

# BIOMECHANICS

## REQUIREMENTS

**CORE CURRICULUM** The Core Curriculum is designed to foster critical thinking skills and introduce students to basic domains of thinking that transcend disciplines. The Core applies to all majors. Information on specific classes in the Core can be found at [marshall.edu/gened](http://marshall.edu/gened).

### CORE 1: CRITICAL THINKING

CODE	COURSE NAME	HRS	GRADE
FYS 100	First Year Seminar	3	_____
HS 200	Critical Thinking Course	3	_____
PSY 201	Critical Thinking Course	3	_____
<b>Additional University Requirements</b>			
_____	Writing Intensive (WI sec of Core II Hum)	3	_____
_____	Writing Intensive	3	_____
_____	Multicultural or International (MUS 142 rec.)	3	_____
HS 475	Capstone I	3	_____
HS 495	Capstone II	3	_____

### CORE 2:

CODE	COURSE NAME	HRS	GRADE
ENG 101	Beginning Composition	3	_____
ENG 201	Advanced Composition	3	_____
CMM 103	Fund Speech-Communication	3	_____
MTH 132	Precalculus w/ Sci Applic	5	_____
BSC 228	Physical/Natural Science	4	_____
_____	Core II Humanities (WI)	3	_____
PSY 201	Introductory Psychology (CT)	3	_____
_____	Core II Fine Arts (MUS 142 rec.)	3	_____

## MAJOR-SPECIFIC

All Biomechanics majors are required to take the following courses in the professional core:

CODE	COURSE NAME	HRS	GRADE	CODE	COURSE NAME	HRS	GRADE
BSC 227	Human Anatomy	4	_____	HS 464	Pathomechanics	3	_____
BSC 228	Human Physiology	4	_____	HS 465	Biomechanical Analysis of Mvmnt	3	_____
DTS 210	Nutrition	3	_____	HS 475	Trends in Biomech Analysis (C)	3	_____
ESS 220	Fitness and Wellness	3	_____	HS 495	Trends in Biomechanical Analysis II (C)	3	_____
ESS 345	Exercise Physiology	3	_____	STA 225	Introductory Statistics	3	_____
ESS 375	Fitness Assess & Exer Prescr	3	_____	SFT 235	Intro to Occup Safety (CT)	3	_____
STHM 401	Ethics in Sports	3	_____	SFT 373	Prin Ergonomics & Human Factors	3	_____
STHM 410	Princ, Org, & Admin Phys Ed	3	_____	SFT 373L	Prin Ergonomics Lab	1	_____
ESS 442	Princ of Strength & Condition	3	_____	PHY 201	College Physics I	3	_____
ESS 443	Princ of Strength & Cond Lab	1	_____	PHY 202	General Physics I Lab	1	_____
HS 200	Comp Medical Terminology (CT)	3	_____	PHY 203	College Physics II	3	_____
HS 215	Intro to Athletic Training	3	_____	PHY 204	General Physics II Lab	1	_____
HS 220	Personal Health	3	_____	PSY 311	Child Development	3	_____
HS 222	Hlth Prov First Aid/CPS/AED	3	_____	PSY 312	Adult Development	3	_____
HS 365	Functional Kinesiology	3	_____	_____	Free Elective (or Area of Emphasis)	3	_____
HS 369	Motor Learning	3	_____	_____	Free Elective (or Area of Emphasis)	3	_____
HS 435	Biomech Instrument Mat Lab	3	_____	_____	Free Elective	3	_____

## MAJOR INFORMATION

- Students are required to know and track their degree requirements for graduation or for entrance to a professional school.
- Course offerings and course attributes are subject to change semesters. Please consult each semester's schedule of courses for availability and attributes.
- Math Requirement:** The biomechanics math requirement is for MTH 132 only (a pre-requisite for Physics 1). Students need an ACT Math score of 24+ to be eligible for MTH 132. For students with a lower ACT Math score, we allow them to take two courses as an alternative: Algebra (MTH 130 with ACT 21+ or MTH 127 with ACT 17+) and then Trigonometry (MTH 122) over two semesters.
- Areas of Emphasis
  - Biomechanics Comprehensive:** Students will complete the 87-hour professional core. One term of summer school will be required to complete this degree in four years. There are 7 hours of free electives.
- Biomechanics Pre-Physical Therapy:** In addition to the 87-hour professional core, students will complete CHM 211, 217, 212, and 218; and BSC 120, and 121. Summer school will be required to complete this degree in four years. There are no electives available for students.
- Biomechanics Physics:** In addition to the 87-hour professional core, students will complete PHY 304, 314, and 405, in addition to one of the following (PHY 350 or PHY 360). There are no electives available for students.
- Biomechanics Pre-Medical:** In addition to the 87-hour professional core, students will complete CHM 211, 217, 212, 218, 355, 356, and 361; and BSC 120, 121 in addition to core courses. Summer School will be required to complete this degree in four years. There are no electives available for students.
- Biomechanics Safety:** In addition to the 87-hour professional core, students will complete SFT 372, 375, 378, 458, and 460.

