WASHINGTON UNIVERSITY SCHOOL OF MEDICINE
PROGRAM IN PHYSICAL THERAPY

Course Syllabus Fall, 2013
Essential Clinical Skills II
Course 627

I. Course Description 3 Credits (25 hrs. Lecture, 57 hrs. Lab)

The emphasis of this course is on the following content areas: joint mobilization, modalities, lymphatic drainage and soft tissue massage. The student will develop the knowledge and skill required to formulate and implement appropriate treatment programs related to these skills. This course will apply and build on the knowledge gained in the first year basic science courses. It will provide essential skills for later more advanced clinical courses where comprehensive evaluation and treatment of the patient is the emphasis. The format of this course is a combination of lecture, discussion/demonstration sessions, case studies and laboratory sessions. Students will be expected to demonstrate professional behavior throughout this course.

II. Course Faculty:

Course Master:
Tracy Spitznagle, PT, DPT, WCS
Office: (314) 286-1429

Course Assistants:
Gregory Holtzman PT, DPT: Modalities Unit Assistant
Office: 286-1430

<table>
<thead>
<tr>
<th>Instructors:</th>
<th>Lab Assistants: (unit in which lab assisting)</th>
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<tbody>
<tr>
<td>Nancy Bloom, PT, DPT</td>
<td>Irene Chou PT, DPT (modalities, massage)</td>
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<td>Cheryl Caldwell, PT, DPT, CHT</td>
<td>Cheryl Caldwell, DPT, PT, CHT (mob.)</td>
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<td>Sylvia Czuppon PT, DPT, OCS</td>
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<td>Matt Driskill PT, DPT, (mob., modalities, massage)</td>
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<tr>
<td>Mike Gorman PT, MOMT, DMT, FAAOMPT</td>
<td>Trisha Dorries, OT, CLT-LANA (lymphedema)</td>
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<td>Mary Hastings, PT, DPT, ATC</td>
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<td>Lee Ann Higginbotham PT, MHS, CHT</td>
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<td>Patty Zorn, PT MAAppSci(MT)</td>
<td>Caitlin Kothe, PT, DPT (modalities, massage)</td>
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<td>Julie Killian, PT (modalities, massage)</td>
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<td>Erin Logan, PT, DPT, OCS (mobilizations)</td>
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<td>Janet Mannhard PT(massage)</td>
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<td>Mary Kate McDonnell, PT, DPT, OCS, (mob)</td>
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<td>Theresa Miller, PTA, CLT-LANA (Lymphedema)</td>
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<td>Robyn Seibel, PT, CLT (lymphedema)</td>
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<td>Lesley Turner, PT, DPT, CLT (lymphedema)</td>
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III. Contents

Unit I  Mobilization – Spitznagle
Unit II  Modalities- Holtzman
Unit III Massage- Higginbotham/Tylka

If you have any physical impairment that limits your full participation as therapist or patient for any of the content of this course, you are responsible for:

1) Bringing this to the attention of the course master immediately
2) Providing any documentation requested.

IV. Course Goal and Objectives

A. Goal

Upon completion of this course the student will demonstrate skill in examination, selection and application of appropriate mobilization, massage, and modality application techniques; physical therapy management strategies; and patient education based on a problem solving approach, analysis of results of the examination and the plan of care.

*Since this is a professional program, you will be responsible for material covered in previous P.T. courses. This includes basic scientific background, kinesiological concepts, screening and skills or procedures along with indications and contraindications.

B. Course Objectives

The student will be able to:
1. Make appropriate decisions regarding the action of the physical therapist based on data from the medical screening form, problem-centered history, or physical exam.
2. Select and demonstrate appropriate examination procedures.
3. Analyze examination findings verbally and/or in written form, according to the positive and negative results.
4. Select therapeutic techniques appropriate to the evaluation findings and diagnosis.
5. Demonstrate skill and safety in performing joint mobilization techniques with a patient or with another student using correct therapist and patient positioning, handling techniques, verbal cues, and/or non-verbal cues
6. When given a laboratory practice opportunity demonstrate the generic professional abilities by:
   a. evidence of self-assessment and profiting from the criticism received from others.
   b. utilization of lab time to increase opportunities to work with as many different classmates as possible.
   c. attention to keeping a quiet, clear work environment that will enhance the productivity of all.
   d. requiring correct and careful performance of each activity from self and others.
   e. seeking the help needed to improve one’s performance.
offering others suggestions to enhance their performance using a manner that will encourage their receptivity to the suggestions.

