

**SCHOOL OF KINESIOLOGY
COLLEGE OF HEALTH
BALL STATE UNIVERSITY**

INSTRUCTOR INFORMATION**Instructor:** Henry Wang, PhD**Office:** Biomechanics Laboratory, HP 311B**Phone:** 765-285-5126**Office hours:** M & W: 1pm – 2pm; or by appointment**Email:** hwang2@bsu.edu**COURSE DESCRIPTION**

The EXSC 294 focuses on understanding how structure of the human body determines its function, how movement is produced, the relationship to injury, and how exercise can maintain, rehabilitate, and improve body structure. The purpose of this course is to introduce students to functional human anatomy and concepts of mechanics. This course will lay a foundation to apply mechanical principles to human movement, particularly those pertaining to exercise, sport, and physical activity.

COURSE OBJECTIVES

The student should gain an understanding of the anatomical and mechanical principles that underlie human motion and develop the ability to link the structure of the human body with its function. At the completion of this course it is desired that each student be able to: 1) describe motion with precise, well-defined anatomical and mechanical terminology, 2) identify and describe the function of major anatomical structures in the human body, and 3) understand and apply mechanical concepts of angular and linear motion to human movement.

LECTURE TIMES & LOCATION:

Section 001: M & W: 12 PM – 12:50 PM HP 251

Section 002: M & W: 2 PM – 2:50 PM HP 251

LAB TIMES & LOCATION:

Section 001: F: 12 PM – 12:50 PM HP 251

Section 002: F: 2 PM – 2:50 PM HP 251

REQUIRED and RECOMMENDED TEXT AND MATERIALS:

- 1) Required: Wang, H. (2021). *Anatomical Kinesiology* (2nd Ed.). Ronkonkoma, NY: Linus Learning.
- 2) Recommended: Hamill, J., Knutzen, K.M., & Derrick, T. (2021). *Biomechanical Basis of Human Movement* (5th Ed.). Philadelphia, PA: Wolters Kluwer/Lippincott Williams & Wilkins.
- 3) Recommended: Floyd, R.T. & Thompson, C.W. (2019). *Manual of Structural Kinesiology* (20th Ed.). McGraw-Hill Higher Education.
- 4) Each student must have a scientific calculator (i.e., calculator with SIN, COS, and TAN functions)
- 5) Lectures, lab handouts, supplemental readings, and additional course resources will be available on the Ball State University Canvas system. You can access Canvas at: <http://my.bsu.edu/>.

GRADING:

Test #1	20%
Test #2	20%
Final exam	30%
Lab performance (quizzes, reports, etc.)	20%
Class performance (attendance, pop quizzes)	10%

GRADING SCALE:

A = 93% - 100%; A- = 90% - 92%; B+ = 87% - 89%; B = 83% - 86%; B- = 80% - 82%; C+ = 77% - 79%;
C = 73% - 76%; C- = 70% - 72%; D+ = 67% - 69%; D = 63% - 66%; D- = 60% - 62%; F = <60%

TENTATIVE LECTURE SCHEDULE**

Lecture	Topic
1	Introduction; Movement Terminology (chapter 1)
2a	Movement Analysis (lecture notes)
2b	Human Walking Analysis (lecture notes)
3	Linear Kinematics (chapter 9)
4	Linear Kinetics (chapter 11)
5	Angular Kinematics (chapter 10)
6	Angular Kinetics (chapter 12)
7	Skeletal Consideration of Human Movement (chapter 2)
8	Articular Consideration of Human Movement (chapter 2)
9	Muscular Consideration of Human Movement (chapter 3)
10	Neurological Consideration of Human Movement (chapter 4)
11	Functional Anatomy of Upper Extremity (chapter 5)
12	Functional Anatomy of Lower Extremity (chapter 6)

TENTATIVE LAB SCHEDULE**

Week	Topic
Week 2	Math Review
Week 3	Movement Description
Week 4	The Shoulder Girdle and Shoulder Joint
Week 5	The Elbow Joint and the Wrist Joint
Week 6	Linear Kinematics and Graphing in EXCEL*
Week 7	Linear Kinematics and Graphing in EXCEL*
Week 8	The Pelvic Girdle and the Hip Joint
Week 9	Linear Kinetics*
Week 10	Linear Kinetics*
Week 11	The Knee Joint and the Ankle Joint
Week 12	The Trunk
Week 13	Muscle mechanics & Electromyography*
Week 14	Muscle mechanics & Electromyography*

****Subject to change as semester progresses**

***To be turned in**

IMPORTANT DATES:

Monday, January 5, 2026: First Day of Class (welcome!)
 Monday, January 19, 2026: Martin Luther King Jr Day No Classes
 Sunday, March 1 – Sunday March 8, 2026: Spring Break
 Monday, April 27, 2026: Last meeting day for regular classes
 Tuesday, April 28, 2026- Friday, May 1, 2026: Final Examination Period
 Saturday, May 2, 2026 May Commencement

NOTES REGARDING LAB:

1. Class participation is mandatory.
2. Assigned lab reports are due one week after the lab exercise was completed. **All lab assignments are due at the start of lab.**
3. All lab reports must reflect each student's own work on the lab exercise. Submitting work which is identical to someone else's will be considered academic dishonesty and you will be given a zero on the assignment.