# BIOMECHANICS

Biomechanics is the analysis of human movement to enhance performance, improve training, accelerate rehabilitation, and reduce injury risk. This is done by integrating various mechanical aspects of human movement during static and dynamic activities. The Biomechanics degree applies physics and math principles to study the interactions between humans and various machine systems in both working and living environments. Students will be exposed to specialized equipment to help measure the interaction of humans with their environment. Force plates and accelerometers measure forces generated by various segments of the body and then exerted externally to the body. Muscle activation is measured through electromyography. Motion analysis, using video to create three-dimensional reconstructions, measures body positions, velocities, and accelerations.

YEAR ONE	FALL SEMESTER				SPRING SEMESTER			
	CODE	COURSE NAME	HRS	GRADE	CODE	COURSE NAME	HRS	GRADE
	FYS 100	First Year Sem Crit Thinking	3	_____	HS 222	Hlth Prov First Aid/CPR/AED	3	_____
	ENG 101	Beginning Composition	3	_____	MTH 122	Plane Trigonometry/ or Free Elective	3	_____
	HS 200	Comp Medical Terminology (CT)	3	_____	/ Elective if MTH 132 is completed in Fall			
	_____	College Algebra (MTH 127 or MTH 130) or MTH 132 Precalculus w/ Sci Application	3-5	_____	ENG 201	Advanced Composition	3	_____
	UNI 100	Freshman First Class	1	_____	BSC 227	Human Anatomy	4	_____
					PSY 201	Introductory Psychology (CT)	3	_____
	<b>TOTAL HOURS</b>		<b>13-15</b>		<b>TOTAL HOURS</b>		<b>16</b>	
	Summer Term (optional):							

YEAR TWO	FALL SEMESTER				SPRING SEMESTER			
	CODE	COURSE NAME	HRS	GRADE	CODE	COURSE NAME	HRS	GRADE
	BSC 228	Human Physiology	4	_____	ESS 345	Exercise Physiology	3	_____
	HS 365	Functional Kinesiology	3	_____	PHY 203	College Physics II	3	_____
	PHY 201	College Physics I	3	_____	PHY 204	General Physics II Lab	1	_____
	PHY 202	General Physics I Lab	1	_____	HS 215	Intro to Athletic Training	3	_____
	PSY 311	Child Development	3	_____	SFT 235	Intro to Occup Safety (CT)	3	_____
	HS 220	Personal Health	3	_____	PSY 312	Adult Development	3	_____
	<b>TOTAL HOURS</b>		<b>17</b>		<b>TOTAL HOURS</b>		<b>16</b>	
	Summer Term (optional):							

YEAR THREE	FALL SEMESTER				SPRING SEMESTER			
	CODE	COURSE NAME	HRS	GRADE	CODE	COURSE NAME	HRS	GRADE
	ESS 375	Fitness Assess & Exercise Prescr	3	_____	ESS 220	Fitness and Wellness	3	_____
	STHM 401	Ethics in Sports	3	_____	HS 435	Biomech Instrument Mat Lab	3	_____
	HS 465	Biomechanical Analysis of Mvmnt	3	_____	HS 464	Pathomechanics	3	_____
	STA 225	Introductory Statistics (CT)	3	_____	SFT 373	Prin Ergonomics & Human Factors	3	_____
	_____	Core II Fine Arts (MUS 142 rcmd.)	3	_____	SFT 373L	Prin Ergonomics Lab	1	_____
					_____	Core II Humanities (WI)	3	_____
	<b>TOTAL HOURS</b>		<b>15</b>		<b>TOTAL HOURS</b>		<b>16</b>	
	<b>Summer Term (required):</b>							
	HS 369	Motor Learning	3	_____				

YEAR FOUR	FALL SEMESTER				SPRING SEMESTER			
	CODE	COURSE NAME	HRS	GRADE	CODE	COURSE NAME	HRS	GRADE
	DTS 210	Nutrition	3	_____	STHM 410	Princ, Org, & Admin Phys Ed	3	_____
	ESS 442	Princ of Strength & Conditioning	3	_____	HS 495	Trends in Biomech Analysis II (C)	3	_____
	ESS 443	Princ of Strength & Condition Lab	1	_____	Free Elective or Area of Emphasis			
	HS 475	Trends in Biomechanical Analysis (C)	3	_____	Free Elective or Area of Emphasis			
	CMM 103	Fund Speech Communication	3	_____				
	_____	Free Elective	3	_____				
	<b>TOTAL HOURS</b>		<b>16</b>		<b>TOTAL HOURS</b>		<b>12</b>	
	Summer Term (optional):							

General Education Requirement  
College Requirement  
Major Requirement  
Area of Emphasis

Milestone Course: This is a key success marker for your major. See your advisor to discuss the importance of this course in your plan of study.

