COURSE TITLE: Fitness Measurement and Interpretation (wex-182)

COURSE CREDITS/HOURS: 3 lectures; 3 credits

PREREQUISITE: None

SEMESTER & YEAR: All

COURSE NUMBER: WEX-182

MEETING TIMES & LOCATIONS: To be announced

INSTRUCTOR: All

OFFICE LOCATION: G-207

PHONE: 201-447-7899

DEPARTMENTAL SECRETARY: Betty Highkal

OFFICE HOURS: Vary

EMAIL ADDRESS: bhighkal@bergen.edu

COURSE DESCRIPTION:
Fitness Measurement & Interpretation is a course involving analysis of the parameters of fitness, sport performance, and their assessment. Topics include measurement protocols and the quantitative expression of body composition, aerobic capacity and energy expenditure, strength, endurance, flexibility and sport specific elements relative to exercise application. Requirement for Exercise Science Certificate and Degree.

GENERAL OBJECTIVE:
The investigation of the many parameters of fitness; their identity, measurement through selected evaluatory procedures, and the interpretation of the measurement toward a meaningful and applicable involvement with an exercise program.

COURSE OBJECTIVES:
A. To identify the parameters which describe fitness, i.e. VO₂ max, Anaerobic power, muscular strength, body composition, muscular endurance and flexibility.
B. To develop proficiency in the use of equipment pertinent to evaluative protocols for selected parameters of fitness.
C. To utilize the results of testing in developing an appropriate exercise protocol for an individual.
D. To create the mathematical calculations apply appropriate mathematical calculations that facilitate interpretation of testing results.
E. To create a physiological profile of an individual using selected fitness parameters.
STUDENT LEARNING OBJECTIVES:
A. Students shall summarize in writing, or orally, the appropriate testing protocol for selected parameters of fitness.
B. Students shall execute the skills necessary to use appropriate equipment in testing selected parameters of fitness.
C. Students shall formulate an exercise prescription that will change or maintain a selected fitness parameter based on the results of testing.
D. Students shall distinguish in writing, or orally those mathematical calculations necessary for creating a physiological profile for an individual based on testing selected fitness parameters.

MEANS OF ASSESSMENT:
A. Students will physically demonstrate the skills/procedure for the following: body composition analysis, measurement of aerobic capacity (Max VO₂); Strength Management.
B. Tests will be used to determine comprehension and the ability to do calculations based on stress measurement, i.e. percent body fat, fat weight; ideal body weight; met level; calorie expenditure per minute, max VO₂, strength index, and 1RM prediction.
C. Students will create a fitness profile based on parameter measures and protocols used in class.

COURSE OUTLINE:
A. Fitness Components
   1. Exercise in present society.
   2. Health related fitness
   3. Performance fitness
   4. Parameters
B. Aerobic Function
   1. Oxygen uptake
   2. Health related fitness
   3. Cardiorespiratory function, EKG
   4. Equipment and protocols, calculations
C. Anaerobic function
   1. Phosphagen system
   2. Measurement of power output
   3. Muscle bioenergetics
   4. Equipment, protocols, calculations
D. Body Composition
   1. Energy equation
   2. Caloric cost of exercise
   3. Total weight, protocols, and calculations
E. Cardiovascular dynamics
   1. Heart function & values – stroke volume, etc.
   2. Blood pressure – systolic, diastolic
   3. Resting and active responses.
   4. Equipment, protocols, calculations
F. Musculoskeletal system
   1. Strength – muscle function
   2. Endurance – muscle function
   3. Flexibility – associated structure
   4. Equipment, protocols, calculations
G. Strategies, Precautions
   1. Liability
2. Classification of subjects – ACSM guidelines
3. Documentation – informed consents
4. Contraindications to exercise testing

SUGGESTED READING:

METHODS OF INSTRUCTION:
A. Lecture/discussion
B. Group & individual problem solving.
C. Group investigation – informed consents.
D. Audio-visual aids
E. Reading/writing assignments

