



**1. Plainview Campus  
School of Education**

**2. Wayland Baptist University Mission Statement:**

Wayland Baptist University exists to educate students in an academically challenging, learning-focused and distinctively Christian environment for professional success, and service to God and humankind.

**3. Course Prefix, Number, & Name:**

EXSS 3316 Biomechanics

**4. Term and Year:**

Summer 2022

**5. Full Name of Instructor:**

Dr. J. Paul Fikes

**6. Office Phone and WBU Email Address:**

Office phone: 806.291.3790

Email: [fikesp@wbu.edu](mailto:fikesp@wbu.edu)

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EXSS Front Office: 806.291.1056

Laney Center Front Desk: 806.291.3780

**7. Office Hours, Building, and Location:**

Laney Center, Room 203

Any time by appointment

**8. Class Meeting Time and Location:**

WBU Online

**9. Catalog Description:**

Examines human movement through an examination of physical and natural forces acting on and through the body.

**10. Prerequisite:**

BIOL 1400

EXSS 1301

EXSS 3306

**11. Required Textbook and Resources:**

- Textbook: McGinnis, P. M. (2020). *Biomechanics of sport and exercise* (4<sup>th</sup> ed.). Human Kinetics.

## **12. Optional Materials:**

- Resources available through WBU and Online libraries
- Access to [WBU Learning Resources Center](#)

## **13. Course Outcome Competencies:**

1. Student will comprehend and apply the biomechanical relationship between anatomical structure and physiological function.
2. Student will biomechanically analyze real-life examples of movement within sport and physical activity.
3. Student will comprehend and apply mathematical, physical, and mechanical principles that relate to biomechanical analysis.
4. Student will evaluate his/her own understanding of selected topics.
5. Student will analyze and synthesize selected topics through laboratory experiments.

## **14. Attendance Requirements:**

As stated in the Wayland Catalog, students enrolled at one of the University's external campuses should make every effort to attend all class meetings. All absences must be explained to the instructor, who will then determine whether the omitted work may be made up. When a student reaches that number of absences considered by the instructor to be excessive, the instructor will so advise the student and file an unsatisfactory progress report with the campus executive director. Any student who misses 25 percent or more of the regularly scheduled class meetings may receive a grade of F in the course. Additional attendance policies for each course, as defined by the instructor in the course syllabus, are considered a part of the University's attendance policy.

- As a WBU Online course, any student who misses twenty-five (25%) percent or more of the regularly scheduled class meetings will receive a grade of F for that course. Participation and attendance will be defined as logging into the Blackboard course module and submitting at least one assignment each week. Simply logging into the Blackboard course module will not suffice.

## **15. Statement on Plagiarism and Academic Dishonesty:**

Wayland Baptist University observes a zero-tolerance policy regarding academic dishonesty. Per university policy as described in the academic catalog, all cases of academic dishonesty will be reported and second offenses will result in suspension from the university.

## **16. Disability Statement:**

"In compliance with the Americans with Disabilities Act of 1990 (ADA), it is the policy of Wayland Baptist University that no otherwise qualified person with a disability be excluded from participation in, be denied the benefits of, or be subject to discrimination under any educational program or activity in the university. The Coordinator of Counseling Services serves as the coordinator of students with a disability and should be contacted concerning accommodation requests at (806) 291- 3765. Documentation of a disability must accompany any request for accommodations."

## **17. Course Requirements and Grading Criteria:**

- A. Syllabus Quiz
  - a. Read the full syllabus. If you have any questions or concerns, please contact me ASAP.
  - b. A short (short answer) quiz is available on Blackboard. Once you are confident that you are familiar with the course objectives and expectations, complete the syllabus quiz.
  - c. This is not graded, but is mandatory to be considered a participant in class for Census purposes.
  - d. Due by the end of the day on the first Thursday of the course (see course calendar).
  
