

MHS 600: Health Stats/Epidemiology



Semester, Year, and Section Number MHS 600 76 2

Course Credit Hours 3

Course Format : Online Lecture

Course Website: CANVAS

Classroom Meeting Days and Times: 12 weeks

Instructor Name: Allison Gomes, MS, RD, CNSC, CDN

Instructor Email: Allison.Gomes@cedarcrest.edu

Office Hours: Teams meetings via appointment.

Course Description:

Introduces students to epidemiologic theory, principles, methods and measures commonly used in public health. Students will be introduced to the theoretical basis and practical application of common statistical methods and principles used in public health.

In this course you can expect to learn a broad overview of statistical methods as well as applications commonly used for public health research. The focus areas will include p-values, confidence intervals, sampling methods, measurement and categorizing variables, descriptive statistics, testing hypotheses, and applying commonly used statistical tests. An emphasis will be placed on the practical application of data to address public health issues, rather than theoretical and mathematical development. Students will learn how to choose and apply statistical tools to data sources, when and how statistical tools can be used to analyze data, and how to interpret others' quantitative studies. Students will gain experience through creating their own datasets and analyzing the captured data. Students will gain knowledge and experience in SPSS a statistical software package. This is a required course.

Course Textbooks and Resources:

Dancy, C., Reidy, J., Rowe, R. Statistics for the Health Sciences, 1st edition. Sage Publications. Published 2012 ISBN-13: 978-1849203364 or ISBN-10: 1849203369

Course Student Learning Outcomes:

Upon successfully completing this course, students will be able to:

1. Explain, calculate, and interpret descriptive statistics.
2. Read, construct, and analyze charts, graphs, and contingency tables.
3. Identify the basic concepts of inferential statistics including probability, confidence intervals, p values and hypothesis testing.
4. Identify when and how common parametric statistical tests are applied in a critical review of the public health literature.
5. Use computer technology in the application of statistical procedures.
6. Create a proposed research project including survey design, statistical analysis, and analyzing results.

In addition to the above learning outcomes, we expect that you will be able to:

Module 1 Objectives:

1. Introduce concepts that are important for understanding the research process inclusive of research hypotheses, hypothesis testing, evidence-based practice, and typical research design.
 - a. Survey critique
 - b. Choose health topic
 - c. Create the hypothesis
 - d. Design survey
 - e. Pilot survey

Institutional Review Board (IRB)

1. Introduce concepts that are important for understanding the functions, purpose and methods of an IRB.
 - a. Complete all components required for IRB approval
 - b. Submit for IRB approval

Survey Design

1. Introduce concepts that are important for developing survey designs that yield effective, usable and reliable data.
 - a. Survey design
 - b. Survey pilot
 - c. Data collection

Module 2 Objectives:

1. Introduce statistical software packages and their uses and functions.
2. Describe how data is set up.
3. Provide examples of how data may be analyzed.
 - a. Survey critique
 - b. Assess survey-is it answering your topic hypothesis.
 - c. Re-design if needed
 - d. Administer survey

Module 3 Objectives:

1. Describe numerical descriptive statistics in a sample.
2. Describe the measures of variation in a sample.
3. Present data in sample.
 - a. Research article critique
 - b. Identify mean, mode, median, interquartile range in one data set

Module 4 Objectives:

1. Articulate the significance of the null hypothesis testing.
2. Describe the different types of samples and populations.
3. Recognize sampling errors.
4. Define confidence intervals.
 - a. Research article critique
 - b. Identify p value and statistical significance in article.

Module 5 Objectives:

1. Define prevalence and incidence of disease.
2. Identify risk factors for disease.
 - a. Research article critique
 - b. State the most current prevalence and incidence of chosen health topic.

Module 6 Objectives:

1. Recognize and apply the importance of screening and cleaning data.
2. Identify and define the problem of outliers in a data set.
3. Apply how to handle missing data.
4. Apply how to report data screening.
 - a. Research article critique
 - b. Enter data into Excel or SPSS
 - c. Clean data, including missing variables
 - d. Document method used to clean data
 - e. Create graphs to show data results.

