George Mason University
College of Education and Human Development
Exercise, Fitness and Health Promotion

EFHP 613 – 001 Advanced Applied Biomechanics (3)
Fall 2020
Tuesdays: 10:30AM – 1:15PM
ONLINE

Faculty

Name:	Dr. Oladipo Eddo
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Prerequisites/Corequisites
Full admission to EFHP graduate program. Introductory Biomechanics, Basic Human Anatomy, and Physics or permission of instructor.

University Catalog Course Description
Focuses on kinetic and kinematic concepts and how they apply to the qualitative and quantitative assessment of human movement. Designed for advanced study of human movement.

Course Overview
This is a course to assist the human movement scientist (e.g., sports medicine clinician, exercise science, strength and conditioning) to enhance his/her ability to understand the nature of the structure and function of the human body through quantitative analysis of human motion. This course is intended to provide future clinicians/researchers with the necessary knowledge base to objectively evaluate human motion and to understand the theory, concepts and application of conducting analysis of human motion. Lecture and laboratory concepts will be utilized to instruct students on the foundations of biomechanical data collection and major emphasis will be placed on using 2-D and 3-D motion analysis, force plates, and electromyography.

Course Delivery Method
This course will be delivered online (76% or more) using a synchronous and asynchronous format via Blackboard Learning Management system (LMS) housed in the MyMason portal. You will log in to the Blackboard (Bb) course site using your Mason email name (everything before @masonlive.gmu.edu) and email password. The course site will be available on August 24, 2020.
Overall, this will be a highly interactive class and students will be encouraged to participate.

Under no circumstances, may students participate in online class sessions (either by phone or Internet) while operating motor vehicles. Further, as expected in a face-to-face class meeting, such online participation requires undivided attention to course content and communication.

Technical Requirements

To participate in this course, students will need to satisfy the following technical requirements:

- High-speed Internet access with standard up-to-date browsers. To get a list of Blackboard's supported browsers see: https://help.blackboard.com/Learn/Student/Getting_Started/Browser_Support#supported-browsers

  To get a list of supported operation systems on different devices see: https://help.blackboard.com/Learn/Student/Getting_Started/Browser_Support#tested-devices-and-operating-systems

- Students must maintain consistent and reliable access to their GMU email and Blackboard, as these are the official methods of communication for this course.
- Students may be asked to create logins and passwords on supplemental websites and/or to download trial software to their computer or tablet as part of course requirements.
- The following software plug-ins for PCs and Macs, respectively, are available for free download:
  - Adobe Acrobat Reader: https://get.adobe.com/reader/
  - Windows Media Player: https://support.microsoft.com/en-us/help/14209/get-windows-media-player
  - Apple Quick Time Player: www.apple.com/quicktime/download/

Expectations

- Course Week: Our course week will begin on Mondays and finish on Sundays.
- Log-in Frequency:
  Students must actively check the course Blackboard site and their GMU email for communications from the instructor, class discussions, and/or access to course materials at least 5 times per week. In addition, students must log-in for all scheduled online synchronous meetings.
- Participation:
  Students are expected to actively engage in all course activities throughout the semester, which includes viewing all course materials, completing course activities and assignments, and participating in course discussions and group interactions.

- Technical Competence:
  Students are expected to demonstrate competence in the use of all course technology. Students who are struggling with technical components of the course are expected to seek assistance from the instructor and/or College or University technical services.
- Technical Issues:
  Students should anticipate some technical difficulties during the semester and should, therefore, budget their time accordingly. Late work will not be accepted based on individual technical issues.
- Workload:
  Please be aware that this course is **not** self-paced. Students are expected to meet *specific deadlines* and *due dates* listed in the **Class Schedule** section of this syllabus. It is the student's responsibility to keep track of the weekly course schedule of topics, readings, activities and assignments due.
- Instructor Support:
  Students may schedule a one-on-one meeting to discuss course requirements, content or other course-related issues. Those unable to come to a Mason campus can meet with the instructor via telephone or web conference. Students should email the instructor to schedule a one-on-one session, including their preferred meeting method and suggested dates/times.
- Netiquette:
  The course environment is a collaborative space. Experience shows that even an innocent remark typed in the online environment can be misconstrued. Students must always re-read their responses carefully before posting them, so as others do not consider them as personal offenses. *Be positive in your approach with others and diplomatic in selecting your words*. Remember that you are not competing with classmates, but sharing information and learning from others. All faculty are similarly expected to be respectful in all communications.
- Accommodations:
  Online learners who require effective accommodations to ensure accessibility must be registered with George Mason University Disability Services.

