

**HSCI 4000**

**Section: 0 (30474)**

Introduction to  
Epidemiology  
Spring\_2026



**Abraham Baldwin  
Agricultural College**

### **Instructor Information**

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Adrian Martinez-Franco

amartinezfranco@abac.edu

**Office Location:** Bowen 218

**Office Phone:** 2293915076

**Office Hours**

Monday to Friday 8:00am 12:00pm and 1:00pm to 5:00pm.

### **Course Description**

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"HSCI 4000: This course introduces students to key concepts and procedures used in the surveillance and investigation of common health states and events. This course prepares students to use epidemiological principles to identify determinants of health which forms the basis of effective interventions. Spring odd-numbered years."

### **Credit Hours**

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3

### **Contact Hours**

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3

### **Class Meeting and Location**

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**Meeting Information:** Health Sciences + Health Ctr Rm: 0249 Days=M W F

Time=09:00-09:50

**Location:** Tifton

## **Course Learning Outcomes**

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1. Define epidemiology.
2. Summarize the historical evolution of epidemiology.
3. Name some of the key uses of epidemiology.
4. Identify the core epidemiology functions.
5. Describe primary applications of epidemiology in public health practice.
6. Specify the elements of a case definition and state the effect of changing the value of any of the elements.
7. List the key features and uses of descriptive epidemiology.
8. List the key features and uses of analytic epidemiology.
9. List the three components of the epidemiologic triad.
10. Describe the different modes of transmission of communicable disease in a population.
11. Calculate and interpret ratios, proportions, incidence rates, mortality rates, prevalence, and years of potential life lost.
12. Calculate and interpret mean, median, mode, ranges, variance, standard deviation, and confidence interval.
13. Prepare and apply tables, graphs, and charts such as arithmetic-scale line, scatter diagram, pie charts, and box plots.
14. Describe the processes, uses, and evaluation of public health surveillance.
15. Define public health surveillance.
16. List the essential activities of surveillance.
17. List the desirable characteristics of well-conducted surveillance activities.
18. Describe sources of data and data systems commonly used for public health surveillance.
19. Describe the principal methods of analyzing and presenting surveillance data.

20. Describe selected examples of surveillance in the United States.
21. Given a scenario and a specific health problem, design a plan for conducting surveillance of the problem.
22. Describe the steps of an outbreak investigation.
23. Apply ethical values and principles in epidemiology practice.

## Required Textbooks and Course Materials

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**Six months of access to the Smart Healthy People learning platform is mandatory.**

**Subtitle:** Purchase online at SmartHealthyPeople.org

**Notes:**

Please visit smarthealthypeople.org, complete the registration, and submit payment. The fee is \$49 and includes applicable taxes and provides six months of access to the epidemiology course in the learning system, this includes a textbook and all required instructional materials.

## Course Schedule

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Week	Dates	Topics
1	January 13 to 16	Course Introduction and Orientation, Review and sign syllabus in GA view.
2	January 19 to 23	Problem Based Learning Solving a real case scenario

Week	Dates	Topics
3	January 26 to 30	<p>Module 1 The Science of Population Health: An Introduction to Epidemiology</p> <p>The Historical Roots of Epidemiology: John Snow.</p> <p>Definition of Epidemiology</p> <p>Historical Evolution of Epidemiology, Uses.</p>
4	February 2 to 6	<p>Module 2: Evolution of the Health Care System in the United States</p> <ul style="list-style-type: none"> <li>• Analyze the evolution of the U.S. health care system and its advances.</li> <li>• Relate historical reforms to the organization and provision of health services.</li> <li>• Assess the impact of these processes on epidemiologic and public health practice.</li> </ul>

Week	Dates	Topics
5	February 9 to 13	<p>Module 3: Foundations of Public Health</p> <ul style="list-style-type: none"> <li>• Define the concept of public health.</li> <li>• Describe the essential functions of public health.</li> <li>• Identify the main disciplinary fields of public health (including epidemiology).</li> <li>• Review the history, terminology, organization, and financing of public health in the United States.</li> <li>• Evaluate the effect and contribution of public health and epidemiology to population health.</li> </ul>
6	February 16 to 20	<p>Module 4: Foundations of Epidemiology</p> <ul style="list-style-type: none"> <li>• Define epidemiology, its evolution, and its uses.</li> <li>• Describe the core functions of epidemiology.</li> <li>• Explain prevention, risk, incidence, prevalence, and basic concepts of herd immunity.</li> </ul>