Module 7 Objectives:

1. Understand if two groups or conditions differ from each other on one or more variables.
 - a. Research article critique
 - b. Identify conditions in research article

Module 8 Objectives:

1. Recognize if three groups or conditions differ from each other on one or more variables.
 - a. Research article critique
 - b. Identify conditions in research article

Module 9 Objectives:

1. Describe the use of tests between two categorical or nominal variables.
2. Describe the conceptual basis of the chi-square test.
3. Conduct the analysis using SPSS and interpret the results.
 - a. Research article critique
 - b. Write data analysis report

Module 10 Objectives:

1. Recognize a conceptual understanding of correlational analysis.
2. Identify when to use parametric test, Pearson's r , and the non-parametric test Spearman's rho.
 - a. Research article critique
 - b. Include in data analysis report

Module 14 Objectives:

1. Recognize the basics of interventions, randomized control trials, and single-case design.
 - a. Research article critique
 - b. Include in data analysis report

These learning objectives satisfy the following Masters of Health Science Student Learning Objectives: 1) conducts systematic review of the literature that identifies, resource availability and model programs to address the community needs 2) identifies appropriate and practical health topics for program interventions and 3) recognizes how specific topic areas for health programs need to have different strategies and interventions to target the disparate population.

Assessment of Student Learning Outcomes:

This course provides intentional opportunities for students to achieve the Student Learning Outcomes identified for this course and subsequently the competencies associated with the Master in Nutrition.

The table below delineates each of the competencies met, the learning outcome assessed and the assessment method used to verify a graduate level of competency for the identified learning experience.

| Master in Nutrition Competencies | The student will be able to | Assessment Method (assignment, activity and where in the course – e.g. module) |
|--|---|---|
| Domain 4: Scientific Inquiry | | |
| Conducts a review of the literature that identifies the weight of evidence including area of consensus, inconsistency, and opportunities for further research, program development, and public policy. | Explain, calculate, and interpret descriptive statistics. | Research Report Component 3 Modules 3, 4, 5 |
| | Read, construct, and analyze charts, graphs, and contingency tables. | Research Article Critiques Module 6 |
| | Describe the basic concepts of inferential statistics including probability, confidence intervals, p values and hypothesis testing. | Research Article Critiques Modules 3,4,7,9,10 |
| | Decide when and how to apply common parametric statistical tests. | Research Report Component 3 Modules 3,4,7,9,10,14 |

| | | |
|---|--|--|
| | <p>Use computer technology in the application of statistical procedures.</p> <p>Apply basic skills in critical review of the public health literature.</p> | <p>Research Report Component 3 Modules 2, 6</p> <p>Research Article Critiques Module 2</p> |
| Domain 5: Communication | | |
| Uses innovative, appropriate communication techniques and the most effective formats for the intended audience. | Create a proposed research project including survey design, statistical analysis, and analyzing results. | Research Report Component 4 Student Discussion Boards |

Course Assignment Descriptions:

IRB Submission – Complete documentation and submit for approval to conduct survey as part of the research obtained to analyze.

Research Article Critiques – identify statistical values learned in the class, in published research articles.

Student Discussion Boards - Specific instructions are located in the **Discussion Board** Assignments located in the Assignment tab of the course in CANVAS. Student discussion boards contribute to the development of student cognitive and critical thinking skills, allows time for thoughtful and in-depth reflection on applied learning theories. Student discussions facilitate exploratory learning by allowing reviews and responses to the work of others and paves the way for you to approach your own learning in diverse ways.

Data Analysis Project - In this project, students will create a survey, obtain IRB approval, implement the survey to collect data, enter the data into a database, analyze the obtained data and then create a report based on what the data yields.

Component 1: Hypothesis Statement

Component 2: Survey Design

Component 3: Data entry/cleaning/analysis

Component 4: Research Report

Course Grading Policy:

Students must complete every class with a minimum of a B. Students who receive a grade of B- or below or withdraw from a course are only allowed to repeat the class one time. If a student does not receive a grade of B or above the second time that the student takes a course, the student will be dismissed from the program. Students receiving a grade of F in a course taken for the first time will also be dismissed from the program.

You may work ahead in the course but you may not lag behind. **NO late work will be accepted.** Assignments that are locked by the due date will not be re-opened for any student to submit late work. Assignment not locked and turned in late, will result in a grade of zero. Assignments are assessed and graded using assignment rubrics.

