Course Offering: 4 Credit Hours

Prerequisites: Admission to the MOT Program

Format: Lecture & Laboratory

Lecture Day/Time: Tuesday & Friday 10:30-12:30

Lab Day/Time: Sections A: Thu: 8:30-11:30am; B: Thu: 1:00-4:00pm

Class Location: Main 116 (Lecture) & Jaharis Science Room 019 (Lab) (Main Campus)

Faculty/Lecture/Lab Office: Dr. Natalya Zinkevich, Ph.D.

Office: Charles House 209

Office Hours: Thursday: 11:30-1p.m.; 4-5pm; Friday 1:00-3:00pm

Phone: 262-524-7280

Email: nzinkevi@carrollu.edu

Course Description
This course explores fundamental concepts related to the normal function of the human body. Basic pathophysiological and clinically related concepts are also introduced. This course includes the study of body systems using the incorporation of experimental design, data analysis, computer simulations, case studies and discussion/presentation of primary literature. The physiological basis for human occupation will be examined and applied through the integration of structure and function in content areas most pertinent to the practice of OT and with emphasis on occupational performance. Potential for disruption to homeostasis as it pertains to the occupational dysfunction and to the practice of OT will be addressed. Topics are integrated into both lecture and laboratory formats.

Course Rationale
Developing breadth and depth of knowledge in the physiological principles and concepts relevant to the mechanisms of homeostasis is a fundamental component of the skill set necessary to guide assessments and interventions. A sound knowledge of the body systems as they relate to a physiologic state or normal function of the human body is an essential component of the skill set necessary to guide assessments and interventions as an OT practitioner. Students are expected to take advantage of knowledge gained in concurrent courses including Human Anatomy and Overview of
Occupational Therapy Practice, and apply this to their learning experience in Human Physiology. This mode of study will help solidify knowledge as body systems are simultaneously studied inter-relationally to body regions and the structures therein. Students will use this foundational knowledge to help form the idea that health and wellness depends on well-regulated interacting body systems, and apply this to the concept of occupational performance and to the practice of occupational therapy.

**Relationship to Curriculum Design**
The curricular threads of Occupational Performance, lifelong learning and scholarship, professional development and self-reflection, and inter-professional and collaborative care, supports the foundational knowledge and skill development necessary for OT practice. With a solid understanding of the foundational and theoretical sciences, students can begin to develop an appreciation of the complexities of the human condition and the integral relationship between health, and engagement in everyday occupations.

**Course Goals**
*At course conclusion, students are expected to:*
1. Integrate knowledge and concepts from various organ systems to explain function in the human body
   - Using appropriate medical terminology, students will be able to explain the basic chemical, physical, physiological, and biochemical concepts of body systems and in relation to a fully functioning human body.
2. Use self-assessment, feedback from peers and faculty, the textbook, online resources, course and lab learning experiences, and the course objectives to identify strengths and limitations in knowledge of organ-system physiology.
3. Be prepared to be an effective consumer of the latest research and knowledge bases that support practice and contribute to the growth and dissemination of research and knowledge.
4. Demonstrate the knowledge, skills and attitudes needed to be able to use appropriate tools of evidence to identify and analyze books, reviews, online resources, and basic science reports for their applicability towards quality in healthcare and quality improvement.
5. Work effectively and reach consensus in small peer groups while solving problems that require integration of physiological and clinical information.
6. Demonstrate a combination of knowledge, skills, attitudes, and behaviors necessary to function as a respected member of a learning team in both small group and large class settings.
7. Demonstrate a commitment to individual, professional and personal growth.
### Student Learning Objectives/Instruction/Assessment