Week	Dates	Topics
7	February 23 to 27	<p>Module 5: Descriptive and Analytic Epidemiology • Differentiate between descriptive and analytic epidemiology. • Explain the natural history of disease and the health–disease process. • Describe health promotion and disease prevention approaches. • Describe the chain of infection and modes of transmission. • Recognize epidemic patterns (endemic, epidemic, outbreaks, pandemics).</p>

Week	Dates	Topics
8	March 2 to 6	<p>Module 6: Diagnostic and Screening Tests</p> <ul style="list-style-type: none"> <li>• Explain the concepts of validity of a diagnostic test, including sensitivity and specificity.</li> <li>• Differentiate the use of single versus multiple tests and their clinical and epidemiologic applications.</li> <li>• Analyze sequential and simultaneous testing strategies and their impact on diagnostic performance.</li> <li>• Interpret positive and negative predictive values and explain how prevalence affects these indicators.</li> <li>• Compare test performance using predictive values versus sensitivity and specificity.</li> <li>• Distinguish between reliability and validity in the context of diagnosis and screening.</li> </ul>

Week	Dates	Topics
9	March 9 to 13	<p>Module 7: Measures of Risk and Burden of Disease • Calculate measures of morbidity (incidence, prevalence), mortality, and natality. • Interpret rates, ratios, proportions, and measures of association. • Relate these measures to public health decision-making.</p>

Week	Dates	Topics
10	March 16 to 20	<p>Module 8: Epidemiologic Method</p> <ul style="list-style-type: none"> <li>• Describe the scientific method and the epidemiologic method.</li> <li>• Formulate a research problem.</li> <li>• Formulate hypotheses.</li> <li>• Describe hypothesis testing or experimentation.</li> <li>• Conduct analysis and draw conclusions.</li> <li>• Make generalizations based on findings.</li> <li>• Present examples of the use of the epidemiologic method.</li> <li>• Apply the epidemiologic method to real health problems.</li> <li>• Describe types and designs of epidemiologic studies.</li> <li>• Review the literature (systematic reviews and meta-analyses).</li> <li>• Identify trustworthy sources of information.</li> <li>• Discuss the role of Artificial Intelligence in epidemiology.</li> </ul>
11	March 23 to 27	<p><b>Spring Break, Stay Safe, Have Fun!</b></p>

Week	Dates	Topics
12	March 30 to April 3	<p>Module 9: Causality in Epidemiology</p> <ul style="list-style-type: none"> <li>• Describe the philosophical foundations of causality in epidemiology.</li> <li>• Analyze Bradford Hill's criteria for causal inference.</li> <li>• Understand the sufficient-component cause model.</li> </ul>
13	April 6 to 10	<p>Module 10: Organization, Summary, and Initial Visualization of Data</p> <ul style="list-style-type: none"> <li>• Classify variables and frequency distributions to describe populations.</li> <li>• Calculate measures of central tendency (mean, median, mode) and dispersion.</li> <li>• Explain the normal distribution.</li> <li>• Select appropriate measurement scales according to variable type.</li> <li>• Organize and manage databases for basic analysis.</li> <li>• Apply measures of central tendency and dispersion in practical exercises.</li> <li>• Interpret and communicate results.</li> </ul>

Week	Dates	Topics
14	April 13 to 17	Module 11: Tables, Graphs, and Technology • Create tables and graphs, as well as other visualizations, to describe data. • Use technological tools to present health information. • Analyze interrelationships among health care organizations.
15	April 20 to 24	Final project or final test selection, teamwork or individual work for a project
16	April 27 to May 1	Module 16: Ethics and Professionalism in Epidemiology • Analyze principles of privacy, confidentiality, and data security in epidemiology. • Apply ethical values in decision-making and data management. • Reflect on professionalism and social responsibility in epidemiologic practice.
17	Monday May 4	Last day of class, summary and closure
Final Exam (Waived if presenting at the STEP symposium)	May 8th	8:00am to 10:00am

Schedule above is subject to change.

## **Grading Assessments and Grading Scale**

## How will your grade be determined?

You select one of the following options before the last day of classes by sending an email to the professor (amartinezfranco@abac.edu). (You choose option 1, 2, 3 or 4). Default option number 2 in case you don't e-mail me.

Options to be evaluated	1	2	3	4
Grade Item	%	%	%	%
Exam 1	10	15	20	20
Exam 2	10	15	20	20
Exam 3	10	15	20	20
Exam 4	10	15	20	20
Final	30	20	10	5
Professor grade	30	20	10	15
Total	100	100	100	100

Letter	
A	90-100
B	80-89
C	70-79
D	60-69
F	<59

Professor Grade represents the instructor's comprehensive evaluation of each student's professional performance throughout the course. This includes, but is not limited to: class participation, academic engagement, quality and consistency of effort, adherence to course policies, professionalism in communication, ethical conduct, collaboration with peers, and overall contribution to the learning environment. This component is inherently **qualitative**. While informed by observable behaviors and documented performance, final determination of this grade rests with the instructor's **academic judgment**. The instructor reserves the right to adjust this component based on the student's demonstrated level of professionalism and responsibility across the semester, consistent with course expectations and institutional standards.

