BIOS 4200 Syllabus

Kinesiological Basis of Human Movement
Section BIOS-4200-A, 3 credits
Mondays, Wednesdays, Fridays; 11:00am – 11:50am

Instructor Information

Instructor	**Email**	**Office Hours via Bluejeans:**
Dr. Young-Hui Chang, PhD (he/him/his) Prof. of Biological Sciences	yh.chang@ap.gatech.edu	https://bluejeans.com/736488889/6557 Wed's 2pm-3pm or by appt
Graduate Teaching Assistant	**Email**	**Office Hours:**
Jake Creech DPT/PhD student in Applied Physiology	cjcreech@gatech.edu	By appt. Zoom meetings

General Information

Course Mode Expectations

As per current USG policy, BIOS 4200 will be offered using the traditional in-person teaching mode. However, given the rising COVID cases in Georgia amidst the ongoing pandemic, we will need to make every effort to be prepared for absences, possible quarantine events, and asynchronous/online instruction. This means that ***this syllabus is subject to change*** depending on what happens with the COVID pandemic in the next few months. ***Flexibility*** is the operative word. I will do my best to be flexible with your situation, but I also expect you to be flexible and do your part in helping limit the spread of the coronavirus to help your fellow classmates (and me!) get through this semester in the best possible health. Recorded lectures from 2020 will be made available after the in-person lecture for those that have to miss class. Please beware that the general lecture content will be the same, but I cannot guarantee the exact same lectures for both classroom and online recordings.

Given the current pandemic and recent surge in positive coronavirus cases, ***I will expect everyone to be wearing a mask during classroom lectures***. Masks are largely to protect those around you, and I expect all of us to want to protect each other. I am proud to say that recent statistics estimate that ~85% of the GT community has been vaccinated. If you have not and are able to do so, I strongly urge you to get your COVID-19 vaccination as soon as possible. Efficacy of the COVID-19 vaccines has been proven—there is no doubt among the scientific and medical communities that this is necessary. Getting as high a vaccination rate as possible will help the GT community (literally) survive the semester. Weekly asymptomatic surveillance testing should be part of everyone's regular routine, regardless of vaccination status.

****Please do not attend any face-to-face class meeting if**: you are not feeling well, have a temperature or other COVID-19 symptoms, have tested positive for coronavirus, or suspect that you have been in recent contact with someone who may be infected with coronavirus.

Course Communication Strategy (*at all times, let's be respectful online!*)

Canvas: All official course communications will be done via Canvas; go here first!

- Lectures: pre-recorded lecture videos will be uploaded to Canvas after the in-person lecture
- Links to anything course related will be found on Canvas (Bluejeans links, etc.)
- Announcements and other communications
- Discussions/Q&A: please use the official course discussion platform for content-related and logistics-related questions that all students would benefit from. As of now we will plan to do asynchronous course discussions via **Piazza** on Canvas, but this is subject to change.
- All quizzes and exams will be completed on Canvas and/or in person in the classroom.
- Your grades will be posted on Canvas.

BlueJeans: Online synchronous video discussions and weekly Office Hours will be on BlueJeans at this link:

- Link: https://bluejeans.com/736488889/6557
- Meeting ID: 736 488 889
- PSWD: 6557

Email: please use direct email only for specific, personal issues that do not relate to course content. If it is a general question about the course, others are probably interested in the answer. E.g.1, if you are sick and cannot will be absent from class, this is a great reason to email me directly. E.g. 2, wondering what day the next quiz will be is a great question for Piazza.

Description

Even though the study of human movement dates back thousands of years, the complexities of understanding the control of even simple movements remain as major challenges in several areas of science and medicine ranging from rehabilitation to sports performance. This course teaches principles related to the biomechanics, energetics and motor control of movement as it applies to human and animal movement, rehabilitation, and sports performance. It gives an overview of (1) the biophysical subdisciplines that make up the knowledge base for kinesiology and (2) the professions that depend on kinesiological knowledge for their practice. Key biological themes related to physiological and neural adaptation and maturation will be used to exemplify the contributions that the anatomical, mechanical, physiological, and neural studies of human physical activity can make to human health and performance. The class periods will be organized into topical sections that will be introduced with standard lectures and concluded with active learning tasks within the classroom.