<table>
<thead>
<tr>
<th>Student Learning Objectives (#1)</th>
<th>ACOTE Standards</th>
<th>Instructional Methods/ Learning Activities</th>
<th>Assessment Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using appropriate medical terminology, students will be able to explain the basic chemical, physiological, physical, and biochemical concepts of the body systems noted below, and in relation to a fully functioning human body.</td>
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<tr>
<td>• Students will differentiate landmarks of human development and human behavior of the lifespan stages through the following systems: Musculoskeletal System, Integumentary System, Circulatory System, Nervous System, Respiratory System, Digestive System, Limbic System, Endocrine System, Urogenital System, Reproductive System, Immune system</td>
<td>B.1.2 B. 1.3</td>
<td>• Readings • Lectures • Visuals aids (models, posters, diagrams, PowerPoint, animation, videos) • Lab experiments • Lab reports • Case studies • Literature search • Group Interaction • Class Discussion • Problem-based Learning</td>
<td>• Quizzes • Unit Exams and Final Exam • Lab reports rubric • Group Presentations</td>
</tr>
<tr>
<td>• Students will explain the body process, mechanism and interrelationships of systems involved with and in: Cell Biochemistry and Homeostasis Body Fluids Connective &amp; Supportive Tissue Cardiovascular System Respiration Renal Function Acid-Base Balance GI Tract Endocrinology Metabolic Regulation Nervous System Physiology</td>
<td>B. 1.1</td>
<td>• Readings • Lectures • Visuals aids (models, posters, diagrams, PowerPoint, animation, videos) • Lab experiments • Lab reports • Case studies • Literature search • Group Interaction • Class Discussion • Problem-based Learning</td>
<td>• Quizzes • Unit Exams and Final Exam • Lab reports rubric • Group Presentations</td>
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</table>
Course Content and Relationship to ACOTE Standards

This course meets or partially meets the following standards of education for the Accreditation Council for Occupational Therapy Education (ACOTE). The student will:

- B.1.1 Demonstrate knowledge and understanding of the structure and function of the human body.
- B.1.2 Demonstrate knowledge and understanding of human development throughout the lifespan.
- B.1.3 Demonstrate knowledge and understanding of the concepts of human behavior.
- B.1.7 Demonstrate the ability to use statistics to interpret tests and measurements for the purpose of delivering evidence-based practice.

<table>
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<tr>
<th>Thermoregulation Nutrition</th>
<th>B. 8.2</th>
<th>Lectures, Literature search, Group Interaction, Class Discussion, Problem-based Learning</th>
<th>Lab reports rubric, Group Presentations</th>
</tr>
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<tbody>
<tr>
<td>Students will demonstrate the ability to locate and evaluate quality evidence</td>
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<tr>
<td>Students will interpret criterion-referenced and norm-referenced standardized test scores</td>
<td>B.4.6</td>
<td>Lectures, Literature search, Group Interaction, Class Discussion, Problem-based Learning</td>
<td>Lab reports rubric, Group Presentations</td>
</tr>
<tr>
<td>Students will apply professional ethics, values and responsibilities for the OT profession during all interactions of the class</td>
<td>B.9.0</td>
<td>Readings, Lectures, Visuals aids (models, posters, diagrams, PowerPoint, animation, videos), Lab experiments, Lab reports, Case studies, Literature search, Group Interaction, Class Discussion, Problem-based Learning</td>
<td>Quizzes, Unit Exams and Final Exam, Lab reports rubric, Group Presentations</td>
</tr>
</tbody>
</table>
• B.4.6 Interpret criterion-referenced and norm-referenced standardized test scores on the basis of an understanding of sampling, normative data, standard and criterion scores, reliability, and validity.
• B.8.2 Effectively locate, understand, critique, and evaluate information, including the quality of evidence.
• B.9.0 Apply professional ethics, values, and responsibilities of the OT profession in the conduct of self and during all interactions with others as encountered and required during this course of study.

Required Text for All Students:

Additional readings will be provided by instructor via eLearning course site. TBD.

Resources:
Carroll University’s Library has access to a variety of databases and journals such as CINAHL PLUS, Cochrane Database of Systematic Reviews, Medline & PubMed for example. These databases are recommended to assist with article searches.

Grading and Course Requirements:
Grading for this course will be based on a total possible accumulation of 850 points, with letter grades applied to a percentage of this total as follows:

Grading Scale:

<table>
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<tr>
<th>Percentage</th>
<th>Grade</th>
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<tbody>
<tr>
<td>93-100 %</td>
<td>A</td>
</tr>
<tr>
<td>90-92.9%</td>
<td>A/B</td>
</tr>
<tr>
<td>83-89.9%</td>
<td>B</td>
</tr>
<tr>
<td>80-82.9%</td>
<td>B/C</td>
</tr>
<tr>
<td>70-79.9%</td>
<td>C</td>
</tr>
<tr>
<td>60-69.9%</td>
<td>D</td>
</tr>
<tr>
<td>&lt;60%</td>
<td>F</td>
</tr>
</tbody>
</table>

Progress will be evaluated through the following means:

<table>
<thead>
<tr>
<th>EVALUATION</th>
<th>POINTS</th>
<th>LINKED STUDENT LEARNING OBJECTIVES</th>
<th>LINKED ACOTE STANDARDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam I</td>
<td>150</td>
<td>1</td>
<td>B.1.1, B.1.2, B.1.3, B.1.7, B.4.6, B.8.2, B.9.0</td>
</tr>
<tr>
<td>Exam II</td>
<td>150</td>
<td>1</td>
<td>B.1.1, B.1.2, B.1.3, B.1.7, B.4.6, B.8.2, B.9.0</td>
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</tbody>
</table>
Exams I –IV: Will cover material presented in both lecture and laboratory - i.e., will require both identification and thought processes - as well as that included in assigned readings or other activities. The general exam format will be derived from licensure/board-like objective questions and possibly from short answer/essay questions where you will be asked to apply your physiological knowledge to the solving of clinical problems.