Learner Outcomes or Objectives

This course is designed to enable students to do the following:

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1. Summarize and apply fundamental biomechanical principles to human movement.
2. Differentiate and appropriately apply concepts of kinematic and kinetic analysis to both linear and angular human motion.
3. Describe the equipment and techniques used for the quantitative assessment of human movement.
4. Examine the mechanics of exercises and activities as they affect the human body.

5. Apply biomechanical principles to human movement situations including but not limited to performance, training, rehabilitation, and injury prevention.
6. Apply principles related to internal tissue loading to improving tissue structure and function, and to reduce the likelihood of injury.

Required Texts
McGinnis, Peter. Biomechanics of Sport and Exercise. 4th Edition, Human Kinetics (2020)

Course Performance Evaluation
Students are expected to submit all assignments on time in the manner outlined by the instructor (e.g., Blackboard, Tk20, hard copy).

- **Assignments and Examinations**
  - Mid-Term Exams and Final Exam
    - Each student will be required to complete two exams and a final exam. The final exam will be cumulative. The format for all exams will be multiple choice, true/false, short essays, and problem-solving questions. Examinations represent inquiries regarding student knowledge of fact regarding course content. Examinations demonstrate that the student can remember and apply facts as well as demonstrate a hierarchy of knowledge information.
  - Reading Comprehension Quizzes
    - These quizzes will assess your comprehension of the assigned readings. The format of quizzes may be true/false, multiple choice, short answer and/or problem solving.
  - Case Study Activities
    - The intent of the case study activities is to show how the theory learned in class can be applied to a variety of common activities. The activities will require students to work in small groups. Recorded videos of data collection may be provided to students. In some instances data will be pre-collected and a simple analysis will be required. The activities will include questions regarding the results and several discussion questions.
  - Article Presentation
    - The intent of this assignment is to develop your presentation skills and ability to relate course content to existing body of literature. Students will select an original article from a list provided and present relevant information to the class during a 10-12 minutes presentation session.
  - Attendance and Participation
    - Regularly attending class is mandatory and will count towards the final grade in the class. Participation during the activity labs is mandatory. Participation does not necessarily mean performing the physical activity – lab groups will need members to perform the physical activity, instruct the person performing the activity, take measurements, and record data.

- Final Grades
  - Once your FINAL GRADE at the end of the semester is posted on mymasonportal/blackboard, you will have 24 hours to inquire about it. After that period, your grade will be posted as final. This course will be graded on a point system, with a total of 100 possible points.

- **Other Requirements**
  - **Attendance**
    - Students are expected to be on time, attend all class meetings and be prepared for in class assignments and projects. Excused absences include the following: illness (must bring a receipt or note from a doctor), family death, athletic/academic event, and others at the discretion of the instructor. For known upcoming absences, students must contact the instructor at least one week in advance to the missed class to make up work. In the case of illness or some other unforeseen absence, the student must contact the instructor via e-mail or telephone. At the next attended class meeting the student will discuss material that is to be completed. It is the student's obligation to pursue any make-up work.
  - **Academic Load**
    - Although many students must work to meet living expenses, employment and personal responsibilities are not acceptable reasons for late arrivals, missed classes, or incomplete assignments. Employment must not take priority over academic responsibilities. For additional information on this subject, please see the GMU Academic Catalog (http://catalog.gmu.edu/content.php?catoid=5&navoid=104#Registration_attendance). Students failing to observe these guidelines should expect no special consideration for academic problems arising from the pressures of employment.
  - **Honor Code**
    - Students are held to the standards of the George Mason University Honor Code (see http://honorcode.gmu.edu for details). Violations, including cheating and plagiarism, will be reported to the Honor Committee. Student assignments may be put through plagiarism detecting software.
  - **Written Assignments**
    - All assignments must be typed in Microsoft Word, and formatted as follows (*unless otherwise specified*): double spaced, 12 point Times New Roman font, 1 inch margins, your name and title in the running header at top left had corner, continuous line numbers on left margin, and page numbers centered in footer. Failure to comply with any or all parts of this format will result in an unacceptable assignment, which corresponds to zero (0) points.
    - Pay close attention to spelling and grammar as these will count towards your grade on written assignments. American Medical Association Manual (AMA) of Style (10^{th} edition) format must be used for all written work in this class (e.g., in referencing, creation of tables, and formatting headers for paper sections).

- Assignments must be turned in on Blackboard/MyMason Portal by the beginning of class on the specified date due (*unless otherwise specified*). No late assignments will be accepted. It is recommended that students keep copies of all submitted work.

- **Technology Use During Class**
  - As per GMU policy, all sound emitting technology is required to be turned off during the class meeting time. No sound emitting technology (e.g., cell phones, smart phones, iPads, Tablets, pagers, etc.) is allowed at any time during the class period. Students who are observed using any form of technology inappropriately (e.g., sending text messages from cell phones, visiting social networking sites from laptops, etc) will be dismissed from class for the day, counted as an absence, and not permitted to make up missed assignments. Additionally, no laptop computers (e.g., netbooks, notebooks, etc.) will be permitted for use during class time unless with permission from the instructor.

