

**University of North Carolina at Charlotte
College of Health and Human Services
Department of Health Informatics and Analytics & School of Data Science**

Course Number and Title: HCIP 5376-001: Introduction to Programming for Health Informatics

Semester: Fall 2025

Credits: 3 Graduate Credits

Days/Time, Location:

This course has a hybrid format and we will meet in-person every other Tuesday from 5:30 pm to 8:15 pm in CHHS 294 (College of Health and Human Services)

Web-meeting link (for virtual days only): See Canvas

Faculty Information:

Sydney Westfall (primary instructor)
Email: swestfa2@charlotte.edu

Office Hours: By appointment

Catalog Description An introduction to the fundamentals of computer programming, the course provides students essential programming knowledge and skills to perform commonly encountered computational tasks in the field of health informatics. Prepares students for advanced programming and data science courses.

Pre and/or Co-requisites: Enrollment in PSM or Graduate Certificate in Health Informatics and Analytics program, or the MPH program

Course Objectives:

By the end of this course, students will be able to:

1. Develop basic programming skills using R.
2. Understand and apply programming techniques to healthcare data.
3. Analyze and solve health data problems using R.

Instructional Method: (Face-to-face/online/hybrid)

Required Texts and Materials:

All materials used in this course are freely available for download. Students may choose to purchase a physical copy of the materials if desired.

- **Textbooks (available for free online):**

- *Hands-on Programming with R* by Garrett Grolemund (2014) (<https://rstudio-education.github.io/hopr/index.html>). This is a great introductory resource for those without prior coding experience.
- *R for Data Science* by Hadley Wickham (2023). (<https://r4ds.hadley.nz>) This is a fantastic reference if you continue to use the R language after this course.
- **Data**
 - The Centers for Medicare and Medicaid Services (CMS) *Care Compare Database*: <https://data.cms.gov/provider-data/search?theme=Hospitals>
- **R Programming Examples**
 - <https://posit.cloud/learn/recipes>

Required Equipment:

1. Laptop or PC
2. Access to internet with secure connection, virus protected
3. Microsoft Office (all assignments must be turned in as a .doc or .docx, or PDF file) and presentations should be given in PowerPoint

Graduate Grading Scale:

A = 90-100%
 B = 80 - 89%
 C = 70 - 79%
 U = 69% & below

Evaluation Methods:

Assignments: 60%
 Midterm Exam: 20%
 Final Exam: 20%

Course Schedule:

Class Number	Date	Location	Topic	Assignment
1	8/19/25	In-person	RStudio Cloud Setup and IDE Overview	Wickham: Introduction, 6,7 Grolemund: 1, 2.1, 3
2	8/26/25	Virtual	Basics of R Programming: Part 1	Homework 1 Wickham: 2, 12, 13, 14, 16, 17 Grolemund: 5
3	9/2/25	Virtual (no zoom)	Basics of R Programming: Part 2	Homework 2 Wickham: 25 Grolemund: 2.3-2.7
4	9/9/25	In-person	Welcome to the Tidyverse & Data Manipulation Part 1	Homework 3 Wickham: 3 Grolemund: 6
5	9/16/25	Virtual	Data Manipulation Part 2	Homework 4 Wickham: 5
6	9/23/25	In-person	Data Manipulation: Part 3	Homework 5 Wickham: 19
7	9/30/25	Virtual	Visualizing Data: Part 1	Homework 6 Wickham: 9-11
8	10/7/25	In-person	Mid-Term Exam	
9	10/14/25	N/A	No Class	
10	10/21/25	Virtual	Visualizing Data: Part 2	Homework 7
11	10/28/25	In-person	Visualizing Data: Part 3	Homework 8
12	11/4/25	Virtual	Regression Modeling	Homework 9
N/A	11/11/25	N/A	Veteran's Day- No Classes	
13	11/18/25	In-person	Shiny and Quarto: Part 1	Homework 10
14	11/25/25	Virtual	Shiny and Quarto: Part 2	Homework 11
15	12/2/25	In-person	Open study session/Final Review	
16	12/9/25	In-person	Final Exam	

Syllabus Subject to Change: *The standards and requirements set forth in this syllabus may be modified at any time by the course instructor. Notice of such changes will be by announcement in class, written or email notice, or by changes to this syllabus posted on the course website at (URL).