Assignments and Assigned Readings are designed to strengthen your understanding of a subject and/or to provide for coverage of material, which, because of time constraints, we are unable to discuss in class. These topics are, however, important due to the nature of the Health Professions. These assignments may involve group discussion and problem solving activities (e.g. clinical problems at end of units), and may or may not be collected for grading.

The Self-Evaluation will consist of a personal professional development assessment.

The Peer-Evaluation will consist of evaluating a peer on professional development.

Lecture Quizzes. Four lecture quizzes will be given without notice throughout the semester.

Quizzes: Five lab quizzes (15 points each) will be given as scheduled in the syllabus. Quizzes will be given in lab and will contain questions from both lab and lecture.

Laboratory Summaries: The overall important points from several laboratory exercises should be prepared in a typed summary. The write-up should include graphs and analyses of class data. The report should also incorporate how the activity in lab relates to what you have been studying in lecture and summarize what concepts were demonstrated, etc. Questions posed during and at the end of the laboratory exercises should be incorporated into these summaries. Providing alternative explanations for your findings will serve as a means of review for quizzes and exams and will serve to indicate if you understand the basic concepts presented or demonstrated.
The **Group Lab Presentations**: The field of physiology is constantly growing and expanding. Additionally, you all have areas of physiology that you find especially interesting. These presentations will allow you to explore physiology along this avenue. Each presentation will consist of 20-25-minute seminar-type talks presented to the rest of the class on the topics chosen by each group at the beginning of the semester. The specifics of these presentations will be given to you via a separate handout and discussed in lab. Groups are required to utilize available visual aid resources (PowerPoint, video, etc.) and it is required that ALL group members speak at the presentation. All members of a presentation team will receive the same grade, except under unusual circumstances. Enjoy this experience; it is a good way to review, to apply the physiology you have learned and to showcase your accomplishments this semester.

**Group Lecture Presentations** will consist of 20-25-minute seminar-type talks presented to the rest of the class on the topics chosen by each group at the end of the semester. The presentation will link physiology to clinical Occupational Therapy practice. The specifics of these presentations will be given to you via a separate handout and discussed in lecture. Groups are required to utilize available visual aid resources (PowerPoint, video, etc.) and it is required that ALL group members speak at the presentation. All members of a presentation team will receive the same grade, except under unusual circumstances.

**Group Lecture Presentation Topics:**

**Topic 1**: “Physiological mechanisms of tissue healing. How it can guide rehabilitation process after the surgery?”


**Topic 3**: “The Nesbitt’s paradox: pathophysiology and clinical implications.”

**Topic 4**: “The pathophysiological effect of spinal cord injuries on sexual function. How sexual dysfunction can be managed and/or corrected by occupational therapy practitioners.”

**Topic 5**: “Insulin resistance as a predictor of age-related diseases. Long-term management of type 2 diabetes and associated pathologies”.

**Topic 6**: “Underlying physiological mechanisms of short- and long-term memory loss. Occupational therapy approach to memory problems.”

**Topic 7**: “Electromyographic (EMG) and Semmes-Weinstein' monofilaments (SWMs) tests: physiological principals, clinical applications, and current trends in occupational therapy practice.”

*** Any creative and exciting topic idea approved by the Instructor***

Student Writing Guidelines
As a reminder, the MOT program requires that students follow APA (American Psychological Association) style for all written work. Papers submitted in a format other than APA will be returned ungraded. It is strongly recommended that students purchase the *Publication Manual of the American Psychological Association, 6th Edition*. Thus, for all work submitted in written or presentation form (including references), must be APA style and format.

