

CSCE 100 Introduction to Informatics

Fall 2019

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Lecture: 11:00 a.m. – 12:15 p.m. TR **Room:** Hamilton Hall Room 133
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Course Catalog

Introduction to the use of data-centric and information technologies—and issues and challenges—in today’s applications in sciences, engineering, the humanities, and the arts. Exposure to computational thinking and programming, statistical thinking and research design, data analysis and database techniques, and visualization and creative thinking.

The Informatics Minor

The Informatics minor is an interdisciplinary program that prepares students with core computational skill sets and competencies that allow them to solve problems within their chosen discipline or field. The program also builds interdisciplinary problem solving skills that are applicable and advantageous across academia and within industry. The minor’s objectives are anchored around a set of core outcomes, such that students completing the minor will be able to:

1. Apply **computational thinking** to solve problems effectively and implement it using a programming language;
2. Apply **statistical techniques** to assess outcomes of empirical studies or experiments, and set up research designs to evaluate tools, techniques or hypotheses effectively;
3. Interact, use and manage data or **databases** and solve data-centric problems; or organize, **visualize**, and communicate digital data effectively and efficiently; or use **creative competencies** to generate creative solutions; and
4. Contribute one’s expertise to the solution of **interdisciplinary** problems by effectively collaborating and communicating with those from other disciplines.

What is Informatics?

From Wikipedia (accessed July 30, 2018):

Informatics is a branch of information engineering. It involves the practice of information processing and the engineering of information systems, and as an academic field it is an applied form of information science. The field considers the interaction between humans and information alongside the construction of interfaces, organisations, technologies and systems. As such, the field of informatics has great breadth and encompasses many subspecialties, including disciplines of computer science, information systems, information technology and statistics. Since the advent of computers, individuals and organizations increasingly process information digitally. This has led to the study of informatics with computational, mathematical, biological, cognitive and social aspects, including study of the social impact of information technologies.

Keywords: Information engineering = digital data + systems, problem solving, applications, great breadth, many sub-specialties, etc.

Course Goal

The main goal of the course is to introduce you to the major areas of informatics and to give you a taste of how each area could be used in your academic discipline. The course is designed to give you entry level experience with a range of topics, and to spark ideas of how these tools might fit into your studies. We will hear from practitioners on campus throughout the semester, and we'll try our hands at using the tools and techniques.

Texts

All reading materials will be online, freely available and assigned during the semester.

Assignments (individual)

There will be 3-5 programming assignments based on Python that deals with data processing and informatics. These assignments are designed for students to practice and apply their problem solving skills to solve problems in informatics as well as programming skills.

In-Class Quizzes (individual)

There will be several in-class quizzes administered online via Canvas across the semester. There will be no make-up quizzes.

Mid-term Exams (individual)

There will be 2-3 mid-term exams in class. These exams will include open-ended questions to assess student understanding of the materials in class.

Final Project (group)

There will be one group-based final project. The final project will involve working with real data, perform data processing and data analysis on the data, discuss and present (visualize) the analysis effectively, document and report on the overall project, and present the work towards the end of the semester.

Course Grade

Your final course grade is based on the following: (1) assignments (20%), (2) in-class quizzes (15%), (3) midterm exams (35%), and (4) final project (35%). Final grades in this class will be assigned based on the following scale.

A+: ≥ 97	B-: ≥ 80 & < 83	D+: ≥ 67 & < 70
A: ≥ 93 & < 97	C+: ≥ 77 & < 80	D: ≥ 63 & < 67
A-: ≥ 90 & < 93	C: ≥ 73 & < 77	D-: ≥ 60 & < 63
B+: ≥ 87 & < 90	C-: ≥ 70 & < 73	F: < 60
B: ≥ 83 & < 87		

Services for Students with Disabilities

The University strives to make all learning experiences as accessible as possible. If you anticipate or experience barriers based on your disability (including mental health, chronic or temporary medical conditions), please let me know immediately so that we can discuss options privately. To establish reasonable accommodations, I may request that you register with Services for Students with Disabilities (SSD). If you are eligible for services and register with their office,

make arrangements with me as soon as possible to discuss your accommodations so they can be implemented in a timely manner. SSD contact information: 232 Canfield Admin. Bldg.; 402-472-3787; acontreras3@unl.edu.

Academic Integrity

Violations of academic integrity will result in automatic failure of the class and referral to the proper university officials. The work a student submits in a class is expected to be the student's own work and must be work completed for that particular class and assignment. Students wishing to build on an old project or work on a similar topic in two classes must discuss this with both professors. Academic dishonesty includes: handling in another's work or part of another's work as your own, turning in one of your old papers for a current class, or turning in the same or similar paper for two different classes. Using notes or other study aids or otherwise obtaining another's answers for an examination also represents a breach of academic integrity. Those who share their code and those who copy other's code will be penalized in the same way; both parties will be considered to have plagiarized. Sanctions are applied whether the violation was intentional or not.

Academic dishonesty of any kind will be dealt with in a manner consistent with the CSE Department's Policy on Academic Integrity (http://cse.unl.edu/undergrads/academic_integrity.php). You are expected to know and abide by this policy.

To help avoid these problems, please start assignments early and seek help when you need it.

PLAGIARISM OF ANY KIND IN THIS COURSE WILL RESULT IN A GRADE OF F.