UNIVERSITY AND COLLEGE POLICIES

University Policies

Code of Student Responsibility:

“The *UNC Charlotte Code of Student Responsibility* (the Code) sets forth certain rights and responsibilities in matters of student discipline. The Code defines these responsibilities and guarantees you certain rights that ensure your protection from unjust imposition of disciplinary penalties. You should familiarize yourself with the provisions and procedures of the Code” (Introductory statement from the UNC Charlotte brochure about the Code of Student Responsibility). The entire document may be found at this Internet address:

<https://legal.uncc.edu/policies/up-406>

Academic Integrity:

All students are required to read and abide by the Code of Student Academic Integrity. Violations of the Code of Student Academic Integrity, including plagiarism, will result in disciplinary action as provided in the Code. Students are expected to submit their own work, either as individuals or contributors to a group assignment. Definitions and examples of plagiarism and other violations are set forth in the Code. The Code is available from the Dean of Students Office or online at: <https://legal.uncc.edu/policies/up-407>

AI use:

University Suggested Syllabus Policy:

The following materials, equipment, websites, or tools are prohibited for completing course assignments, quizzes or examinations, or other academic exercises unless I explicitly permit such use for legitimate pedagogical purposes. These materials include include ChatGPT or other generative artificial intelligence tools as well as online course material suppliers like CourseHero or Chegg, etc.

SimCheck:

As a condition of taking this course, papers that the instructor in good faith suspects are in whole or in part plagiarized may be subject to submission for textual similarity review to [SimCheck](#) or another service for the detection of plagiarism. Such works will be included as source documents in the SimCheck or other plagiarism detection service reference database solely for the purpose of detecting plagiarism of such papers. No student papers will be submitted to SimCheck or other plagiarism detection service without a student's [written consent and permission](#). If a student does not provide such written consent and permission, the instructor may: (i) require a short reflection paper on research methodology; (ii) require a draft bibliography prior to submission of the final paper; or (iii) require the cover page and first cited page of each reference source to be photocopied and submitted with the final paper.

Office of Civil Rights and Title IX Reporting Obligations Regarding Incidents of Sexual Harassment, sexual assault, dating violence, domestic violence, or stalking:

UNC Charlotte is committed to providing an environment free of all forms of discrimination and sexual harassment, including sexual assault, domestic violence, dating violence, and stalking. If you (or someone you know) has experienced or experiences any of these incidents, know that you are not alone. UNC Charlotte has staff members trained to support you in navigating campus life, accessing health and counseling services, providing academic and housing accommodations, helping with civil protective orders, and more.

Please be aware that all UNC Charlotte employees, including faculty members, are expected to relay any information or reports of sexual misconduct they receive to the Title IX Coordinator. This means that if you tell me about a situation involving sexual harassment, sexual assault, dating violence, domestic violence, or stalking, I am expected to [report the information to the Title IX Coordinator](#). Although I am expected to report the situation, you will still have options about how your case will be handled, including whether or not you wish to pursue a formal complaint. Our goal is to make sure you are aware of the range of options available to you and have access to the resources you need.

If you wish to speak to someone confidentially, you can contact the following on-campus resources, who are not required to report the incident to the Title IX Coordinator: (1) University Counseling Center (counselingcenter.charlotte.edu, 7-0311); or (2) Student Health Center (studenthealth.charlotte.edu, 7-7400). Additional information about your options is also available at titleix.charlotte.edu under the “Students” tab.

Course Credit Workload:

This 3-credit graduate course requires 3 hours of classroom or direct faculty instruction, and 6 hours of out-of-class student work each week for approximately 15 weeks, including the final exam period. Out-of-class work may include but is not limited to: programming practice, required reading, library research, written assignments, and studying for quizzes and exams.

Disability Accommodations:

UNC Charlotte is committed to access to education. If you have a disability and need academic accommodations, please provide a letter of accommodation from Disability Services early in the semester. For more information on accommodations, contact the Office of Disability Services at [704-687-0040](tel:704-687-0040) or visit their office in Fretwell 230.

Diversity Statement:

UNC Charlotte strives to create an academic climate in which the dignity of all individuals is respected and maintained. Therefore, we celebrate diversity that includes, but is not limited to ability/disability, age, culture, ethnicity, gender, language, race, religion, sexual orientation, and socio-economic status.

All students are required to abide by the [UNC Charlotte Sexual Harassment Policy](#) and the policy on [Standard for Responsible Use](#) of University Computing and Electronic Communication Resources. Sexual harassment, as defined in the UNC Charlotte Sexual Harassment Policy, is prohibited, even when carried out through computers or other electronic communications systems, including course-based chat rooms or message boards.

Religious Accommodation:

It is the obligation of students to provide faculty with reasonable notice of the dates of religious observances on which they will be absent by submitting a Request for Religious Accommodation Form (<https://legal.uncc.edu/sites/legal.uncc.edu/files/media/UP409-ReligiousAccommodationForStudents.pdf>) to their instructor prior to the census date for enrollment for a given semester <https://legal.uncc.edu/policies/up-409>. The census date for each semester (typically the tenth day of instruction) can be found in UNC Charlotte's Academic Calendar (<https://registrar.uncc.edu/printable-calendar>

College Policies

CHHS Laptop Policy:

ALL STUDENTS, graduate and undergraduate, taking CHHS courses, are required to possess a laptop with webcam and microphone. Our courses may require a laptop or other compliant device for in-class assignments. Please note that Chromebooks won't satisfy this policy. NinerTech offers compliant models at student discounted pricing that may represent a savings over regular commercial purchase.

