manner.

Wear proper clothing for surface anatomy sessions.

Homework assignments are required to be completed prior to the next class session. Homework assignments consist primarily of iCampus video presentations that are essential to understanding and preparing for laboratory projects for the next class meeting.

Open laboratory times are available each semester. The instructor will provide students with the open lab times at the beginning of each semester. Every effort should be made to complete projects during the allotted class time.

Since orthotics and prosthetics is a medical field, a clean and neat appearance is essential. Sleeveless shirts, short pants, or clothing of questionable taste, etc. are not acceptable in the O/P lab.

B. Attendance Policy:

Attendance is essential for the student to develop the sequentially presented skills. If absence is unavoidable, notify the instructor prior to a scheduled class. Because many of the projects build from what was done in previous class work, it is advisable to attend each class. Attendance is taken and class participation is counted as part of the grade.
Attend all classes. Do not make appointments during scheduled class times (doctors, dentist, personal, business, etc.).

An excused absence may be allowed in the case of personal illness, family emergency, transportation difficulties or as previously arranged with the instructor.

C. Make-up Policy
All work assigned will be due by the assigned date; late work may be accepted at a penalty to the student. The penalty is one-half (1/2) credit for the late assignment. The grade will be on a total point system with points assigned to each activity assigned to the class.

D. Extra-credit Policy
Students have the opportunity to gain extra credit through special projects, assistance in lab set up and other fabrication projects as determined by the department head. All extra credit must be scheduled and approved by the department head. Students may apply the agreed upon credit to projects, quizzes or exams.

E. Final Exam Information
Final exams are given during final exam week. Exams consist of a written exam and a laboratory practical.

F. Academic Honor Code
The objective of the academic honor code is to sustain a learning-centered environment in which all students are expected to demonstrate integrity, honor, and responsibility, and recognize the importance of being accountable for one’s academic behavior.

Students who are found in violation of the academic honor code will be required to meet with the program director to determine the severity of the penalty. This may include dismissal from the program, remediation in the form of specific assignments or other measures that are determined by the department head.

G. College Statement about grades of “F” and withdrawal from class.

- Students may withdraw from a course by processing an add/drop form during regular office hours through the Registration and Records Office at Main Campus or Romeoville Campus, or by phone at 815-744-2200. Please note the withdrawal dates listed on your bill or student schedule. Every course has its own withdrawal date. Failure to withdraw properly may result in a failing grade of “F” in the course.

- At any time prior to the deadline dates established, an instructor may withdraw a student from class because of poor attendance, poor academic performance or inappropriate academic behavior, such as, but not limited to, cheating or plagiarism.

H. Intellectual Property
Students own and hold the copyright to the original work they produce in class. It is a widely accepted practice to use student work as part of the college’s internal self-evaluation, assessment procedures, or other efforts to improve teaching and learning and in promoting programs and recruiting new students. If you do not wish your work to be used in this manner, please inform the instructor.

I. Student Code of Conduct
Each student is responsible for reading and adhering to the Student Code of Conduct as stated in the college catalog.

J. Sexual Harassment
Joliet Junior College seeks to foster a community environment in which all members respect and trust each other. In a community in which persons respect and trust each other, there is no place for sexual harassment. JJC has a strong policy prohibiting the sexual harassment of one member of the college community by another. See Catalog or Student Handbook.
K. Student Support [http://jjc.edu/services-for-students/pages/default.aspx](http://jjc.edu/services-for-students/pages/default.aspx)

a. Disability Services: [http://jjc.edu/services-for-students/disability-services/Pages/default.aspx](http://jjc.edu/services-for-students/disability-services/Pages/default.aspx).

Student Accommodations and Resources (STAR): If you need disability-related accommodations, specialized tutoring, or assistive technology in this class, if you have emergency medical information you wish to share with me, or if you need special arrangements in case the building must be evacuated, please inform me immediately. Please see me privately after class or at my office. New students should request accommodations and support by scheduling an appointment with the Student Accommodations and Resources (StAR) Office, Campus Center 1125, (815) 280-2230.

b. Tutoring: [http://jjc.edu/services-for-students](http://jjc.edu/services-for-students)

c. Counseling and Advising: [http://jjc.edu/services-for-students/counseling-advising](http://jjc.edu/services-for-students/counseling-advising)

d. Academic Resources: [http://jjc.edu/services-for-students/academic-resources](http://jjc.edu/services-for-students/academic-resources)

e. Support Programs: [http://jjc.edu/services-for-students/support-programs-services](http://jjc.edu/services-for-students/support-programs-services)

f. Technology Support: [http://jjc.edu/services-for-students/Pages/technology-support.aspx](http://jjc.edu/services-for-students/Pages/technology-support.aspx)

L. Safety

Students with an impaired ability to concentrate may jeopardize safety in this classroom for themselves, their classmates and their instructor. If your ability to concentrate is impaired you should discuss this matter with your instructor prior to operating equipment or performing a laboratory procedure. Students are responsible for reporting to their instructor any condition that would impair the ability to concentrate. Failure to notify your instructor of this issue may be a violation of the Student Code of Conduct.

For safety purposes, students are required to wear closed shoes at all times.

Safety glasses must be worn in all designated areas.