Student Responsibility:
Regular attendance is expected and required for successful completion of this course. Three or more unexcused absences and/or tardiness will be noted and will result in specific point deductions at the instructor’s discretion, because you will miss out on important interactions/classroom exercises. Students should come prepared for each class period by: 1) having reviewed the previous information from each unit and 2) having at least skimmed assigned readings and reviewed any materials provided. Because of the nature of this course, you should expect to spend a great deal of time in independent study and review outside of class; your instructor can only do so much for you. Each student is responsible for material assigned and presented in class, whether the student is present or absent. Because of the nature of the course, NO MAKE UP EXAMS/ quizzes will be given except under extraordinary circumstances and as approved PRIOR to the absence by the course Instructor (when possible). In the case of an unexpected absence (such as a medical emergency) written documentation (such as an explanation from the attending physician) will be required to sit for the exam. The scheduling of and format for any make-up exams/ quizzes will be at the discretion of the Course Coordinator. Additional policies will be in accord with those outlined in the MOT Program Student Handbook. It should be re-emphasized that repeated tardiness or disruptive behavior, as well as any form of academic misconduct will not be tolerated in this course.

Academic Progression and Proficiency
Academic progression in the MOT program requires a grade of C or better in all MOT courses. A student receiving a D, F, or U on any assignment or exam in any course must remediate and be reassessed to ensure competence. It is necessary for the student to demonstrate proficiency before progressing through the course. Successful remediation results in demonstration of competence NOT a change in the initial grade.

The minimum passing score for practical examinations and skill checks is 80%. If a student does not pass the exam in the initial attempt, remediation occurs and reassessment is performed to ensure competence. The recorded grade from the initial examination remains unchanged. The maximum number of attempts varies between courses/faculty and depends on examination content and faculty judgment. Failure to
In addition, students may be required to complete a learning contract in collaboration with faculty and MOT advisor. The learning contract is a method through which a student identifies potential barriers to learning and creates an action plan toward successful learning and performance.

**Disability/Illness:**
Any student who feels s/he may need an accommodation based on the impact of a disability should contact the instructor privately to discuss the specific needs. Please contact the Office of Services for Students with Disabilities at 262-524-7335 in the Walter Young Center to coordinate reasonable accommodations for students with documented disabilities.

If you are ill and unable to attend a class, it is your responsibility to notify faculty in a timely fashion. In order to make up an assignment you **must** document that illness.

**Statement on Academic Integrity:**
The Carroll University Academic Integrity Policy is located in your student handbook on the University website:  http://www.carrollu.edu/campuslife/. Please familiarize yourself with it. **If a student is found in violation of the Carroll University Academic Integrity Policy, I reserve the right to fail the student on the assignment/exam or even FAIL the student in the course.**
Some examples of violations will be discussed on the first day of class. These will include:

1. **Plagiarism**
   - Must use OWN words
   - If you copy more than two or three consecutive words from an author, then you are plagiarizing that author.
   - A student who uses an author’s words as her/his own will receive 0 points for that assignment. A second offense will result in failure in the course.

2. **Failure to return or removal of an exam**
3. **Submitting work completed by another individual**
   - A student who copies another student’s work and the student who allowed the other student to copy her/his work will each receive 0 points for that assignment. A second offense will result in failure in the course.

4. **Discussing quiz/exam questions with students who have not yet taken the quiz/exam.**
5. **Any other forms of cheating**

**Core Professional Behaviors:**
We insist on student development of ethical and professional behaviors expected of practitioners according to standards, values, and attitudes of the occupational therapy profession. As a reminder, an expectation for MOT program graduation is the
demonstration of appropriate behaviors consistent with professional standards as mentioned, as well as Carroll University and MOT Program policies.

1. PERSONAL RESPONSIBILITY
   - Student is punctual
   - Student completes assignments and tasks on time
   - Student attends all lecture and laboratory sessions

2. PERSONAL HONESTY & INTEGRITY
   - Student is honest in word and actions and is accurate in reporting all information
   - Student maintains positive learning environment
   - Student follows the University policies regarding academic integrity (i.e., cheating on exams, removal of an exam, passing exam information to peers)

3. RESPECT
   - Student gives full attention to lecturer, does not talk in class, treats others with dignity
   - Student refrains from the use of technology during class (cell phones, headphones, "surfing" the web on laptops)

4. TEACHABILITY/ADAPTABILITY
   - Student takes responsibility for own actions and understands consequences of inappropriate actions
   - Student behavior is appropriate during times of high stress

5. COMMUNICATION
   - Student properly formats emails to instructors and with respect (i.e., correct punctuation and salutations)
   - Student follows appropriate procedures for discussion of course issues and concerns
     - 1\textsuperscript{st} → Student contacts their lecture or laboratory instructor
     - 2\textsuperscript{nd} → Student communicates concerns to OT program director (should the need arise, the OT program director will direct the student to the Departmental Chair)

6. RELATIONSHIP WITH PEERS
   - Student participates in class and small group discussions
   - Student demonstrates ability to function within a group (i.e. student respects the opinions of others and can work collaboratively to solve problems).