GRADING:
A. Subjective & objective testing (quizzes/exams)
B. Written projects/outside reading
C. Completion of classwork
D. Term projects

LEARNING FACILITIES & RESOURCES:
A. Library – books, audio-visual, computers
B. Fitness Center
C. Dynamometers, Calipers, Sphygmomanometers
D. Treadmills, Ergometers
E. Gymnasium, Pool

SPECIAL FEATURES OF THE COURSE:
Students will be assigned well-designed out of class writing/reading projects during the semester involving journals, research papers, articles, etc. The number and content of assignments are exclusive of writing (essay) required on exams.

The use of the Internet to locate, review and evaluate selected websites appropriate to class content.

GRADING POLICY:
A final grade for the course is based on the student’s performance on the required work for the course (writing assignments, examinations, quizzes, class presentations, attendance, etc.) and on his mastery of the material covered in the course. A student’s participation may also be evaluated and used in the determination of a final grade.

ATTENDANCE POLICY:
Students are expected to attend punctually every scheduled meeting of each course in which they are registered. Attendance and lateness policies and sanctions are to be determined by the instructor for each section of the course. These will be established in writing on the individual course outline. Attendance will be kept by the instructor for administrative and counseling purposes.
RULES & REGULATIONS:
At the beginning of the academic year, each student is expected to obtain a copy of the College Catalog, Student Handbook, and the Academic Calendar. The catalog contains information about the regulations and procedures essential to student life on campus. Every student is responsible for knowing the information included in the catalog and academic calendar.

STUDENT FACILITIES:
Students are referred to the College Catalog which contains a complete listing and description of available facilities and services including but not limited to: the Silverman Library, Office of Specialized Services, Bookstore, Graphics lab, Tutoring Center, Athletic and Exercise facilities, etc.

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<tr>
<th>Week</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>The need for measurement in exercise; Parameters of fitness, nomenclature; Variables, liability, testing; American College of Sports Medicine standards.</td>
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<tr>
<td>2</td>
<td>Body composition; body weight, Somatotypes; protocol methodology; BMI, Ponderal Index;</td>
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<td>3</td>
<td>Use of calipers; Bioelectric impedance analysis; Infrared interactance, hydrostatic weighing</td>
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<td>4</td>
<td>Cardiovascular function; aerobic capacity measures/protocols; standards and introduction to metabolic calculations.</td>
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<td>5</td>
<td>Field measures of aerobic capacity. Walk test; step test. Introduction to ergometry for aerobic testing.</td>
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<td>6</td>
<td>Resting assessments of HR, BP. Responses of HR and BP to exercise; arm work vs. leg work. Practice assessments with sphygmomanometer and cardiotachometer.</td>
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<tr>
<td>7</td>
<td>Graphing HR responses to work loads for determining VO₂ max. Use of metabolic calculations. Intro EKG.</td>
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<td>8</td>
<td>Electrocardiography testing and exercise. Basic EKG and interpretation.</td>
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<td>9</td>
<td>Bicycle ergometry testing; determination of VO₂ max; metabolic calculations.</td>
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<td>10</td>
<td>Exercise prescription development; body composition change; control.</td>
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<td>11</td>
<td>Protocols for submaximal and maximal protocols; use of treadmill.</td>
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<td>12</td>
<td>Introduction to musculoskeletal assessment. Review skeletal muscle structure and function.</td>
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<td>13</td>
<td>Protocols and calculations for assessing strength, endurance, power, flexibility.</td>
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<td>14</td>
<td>Determining strength, endurance values, 1 RM flexibility-range of motion, field tests.</td>
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<td>15</td>
<td>Exercise prescription for strength, endurance change/maintenance; flexibility</td>
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change/maintenance; implications of body composition; cardiovascular and muscular values for health.

Course sequence and content are subject to change without notice as emphasis on course content may vary.