- **E-mail Correspondence**
  - Messages must be in a professional format and originate from a Mason address:

    Subject: EFHP 613
    Dear Dr. Eddo *(Beginning salutation),*
    I have a question regarding one of the assignments. *(Text body)*
    Respectfully, *(Ending Salutation)*
    Mr. / Mrs. Student *(Your name)*

  Note: All email will be responded to in the order in which it is received. Students should allow 48 hours for a response.

    Example in-person interaction with instructor:

    Student: Professor (*instructor's last name*) I have a question regarding….

    Professor: (Student's name) I would be happy to help you. What is your question?

    Student: My question is…….

    Professor: The answer to that question is…

    Student: Professor (*instructor's last name)* thank you for your time and availability to answer my questions.

Assignments	Points
#1 Exam I	15
#2 Exam II	15
#3 Final Exam	20
#4 Reading Comprehension Quizzes (RCQ)	15
#5 Case Study Activities (CSA)	25
#6 Article Presentation	10
TOTAL	100

Grading Scale

A = 94 – 100	B+ = 87 – 89	C = 70 – 79
A- = 90 – 93	B = 84 – 86	F = 0 – 69
	B- = 80 – 83	

Note: * Although a B- is a satisfactory grade for a course, students must maintain a 3.00 average in their degree program and present a 3.00 GPA on the courses listed on the graduation application.

Professional Dispositions
See https://cehd.gmu.edu/students/polices-procedures/
Assignments must be turned in at the specified date due or **no credit will be given**.

Class schedule

Date			Suggested Activity for the Day	Assignments Due
Introductory Module	Week 1	Aug 24-26	**Synchronous Meeting – Tuesday @ 10:30AM** *Course Introduction*	
		Aug 27-30	Video Lecture Slides – Chapters 10&11: Review Musculoskeletal Considerations for Movement	Read Chapter 10&11
	Week 2	Aug 31-Sep 2	**Synchronous Meeting – Tuesday @ 10:30AM** *Review Musculoskeletal Considerations for Movement*	**Chapter 10&11 RCQ Due 24 hours prior to synchronous meeting.**
		Sep 3-6	Video Lecture Slides: Chapter 2 – Linear Kinematics	**CSA #1 Due Midnight Sept 6.** Read Chapter 12, 2 pp 51-68
Module 1	Week 3	Sep 7-9	**Synchronous Meeting – Tuesday @ 10:30AM** *Linear Kinematics*	**Chapter 12, 2 RCQ – Linear Kinematics Due 24 hours prior to synchronous meeting.**
		Sep 10-13	Video Lecture Slides – Chapter 2: Projectile Motion / Work on Case Study Activity #2	Read Chapter 2 pp 69-79
	Week 4	Sep 14-17	**Synchronous Meeting – Tuesday @ 10:30AM** *Projectile Motion*	**Chapter 2 RCQ – Projectile Motion Due 24 hours prior to synchronous meeting.**
		Sep 18-20	Work on Case Study Activity **#2** Video Lecture Slides – Chapter 1	**CSA #2 Due Midnight Sept 20.** Read Chapter 1

Module 2	Week 5	Sep 21-23	**Synchronous Meeting – Tuesday @ 10:30AM** *Forces*	**Chapter 1 RCQ Due 24 hours prior to synchronous meeting.**
		Sep 24-27	Video Lecture Slides – Chapter 3: Linear Kinetics Work on Case Study Activity **#3**	Read Chapter 3
	Week 6	Sep 28-30	**Synchronous Meeting – Tuesday @ 10:30AM** *Linear Kinetics*	**Chapter 3 RCQ Due 24 hours prior to synchronous meeting.**
		Oct 1-4	Video Lecture Slides – Chapter 4: Work, Power & Energy Work on Case Study Activity #**3**	Read Chapter 4
	Week 7	Oct 5-7	**Synchronous Meeting – Tuesday @ 10:30AM** *Work, Power, & Energy*	**Chapter 4 RCQ Due 24 hours prior to synchronous meeting.**
		Oct 8-11	Video Lecture Slides – Chapter 8: Fluid Mechanics Work on Case Study Activity #**3**	**CSA #3 Due Midnight Oct 11** Read Chapter 8
	Week 8	Oct 12-14	**Synchronous Meeting – Tuesday @ 10:30AM** *Fluid Mechanics /Review for Exam #1*	**Chapter 8 RCQ Due 24 hours prior to synchronous meeting.**
		Oct 15-18	**Exam #1**	

