Course Particulars

Instructor: Prof Daniel J. Goble, PhD

Meeting time and place: TU & TH 2:00-3:15pm; ENS 106/Biomechanics Lab

Office Hours: TBD (ENS 313)

E-mail: dgoble@mail.sdsu.edu
Twitter: DocProprio@mail.sdsu.edu

Prerequisites: ENS 306 or equivalent

Course Description

This course is part of a three-part series involving the use of biomechanical techniques to gather scientific information for the purposes of quantifying and evaluating human movement ability. The present course focuses on the collection, analysis and interpretation of electromyographical (EMG) data from surface musculature.

ENS Learning Goals

Learning Goal 1  Demonstrate core critical thinking skills and dispositions to ask and answer questions relevant to exercise, nutrition, and rehabilitation sciences.

Objective 1.1  Critically evaluate published research in the discipline.

Objective 1.3  Present opposing viewpoints and alternative hypotheses on issues in exercise, nutrition, and rehabilitation sciences.

Objective 1.4  Critically evaluate current trends and practices using disciplinary knowledge.

Objective 1.5  Actively seek out discipline-based questions as opportunities to apply core critical thinking skills.
Learning Goal 2  Demonstrate effective oral, written, and other interpersonal skills to help communicate knowledge and promote health, wellbeing, and rehabilitation in diverse communities.

Objective 2.1  Use effective technical writing skills to communicate information about exercise, nutrition, and rehabilitation sciences.

Objective 2.2  Use effective oral presentation skills to present information to peers and other professionals.

Learning Goal 3  Demonstrate understanding of scientific concepts, principles, and methods used in the study of exercise, nutrition, and rehabilitation sciences.

Objective 3.5:  Design a research study and collect, analyze, and evaluate findings in relation to a proposed hypothesis.

Learning Goal 4  Use an array of technologies to support inquiry and professional practice.

Objective 4.2  Use various technology instrumentations to measure phenomena of interest.

Objective 4.3  Use software programs appropriate to discipline to organize, analyze and interpret findings.

Objective 4.4  Use presentation software to report project findings.

Learning Goal 8  Demonstrate an ability to integrate and apply knowledge and skills through experiential learning opportunities.

Objective 8.2  Administer assessments in a variety of healthy and chronic disease populations across the lifespan.

Objective 8.3  Organize and structure learning and research environments to maximize their quality and safety.
Learning Outcomes

1. Appreciate the role of movement in all aspects of daily living and the necessity to quantify movement for the purposes of improving performance in both healthy and disabled individuals.

2. Present and critically evaluate a research article related to the assessment of movement using EMG.

3. Develop a research project that replicates an aspect of the existing EMG literature and extends this work in some meaningful way. The project must be undertaken using available equipment in the biomechanics laboratory and should have some application to either a sport or clinical setting.

4. Demonstrate research findings in a clear and convincing manner through multiple written and oral presentation techniques.

Tentative Class Schedule

Week 1
Aug 28  Introduction (ENS 106)
Aug 30  Biological Signals, EMG as an Example (ENS 106)

Week 2
Sept 4  History of EMG (ENS 106)
Sept 6  Uses of EMG (ENS106)

Week 3
Sept 11  EMG Data Processing and Demo (ENS 106, Biomechanics Lab)
Sept 13  Article Selection for Discussion Assignment (ENS 106)

Week 4
Sept 18  Article Discussion #1 (ENS 106)
Sept 20  Article Discussion #2 (ENS 106)

Week 5
Sept 25  Article Discussion #3 (ENS 106)
Sept 27  Lit review info, Group Meetings for project topic selection (ENS 106)
Week 6
Oct 2  Project Topic Selection (ENS 106)
Oct 4  Project Topic Selection (ENS 106)

Week 7
Oct 9  Literature Review Check-in (ENS 106)
Oct 11 Literature Review Check-in (ENS 106)

Week 8
Oct 16 Data Collection/Analysis (Biomechanics Lab)
Oct 18 Data Collection/Analysis (Biomechanics Lab)

Week 9
Oct 23 Data Collection/Analysis (Biomechanics Lab)
Oct 25 Data Collection/Analysis (Biomechanics Lab)

Week 10
Oct 30 Data Collection/Analysis (Biomechanics Lab)
Nov 1  Data Collection/Analysis (Biomechanics Lab)

Week 11
Nov 6  Data Collection/Analysis (Biomechanics Lab)
Nov 8  Data Collection/Analysis (Biomechanics Lab)

Week 12
Nov 13 Group/Instructor Discussion of Findings (ENS 106)
Nov 15 Group/Instructor Discussion of Findings (ENS 106)

Week 13
Nov 20 Development of Presentations
Nov 22 Thanksgiving Holiday

Week 14
Nov 27 Development of Presentations
Nov 29 Development of Presentations
Week 15

Dec 4    Video Presentations; Check-in (ENS 106)
Dec 6    Poster Presentations; Check-in (ENS 106)

Exam Week

Dec 8-15  TBD

Course Evaluation

Percent of Grade

1. Article review          15%
2. Literature review       20%
3. Project – written presentation 25%
4. Project – oral presentation 30%
5. Class participation     10%

Grading Scale

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Statement on Cheating and Plagiarism

Cheating is the actual or attempted practice of fraudulent or deceptive acts for the purpose of improving one’s grade or obtaining course credit; such acts also include assisting another student to do so. Typically, such acts occur in relation to examinations. However, it is the intent of this definition that the term ‘cheating’ not be limited to examination situations only, but that it include any and all actions by a student
that are intended to gain an unearned academic advantage by fraudulent or deceptive means. Plagiarism is a specific form of cheating which consists of the misuse of the published and/or unpublished works of others by misrepresenting the material (i.e., their intellectual property) so used as one’s own work. Penalties for cheating and plagiarism range from a 0 or F on a particular assignment, through an F for the course, to expulsion from the University. For more information on the University’s policy regarding cheating and plagiarism, refer to the Schedule of Courses (‘Legal Notices on Cheating and Plagiarism’) or the University Catalog (‘Policies and Regulations’).