Pre- &/or Co-Requisites for course

This course will allow students the opportunity to integrate concepts from previous courses such as anatomy, physiology, introductory biology, math and physics. This course also fulfills a breadth elective requirement for the Physiology minor in Biological Sciences and is also provided for pre-health professional students to gain additional knowledge-base for potential graduate studies in different allied health programs (e.g., medical, dental, physical therapy, prosthetics & orthotics, etc.). It is assumed that students in this course will have taken and performed adequately in at least one course from among each of the two following lists (or have permission from the instructor):

- Pre-requisite *physiology* course 1 (one from this list):

BIOL 1510 or BIOL 1511 or BIOL 1520 or BIOL 3751 or BIOL 3753 or APPH 3751 or APPH 3753

AND,

- Pre-requisite *math* course 2 (one from this list):

MATH 1113, MATH 1501, MATH 1511, MATH 1502, MATH 15X2, MATH 1504, MATH 1555, MATH 1552

Course Goals and Learning Outcomes

To introduce students to the disciplinary and professional bases for the field of kinesiology and to establish an organizational framework for any future study in human movement science. On completion of this course, students will be able to demonstrate understanding of the following topics:

- The goals, scope, significance and methods of the field of kinesiology
- The various subdisciplines of kinesiology
- The multidimensional changes in human movement capability that occur with maturation and as an adaptation to physical activity
- The professions and professional associations related to kinesiology

Course Requirements & Grading

Description of Graded Components

*****Honor Code for quizzes and exams:** All quizzes and exams are an assessment of ***your*** knowledge. These are to be completed on your own without any outside help from others, the internet, or any other resources unless explicitly stated by the instructor prior to starting the exam/quiz. Please approach the course with integrity and pride in doing your own work.

Quizzes (30% of total): 10 online quizzes will be given throughout the semester at the end of each of 10 topics/sections. Each quiz is designed to be brief (~10-15 minutes) and will cover topics covered in the previous lectures on a given topic. I will automatically replace the lowest quiz grade with the mean of your others. Also, quizzes will be graded such that I will round up to the nearest 5pts (e.g., if you get a 25-29 pts out of 30, you will receive a grade of 30/30 for that quiz, 20-24 will be rounded to a 25/30, etc.).

3 Mid-term Exams (45% of total, 15% each): Three mid-term exams will be given online during the semester. They are designed to test your knowledge and mastery of the material over several weeks of lectures. The format will be a mix of multiple choice, short and long answer. They will test recall as well as your ability to synthesize the material and apply it to novel contexts. You will need to use a calculator to complete these exams. One page of notes (front and back) are allowed for reference during the mid-term exams and these you will need to turn in your notes as part of your exam grade.

Final Exam (15% of total): An online final exam will be given during exam week, but it will only cover new material. The format will be the same as for the mid-term exams. You will need to use a calculator to complete these exams. One page of notes (front and back) are allowed for reference during the final exam and you will need to turn in your notes as part of your exam grade.

Participation (10% of total): Online participation in class or online will involve productively participating to class discussions whther in person or live on BlueJeans or on the asynchronous discussion threads (asking questions, adding your thoughts, etc.). I expect each of you to be proactive learners and to contribute to the learning environment of the classroom even when it is a virtual discussion. I will take note of who participates during synchronous sessions and on asynchronous discussions.

Assignment	Date	Weight (Points out of 1000 total possible)
Quiz 1	Mon, 8/30	30
Quiz 2	Fri, 9/3	30
Quiz 3	Mon, 9/13	30
Mid-term Exam 1	Fri, 9/17	150
Quiz 4	Fri, 9/24	30
Quiz 5	Fri, 10/8	30
Quiz 6	Mon, 10/8	30
Mid-term Exam 2	Fri, 10/22	150
Quiz 7	Mon, 11/1	30
Quiz 8	Mon, 11/8	30
Mid-term Exam 3	Fri, 11/12	150
Quiz 9	Mon, 11/22	30

Assignment	Date	Weight (Points out of 1000 total possible)
Quiz 10	Mon, 12/6	30
Final Exam 4	Wed, 12/15	150
Participation	Weekly	100 (total over semester)

Extra Credit Opportunities: Extra credit is typically not given in this class. If any opportunities for extra credit should arise, it will be announced in class as appropriate.