C. Unit Objectives

Standard for Objectives

Unless otherwise noted on the objectives, successful attainment will be measured by a grade of at least 70% on the written papers and tests and a grade of 3 or higher on the practical test items.

1. Unit I: Mobilization – Spitznagle et al

This unit focuses on teaching basic skill in physical therapy examination and treatment by joint mobilization. The unit begins with learning mobilization techniques for the lower extremity followed by upper extremity and finishes with the spine (lumbar, thoracic, and cervical). Emphasis is placed on manual skill development of common basic mobilization techniques. The student will be introduced to the evidence for joint manipulation. Joint mobilization techniques will also be taught in future DMMC II III, and Case Integration III classes. Patient positioning, examination and mobilization techniques introduced in this unit are designed to prepare the student for future education on manipulation in Case Integration III in the 3rd year of education.

A. From Kinesiology I and II the student is expected to be able to: Describe basic concepts of joint motion and the Physical Stress Theory (PST) as applied to joint mobilization based on review of principles of kinesiology. Including:

Arthokinematics
Osteokinematics
Physiological movements
Accessory movements (joint play)
Concept of convex concave rule
Close packed/open packed position
Degrees of freedom
Coupled movements of the spine
Stress/strain/elongation of tissue

B. At the end of unit I, the student should be able to:

1. Define terminology of joint mobilization.

2. List indications and contraindications and precautions for joint mobilization.

3. Systematically assess mobility of extremity and spinal joints using movement testing to determine suitability of mobilization as treatment for an identified joint restriction. This includes assessment of:

   a. passive physiological and accessory (joint play) movement
   b. end feel
   c. presence of capsular and non-capsular patterns of restrictions

4. Describe what happens to joint and other soft tissues during manual techniques
and demonstrate the basic techniques of traction and glide to selected spinal and peripheral joints. (written and practical test)

5. Differentiate between two systems (Maitland, Kaltenhorn) of grading as presented in class and readings.

6. Demonstrate grades of movement used in mobilization and defend your choice of grade in relation to signs and symptoms. (written and practical test)

7. On a student patient, perform assessment of physiological and accessory (joint play) movement of selected spinal and peripheral joints.

8. Choose the correct treatment and sequence for progression of the treatment.

9. From case examples decide appropriate techniques to mobilize selected spinal and peripheral joints based on assessment of restriction of physiologic and accessory movement and relationship of pain produced by those movements including the following factors: (written and practical test)

Components of technique
Direction of movement
Grade of movement

10. Given a student patient the student should be able to:
(practical test)
a. Perform appropriate assessments based on joint specifics to determine appropriate technique. (temperature, sweating, joint alignment, comparable sign, passive physiological and or accessory motion)

b. Perform selected joint mobilization techniques using proper positioning (therapist and patient), proper hand placement, proper stabilization, proper control of part and proper application of force.

c. Continually assess response of patient to technique being used and modify technique according to this response.


11. Given a case example, plan progression of mobilization treatment based on assessment and reassessment of joint response. (written and practical test)

12. Verbalize the application of the Physical Stress Theory (PST) to joint mobilization.
3. Unit II – Modalities: Holtzman et al

This unit focuses on developing expertise in application and delegation of the use of the common physical agents used in physical therapy, including heat, cold, water, sound compression, and electricity. The unit has three major areas of emphasis: the physics, biophysics and physiological effects of physical agents; the hands-on application of physical agents; and the decision making skills concerned with physical agent selection. The unit is divided into two sections: Clinical Electrotherapy and Agents - Thermal and Mechanical. Each section contains a combination of assigned readings from the text and reference articles, lectures, and guided and self-directed laboratory experiences. This unit relies on previous didactic knowledge for successful completion.