## Course Assessments

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### Assessment Methods & Learning Outcome Alignment

Assessment Method	Primary Learning Outcomes Assessed
Examinations & Quizzes	Define epidemiology; explain historical development; describe core epidemiologic functions; distinguish descriptive vs. analytic epidemiology; explain modes of transmission; apply ethical principles
Applied Assignments & Data Analysis Exercises	Calculate and interpret epidemiologic measures; analyze surveillance data; construct tables, charts, and graphs; interpret public health indicators
Problem-Based Learning Case Study	Design surveillance plans; investigate outbreak scenarios; apply epidemiologic reasoning to real-world health problems; integrate ethical and professional standards
Final Project or Final Examination	Synthesize course concepts; evaluate population health problems; demonstrate comprehensive understanding of epidemiologic methods
Participation & Professional Engagement	Communicate effectively; collaborate in teams; demonstrate professional responsibility and ethical conduct

## College Policy on Attendance

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Courses at ABAC are provided for the intellectual growth and development of students. The interaction with instructors and other students is an essential element of the learning process, and a high correlation exists between class attendance and course grades. Therefore, to attain maximum success, students should attend all their classes, be on time, and attend all scheduled course activities. Absence from class does not excuse students from full responsibility for classwork or assignments missed. Students must accept this responsibility.

Individual instructors will establish attendance policies for each class, which are

published in the course syllabus. The penalty for absences is at the discretion of the instructor and may include failure of the course. Students who stop attending class without officially withdrawing will receive a grade for the course.

## **Instructor Attendance Policy**

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Attendance is not assigned a fixed percentage of the course grade, but it is still mandatory. If you must be absent, you are required to submit a written justification in advance or as soon as possible. Unexcused absences totaling more than 20% of class meetings (11 unexcused absences = F) will result in a final grade of F.

## **College Policy on Academic Dishonesty**

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Academic irregularities include, but are not limited to, giving or receiving unauthorized assistance in the preparation of any academic assignment; taking or attempting to take, stealing, or otherwise obtaining in an unauthorized manner any material pertaining to the education process; selling, giving, lending, or otherwise furnishing to any person any question and/or answers to any examination known to be scheduled at any subsequent date; fabricating, forging, or falsifying lab or clinical results; plagiarism in any form related to themes, essays, term papers, tests, and other assignments; breaching any confidentiality regarding patient information.

## **Accessibility and Accommodation Statement**

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Students with disabilities who require academic accommodations must register with Accommodation & Disability Services. Once registered, students will receive an accommodation letter that must be presented to the instructor as early in the semester as possible. Accommodations will not be provided retroactively.

It is the student's responsibility to initiate this process and communicate their needs in a timely manner. The instructor will work collaboratively with the student and Accommodation & Disability Services to ensure appropriate accommodations are provided. For more information or to begin the accommodation process, please contact:

Accommodation & Disability Services

Carlton 314 (Tifton)

Mobley Building (Bainbridge)

229-391-5132

[ads@abac.edu](mailto:ads@abac.edu)

ADS Website: [https://www.abac.edu/campus\\_life/wellness-safety/accommodation-disability-services.html](https://www.abac.edu/campus_life/wellness-safety/accommodation-disability-services.html)

## **Counseling and Wellness Services**

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The mission of The Counseling Center is to foster the development and emotional well-being of ABAC students through personal behavioral health counseling. The Counseling Center provides individual counseling, group counseling, prevention and outreach, consultation, and crisis response across the ABAC Tifton and Bainbridge campuses. For more information or to schedule an appointment with a mental health counselor call 229.391.5135 or email [counseling@abac.edu](mailto:counseling@abac.edu) or visit the Student Health Center located on the first floor of the Health Sciences Building.

## **Academic Support**

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Occasionally, college students encounter academic and personal obstacles that can feel overwhelming and derail their college plans. Academic Support can help as it is the go-to department for students. The office hosts award-winning academic development programs and coaching designed to reduce barriers that can impact student success. Visit the Academic Support webpage for additional information, or email [asc@abac.edu](mailto:asc@abac.edu) or call 229-391-4995.