Grading Scale

Every effort will be taken to provide you with timely and thorough feedback on your performance and if you have any questions, please ask. Final average grades will be rounded to the nearest whole percentage point. Curving grades is rare and should not be expected. Your final grade will be assigned as a letter grade according to the following scale:

A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	0-59%

Course Materials

Required Course Text

- **"Biophysical Foundations of Human Movement"**, 3rd Edition, by Abernathy, et al.

  Publisher: Human Kinetics

  ISBN: 9781450431651

  New, Used, and Digital Copies available at GT Barnes & Noble: https://gatech.bncollege.com/

- **MotorLab software**, we will be using this software in the second half of the course. Software & license will cost you $5. More details to follow.

Additional Materials/Resources

Additional readings and lecture slides will be made available as appropriate.

Course Website and Other Classroom Management Tools

Additional materials, announcements, and resources will be posted to the course website on Canvas.

Course Expectations & Guidelines

Tips for Success in this Course:

- You are in college; be accountable for your own education; actively seek knowledge, don't wait for it!
- Come prepared to think and respond—even if it is an asynchronous format
- Use the textbook and assigned readings as a resource to reinforce principles covered in lectures
- Be prepared by reading all assigned material and watching all lectures
- Be mindful of the **'π rule'**: however long you expect a task to take, multiply by π and that is how long it will *actually* take! (works surprisingly well...)

- Have respect for your classmates and instructor: team-*building*, not team-*destroying*.
- This is a truly unprecedented generational event we are living through. I will do my best to be understanding and sympathetic, but you will need to take responsibility for keeping up with the material and communicating (early!) with me if you are having any problems in the course.

Academic Integrity

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. For information on Georgia Tech's Academic Honor Code, visit http://www.catalog.gatech.edu/policies/honor-code/ or http://www.catalog.gatech.edu/rules/18/.

Any student suspected of cheating or plagiarizing in the course will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services at (404)894-2563 or http://disabilityservices.gatech.edu/, as soon as possible, to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible to set up a time to discuss your learning needs.

Attendance and/or Participation

I have designed a fast paced and intensive course. Missing any class will put you at a serious disadvantage to complete the course requirements. **Please let me know as soon as possible and provide any relevant documentation if you need to miss a class.** If you are absent for class, you are still responsible for the work assigned for that day, as well as any information given out that day. Please contact fellow students to find out what you missed before you reach out to me.

I encourage you to participate in the course. Chances are if you have a question, someone else is wondering the same thing. Please ask so I can help clarify for everyone.

Collaboration & Group Work

I expect all students to adhere to the university's Honor Code. Your work on all quizzes and exams must be your own. Any homework can be done in groups, but you must disclose everyone that you worked with on that assignment.

Extensions, Late Assignments, & Re-Scheduled/Missed Exams

10% of the total possible grade on the assignment will be deducted for **EACH DAY** an assignment is LATE. For example, work that would normally earn 100% of possible points will instead earn a grade of 90% if turned in one day late. Extensions may be allowed under some circumstances, but require prior approval from the instructor. Requests for an extension after the assignment deadline will not be accepted.

Exams may be rescheduled for pre-approved excused absences (sick with doctors note, car accident in route to test, hospitalization, death in your immediate family). You should not assume that an absence is automatically excused. Please contact me as soon as possible to ensure that the absence will be excused.

Student-Faculty Expectations Agreement

At Georgia Tech we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. See http://www.catalog.gatech.edu/rules/22/ for an articulation of some basic expectation that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.

Additional Course Policies

Institute-Approved Absences
As per Georgia Tech policy, you are permitted to be absent from class to participate in athletic events, official field trips, and religious observances. For planning purposes, please provide me with written notice of your upcoming absence at least two weeks before the event, and ideally within the first two weeks of class. When I receive this notice, you and I will discuss opportunities to make up work you will miss in your absence. Please see http://catalog.gatech.edu/rules/4/ for more information about receiving official notice from the Registrar about the nature and timing of your upcoming Institute-approved absence.

Freedom of Expression and Guidelines for Discussion

I respect your right to freedom of speech and peaceful assembly. I am also committed to maintaining an orderly learning environment for all students and ensuring that all facilities are used in a way that facilitates teaching, learning, and research. Therefore, I encourage you to voice your opinions respectfully, as long as they are related to the content of this class and as long as doing so does not infringe unduly on the rights of other.