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# BIOMECHANICS — 2023-2024

## INVOLVEMENT OPPORTUNITIES

- Student Government Association
- Campus Activity Board
- JMELI
- Commuter Student Advisory Board
- Club Sports
- Religious Organizations
- Political Organizations
- Residence Hall Association
- Cultural Organizations
- National Society of Leadership and Success
- Greek Life

## RELATED MAJORS

- Athletic Training
- Exercise Science
- Biomedical Engineering
- Health Sciences

## GRADUATION REQUIREMENTS

- Have a minimum of 120 credit hours (some colleges or majors require more);
- Have an overall and Marshall Grade Point Average of 2.00 or higher;
- Have an overall Grade Point Average of 2.00 or higher in the major area of study;
- Have earned a grade of C or better in English 201 or 201 H;
- Have met all major(s) and college requirements;
- Have met the requirements of the Core Curriculum;
- Have met the residence requirements of Marshall University, including 12 hours of 300/400 level coursework in the student's college (see section entitled "Residence Requirements" in the undergraduate catalogue);
- Be enrolled at Marshall at least one semester of the senior year;
- Have transferred no more than 72 credit hours from an accredited West Virginia two-year institution of higher education.
- Completion of HS 495 and 2.75 overall GPA
- 40 Upper Division Hours

Colleges and specific programs may have unique requirements that are more stringent than those noted above. Students are responsible for staying informed about and ensuring that they meet the requirements for graduation.

This academic map is to be used as a guide in planning your coursework toward a degree. Due to the complexities of degree programs, it is unfortunate but inevitable that an error may occur in the creation of this document. The official source of degree requirements at Marshall University is DegreeWorks available in your myMU portal. Always consult regularly with your advisor.

## YEAR ONE



Have questions? Need to talk? You already have a Friend-At-Marshall ready to help you succeed. Find your FAM Peer Mentor here: [www.marshall.edu/fam](http://www.marshall.edu/fam)



Stay on the Herd Path and come to class! Class attendance is more important to your success than your high school GPA, your class standing, or your ACT/SAT scores.



Take a Community Based Learning (CBL) class that connects course content to the community. Stay engaged and make a difference.



In order to graduate on time, you need to take an average of 15 credits per semester. Are you on track? Take 15 to Finish!



Take a pulse check. Know what you need to do every year to keep your grants, scholarships, or federal financial aid.



Begin your anatomy and physiology sequence in HS 200



Attend an intercultural festival or event on campus or in town.

## YEAR THREE



Develop relationships with professors who can serve as future references by attending their office hours.



No need to wait until graduate school. Discuss undergraduate research opportunities with faculty in your major right now.



Are you on track to graduate? Meet with your advisor for your Junior Eval to make sure you know what requirements you have left.



Join professional associations in your field, like ASB, ACSM, ISBS.



Your degree requires a research study. Meet with a Faculty Mentor for more information.



Think about who can help you grow as a student and a professional (professors, advisors, alumni, etc.) and ask at least one to be your mentor.

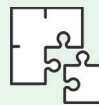
## YEAR TWO



Join the Marshall Mentor Network and connect with professionals in your field to discuss your major, career path, and more.



Are you completing enough credits to graduate on time? Dropping or failing a class can put you behind. Use summer terms to quickly get back on track.



Meet with a career education specialist to conduct a "gap analysis." Figure out the skills you'll need for the career you want while you still have time to build them.



Want to continue your education and increase your opportunities? Talk to a faculty member about whether graduate school fits your career goals.



No need to wait until graduate school. Discuss undergraduate research opportunities with faculty in your major right now.



Join professional associations in your field, like American Society of Biomechanics.

## YEAR FOUR



This is it! Are you on track to graduate? Meet with your advisor for your Senior Eval to see what requirements you have left.



Networking is key! Attend a Career Expo to seek employment opportunities and network with employers in your field.



Think about who can help you grow as a student and a professional (professors, advisors, alumni, etc.) and ask at least one to be your mentor.



Develop relationships with professors who can serve as future references by attending their office hours.



Prepare to present at the COHP Research Day in April.



Complete graduate admissions exams (GRE, MCAT, LSAT) the summer before your senior year.



Be at the top of your professional game! Prepare a final resume and practice your interview skills with a career coach in Career Education.

## TRANSFERABLE SKILLS ASSOCIATED WITH THIS MAJOR

- Knowledge of the Human Body
- Assess human movement (with MoCap technology)
- Numeracy
- Computer coding/programming
- Oral and Written Communication Skills
- Ability to Instruct Others
- Cultural Understanding
- Time-Management Skills

## ASSOCIATED CAREERS

- Professional graduate study in PT, OT, PA, MD
- Sports performance scientist
- Sports medicine technician/researcher
- Gait lab technician in a hospital or clinic
- Prosthetist or orthotist
- Accident consulting
- Research and development



Marshall University  
College of Health Professions  
One John Marshall Drive  
Huntington, WV 25755  
1-304-696-2624  
cohp@marshall.edu  
marshall.edu/cohp