				Exam 1 is due by Midnight on Oct 18
Module 3	Week 9	Oct 19-21	**Synchronous Meeting – Tuesday @ 10:30AM** Review Exam 1 / Discuss any concepts from Module 1 & 2 that are still unclear	**Article Presentations for week 10 Due**
		Oct 21-25	Video Lecture Slide – Chapter 6: Angular Kinematics	Read Chapter 6
	Week 10	Oct 26-29	**Synchronous Meeting – Tuesday @ 10:30AM** Article Presentations *Angular Kinematics*	**Chapter 6 RCQ Due 24 hours prior to synchronous meeting.** **Article Presentations for week 11 Due**
		Oct 30-Nov 1	Video Lecture Slides – Chapter 5	Read Chapter 5
	Week 11	Nov 2-8	**Synchronous Meeting – Thursday @ 10:30AM** Article Presentations *Torques and Moments of Force*	**Chapter 5 RCQ Due 24 hours prior to synchronous meeting.** **Article Presentations for week 12 Due**
			Video Lecture Slides – Chapter 7: Angular Kinetics	Read Chapter 7
	Week 12	Nov 9-12	**Synchronous Meeting – Tuesday @ 10:30AM** Article Presentations *Angular Kinetics*	**Chapter 7 RCQ Due 24 hours prior to synchronous meeting.**

				Article Presentations for week 13 Due
		Nov 13-15	Case Study Activity #**4**	**CSA #4 Due Midnight Nov 15**
Module 4	Week 13	Nov 16-19	**Synchronous Meeting – Tuesday @ 10:30AM** Article Presentations *Review what is still unclear from modules 3 & 4*	**Article Presentations for week 14 Due**
		Nov 20-22	Video Lecture Slides – Chapter 9: Mechanical Properties of Biological Tissues Work on Case Study Activity **#5**	Read Chapter 9
	Week 14	Nov 23-26	**Synchronous Meeting – Tuesday @ 10:30AM** Article Presentations Mechanical Properties of Biological Tissues	**Chapter 9 RCQ Due 24 hours prior to synchronous meeting.** **Article Presentations for week 15 Due**
		Nov 27-29	**Thanksgiving Break** Review for exam 2	**CSA #5 Due Midnight Nov 29**
	Week 15	Nov 30-Dec 3	**Synchronous Meeting – Tuesday @ 10:30AM** Article Presentations	**Exam 2 Due Midnight Dec 3**
		Dec 4-Dec 6	Study for Final Exam	
	Week 16	Dec 15	**Final Exam**	**Final Exam**

Note: The instructor reserves the right to make changes to the course syllabus and/or schedule at any time. Students will always be informed of any changes made.

Core Values Commitment

The College of Education and Human Development is committed to collaboration, ethical leadership, innovation, research-based practice, and social justice. Students are expected to adhere to these principles: http://cehd.gmu.edu/values/.

GMU Policies and Resources for Students

Policies

- Students must adhere to the guidelines of the Mason Honor Code (see https://catalog.gmu.edu/policies/honor-code-system/).
- Students must follow the university policy for Responsible Use of Computing (see https://universitypolicy.gmu.edu/policies/responsible-use-of-computing/).
- Students are responsible for the content of university communications sent to their Mason email account and are required to activate their account and check it regularly. All communication from the university, college, school, and program will be sent to students **solely** through their Mason email account.
- Students with disabilities who seek accommodations in a course must be registered with George Mason University Disability Services. Approved accommodations will begin at the time the written letter from Disability Services is received by the instructor (see https://ds.gmu.edu/).
- Students must silence all sound emitting devices during class unless otherwise authorized by the instructor.

Campus Resources

- Support for submission of assignments to Tk20 should be directed to tk20help@gmu.edu or https://cehd.gmu.edu/aero/tk20. Questions or concerns regarding use of Blackboard should be directed to https://its.gmu.edu/knowledge-base/blackboard-instructional-technology-support-for-students/.
- For information on student support resources on campus, see https://ctfe.gmu.edu/teaching/student-support-resources-on-campus

Notice of mandatory reporting of sexual assault, interpersonal violence, and stalking:

As a faculty member, I am designated as a "Responsible Employee," and must report all disclosures of sexual assault, interpersonal violence, and stalking to Mason's Title IX Coordinator per University Policy 1202. If you wish to speak with someone confidentially, please contact one of Mason's confidential resources, such as Student Support and Advocacy Center (SSAC) at 703-380-1434 or Counseling and Psychological Services (CAPS) at 703-993-2380. You may also seek assistance from Mason's Title IX Coordinator by calling 703-993-8730, or emailing titleix@gmu.edu.

For additional information on the College of Education and Human Development, please visit our website https://cehd.gmu.edu/students/