Re-grading and Re-submission
I try to be fair in my grading and generally try to give as much partial credit as possible. As such, please consider carefully any requests you have for regrading other than obvious errors on my part in calculating your grade. Requests for regrading of a homework assignment or an exam may be submitted in writing within one week of the day the homework or exam is handed back to the class (regardless of whether or not you attend class that day). You must justify in writing the technical basis for the regrade. If the regrading request is accepted, your entire homework or exam may be regraded. Note that your grade may decrease after regrading, and you should not assume that your grade will always go up after regrading.

Campus Resources for Students

In your time at Georgia Tech, you may find yourself in need of support of different kinds. There are many on campus who are here to help in this regard. Below you will find some resources to support you both as a student and as a person.

Academic support

- Center for Academic Success http://success.gatech.edu
    - 1-to-1 tutoring http://success.gatech.edu/1-1-tutoring
    - Peer-Led Undergraduate Study (PLUS) http://success.gatech.edu/tutoring/plus
    - Academic coaching http://success.gatech.edu/coaching
- Residence Life's Learning Assistance Program https://housing.gatech.edu/learning-assistance-program
    - Drop-in tutoring for many 1000 level courses
- OMED: Educational Services (http://omed.gatech.edu/programs/academic-support)
    - Group study sessions and tutoring programs
- Communication Center (http://www.communicationcenter.gatech.edu)
    - Individualized help with writing and multimedia projects
- Academic advisors for your major http://advising.gatech.edu/

Personal Support

Georgia Tech Resources

- The Office of the Dean of Students: http://studentlife.gatech.edu/content/services; **404-894-6367**; Smithgall Student Services Building 2nd floor
    - You also may request assistance at https://gatech-advocate.symplicity.com/care_report/index.php/pid383662?

- Counseling Center: http://counseling.gatech.edu; **404-894-2575**; Smithgall Student Services Building 2nd floor
    - Services include short-term individual counseling, group counseling, couples counseling, testing and assessment, referral services, and crisis intervention. Their website also includes links to state and national resources.
    - *Students in crisis may walk in during business hours (8am-5pm, Monday through Friday) or contact the counselor on call after hours at **404-894-2204**.*
- Students' Temporary Assistance and Resources (STAR): http://studentlife.gatech.edu/content/need-help
    - Can assist with interview clothing, food, and housing needs.
- Stamps Health Services: https://health.gatech.edu; **404-894-1420**
    - Primary care, pharmacy, women's health, psychiatry, immunization and allergy, health promotion, and nutrition
- OMED: Educational Services: http://www.omed.gatech.edu
- **Women's Resource Center: http://www.womenscenter.gatech.edu; 404-385-0230**
- **LGBTQIA Resource Center: http://lgbtqia.gatech.edu/; 404-385-2679**
- **Veteran's Resource Center: http://veterans.gatech.edu/; 404-385-2067**
- **Georgia Tech Police: 404-894-2500**

Statement of Intent for Inclusivity

As a member of the Georgia Tech community, I am committed to creating a learning environment in which all of my students feel safe and included. Because we are individuals with varying needs, I am reliant on your feedback to achieve this goal. To that end, I invite you to enter into dialogue with me about the things I can stop, start, and continue doing to make my classroom an environment in which you feel safe to participate in learning.