Academic Support Webpage: <https://www.abac.edu/academics/student-success/index.html>

## **Grade Appeal Process**

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To contest a grade, students must initiate the appeal in writing to the instructor within 30 calendar days from the last day of class of the term in which the grade was recorded. Students must first appeal the matter in writing to the instructor(s) who taught the course. The appeal must specify reasons the assigned grade is incorrect or inappropriate. The instructor(s) will respond to the student in writing within 10 (ten) working days of the date

of the appeal. Should this response not satisfy the appeal, the student can appeal in writing within 10 (ten) working days from the date of the instructor's response to the department head/dean of the academic school in which the course was taught. The department head/dean may conduct a conference including the dean, the department head, the student, and the instructor. The department head/dean may convene an impartial committee in the discipline to review pertinent documents. Within 10 (ten) working days from the date of the student's appeal to the department head/dean, the department head/dean will respond to the student in writing. Should this procedure fail to resolve the appeal, the student must provide a written appeal to the Provost and Vice President for Academic Affairs within ten working days from the date of the school department head/dean's response. The Provost and Vice President for Academic Affairs will take the appeal to the Academic Review Committee, where further hearings may be conducted.

The appeals process is intended to provide a venue whereby students may voice a claim of discrimination, capricious or unfair dealings, or denial of due process.

## **Title IX**

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Abraham Baldwin Agricultural College is committed to ensuring a safe learning environment that supports the dignity of all members of the ABAC community. ABAC does not discriminate on the basis of sex or gender in any of its education or employment programs and activities.

The College prohibits specific forms of behavior that violate Title IX of the Education Amendments of 1972. ABAC will not tolerate sexual misconduct, which is prohibited, and which includes, but is not limited to, domestic violence, dating violence, sexual assault, sexual exploitation, sexual harassment, and stalking.

ABAC strongly encourages members of the College community to report instances of sexual misconduct promptly. These policies and procedures are intended to ensure that all parties involved receive appropriate support and fair treatment and that allegations of sexual misconduct are handled in a prompt, thorough, and equitable manner. For more information visit ABAC's Title IX webpage: [https://www.abac.edu/campus\\_life/title-ix.html](https://www.abac.edu/campus_life/title-ix.html).

## **Library Information**

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[ABAC Libraries](#) support students and faculty by providing access to library services through its collections both physical and digital. The libraries ensure access to information for the ABAC community. The materials provided by the libraries focus on supporting the curriculum. The libraries will make materials available to all students, faculty, and staff, will assist in the use of these materials including but not limited to critical evaluation of resources, will provide access to materials not located in the libraries through partnership with other colleges in Georgia, and will provide opportunities designed to foster lifelong learning.

## **Notice Concerning the Possibility of Interruption of Instruction Due to a State of Emergency and Inclement Weather**

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ABAC reserves the right to adjust the mode of instructional delivery and the dates included in the Academic Calendar due to a local, state or national emergency. If the college is closed due to inclement weather, missed activities will resume on the next scheduled class day (ABAC Weather Hotline: 229-391-5225).

## **ABAC Additional College Policies**

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<https://abac-2024-2025.catalog.prod.coursedog.com/home>

## **Syllabus Statement**

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The instructor reserves the right to make modifications to the syllabus. Students will be notified of any changes within 24 hours.

## **ABRAHAM BALDWIN AGRICULTURAL COLLEGE**

### **COURSE AGREEMENT AND VERIFICATION OF UNDERSTANDING**

I have received a copy of the course syllabus and requirements for HSCI 4000: INTRO TO EPIDEMIOLOGY COURSE POLICIES AND CALENDAR SPRING 2026. I have received an explanation of the course materials and conditions and understand the description of these requirements. I know all the conditions necessary for satisfactorily completing the course, and I accept my responsibility for seeking any clarification needed.

I also have been instructed to read again the information in the Policy and Procedure Manual, which was explained to me during my freshman orientation session. I understand that I must abide by all of the policies listed in the Policy and Procedure Manual. I accept my responsibility for reading the copy of the Policy and Procedure Manual that I was given during the orientation session and seeking clarification if needed.

### **HONOR CODE:**

As an ABAC Stallion, I pledge to conduct myself with pride, honor, and respect for others. I understand that it is the responsibility of all ABAC Students, Faculty, Staff, and Alumni to adhere to this code. I will be honest, fair, and just in my academic, personal, and professional pursuits. As a member of the ABAC family, I will support my fellow Stallions as they endeavor to uphold these standards and I will lead by example for future generations. Academic integrity is the responsibility of all ABAC faculty and students. Faculty members and students should promote academic integrity. Further, faculty members should include clear instruction on the components of academic integrity and clearly define the consequences for cheating and plagiarism in their course syllabi.

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Print Name

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Student's Signature

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Date