Grade percentage guide

| Percentages | Grade | Percentages | Grade |
|-------------|-------|-------------|-------|
| 95 – 100 | A | 73-76 | C |
| 90-94.5 | A- | 70-72 | C- |
| 87-89 | B+ | 67-69 | D+ |
| 83-86 | B | 63-66 | D |
| 80-82 | B- | 60-62 | D- |
| 77-79 | C+ | <60 | F |

| Assignment | Number of points |
|---|------------------|
| IRB Submission | 50 |
| Research Article Critique | 65 |
| Student Discussion Boards | 97.5 |
| Data Analysis Project Component 1: Hypothesis Statement Component 2: Survey Design Component 3: Data entry/cleaning/analysis Component 4: Research Report | 487.5 |
| TOTAL | 700 |

Cedar Crest College Honor Philosophy:

The Cedar Crest College Honor Philosophy states that students shall uphold community standards for academic and social behavior to preserve a learning environment dedicated to personal and academic excellence. It is based upon the principle that, as a self-governing body, students have the ability to create an atmosphere of trust and support. Within this environment, individuals are empowered to make their own decisions, develop personal regard for the system under which they live, and achieve a sense of integrity and judgment that will guide them through life.

Classroom Etiquette/Computer Help:

Online Course Format and Platform Protocol

This is an online course, you must use the course platform to communicate and produce work.

If you are new to Canvas you must view this student instructional video before you begin

https://cedarcrest.instructure.com/courses/1703/pages/canvas-tutorial-for-students?module_item_id=24700

All course materials are located in the weekly Modules and Units on the Canvas course platform.

Click on the Module and a portal will open with materials for each of the units and associated topics.

Online learning provides wonderful flexibility but typically requires more self-direction than traditional face-to-face learning.

To enhance your experience, try to set aside some time each day to “go to class”.

Remember, you are responsible for “class time” as well as other assignments associated with the class. The table at the beginning of this syllabus outlines the anticipated time the “in class” activities will take. This does not include required readings in preparation for class, or work on your projects. Much like any other in class experience, a 3 credit class would “meet” for 45 hours over the course of a semester.

All communication must be through **Cedar Crest College email**.

Messages from the instructor will be in the form of **Announcements on the Canvas Course page**. You are responsible for checking your email and the course page daily and you are responsible for any information received in this format. Please update your Canvas settings to allow for Announcements to be sent to your Cedar Crest email as well so that you do not miss information:

- 1) Log into canvas
- 2) Click “Account”
- 3) Click “Notifications”
- 4) Under Notification Preferences, make sure that “Announcement” has a the green check box for your Email address and Push notification for all Devices

This course relies on the online Canvas site for quizzes, exams, assignments, copies of lectures and any handouts. Information Technology must be contacted if you aren't able to log into the course page.

If you are experiencing any challenges with the Canvas online course page, contact their support team at any time: 800-585-5257 or cedarcresttech@onlinestudentsupport.com

If you are new to online courses: Check your email; a login credential should have already been emailed to you. Check your spam filter if you can't find it. If you still can't find the information, call the Cedar Crest College IT HelpDesk at 610-606-4635. You can also visit the Cedar Crest College IT page at: <http://help.cedarcrest.edu/>.

Reminder: Course instructors cannot help fix computer problems or login issues but the IT help desk can.

Class citizenship

Requires respect for the professor and fellow students. Students are expected to communicate in writing and orally, in person, and through electronic means with linguistic and cultural competency. Please also refer to Section A of "A Student's Guide to Cedar Crest College" which contains additional information on expected classroom protocol.

The following is the online protocol for Master in Nutrition Courses:

Online course activities are different from in class experiences in that they are a student centered, instructor facilitated learning experience. Therefore, it is the responsibility of the student to take an active role in the learning experience.

- It is also the student's responsibility to:
 - have adequate computer access
 - have working knowledge of the Canvas platform to fully participate in all online course activities and assignments (discussion boards, exams, chat rooms - when required),
 - be able to download course materials,
 - read of all posted announcements,
 - read and respond to emails,
 - access your grade book,
 - have the ability to submit assignments to drop boxes, and
 - Participate in all other activities on the Canvas platform required by the instructor to ensure successful completion of all course objectives and associated assignments.