7. PERSONAL APPEARANCE
   - Student dresses appropriately for presentations and palpation.

CONSEQUENCES (SHOULD STUDENT NOT MEET EXPECTATIONS)
At the discretion of the Instructor:
- A deduction in course points (i.e., -10 pts for cell phone use)
- Removal from class
- Tardiness of required assignments, -5% per day late
- Multiple offenses may result in a full letter grade deduction

**Course Overview:** The instructor and the University reserve the right to modify, amend, or change the syllabus (schedule, course requirements, grading policy, etc.) as the curriculum and/or program require(s).

**Tentative Lecture Schedule:**

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Readings/Assignments</th>
<th>Lab</th>
<th>Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 29</td>
<td>Intro &amp; Cell Physiology Membrane Potential Changes in Membrane Potential</td>
<td>Chapters 1-5</td>
<td>NO Lab</td>
<td>Solutions Worksheet</td>
</tr>
<tr>
<td>June 5</td>
<td>Changes in Membrane Potential Synaptic Transmission Neurophysiology Glia</td>
<td>Chapter 3-6, 8</td>
<td><strong>Lab #1:</strong> Movement of Materials Osmosis, Diffusion &amp; Tonicity</td>
<td></td>
</tr>
<tr>
<td>June 12</td>
<td>Sensory System</td>
<td>Chapter 7</td>
<td><strong>Lab #2:</strong> Biopac Tutorial &amp; Electroencephalography (EEG) Lesson #4 Lab Quiz #1 (Mvmt. of Materials) Lab Summary #1 Due (Mvmt. of Materials)</td>
<td></td>
</tr>
<tr>
<td>June 19</td>
<td>Sensory System &amp; Endocrine System</td>
<td>Chapters 7, 11</td>
<td><strong>Lab #3:</strong> Electrodermal &amp; Polygraph Lesson #9</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Course</td>
<td>Chapters</td>
<td>Lab #1:</td>
<td>Lab Quiz #1</td>
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<tr>
<td>June 26</td>
<td>Muscle Physiology</td>
<td>Chapters 9-10</td>
<td>Lab #4: Electrooculogram (EOG) Lesson #10</td>
<td>Lab Quiz #2 (EEG &amp; Electrodermal)</td>
</tr>
<tr>
<td>July 3</td>
<td>Happy 4th of July!</td>
<td></td>
<td>Lab #5: Sensory System &amp; Reflexes Spinal Cord Reflexes Lesson #20</td>
<td>Lab Quiz #3 (EOG, Sensory &amp; Spinal Cord Reflexes)</td>
</tr>
<tr>
<td>July 10</td>
<td>Cardiovascular Physiology</td>
<td>Chapter 12</td>
<td>Lab #6: Skeletal Muscle &amp; Electromyography (EMG) Lesson #2</td>
<td>Lab Quiz #4 (Skeletal Muscle &amp; CV Function)</td>
</tr>
<tr>
<td>July 17</td>
<td>Immune System, Respiratory Physiology</td>
<td>Chapter 18, 13</td>
<td>Lab #7: Cardiovascular Function &amp; Electrocardiography (ECG) I Lesson #5</td>
<td>Lab Quiz #5 (Respiratory, Pulmonary Function)</td>
</tr>
<tr>
<td>July 24</td>
<td>Respiratory Physiology</td>
<td>Chapter 13</td>
<td>Lab #8: Respiratory Volumes &amp; Pulmonary Function I&amp;II Lesson #12&amp;13</td>
<td>Lab Summary #2 Due (CV)</td>
</tr>
<tr>
<td>July 31</td>
<td>Urinary Physiology</td>
<td>Chapter 14</td>
<td>Lab #9: Urinalysis</td>
<td>Lab Quiz #5 (Respiratory, Pulmonary Function)</td>
</tr>
<tr>
<td>Aug. 7</td>
<td>Digestive System, Reproductive System</td>
<td>Chapters 15-16 &amp; 17</td>
<td>Lab #10: Group Lab Article Presentations</td>
<td>Lab Summary #3 Due (Urinalysis)</td>
</tr>
<tr>
<td>Aug. 14</td>
<td>Presentations</td>
<td></td>
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<tr>
<td>Aug. 21</td>
<td>FINAL EXAM</td>
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