Course Schedule

C: to be taken on canvas *

Date	Mode: Topic	Reading, Notes, due dates, and more
WK1: Mon Aug 23	Intro, overview, terminology (L1)	Text CH 1-2
WK1: Wed Aug 25	Musculoskeletal Anatomy 1 (L2)	Text CH 3-4
WK1: Fri Aug 27	Musculoskeletal Anatomy 2 (L3)	Text CH 3-4
WK2: Mon Aug 30	Musculoskeletal changes: age (L4);	Text CH 5 **C: Quiz 1**: L1, L2, L3
WK2: Wed Sep 1	Musculoskeletal changes: training (L5)	Text CH 6
WK2: Fri Sep 3	Review: Functional Anatomy	**C: Quiz 2**: L4, L5
WK3: Mon Sep 6	**NO CLASS**	**LABOR DAY**
WK3: Wed Sep 8	Kinematics 1 (L6)	Text CH 7 (kinematics portions)
WK3: Fri Sep 10	Kinematics 2 (L7)	Text CH 7 (kinematics portions)
WK4: Mon Sep 13	Review: Kinematics	**C: Quiz 3**: L6, L7
WK4: Wed Sep 15	EXAM 1 Review	Text CH 1-7
WK4: Fri Sep 17	**EXAM 1**	**Weeks 1-4 Material (L1-L7)**
WK5: Mon Sep 20	Mechanics & energetics of gait (L8)	Text CH 8
WK5: Wed Sep 22	Biomechanical changes: age & training (L9-L10)	Text CH 9-10
WK5: Fri Sep 24	Review: Biomechanics	**C: Quiz 4**: L8-10
WK6: Mon Sep 27	Gait transitions (L11)-C.R.	Additional readings (horse papers)
WK6: Wed Sep 29	Gait transitions (L12)-C.R.	Additional readings (human papers)
WK6: Fri Oct 1	Clinical applications-(L13)-J.C.	TBD
WK7: Mon Oct 4	Kinetics 1 (L14)	Text CH 7 (kinetics portions)
WK7: Wed Oct 6	Kinetics 2 (L15)	Text CH 7 (kinetics portions)
WK7: Fri Oct 8	Review: Kinetics 1-2	**C: Quiz 5**: L11-15
WK8: Mon Oct 11	**NO CLASS**	**FALL BREAK**
WK8: Wed Oct 13	Kinetics 3 (L16)	Text CH 7 (kinetics portions)
WK8: Fri Oct 15	Kinetics 4 (L17)	Text CH 7 (kinetics portions)
WK9: Mon Oct 18	Review: Kinetics 3-4	**C: Quiz 6**: L16-L17

Date	Mode: Topic	Reading, Notes, due dates, and more
WK9: Wed Oct 20	Exam 2 Review	Text CH 7-10
WK9: Fri Oct 22	**EXAM 2**	**Weeks 5-8 Material (L8-L17)**
WK10: Mon Oct 25	Metabolism 1 (L18)	CH 11
WK10: Wed Oct 27	Metabolism 2 (L19)	CH 11
WK10: Fri Oct 29	Metabolism 3 (L20)	CH 12
WK11: Mon Nov 1	Review: Metabolism	**C: Quiz 7**: L18-L20
WK11: Wed Nov 3	Physiological Changes: age (L21)	Text CH 13
WK11: Fri Nov 5	Physiological Changes: training (L22)	Text CH 14
WK12: Mon Nov 8	Review: Physiological changes	**C: Quiz 8**: L21-L22
WK12: Wed Nov 10	EXAM 3 Review	Text CH 11-14, additional readings
WK12: Fri Nov 12	**EXAM 3**	**Weeks 9-12 material (L18-L22)**
WK13: Mon Nov 15	Neuromuscular control 1 (L23)	Text CH 15
WK13: Wed Nov 17	Neuromuscular control 2 (L24)	Text CH 15
WK13: Fri Nov 19	Neuromuscular control 3 (L25)	Text CH 15
WK14: Mon Nov 22	Review: Neuromuscular Control	**C: Quiz 9**: L23-L25
WK14: Wed Nov 24	**NO CLASS**	**STUDENT RECESS**
WK14: Fri Nov 26	**NO CLASS**	**THANKSGIVING BREAK**
WK15: Mon Nov 29	Cog. motor control theories (L26-L27)	Text CH 16, 17
WK15: Wed Dec 1	Motor control changes (L27-28)	Text CH 17, 18
WK15: Fri Dec 3	Review: Motor Control Review	**C: Quiz 10**: L26-L28
WK16: Mon Dec 6	Review: Final Exam	Text CH 15-18, Weeks 13-15, L23-L28
WK16: Wed Dec 8	**NO CLASS**	**READING DAY**
WK16: Wed Dec 15	**Exam 4 (final exam; *new material only*) -taken 11:20am-2:10pm**	**Weeks 13-15 material (L23-L28, CH 15-18)**

* Assessments on Canvas will be done asynchronously over a given window of time unless otherwise announced (i.e., exams may be given synchronously on Canvas during regular class time)