Students may avail themselves of loaner equipment such as that provided via [Atkins Library](#), but should not rely on that option for all of their computing needs. This requirement extends to non-majors, pre-majors and postbac students enrolling in any of our CHHS courses and to students enrolling in courses delivered by CHHS faculty under a designation or cross-list not associated with one of our programs.

Diversity, Equity, & Inclusion:

The College of Health & Human Services (CHHS) values human diversity in all its richly complex and multi-faceted forms, whether expressed through, but not limited to, race and ethnicity, culture, political and social views, religious and spiritual beliefs, language and geographic characteristics, gender, gender identities and sexual orientations, learning and physical abilities, age, and social or economic classes. It is the intent of CHHS that students from all diverse backgrounds and perspectives be well served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that students bring to this class be viewed as a resource, strength and benefit. For more information on diversity and inclusion please visit diversity.charlotte.edu

Wellness Statement

It is common for college students to experience challenges that may interfere with academic success such as academic stress, sleep problems, juggling responsibilities, life events, relationship concerns, or feelings of anxiety, hopelessness, or depression. If you or a friend is struggling, we strongly encourage you to seek support. Helpful, effective resources are available on campus at no additional cost.

If you are struggling academically with this class, please visit me during office hours or contact me by email at swestfa2@uncc.edu.

Meet with your academic advisor if you are struggling academically in multiple classes, unsure whether you are making the most of your time at UNC Charlotte, or unsure what academic resources are available at UNC Charlotte.

Visit the Counseling and Psychological Services website at <https://caps.charlotte.edu/> for information about the broad range of confidential on-campus mental health services, online health assessments, hours, and additional information.

Call CAPS at (704) 687-0311 if interested in scheduling an appointment with a counselor. After hours, call CAPS at (704) 687-0311. When you connect to the CAPS voicemail message, press '2' to be connected by a counselor by phone.

Campus Emergencies: UNC Charlotte and your instructor have a primary responsibility for ensuring student safety. Students are notified of impending or imminent threats via the [NinerAlert](#) system. In the event of an imminent emergency, please follow all university and/or instructor guidelines.

Disruptions to university operations are communicated via the [NinerNotice](#) system. All students are automatically enrolled in NinerNotice to receive important texts and other UNC Charlotte communications.

Classroom Expectations: This syllabus contains the policies and expectations that I have established for HCIP 5376: Introduction to Programming for Health Informatics. Please read the entire syllabus carefully before continuing in this course. These policies and expectations are intended to create a productive learning atmosphere for all students. Unless you are prepared to abide by these policies and expectations, you risk losing the opportunity to participate further in the course.

Classroom Conduct: I will conduct this class in an atmosphere of mutual respect for all persons. This principle is rooted in the College of Health and Human Services statements regarding [diversity, access and inclusion](#).

I encourage your active participation in class discussions. Each of us may have strongly differing opinions on the various topics of class discussions. The conflict of ideas is encouraged and welcome. The orderly questioning of the ideas of others, including mine, is similarly welcome. However, I will exercise my responsibility to manage the discussions so that ideas and argument can proceed in an orderly fashion. You should expect that if your conduct during class discussions seriously disrupts the atmosphere of mutual respect I expect in this class, you will not be permitted to participate further.

Course Content Recording or Sharing Is Prohibited: Electronic video and/or audio recording is not permitted during class unless the student obtains permission from the instructor. If permission is granted, ANY distribution of the recording is prohibited. Students with specific electronic recording accommodations authorized by the Office of Disability Services do not require instructor permission; however, the instructor must be notified of any such accommodation prior to recording. Any distribution of such recordings is prohibited.

All students are prohibited from copying and sharing old exams, course notes, tests, lecture slides, assignments, or online content on any other website, device, student groups, etc., as this infringes on the professor's rights and is a copyright infringement. Sharing any content without explicit permission of the instructor will result in an Academic Integrity Violation.

Instructor's absences or tardiness: If I am late in arriving to class, you must wait a full 20 minutes after the start of class before you may leave without being counted absent, or you must follow any written instructions I may give you about my anticipated tardiness.

Preferred Gender Pronoun: This course affirms people of all gender expressions and gender identities. If you prefer to be called a different name than what is indicated on the class roster, please let me know. Feel free to correct me on your preferred gender pronoun. If you have any questions or concerns, please do not hesitate to contact me.