Remember, if it is not on the course page discussion boards or submitted to the appropriate drop box or ancillary platform feedback cannot be provided, nor can your work, participation or progress be assessed or graded.

Communicating with the Professor:

The best means of communication is through Cedar Crest College email. Please allow 24 hours for an answer to your questions.

It is best to address problems and issues you may be having in a proactive manner. If there is something you do not understand or if you are having problems with course content please do not wait until something is due to contact me for help. This will result in missed deadlines and loss of points.

I am available for email, phone, face-to-face and virtual office meetings; however, you **MUST make an appointment.**

Academic Misconduct:

Faculty who suspect academic misconduct on the part of a student, should first discuss the issue with the student. If, after discussion with the student, the faculty member believes that academic misconduct occurred the faculty member must report the incident to the Provost's Office in a timely manner using the "Report of Academic Misconduct" and attach relevant evidentiary documentation as appropriate. Contemporaneous with the submission of the report to the Provost's Office, the faculty member must report the incident in writing to the Program Director. This report will be kept with the Program Director. Within fourteen days of receiving the report, the Program Director in consultation with the faculty member issuing the report and the Department Chair will make a written notification to the Provost regarding the extent (if any) of the disciplinary action toward the student. The student will also receive written notification from the Program Director regarding this decision. Both the written notification to the Provost and to the student will be kept with the Program Director. Students disagreeing with the decision of the Program Director should follow the Student Complaint – Appeals Process.

Definitions of Academic Misconduct

Cedar Crest College considers the following acts, but not only the following acts, to be breaches of its academic standard of integrity. Cedar Crest College reserves the right to alter the definitions of academic misconduct herein (below definitions taken from the Cedar Crest College Student Handbook).

- i) *Cheating*. During the completion of an academic assignment (e.g. quizzes, tests, examinations, artistic works, presentations, or papers), it is dishonest to use, have access to, or attempt to gain access to any and all sources or assistance not authorized by the instructor.
- ii) *Plagiarism*. Plagiarism is the act, intentional or not, of misrepresenting the work, research, language or ideas of another person (published or unpublished) as one's own. An assignment, or part of an assignment, that fails to acknowledge source material through an appropriate academic discipline's citation conventions for quotation, paraphrase, and summary also constitutes plagiarism.

- iii) *Collusion*. Collusion is the collaboration of two or more individuals in either giving or receiving assistance not authorized by the instructor for the completion of an academic assignment.
- iv) *Falsification*. Falsification is the misrepresentation of academic work or records. Falsification includes, but is not limited to: the fabrication of research, scientific data, or an experiment's results; providing false information regarding an academic assignment, including reasons for absence, deadline extension or tardiness; the tampering with grade or attendance records; the forging or misuse of college documents or records; or the forging of faculty, thesis committee member or administrator signatures. An assignment, or part of an assignment, submitted for academic credit in one course and resubmitted by the student for academic credit in another course without both instructors' permission also constitutes falsification.
- v) *Sabotage*. Sabotage is the act of hindering another student's (or students') ability to complete an academic assignment. Destruction of college property (e.g. library holdings, laboratory materials, or computer hardware or software) may constitute sabotage.
- vi) *Other forms of academic misconduct*. The forms of academic misconduct defined above are not exhaustive, and other acts in violation of the Cedar Crest Honor Code or academic standards of integrity may be deemed academic misconduct by an instructor or by the College.

VeriCite Citation Verification/Plagiarism Detection:

Cedar Crest College uses a citation verification service (VeriCite, www.vericite.com) to help teach proper citation techniques and to ensure the integrity of written academic work. By enrolling in this course, students agree to the submission of their written assignments to such a citation verification service, the use of which is subject to the Terms of Use posted on the provider's website. Written work submitted to a citation verification service will become part of its database for the purposes of future citation verification.

Attendance:

Attendance is monitored by accessing the course and actually doing something. Simply signing on and off does not count as a class attended. If you are signing in and completing the work that is due at least twice a week, you will be fine.

Class Cancellation Policy:

For notification of the College closing, for inclement weather or other emergencies, refer to Cedar Crest's e2Campus system, the Inclement Weather Hotline at 610-606-4629, or the College's MyCedarCrest website for notification.