A. Overall Objectives: At the end of unit II, the student should be able to:

1. Understand the biophysical, physiological, and, when applicable, neurophysiological principles and effects of a given physical agent.

2. Be able to select an appropriate physical agent and defend that decision given a clinical problem.

3. Use the physical stress theory to understand how modalities can be used as an adjunct to other forms of treatment to restrict stress (protect tissue) or to progress stress (overload tissue)

4. Be able to apply a selected physical agent safely and appropriately.

5. Be able to adequately supervise a physical therapy extender with the use of a selected physical agent.

6. Write a P.T. note using the SOAP format including written evidence of informed consent regarding the application of a physical agent in a clinical situation.

7. Demonstrate professional behavior by exhibiting a commitment to learning, successful interpersonal and communication skills with fellow students and faculty, and effective use of constructive feedback from classmates and faculty.

B. Section I Clinical Electrotherapy Objectives: Following lectures, labs and readings, the student will accurately

1. Describe and compare the various waveforms and waveform characteristics produced by the electrical generators discussed in this unit:
   - NMES (AC and DC) - neuromuscular electrical stimulation
   - TENS - transcutaneous electrical stimulation
   - Iontophoresis
   - Interferential current
   - HVPC - high volt pulsed current

2. Define chronaxie and rheobase and assess if a muscle is innervated or denervated based on these values.
3. Describe and analyze how the strength-duration curves of innervated, partially innervated and denervated muscle relate to the pulse duration of an electrical current generator.

4. Assess the effects of the following on a muscle contraction: stimulation amplitude, stimulation frequency, pulse duration, location of axons, duty cycle, muscle fatigue, patient comfort. Provide rationale for the most optimal parameters.

5. Distinguish the significance of current density and the ways that it may be clinically altered.

6. Compose a list of the advantages, indications, contraindications and precautions of all forms of electrical stimulation/biofeedback studied in this unit.

7. Evaluate the differences between a muscle contraction induced by electrical stimulation (extracellular) and one which is physiologically (intracellular) induced. Explain the clinical ramifications of this difference.

8. Describe the physiological effects that occur at the anode and cathode.

9. Translate the standard electrode configurations (monopolar, bipolar and tetrapolar), and compare the indications for each of their uses.

10. Identify the sources of impedance (resistance) and distinguish the ways that impedance is minimized in the clinical application of electrical stimulation and biofeedback.

11. Discuss the methods used clinically to document a patient's subjective pain level.

12. Compare the most common modes of TENS and identify the theoretical mechanisms by which each is thought to modulate pain.

13. Examine the effects of denervation on muscle tissue and the impact of electrical stimulation therapy on this pathology.

14. Given a patient scenario, select and justify the optimal parameters for muscle strengthening, muscle re-education, denervated muscle, iontophoresis, wound healing, edema reduction and pain relief (stress restriction, stress restriction, or stress modulation).

15. Analyze the effect of pulsed electrical stimulation on local blood flow.

16. Explain the theoretical mechanisms for the bacteriocidal effects of cathodal DC current.

17. Relate the current of injury theory and how this theory relates to the use of electrical stimulation for wound healing.
18. Demonstrate the use of biofeedback for both muscle strengthening and muscle relaxation.

19. Given a patient scenario, justify the placement of biofeedback electrodes.

20. Given a patient case scenario design and perform a safe and effective treatment utilizing an electrical stimulation modality.

C. Thermal, Mechanical, and Light Objectives: Following lecture, labs and readings, the student will accurately

1. Compare and contrast conduction, convection and conversion. Identify the method each thermal agent in this unit uses to transfer heat.

2. Formulate the characteristics of mild and vigorous heating.

3. Given a patient scenario, choose which type of heating (mild or vigorous) would be most beneficial for the patient.

4. Describe specific heat capacity and relate its significance in the clinical application of paraffin.

5. Evaluate all parameters that determine safe and effective use of superficial heat, cold, hydrotherapy, ultrasound, laser/infrared light.

6. States the depth of penetration of all thermal or light agents discussed in this unit and evaluate the importance of considering the depth in patient scenarios.