4. During labs you will be working in groups of four or five. You should come dressed in comfortable clothing as some labs require moderate physical activity.
5. Please bring a scientific calculator to all lab sessions. You are expected to show all work for calculations and to present answers using SI units. This is also expected for all problem sets, quizzes, and exams.

COMPETENCIES AND SKILLS

The National Association of Colleges and Employers (NACE) has identified the following as competencies that graduates from any degree program should develop. In this class, some of the competency aspects mentioned below are integrated into the class projects, labs, and assignments. Working through the class projects, assignments, and labs will foster your ability to be skillful in those areas.

- **Critical Thinking/Problem Solving:** Exercise sound reasoning to analyze issues, make decisions, and overcome problems. The individual is able to obtain, interpret, and use knowledge, facts, and data in this process, and may demonstrate originality and inventiveness.
- **Oral/Written Communications:** Articulate thoughts and ideas clearly and effectively in written and oral forms to persons inside and outside of the organization. The individual has public speaking skills; is able to express ideas to others; and can write/edit memos, letters, and complex technical reports clearly and effectively.
- **Teamwork/Collaboration:** Build collaborative relationships with colleagues and customers representing diverse cultures, races, ages, genders, religions, lifestyles, and viewpoints. The individual is able to work within a team structure, and can negotiate and manage conflict.
- **Digital Technology:** Leverage existing digital technologies ethically and efficiently to solve problems, complete tasks, and accomplish goals. The individual demonstrates effective adaptability to new and emerging technologies.
- **Leadership:** Leverage the strengths of others to achieve common goals, and use interpersonal skills to coach and develop others. The individual is able to assess and manage his/her emotions and those of others; use empathetic skills to guide and motivate; and organize, prioritize, and delegate work.
- **Professionalism/Work Ethic:** Demonstrate personal accountability and effective work habits, e.g., punctuality, working productively with others, and time workload management, and understand the impact of non-verbal communication on professional work image. The individual demonstrates integrity and ethical behavior, acts responsibly with the interests of the larger community in mind, and is able to learn from his/her mistakes.
- **Career Management:** Identify and articulate one's skills, strengths, knowledge, and experiences relevant to the position desired and career goals, and identify areas necessary for professional growth. The individual is able to navigate and explore job options, understands and can take the steps necessary to pursue opportunities, and understands how to self-advocate for opportunities in the workplace.
- **Global/Intercultural Fluency:** Value, respect, and learn from diverse cultures, races, ages, genders, sexual orientations, and religions. The individual demonstrates openness, inclusiveness, sensitivity, and the ability to interact respectfully with all people and understand individuals' differences.

To help you start the process of identifying the competencies and skills you have or should be learning, provided below is a breakdown of what you should get out of this class.

Assignments	Workplace Competencies	Technical Skills
Linear Kinematics Project	Critical Thinking / Problem Solving; Teamwork / Collaboration; Written Communications;	<ul style="list-style-type: none"> • Work as a team to collect quantitative kinematic data. • Learn how to operate basic biomechanical tools including stop watch, tape measure, and cameras. • Perform data processing and analysis in Microsoft Excel. • Interpret results during a group meeting. • Write a technical report of the project independently.

Linear Kinetic Project	Critical Thinking / Problem Solving; Teamwork / Collaboration; Written Communications	<ul style="list-style-type: none"> • Work as a team to collect quantitative kinetic data. • Understand the working theory of a biomechanical tool (force plate). • Perform data processing and analysis in Microsoft Excel. • Interpret results during a group meeting. • Write a technical report of the project independently.
Muscle Mechanics Project	Critical Thinking / Problem Solving; Teamwork / Collaboration; Written Communications	<ul style="list-style-type: none"> • Work as a team to collect quantitative electromyographic (EMG) data. • Understand the working theory of an EMG system. • Perform data processing and analysis in Microsoft Excel. • Interpret results during a group meeting. • Write a technical report of the project independently.
Movement Description Assignment	Critical Thinking / Problem Solving; Teamwork / Collaboration; Written Communications	<ul style="list-style-type: none"> • Understand the biomechanical movement analysis model. • Be familiar with standard terms used in medical and exercise science fields. • Practice of using precise terms and standard language to describe common human movements.
Functional Anatomy Labs	Critical Thinking / Problem Solving; Teamwork / Collaboration; Written Communications	<ul style="list-style-type: none"> • Be familiar with the musculoskeletal system. • Understand the internal structure of the upper body and lower body anatomy. • Understand the articular system in the human body. • Be able to describe the primary and secondary functions of major muscles in the body. • Practice of using technical terms to describe muscle actions and joint movements.