Since this is in online course, in most circumstances weather or campus closings may not impact us. However, power outages and internet access issues can. The best way to address this is to communicate with me as soon as possible. And I will do the same.

Accommodations Policy:

Cedar Crest College is committed to making reasonable accommodations in accordance with the Americans with Disabilities Act (ADA) and Section 504 of the National Rehabilitation Act in order to assist students with disabilities in reaching their academic potential. If you have a disability that may affect your academic performance in this course, please contact Academic Services (Student Success Center in Cressman Library, 610-606-4628, or advising@cedarcrest.edu) to discuss the needed accommodations. Please note that accommodations are not typically retroactive and may require advance notice to implement.

Canvas Accessibility Statement

WebAIM.org, a third party authority in web accessibility, has [evaluated the Canvas Learning Management System](#) (LMS) by Instructure and certifies it to be substantially conformant with Level A and Level AA of the Web Content Accessibility Guidelines version 2.0. A representative sample of system views was evaluated for accessibility. This sample included course pages, calendars, quizzes, and communication tools.

The Voluntary Product Accessibility Template, or VPAT, is a tool that administrators and decision-makers can use to evaluate Canvas' conformance with the accessibility standards under [Section 508 of the Rehabilitation Act](#) and the Act WCAG 2.0 AA Standards.

For a complete description of how CANAVAS meets the VPAT, see: <https://www.canvaslms.com/accessibility>

YouTube Accessibility

YouTube does not have a formal accessibility statement. Most YouTube videos utilized in this class will have captions.

For information about accessibility of google tools including YouTube, see: <https://www.google.com/accessibility/products-features.html>

Microsoft Accessibility

Microsoft states a commitment to accessibility on its web site but does not have a formal accessibility statement. Microsoft publishes VPATs that reflect the complete product or service, and generally does not create VPATs for individual features or components.

Information about accessibility of its products including Microsoft Windows and Office can be found at: <https://www.microsoft.com/en-us/accessibility/home>

A list of VPATs for Microsoft products can be found at: <https://enterprise.microsoft.com/en-us/industries/government/section-508-vpats-for-microsoft-products/>

Apple Accessibility

Apple states a commitment to accessibility on its web site but does not have a formal accessibility statement. Information on accessibility of its products including OS X and other operating systems and devices can be found at: <http://www.apple.com/accessibility/>

Tutors and Academic Assistance:

Cedar Crest College has tutoring and writing assistance available. Please contact Academic Services via MyCedarCrest <https://my.cedarcrest.edu/ICS/> and use the Tutor Request Form to request a tutor.

For assistance with writing, students can use the Writing Center, which has both face-to-face meetings and e-Tutoring appointments (the students attach their paper to their appointment form in WOnline

https://my.cedarcrest.edu/ICS/Current_Students/Academic_Services/Tutoring_Support_Resources.jnz, and a tutor provides written feedback and returns it). Appointments can be scheduled using WOnline, which is available through MyCedarCrest.

The college also provides access to online writing assistance through “Smarthinking”.

Smarthinking provides students 24/7 access to online tutoring and support

https://my.cedarcrest.edu/ICS/Current_Students/Academic_Services/Tutoring_Support_Resources.jnz?portlet=Free-form_Content_2019-03-25T12-04-13-214

Smarthinking provides assistance with Writing

<https://my.cedarcrest.edu/ICS/icsfs/mm/writing.pdf?target=566375af-f400-45da-93d1-b5636c09f1cf>

Math and Statistics

https://my.cedarcrest.edu/ICS/icsfs/mm/mathematics_statistics.pdf?target=0b751626-7cfc-4881-9f03-f9dccebea267

Credit Hour Equivalency:

For each 1 credit hour awarded, courses are required to provide 15 hours of classroom instruction or equivalent instructional activities. Online courses that do not have these hours scheduled as classroom instruction must indicate what instructional activities

account for the required hours. See the Online and Hybrid Course Guidelines for details and examples of instructional activities.

As a 3-credit online class, MHS 600 satisfies the required hours of classroom instruction through the below course activities and assignments. These hours do not include preparatory or assessed assignments that would be completed outside of an in-person class meeting.

