SYLLABUS
BIOLOGY 184 – ST: EXTREME PHYSIOLOGY, NEPA EDITION
SUMMER, 2016

COURSE: Biology 184 – Special Topic: Extreme Physiology, NEPA Edition
Credit value: 3.0 (Combined Lecture and Laboratory)
University of Scranton General Education Natural Science (E) Elective
Prerequisites: None

LOCATION: The University of Scranton and various locations throughout Northeastern PA

DAYS/TIME: MTWR 9:00 AM - 4:30 PM; and optional Friday and/or Saturday events

TEXTS and other INSTRUCTIONAL MATERIALS:
1) Assigned readings and journal articles
2) Instructor-provided PowerPoint presentations

INSTRUCTORS: Dr. Terrence Sweeney; LSC 275; phone: 941-7623; terrence.sweeney@scranton.edu
with Prof. Tara Fay; LSC 254; phone: 941-4395; tara.fay@scranton.edu

COURSE DESCRIPTION:
This course will expose the student, serving as both subject and investigator, to the landscapes of Northeastern Pennsylvania, as she/he assesses physiological adaptation to exercise and learns the physiological and psychological benefits of an active, healthy lifestyle. The student will learn how governmental and private organizations conserve and maintain land for public use, will learn the types of activities made possible through these efforts, and will participate in service work to promote stewardship of Pennsylvania’s natural resources.

STUDENT LEARNING OUTCOMES AND THEIR ASSESSMENT:
Upon successful completion of the course, the student will:
1. know techniques for quantitatively recording and analyzing human physical performance (links to (E) Objectives 2 and 3);
   • this will be assessed by having students collect, analyze, interpret and present physical performance data (see Physical Assessment Mechanisms under Course Content), and by asking questions related to this topic on the final exam;
2. understand human energy demands under various conditions and be able to identify the body systems responsible for meeting energetic demands (links to (E) Objectives 1, 2 and 4);
   • this will be assessed by having students organize and present a review session on this topic and by asking questions related to this topic on the final exam;
3. describe the synergism of nutrition and training in the enhancement or degradation of human physical performance and health (links to (E) Objectives 1, 2 and 4);
   • this will be assessed by having students organize and present a review session on this topic and by asking questions related to this topic on the final exam;
STUDENT LEARNING OUTCOMES AND THEIR ASSESSMENT (continued):

4. be able to articulate the physiological & psychological benefits of an active, healthy lifestyle (links to (E) Objectives 1, 2 and 4);
   • this will be assessed by evaluating student journal entries and by asking questions related to this topic on the final exam;

5. be able to describe why and how governmental and private organizations acquire, develop and conserve lands for the betterment of the public, and how such activities are funded and promoted (links to (E) Objectives 5 and 6);
   • this will be assessed by asking questions related to this guest lecture topic on the final exam;

6. understand how they themselves can serve to further land conservation for the good of the public and the environment (links to (E) Objectives 5 and 6);
   • this will be assessed by asking questions related to this guest lecture topic and service experience on the final exam;

7. know the breadth and locations of lands in Scranton and around the broader Northeastern Pennsylvania region that are available to the public for natural resource protection and recreational opportunities (links to (E) Objectives 5 and 6)
   • this will be assessed by asking questions related to students’ service experience on the final exam.

COURSE POLICIES:

Course Enrollment cap: 20 students

The grading scale used is as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Range</th>
</tr>
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<tbody>
<tr>
<td>A</td>
<td>94 – 100</td>
</tr>
<tr>
<td>A-</td>
<td>90 – 93</td>
</tr>
<tr>
<td>B</td>
<td>84 – 86</td>
</tr>
<tr>
<td>B-</td>
<td>80 – 83</td>
</tr>
<tr>
<td>C</td>
<td>74 – 76</td>
</tr>
<tr>
<td>C-</td>
<td>70 – 73</td>
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<tr>
<td>D</td>
<td>60 – 64</td>
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<tr>
<td>D+</td>
<td>65 – 69</td>
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<tr>
<td>F</td>
<td>below 60</td>
</tr>
<tr>
<td>B+</td>
<td>87 – 89</td>
</tr>
<tr>
<td>C+</td>
<td>77 – 79</td>
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</table>

Student grade will be determined from performance on tasks and deliverables described below.

Final Grade Breakdown:

<table>
<thead>
<tr>
<th>Description</th>
<th>Contribution to Final Letter Grade (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation in collection &amp; presentation of human performance data</td>
<td>15</td>
</tr>
<tr>
<td>Topical Presentations</td>
<td>15</td>
</tr>
<tr>
<td>Online Quizzes and Assignments</td>
<td>15</td>
</tr>
<tr>
<td>Final Exam</td>
<td>30</td>
</tr>
<tr>
<td>Personal Performance Journal</td>
<td>10</td>
</tr>
<tr>
<td>Participation in Service Activities</td>
<td>15</td>
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### COURSE CONTENT & ACTIVITIES:

<table>
<thead>
<tr>
<th><strong>Course Duration</strong></th>
<th>4 weeks (Univ. of Scranton Summer Session II; July)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Course Content Delivery Schedule</strong></td>
<td>Morning Lectures/Lab Activities, as well as online learning component</td>
</tr>
<tr>
<td><strong>Potential Outdoor Activities</strong></td>
<td>Running, Hiking, Swimming, Road- and Mountain Biking, Rock Climbing, Kayaking, White Water Rafting, Service Activities</td>
</tr>
<tr>
<td><strong>Physical Fitness Assessment Mechanisms</strong></td>
<td>Pre-training and Post-training assessments: including: ( \text{Aerobic Performance Assessments, including Instrumented VO}_2\text{max treadmill sampling tests; Harvard Step Test; Timed 1.5 Mile Run; Anaerobic Performance Assessment, including: Wingate Test; Strength assessments, including: push-up and sit-up tests as outlined in the President's Challenge Adult Fitness Test} ) ( \text{Other Assessments, including: Resting HR journaling; body weight; daily log of exercise activity} )</td>
</tr>
</tbody>
</table>
| **Locations for off-site exercise and service activities (Transportation will be provided)** | TBD, to be determined by **Activity Site and Outreach Steering Committee** (see at end of Syllabus) Potential locations include: \( \text{For Running:} \)  
  - Countryside Conservancy Trolley Trail, Clarks Summit  
  - Lackawanna Heritage Valley Trail, Scranton and Lackawanna County  
  - Susquehanna Warrior Trail, Luzerne County  
\( \text{For Hiking:} \)  
  - Ricketts Glenn State Park – Falls Trail  
  - Bear Creek Preserve  
  - Dick and Nancy Eales Nature Preserve at Moosic Mountain  
  - Delaware State Forest – Thunder Swamp Trail & Stairway Wild  
  - Delaware Water Gap National Recreation Area – Mt. Tammany  
\( \text{For Cycling:} \)  
  - Countryside Conservancy Trolley Trail and surrounding rural roads  
  - Susquehanna Warrior Trail, Luzerne County  
  - Lackawanna Heritage Valley Trail, Scranton and Lackawanna County  
\( \text{For Kayaking & Multi-Mode Activities:} \)  
  - North Branch Land Trust Howland Preserve – hike/bike/kayak  
  - Bear Creek Preserve – hike/kayak  
  - Pecks Pond – Kayaking and Ecology  
  - Lacawac Sanctuary and Biological Field Station – hiking/Boating  
  - Bruce Lake /Promised Land State Park – hiking/biking/kayaking  
  - Lackawanna State Park - hiking/kayaking/mtn biking/cycling  |
| **Potential Service Activities** | Trail maintenance, 5K road race fundraiser, Plant A Tree program, with input from **Activity Site and Outreach Steering Committee** |
Tentative Dates of Activities:

7/11-8/5  Each student is to keep a daily log of exercise regimen

7/11-7/12  “Pre” fitness testing – VO2max on sample group, Wingate Test (in coordination with Michael Landram (EXSC)), 1.5 mile run, Harvard Step Test, Sit-up and Push-up challenge and collection of resting parameters (HR, BP, SO2, body weight)

7/13-7/26  Tentative Lecture/Activity Schedule & Topics (Mon - Thurs schedule)
Nutrition and Metabolism 1 - Rest and Short-term (<2hr) Exercise
Nutrition and Metabolism 2 - Prolonged (>2hr) Exercise
Cardiopulmonary Physiology at Rest (using QCP Modeling Software)
Cardiopulmonary Physiology during Exercise (using QCP Modeling Software)
Physiological Adaptation to Exercise Training
Impact of Exercise on Immune Function
Guest Lecture 1 - Psychological Effects of Exercise (Danielle Arigo)
Guest Lecture 2 - Local Ecology (PA State Park Envir. Educators)
Guest Lecture 3 - Land Conservation (PFWCL* members)
Guest Lecture 4 - Rail-Trail Development (PFWCL members)
Service Activities - PFWCL members
Exercise Activities
  Part I: Mandatory Group Exercise Regimen
    • Varied daily schedule of distance cycling, hiking, running, etc.
  Part II: Individualized Exercise Regimen
    • Optional additional logged exercise

7/27-7/28  “Post” fitness testing – VO2max on sample group, Wingate Test (in coordination with Michael Landram (EXSC)), 1.5 mile run, Harvard Step Test, Sit-up and Push-up challenge and collection of resting parameters (HR, BP, SO2, body weight)

8/1-8/2  Faculty mentoring of students on lecture mini-reviews & human performance data analysis

8/3-8/4  Course Lecture Wrap-up, Student Presentations of human performance data and lecture mini-reviews; group discussions of student conditioning data

8/8  Final Exam

Activity Site and Outreach Steering Committee:
The steering committee, with broad regional expertise, includes:
  • Course Faculty Tara Fay and Terrence Sweeney
  • *Pocono Forest and Waters Conservation Landscape (PFWCL) members
    • Christine Dettore, Tim Dugan, David Madl, Rob Neitz, Janet Sweeney, and Joe Vinton
  • Pennsylvania State Park Environmental Educators
  • Owen Worozbyt, Lackawanna Heritage Valley Trail Manager & Environmental Projects Manager
  • Danielle Arigo, Univ. of Scranton Dept of Psychology, Health and Exercise Psychologist
  • Mark Murphy, Univ. of Scranton Sustainability Initiative Director