- B. Reading Quizzes – will assess competencies 1, 3, and 4.
  - a. One for each chapter – posted in Blackboard
  - b. Due by end of day as noted on course calendar
    - i. May be submitted late for credit only with pre-approval (before the due date) from the instructor.
  - c. 16, worth up to 10 points each (150 total pts possible)
  
- C. Lab Review Sheets – will assess competencies 1, 2, 3, 4, & 5.
  - a. Hands-on activities to experience and analyze concepts from selected units
  - b. Due by end of day as noted on course calendar
    - i. May be submitted late with 10% deduction per calendar day (max -30%)
  - c. 5, worth 30 points each (150 total pts possible)
  
- D. Final Analysis Project – will assess competencies 1, 2, 3, & 4.
  - a. At some point during the course, watch and video record a sporting event or similar clinical situation.
  - b. Analyze the difference between two participants from opposite teams (or different patients) doing the same specific skill (e.g., 2 different players each swinging at a similar pitch or 2 different athletes performing the same squat lift exercise).
  - c. Analyze the performances with these questions in mind:
    - i. How do the two performers compare? How do they differ?
    - ii. What mechanical advantages does each performer have over the other?
    - iii. What techniques and strategies could each performer utilize to improve performance?
    - iv. What techniques could the opponent (if appropriate) use to take advantage of the trends and flaws of the performers?
  - d. Findings and analysis will be presented to instructor and class through a Presentation Video posted into Blackboard. I recommend screen capturing video from your computer desktop (i.e., Zoom or Microsoft Teams; can switch between video and/or presentation slides as appropriate) and the VidGrid software (accessible in Blackboard) to complete and edit before final submission.
  - e. Specific grade based on rubric posted in Blackboard
  - f. Due by end of day as noted on course calendar
    - i. May not be submitted late as the course term will be over at this due date.

- g. Worth 100 points
- E. Trig Review Lab – Extra Credit Assignment
  - a. Assignment is designed to be a review of foundational trigonometry which will be used in several areas of this course.
  - b. Due by end of day as noted on course calendar. May not be submitted late for credit as this is designed to review *prior to* using the reviewed content for course assignments.
  - c. Worth up to 40 points
- F. 400 Total Points Possible
  - A: 360 to 400 points
  - B: 320 to 360 points
  - C: 280 to 320 points
  - D: 240 to 280 points
  - F: Fewer than 240 points; **or** less than 75% attendance
- G. Extra credit policy:

Extra credit is pre-defined for this course. All extra credit must be submitted by the due date noted on the course calendar. No other activities will be considered for extra credit.
- H. Grade of Incomplete – The university catalog, [link](#), states that “an incomplete may be given within the last two weeks of a long term . . . to a student who is passing, but has not completed a term paper, examination, or other required work for reasons beyond the student’s control.” For this course, I will approve any request that includes a statement of need due to “reasons beyond the student’s control” and that is requested in the last two weeks of the term. However, I can only approve the request if you are both requesting an extension for *one assignment* and are otherwise *passing* (defined as at least 60% of the points expected based on the position within the course, excluding the assignment within the request). More extensive requests may be possible through working with WBU academic administration.

**18. Tentative Schedule:**

(see course calendar below)

**19. Faculty May Add Additional Information as Desired:**

- Lab experiences are designed to be hands-on and working in small teams. As such, you may need to work with a friend or a classmate to complete some of these. You should need no more technology than you should have access to on your personal smart phone. You may need additional supplies which should be readily available or easy to obtain.

EXSS 3316  
Biomechanics

Week #	Dates	Assigned Readings (McGinnis Text Chapters); Others Listed in Blackboard Weekly Content Folders	Assignments Due
1	May 30 – June 4	Syllabus, Introduction (0), Forces (1)	- Syllabus Quiz (June 2) - Reading Quiz 1 (June 4)
2	June 6 – 11	Linear Kinematics (2) & Linear Kinetics (3)	- Trig Review Lab (June 6) - Lab 1 (June 6) - Reading Quizzes 2 & 3 (June 11)
3	June 13 – 18	Work, Power, and Energy (4) & Torques and Moments of Force (5)	- Lab 2 (June 13) - Reading Quizzes 4 & 5 (June 18)
4	June 20 – 25	Angular Kinematics (6) & Angular Kinetics (7)	- Lab 3 (June 20) - Reading Quizzes 6 & 7 (June 25)
5	June 27 – July 2	Fluid Mechanics (8), Mechanics of Biological Materials (9)	- Lab 4 (June 27) - Reading Quizzes 8 & 9 (July 2)
6	July 4 – 9	Skeletal System (10), Muscular System (11), & Nervous System (12)	- Reading Quizzes 10, 11, & 12 (July 9)
7	July 11 – 16	Qualitative Analyses to Improve Technique (13) & Training (14)	- Lab 5 (July 11) - Reading Quizzes 13 & 14 (July 16)
8	July 18 – 23	Qualitative Analysis to Understand Injury Development (15) & Technology in Biomechanics (16)	- Reading Quizzes 15 & 16 (July 23) - Final Analysis Project (July 23)