7. Justify the selection of a thermal or light agent based upon the target tissue and the goal to be achieved (stress progression, stress restriction, or stress modulation)

8. Given a patient scenario, justify the optimal treatment parameters of a thermal or light agent.

9. Compare and contrast the physiological effects of each thermal or light agent on connective tissue, circulation, metabolic rate, pain and neuromuscular tissue. Identify the mechanisms by which these effects are thought to occur. State how each of these physiological effects modifies the tissue response to physical stress.

10. Justify the selection of a thermal or light agent based on the biological events that occur during the inflammation and repair process, or support the decision against their use. Identify the impact of inflammation on the threshold for injury of specific biological tissues and discuss how thermal or light agents can be used to modify this threshold.

11. Compose a list of the advantages, indications, contraindications and precautions of all thermal and light agents studied in this unit.

12. Compose a list of the indications, contraindications, and precautions for spinal traction.

13. Given a patient scenario, select and justify the optimal treatment parameters for spinal
cervical and lumbar traction including:

- distractive force
- angle
- on/off time
- treatment duration
- treatment frequency

14. Compare and contrast each type of therapeutic traction: bed, manual, mechanical, home traction including advantages and disadvantages of each.

15. Evaluate the effects of spinal traction on muscle, disc, facets and foraminal size.

16. Given a patient case scenario, identify the injured tissue design / perform a safe and effective treatment utilizing a traction modality to produce an adaptive response (protection or progression)

17. Describe and explain the ultrasound coupling technique, various treatment applications as well as the thermal and non-thermal effects of ultrasound.

18. Explain the properties of water that may contribute to therapeutic effects.

19. Given a patient case scenario design and perform a safe and effective treatment utilizing a thermal, light, or mechanical modality.

4. **Unit III –Lymphedema/ Massage - Tylka /Higginbotham**

At the end of the unit, the student should be able to:

a. Describe the anatomy and physiology of the lymphatic system.

b. Define Lymphedema.

c. Identify causes of Lymphedema; differentiate between primary and secondary causes of Lymphedema.

d. Recognize physical therapy treatment options for the management of Lymphedema.

e. Identify contraindications to manual lymphatic drainage.

f. Identify contraindications to compression bandaging.

g. Demonstrate appropriate compression bandaging and/or manual lymphatic drainage. (Practical exam)

h. Apply information presented in class to patients in a laboratory setting.

i. Define massage; soft tissue mobilization and myofascial trigger points.

j. Identify various massage and soft tissue techniques.
k. Give rationale for various types of massage.

l. Demonstrate various massage and soft tissue techniques. (Practical exam)

m. Identify components of massage.

n. Palpate bony and soft tissue structures accurately.

o. Adapt the strokes to various diagnoses and areas to be treated.

p. State indications and contraindications for massage and soft tissue techniques.

V. Resources

A. Required Resources:


Mobilization Techniques for LE, UE, Spine I and Spine II, Program in Physical Therapy, Washington School of Medicine, St Louis Mo. 
http://dptcourses.wusm.wustl.edu


Lymphedema Techniques, Program in Physical Therapy, Washington School of Medicine, St Louis Mo. 
http://dptcourses.wusm.wustl.edu


*When information/methods, etc. presented in class differ from those in the required text, the class information takes precedence.

B. Suggested Resources:

Edmond, SL. Manipulation and Mobilization: Extremity and Spinal Techniques, St. Louis, Mosby 1993

Maitland, GD. *Peripheral Manipulation*, Butterworth

Maitland, GD. *Vertebral Manipulation*


Jules Rothstein, *Measurement in Physical Therapy*


C. Handouts will be supplied by instructors.

VI. Grading Criteria

Students are expected to attend all classes, prepare for all classes and actively participate in laboratory sessions and class discussions. Failure to do so can lower your grade. Report illnesses and absences to the Course Master who will attempt to provide alternate opportunities. PLEASE REFRAIN FROM CONVERSATION DURING LECTURE IN ORDER NOT TO CHEAT YOUR CLASSMATES OF THE OPPORTUNITY TO HEAR THE LECTURE. REPEATED OCCURRENCES OF THIS DISRUPTIVE BEHAVIOR IS CONSIDERED UNPROFESSIONAL BEHAVIOR AND WILL BE REPORTED TO CAES.

