

# Medical Gastrointestinal Physiology

## Course Syllabus

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**Course Number:** GMS 6479

**Credit Hours:** 2 credit hours

**Course Format:** This online course is tailored for asynchronous distance learners.

### COURSE DESCRIPTION

Medical Gastrointestinal Physiology (GMS6479) teaches the functions of the digestive/gastrointestinal system of human body at a level required for clinical medicine and basic research in medical physiology. The course covers normal physiology, as well as selected diseases. Concepts are taught using a combination of lectures, functional genomics research assignments, and online problem sets. The research assignments are designed to help the student understand the integration of gastrointestinal physiology with genetics, genomics, molecular biology, and cellular physiology as a basis for a better understanding of human disease. The ultimate goal is for students to develop an understanding of the integrated functions of the normal body and “problem solving” and “critical thinking” skills in evaluating clinical situations. Each recorded lecture lasts between 20 and 30 min.

### TARGET AUDIENCE

This course is designed to meet the needs of individuals wanting to pursue a career in medicine, biomedical research, or in teaching topics related to physiology and medicine. For example, this course is designed to provide critical knowledge for individuals who wish to teach gastrointestinal physiology at the secondary and post-secondary levels. However, this course will also provide a foundation for students wishing to attain or enhance knowledge of medical gastrointestinal physiology.

### PREREQUISITES

This course requires a BA or BS and a strong science foundation with at least 5 full semester courses related to Biology, chemistry and/or physics. **A minimum undergraduate GPA = 2.0 is required for admission.** Co-enrollment or prior passing grade in GMS 6440 required for enrollment in this class.

### CONTACTS

Bruce R. Stevens PhD, Professor of Physiology and Functional Genomics. Please use the email function within Canvas to contact Dr. Stevens.

### SCHEDULE

This is a self-paced course that is offered in the spring, fall and summer.

### COURSE GOALS

Physiology is the science of how the body functions, and is the basis for understanding modern clinical medicine and the biomedical sciences. This course will provide: 1) a foundation understanding of the basic functions of the gastrointestinal systems; 2) integration of individual facts in order to understand how organ systems work independently and inter-dependently in the body.

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## LEARNING OUTCOMES

Upon completion of this course, students will be able to:

1. Understand the normal functions of the gastrointestinal system at a level required for an understanding of clinical medicine.
2. Understand the endocrine and neural mechanisms controlling gastrointestinal physiology at a level required for an understanding of clinical medicine.
3. Understand how these systems act in an integrated manner to regulate overall body functions.
4. Understand how failure of these normal physiologic functions and integrations are associated with some diseases.
5. Demonstrate the ability to apply physiological principles of clinical and basic science relevancy by multiple choice examination, research assignments, and problem sets.

## LEARNING RESOURCES

1. Recorded video lectures with PowerPoint presentations will be provided on the course website.
2. Recorded video clinical correlation(s) and/or case studies relating to the basic science material.
3. Lecture notes of the PowerPoints used for each video lecture are available as PDF downloads enabled for direct note taking.
4. Recommended text (not required, but highly recommended): "*Ganong's Review of Medical Physiology, Twenty-Fifth Edition*" 2016. Authors: Kim E. Barrett, Susan M. Barman, Scott Boitano, & Heddwyn L. Brooks. ISBN: 9780071825108.  
Free online: <https://accessmedicine.mhmedical.com/Book.aspx?bookid=1587#96462596>.
5. Recommended text (not required, but highly recommended): "*Medical Physiology: The Big Picture/Gastrointestinal System*". Authors: Johnathan Kibble & Colby Halsey. ISBN: 9780071485678.  
Free online: <https://accessmedicine.mhmedical.com/content.aspx?bookid=1291&sectionid=75577353#1106602837>.
6. Required text: Student may wish to supplement the course videos and PDF handout by purchasing an online version of "*Berne & Levy Physiology, 7th Edition*" 2018. Author: Bruce M. Koeppen & Bruce A. Stanton. ISBN: 9780323393942.

## COMMUNICATION WITH FACULTY

If you have questions about the material or the course, please contact the course director Dr. Stevens using the email function in Canvas.

## STRUCTURE OF CONTENT

The course content is structured into sub-topical groups of lectures that are accompanied by *Problem Sets*. *Problem Sets* are designed to help the student master the course material. These *Problem sets* are to be completed as take-home assignments, and are graded. There are 2 Functional Genomics Research Assignments, which are designed to help the student integrate the concepts of physiology with functional genomics and human diseases of genetic origin. These Research Assignments are also completed as take-home assignments and are also graded.