This class meets for 12 weeks, therefore you can expect to spend an average of 3.75 hours on class work (not homework) each week. Be sure to schedule your time accordingly. Consider this class as if you were attending an on campus class, and it met once or twice a week for a total of 3.75 hours. Pick a day and time that works in your schedule to “ATTEND”.

| Course Activities or Assignments | Equivalent Classroom Instructional Hours |
|---------------------------------------|--|
| On-line Lecture | 25 |
| Statistical package/database practice | 15 |
| Literature analysis review | 5 |
| Total: | 45 |

Course Schedule:

| Class Week, Dates & Module(s) | Module Topics & Readings | Assignments & Due Dates |
|--|--|--|
| <p>Week 1</p> <p>Modules 1 & 2</p> | <p>Module 1 An Introduction to the Research Process</p> | <p>Student Introductions <i>due Thursday</i></p> <p><u>Data Analysis Project</u> * Component 1: Health topic and Hypothesis Statement submit to dropbox <i>due Sunday</i></p> <p><u>Discussion Board</u> Hypothesis statement Initial post <i>due Sunday</i> Reply <i>due the following Wednesday</i></p> |
| | <p>Module 2 Statistical Testing</p> <p>Research Article: Access to Oral Health Care: The Role of Federally Qualified Health Centers in Addressing Disparities and Expanding Access</p> | <p>Research Article Critique <i>due Sunday</i></p> |
| <p>2</p> <p>Module 3</p> | <p>Module 3 Survey Design</p> <p>Research Article: Is it Time to Rethink Nutrition Communications? A 5-Year Retrospective of Americans' Attitudes toward Food, Nutrition and Health.</p> | <p>Research Article Critique <i>due Sunday</i></p> <p><u>Data Analysis Project</u> * Component 2 (Part 1): Survey Design <i>due Sunday</i></p> <p><u>Discussion Board</u> Component 1: Survey Design Initial post <i>due Sunday</i> Reply <i>due the following Wednesday</i></p> |
| <p>3</p> <p>Module 4</p> | <p>Module 4 Institutional Review Board (IRB)</p> | <p><u>Data Analysis Project</u> * Component 2 (Part 2): IRB Assignment <i>due Sunday</i></p> |

| | | |
|-----------------|---|---|
| 4 Module 5 | Module 5 Computer Assisted Analysis | |
| 5 Module 6 | Module 6 Descriptive Statistics | |
| 6 Module 7 | Module 7 Epidemiology Research Article: Consumption Patterns of Sugar-Sweetened Beverages in the US | Research Article Critique <i>due Sunday</i> |
| 7 Module 8 | Module 8 Data Screening and Cleaning | <u>Data Analysis Project</u> * Component 2 (Part 3): Survey administered <i>due Sunday</i> |
| 8 Module 9 | Module 9 Differences Between Groups Research Article: Trends In Dietary Intake among US 2 to 6 year old children, 1989-2008 | <u>Data Analysis Project</u> * Component 3: Data entry and analysis <i>due Sunday</i> <u>Discussion Board</u> Component 3: Data entry, cleaning and analysis Initial post <i>due Sunday</i> Reply <i>due the following Wednesday</i> Research Article Critique <i>due Sunday</i> |
| 9 Module 10 | Module 10 Testing Associations between categorical variables | |
| 10 Module 11 | Module 11 Measuring Agreement: Correlational Techniques Research Article: Regular Soda Intake Independent of Weight Status Is Associated with Asthma among US High School Students | Research Article Critique <i>due Sunday</i> |

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|----------------------------|--|--|
| <p>11</p> <p>Module 12</p> | <p>Module 12 Interventions and Analysis of Change</p> | <p><u>Data Analysis Project</u> *</p> <p>Component 4: Research Report <i>due Sunday</i></p> <p><u>Discussion Board</u></p> <p>Component 4: Data Analysis Initial post <i>due Sunday</i> Reply <i>due the following Wednesday</i></p> |
| <p>12</p> | <p>Course Wrap-up</p> | |

*The Data Analysis Project includes the following components:

- 1) selection of the health topic, the hypothesis statement
- 2) survey design, IRB Approval, Survey Administered
- 3) data entry, cleaning and analysis
- 4) the report.

The Data Analysis Project is will be broken into components to correspond with the learning material. Each component is due separately and graded individually collectively accumulating to the total grade for this assignment.