### Topical Outline

<table>
<thead>
<tr>
<th>Week</th>
<th>Unit, Topic, Class Activity (Indicate approximate time allotment for each topic/unit)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Patient Evaluation Measurement Methodology Impression Techniques</td>
<td>Review of anatomy and concepts of transtibial prostheses. Impression techniques and measurement systems are presented. Laboratory project; impression techniques <strong>Objectives:</strong> 1. Locate and identify anatomical landmarks for a PTB impression 2. Perform the impression procedure for a PTB prosthesis</td>
</tr>
<tr>
<td>2</td>
<td>Introduction to PTB Plaster Model Rectification</td>
<td>Lecture/Demonstration cast modifications for PTB prosthesis. Laboratory project; cast modifications <strong>Objectives:</strong> 1. Locate soft tissue and bony areas on a PTB cast 2. Modify a PTB cast</td>
</tr>
<tr>
<td>3</td>
<td>Supracondylar Prosthetic Sockets</td>
<td>Lecture/Demonstration; supracondylar socket modifications. Laboratory project; Cast modification of supracondylar socket</td>
</tr>
<tr>
<td>Section</td>
<td>Title</td>
<td>Lecture/Demonstration Examples</td>
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<tr>
<td>5</td>
<td>Lay-up and Lamination Techniques</td>
<td>Lecture/Demonstration: PVA, PVC bag fabrication techniques. Lay-up techniques, lamination of socket, breakout of socket. Laboratory project: Lamination and breakout of socket. Objectives: 1. Prepare a cast and soft insert for lamination 2. List various lamination layups for transtibial prostheses 3. Laminate a socket for a transtibial prosthesis</td>
</tr>
<tr>
<td>6</td>
<td>Description of Adjustable Leg Bench Alignment</td>
<td>Lecture/Demonstration: socket attachment, adjustable leg alignment. Laboratory project: set up and alignment. Objectives: 1. Identify components of the adjustable leg for alignment of a transtibial prosthesis 2. Bench align a transtibial prosthesis</td>
</tr>
<tr>
<td>7</td>
<td>Finishing Techniques Exoskeletal Prostheses</td>
<td>Lecture/Demonstration: finishing of exoskeletal prostheses. Laboratory project: shaping, lamination and finishing of exoskeletal prosthesis. Objectives: 1. Fabricate an exoskeletal prosthesis 2. Shape an exoskeletal prosthesis 3. Laminate a cosmetic finish for an exoskeletal prosthesis</td>
</tr>
<tr>
<td>8</td>
<td>Principles of Endoskeletal Prosthetic Components</td>
<td>Lecture/Demonstration: endoskeletal components, alignment techniques. Laboratory project: alignment of endoskeletal prosthesis. Objectives: 1. Identify common endoskeletal components 2. Utilize endoskeletal components to align</td>
</tr>
<tr>
<td>9</td>
<td>Introduction to Total Surface Bearing Principles Overview of Silicone Liner Varients</td>
<td>Lecture/Demonstration: impression TSB suction socket design, model rectification, placement of locking mechanism. Laboratory project: modification, locking modification, and clear test socket fabrication. Objectives: 1. Modify a cast for a total surface bearing prosthesis 2. Fabricate a diagnostic socket for a total surface bearing prosthesis</td>
</tr>
<tr>
<td>10</td>
<td>Lamination of Endoskeletal Socket Locking mechanism</td>
<td>Lecture/Demonstration: lamination of endoskeletal socket with locking mechanism. Laboratory project: lamination of socket Objectives: 1. Laminate a carbon fiber socket with a soft liner 2. Set up alignment and attachment for a pin suspension system</td>
</tr>
</tbody>
</table>
| 11 | Finishing Techniques  
Endoskeletal Prostheses | Lecture/Demonstration; finishing of endoskeletal prosthesis.  
Laboratory project; finishing of endoskeletal socket  
**Objectives:**  
1. Apply a cosmetic cover to an endoskeletal prosthesis  
2. List various finishing techniques for endoskeletal prostheses |
|---|---|
| 12 | Syme Prostheses | Lecture/Demonstration; Cast modifications, variations of Syme prostheses.  
Laboratory Project; modify cast and fabricate Syme medial opening prosthesis  
**Objectives:**  
1. Perform cast modifications for a Syme prosthesis  
2. Fabricate and align a Syme medial opening prosthesis |
| 13 | Syme Prosthesis | Continue Syme Prosthesis project  
Laboratory fabrication |
| 14 | Digitizing Techniques  
Transtibial Impressions  
Socket modifications utilizing CAD | Lecture/Demonstration; digitizing techniques transtibial sockets.  
Laboratory project; digitizing impressions, CAD design of transtibial sockets.  
**Objectives:**  
1. Identify various shape acquisition systems  
2. Explain template application and with respect to socket modification |
| 15 | Adjustments  
Socket Modifications  
Alignment and Height Adjustments | Lecture/Demonstration; socket adjustments, modifications, height adjustments.  
Laboratory project; adjustments, socket, and height modifications.  
**Objectives:**  
1. Perform basic socket modifications for a transtibial prosthesis  
2. Perform alignment and height adjustments for a transtibial prosthesis |
| 16 | Final Exam | Course Review; final exam laboratory project. |

**Effective Date:** 1-16-2012

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**Signature of Department Chair:** ________________________________