Any time a student receives a grade of **69% or lower** on any exam it is **the student's responsibility** to meet with the Course Master **within one week** of receiving the grade. Student tutors will be arranged as needed. You are encouraged to make use of the Open Lab for additional skill practice. A lab assistant from this unit will staff the Open Lab hours.

A. Written Exams:

There will three written exams. Exam one will cover only material from Mobilization. Exam two will cover material on Clinical Electrotherapy. Exam three will cover agents: thermal and mechanical plus, massage and lymphedema. Exam three is not comprehensive but will be scheduled during finals week. All information provided in both lecture and lab will be considered appropriate material for these written tests.

At the start of the exam you must sign both the Scantron sheet and the exam paper. Tests will be available to see in approximately one week. All tests must be returned to faculty **WITH SCANTRON SHEET ATTACHED**. If you have a question on your test, write the question on the outside of the Scantron Sheet and the appropriate faculty member will respond to your question. Exam grades will not be considered final until after all changes have been made by the course master in response to Scantron analysis and questions from students. Be prompt to all tests. If a student is late for a test (including a practical test) the test must be taken in the amount of time remaining.
B. Practical Exams:

A grade of 70% or higher is needed to pass the course. Only one retake exam of a failure grade will be allowed. Failure on a retake exam will be discussed at CAPES to determine the next course of action. The highest practical grade possible after a retake examination is 70%.

You should plan the time of the retake with the course master to give you the best opportunity to remediate the failure. The practical exams evaluate problem solving, technical skills, and professional behavior. Two practical exams will be given during the course.

C. Course unit values:

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<th>Written Exam One: Mobilization</th>
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<tr>
<td>Practical Exam One: Mobilization</td>
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<tr>
<td>Written Exam Two: Electrical Modalities</td>
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<td>Practical Exam Two: Modalities (all) and Massage</td>
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<tr>
<td>Written Exam Three: Modalities: Thermal Modalities</td>
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<tr>
<td>Lymphedema and Massage</td>
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<tr>
<td>Modality Lab Assignments</td>
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**TOTAL = 100%**

If pass/fail assignments occur in this course, failure will lower your grade by 5%.

Your written exams may be reviewed by appointment with the course master for 3 weeks after the exam date.

**PLEASE TAKE RESPONSIBILITY IN PREVENTING OCCURRENCES OF DISHONESTY IN THIS COURSE.**

CONVERSATION IS NOT PERMITTED in the halls or classroom DURING or AFTER A WRITTEN OR PRACTICAL TEST.

THERE SHOULD NOT BE ANY DISCUSSION OF TEST CONTENT AMONGST STUDENTS.

ALL ASSIGNMENTS ARE TO BE INDIVIDUAL WORK UNLESS TOLD OTHERWISE.

YOU ARE EXPECTED TO REPORT ANY OCCURRENCES OF DISHONESTY TO THE COURSE MASTER.

VII. Course Schedule

The course is generally scheduled to meet:

Monday 10-11:50
Tuesday 1:00-2:50
Thursday 1:00-2:50

Any deviations are noted on the schedule form attached to this document in **Bold**.
VIII. Attire

Appropriate dress for lab sessions should be discussed with instructors prior to scheduled labs. It is important to dress appropriately for every lab so that each student can experience the physical agents. Proper attire consists of halters or swimsuits and shorts for women and t-shirts and shorts for men. BE DRESSED FOR LABS BEFORE SESSION BEGINS.

For mobilization and massage units, due to the handling skills needed to appropriately perform the techniques, it will be expected that each student have trimmed fingernails such that the nail does not extend beyond the pad of your fingers.

Laboratory practice is critical for the safe and competent practice of your profession. DO NOT waste your own or your partner's lab time. See objectives #1-6 on generic professional abilities under general objectives.

IX. Written Assignments:

A. Modality Lab Assignments: Information on this assignment will be given out during the lab orientation.

B. Pass/fail assignments will potentially be given out in other units based on the needs of the lectures.

Students are prohibited from selling or being paid for taking notes during this course to or by any person or commercial firm without the express written permission of the professor teaching this course.

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