CLASSROOM ENVIRONMENT:

No foods and drinks in the class room during the lecture time. No cell phone calls and text messaging. No surfing internet in class.

Wearing face masks is optional. Face masks should be worn so that they cover the individual's nose and mouth, and the type of mask should be consistent with CDC guidance. This means the face mask should help prevent respiratory droplets from traveling into the air and onto other people when the person wearing the face mask coughs, sneezes, talks, or raises their voice.

STUDENT EXPECTATIONS:

Students are required to concentrate on lectures and participate in classroom discussions. Students should not make noises and movements, which may distract the class.

ASSIGNMENTS AND EXAMS INFORMATION:

Information of assignments and exams will be explained in the class through the semester. Assignments must be turned in before the due dates. Exams must be taken during the scheduled times.

ACADEMIC INTEGRITY AND DISHONESTY:

Students of the university must conduct themselves in accordance with the highest standards of academic honesty and integrity. Academic dishonesty by a student will not be tolerated in activity or academic areas and will be treated in accordance with the policy in the faculty handbook. Please refer to the specific sections in Undergraduate Rights and Responsibilities for information regarding academic honesty. These policies (including cheating on exams and plagiarism) will be strictly enforced. I will not tolerate cheating or plagiarism. Incidents of academic dishonesty will be prosecuted to the full extent within the university judicial process! Failure to follow these guidelines will result in an "F" for the course.

EMAIL ETIQUETTE:

Emails need to include complete words and phrases with proper capitalization and punctuation. Emails will only be responded to if they can be read, name, course and section number are included.

THE LEARNING CENTER:

The Learning Center offers free tutoring for most courses in the core curriculum, for a variety of math, economics, accounting, and physics courses, for any writing task, and for general study strategies such as time management, test taking, speed reading, and effective textbook reading and note taking. We also tutor for many courses outside of the core curriculum. Call 285-1006 or visit NQ 350 to make an appointment to meet with a tutor. We can help! Tutoring is available one-on-one or in small groups.

INTERNATIONAL STUDENTS:

The Learning Center has tutors trained to address some of the challenges specific to International Students and if you are having trouble understanding information presented in class, you are encouraged to contact the Learning Center. Bilingual tutors may also be available upon request.

WRITING CENTER INFORMATION:

Want extra feedback on your papers? The Writing Center is a community of Ball State students and faculty who value writing. Come and collaborate with one of our trained peer tutors on any project for any major. The Writing Center is a comfortable, supportive environment for writers from all communities and backgrounds. It is located in Robert Bell 291. We have both online and face-to-face appointments. To make an appointment go to www.ballstate.mywconline.com.

COURSE WITHDRAWAL:

There is only one withdrawal period. It extends from the 6th through the 45th day of classes during fall or spring semester. **See important dates.** For fall and spring semesters, a student has the entire first week of courses to drop a course with no penalty. They do this through “Add/Drop/Registration” from the website www.bsu.edu/student services. After the first week, a student can withdraw from a course with a grade of “W” up until the decided upon withdrawal date. They accomplish this by completing a Withdrawal form and turning it in to the Registrar located in Lucina Hall. After this withdrawal date a student may only withdraw and receive a grade of “W” (instead of an “F”) if they are confirmed to have proper extenuating circumstances.

UNIVERSITY STATEMENT

We are committed to ensuring that all members of the community are welcome, through valuing the various experiences and worldviews represented at Ball State and among those we serve. We promote a culture of respect and civil discourse. If you need course adaptations or accommodations because of a disability, please contact the instructor of record as soon as possible. Ball State's [Disability Services Office](#) coordinates services for students with disabilities; documentation of a disability needs to be on file in that office before any accommodations can be provided. Disability Services can be contacted at 765-285-5293 or dsd@bsu.edu.

FREEDOM OF EXPRESSION

In this course, we are committed to fostering a learning environment that values intellectual diversity, encourages free expression, and promotes open inquiry. As members of the Ball State Community, we treat each person in the Ball State community with civility, courtesy, compassion, and dignity and respect and learn from differences in people, ideas, and opinions. Please review Ball State University's [Statement on Freedom of Expression](#), the resources on Ball State's [Freedom of Expression webpage](#), and [Ball State's Beneficence Pledge](#).