Class Attendance Policy: Students are expected to attend every class and remain in class for the duration of the session. Failure to attend class or arriving late may impact your ability to achieve course objectives which could affect your course grade. An absence, excused or unexcused, does not relieve a student of any course requirement. Regular class attendance is a student's obligation, as is a responsibility for all the work of class meetings, including tests and written tasks. Any unexcused absence or excessive tardiness may result in a loss of participation points.

Last Date of Attendance: The United States Department of Education requires UNC Charlotte's Office of Financial Aid to determine if a student who receives financial aid and fails to earn a passing grade in a course has actually attended and/or completed the course. Because I do not take regular attendance for this course, the date I will report as your last date of attendance will be the latest of the following:

- The date you last participated in an online discussion or activity;
- The date you last submitted an assignment/project/test/tutorial/quiz; or
- The date you last initiated contact with me to ask a question about the course or course content.

If you earn an F or U grade, your last date of attendance will be reported to the United States

Department of Education. *This may require you to pay back any financial aid funds received for this course.* (For additional information, see [Last Date of Attendance FAQs](#) on the Registrar's website.)

Class Absence(s): The authority to excuse a student's class absence(s) and to grant a student an academic accommodation (turn in a late assignment(s), provide extra time on an assignment, reschedule an exam(s) etc.) sits with the individual instructor. Students are encouraged to work directly with their instructors regarding their absence(s). Note: The Dean of Students Office can assist faculty members in the verification a student's class absence(s) for documented situation related to medical, psychological, personal crisis, or military absences.

Cell Phone and Computer Use in the Classroom (this will vary by faculty preference): The use of cell phones, smart phones, or other mobile communication devices is disruptive, and is therefore prohibited during class. Except in emergencies, those using such devices must leave the classroom for the remainder of the class period. Students are permitted to use computers during class for note-taking and other class-related work only. Those using computers during class for work not related to that class must leave the classroom for the remainder of the class period.

Withdrawal Policy: Students are expected to complete all courses for which they are registered at the close of the add/drop period. If you are concerned about your ability to succeed in this course, it is important to make an appointment to speak with me as soon as possible. The University policy on withdrawal allows students only 16 credit hours to withdraw from courses. It is important for you to understand the financial and academic consequences that may result from [course withdrawal](#).

COVID Policies and Requirements:

Masks: Face masks are **optional** on UNC Charlotte's campus. This includes classrooms and other academic spaces. This follows the [UNC System issued-guidance that makes face masks optional in all indoor settings](#) on all campuses of the System, sent on Feb. 25, 2022.

Masks are available for pick up in the Popp Martin Student Union, Atkins Library and the Career Center for individuals who wish to wear one.

COVID-19 Policy on absenteeism: Students are expected to attend every class and remain in class for the duration of the session when it is safe to do so in accordance with university guidance regarding COVID-19. Failure to attend class or arriving late may impact your ability to achieve course objectives which could affect your course grade. An absence, excused or unexcused, does not relieve a student of any course requirement. Regular class attendance is a student's obligation, as is a responsibility for all the work of class meetings, including tests and written tasks. Any unexcused absence or excessive tardiness may result in a loss of participation points.

Students are encouraged to work directly with their instructors regarding their absence(s). For absences related to COVID-19, please adhere to the following:

- Complete your [Niner Health Check](#) each morning.

- **Do not come to class if you are sick.** Please protect your health and the health of others by staying home. Contact your healthcare provider if you believe you are ill.
- **If you are sick:** If you test positive or are evaluated by a healthcare provider for [symptoms of COVID-19](#), indicate so on your [Niner Health Check](#) to alert the University. Submit a copy of your Niner Health Check notification email to your instructors. Upon learning that you have tested positive or have been diagnosed for symptoms of COVID-19, either from your reporting or from Student health Center testing or diagnosis, representatives from Emergency Management and/or the Student Health Center will follow up with you, and your instructors will be notified of the need for accommodations, as necessary.
- **If you have been exposed** to COVID-19 positive individuals and/or have been notified to self-quarantine due to exposure, indicate so on your [Niner Health Check](#) to alert the University. Representatives from Emergency Management and/or the Student Health Center will follow up with you as necessary. Submit a copy of your Niner Health Check notification email to your instructors. If you need any additional support verifying your absence after you have communicated with your professors, contact [Student Assistance and Support Services](#).

To return to class after being absent due to a period of **self-quarantine**, students should submit a copy of their Niner Health Check clearance email to their instructor(s). To return to class after being absent due to a COVID-19 **diagnosis**, students should submit an [online request form](#) to Student Assistance and Support Services (SASS). Supporting documentation can be attached directly to the request form and should be from a student's health care provider or the Student Health Center, clearly indicating the dates of absences and the date the student is able to return to class. Instructors will be notified of such absences.

If you are absent from class as a result of a COVID-19 diagnosis or quarantine, as instructor I will provide reading materials so that you may continue to progress through the course. The final decision for approval of all absences and missed work is determined by the instructor.