## COURSE CALENDAR and RECOMMENDED TIME MANAGEMENT

The videos and corresponding PDF notes are available throughout the entire time the course is open, from the first day through the end of the course on the day the grades are reported to the Registrar. However, the Exam is open ONLY during the window of time shown on the website. The course content lecture titles should be viewed in the order shown later in this syllabus.

## EXAMINATION AND GRADING

There will be one multiple choice examination covering the material taught in the lectures. The exam will be monitored by ProctorU, a UF chosen service that allows the students to complete their exams at home while still ensuring academic integrity. Students will take the exam at a computer that meets the technical requirements of ProctorU, including a web cam and microphone. Students will make the arrangements for exam proctoring. The exam may be taken any time during the window of availability; however, it can only be taken once.

**We recommend you make an appointment with ProctorU at least two weeks in advance of your preferred exam date.** All costs of the exam are covered in the registration costs. Scores are reported as a percent. The points used to compute final grades will be determined after all assignments and the exam have been completed.

#### **GRADING SCALE:**

A numerical grade will be given at the end of the course and will be scored as follows, per University of Florida standards:

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

The final examination accounts for 40% of the total grade, Functional Genomics Self-Guided Research Assignments 40% of the total grade, and Problem Sets 20% of the grade.

#### **GRADING POLICY**

There are no make-up exams unless otherwise granted by the course coordinator prior to an examination date. Failure to take an exam without prior permission from the course coordinator will be recorded as 0.

#### **ACADEMIC HONESTY**

Please review the complete policy of the University of Florida regarding academic dishonesty, found in the online student handbook at: <http://graduateschool.ufl.edu/media/graduate-school/pdf-files/handbook.pdf>.

**Students are expected to abide by the [University of Florida Academic Honesty Guidelines](#) and to adhere to the following pledge:**

***"We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity."***

On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied:

***"On my honor, I have neither given nor received unauthorized aid in doing this assignment."***

## **IMPORTANT NOTICE ABOUT PLAGIARISM**

Plagiarism is not tolerated at the University of Florida. Plagiarism may be punishable by expulsion from the course or the certificate program. If the plagiarism is detected after the certificate has been awarded, the certificate may be rescinded.

The University of Florida has an honor code that defines plagiarism as follows:

Section 3a: Plagiarism.

A student shall not represent as the student's own work all or any portion of the work of another. Plagiarism includes but is not limited to:

1. Quoting oral or written materials including but not limited to those found on the internet, whether published or unpublished, without proper attribution.
2. Submitting a document or assignment which in whole or in part is identical or substantially identical to a document or assignment not authored by the student.

Please note that intent is not an element of this kind of violation so it is important to take great care to complete the written assignments in your own words.

For a complete description of the UF Honor Code and procedures, please visit:

<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>

For a good discussion about plagiarism and how to properly cite your sources, please visit:

<http://mediasite.video.ufl.edu/Mediasite/Play/adaa44500eaf460a84f238e6b9a558f9>

## **COURSE EVALUATION POLICY**

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

## **MEDICAL GASTROINTESTINAL PHYSIOLOGY (2 credit hours)**

Lecture 1: Introduction to GI Physiology  
Lecture 2: GI Nervous System and Motility I  
Lecture 3: GI Nervous System and Motility II  
Lecture 4: GI Nervous System and Motility III  
Lecture 5: GI Nervous System and Motility IV  
Problem Set 1: GI Nervous System and Motility

Lecture 6: Phases of Digestion and Salivary Gland Physiology  
Lecture 7: Exocrine Pancreas  
Problem Set 2: Digestion and Secretion.

Self-Guided Research Assignment 1: ***Lynch Syndrome***

Lecture 8: Gastric Physiology I  
Lecture 9: Gastric Physiology II  
Problem Set 3: The Stomach

Lecture 10: Small Intestine Epithelium and Protein Digestion/Absorption  
Lecture 11: Carbohydrate Digestion/Absorption  
Lecture 12: Liver and Gall Bladder I  
Lecture 13: Liver and Gall Bladder II  
Problem Set 4: Liver and Gall Bladder

Lecture 14: Lipid Digestion/Absorption I  
Lecture 15: Lipid Digestion/Absorption II  
Problem Set 5: Lipids

Self-Guided Research Assignment 2: ***Familial Adenomatous Polyposis; MUTYH-Associated Polyposis; & Attenuated Familial Adenomatous Polyposis***

Lecture 16: GI Electrolytes and Fluids I  
Lecture 17: GI Electrolytes and Fluids II  
Lecture 18: Summary Map of Digestion/Absorption  
Problem Set 6: Electrolytes and Fluids

Lecture 19: GI Commensal Microbiota I  
Lecture 20: GI Commensal Microbiota II  
Problem Set 7: Gut Microbiota

Final Examination