
Course Information

Course: Course Name
Call #: 12345
Credit Hours: 3
Room: Building Name 123
Day/Times: T, R 2:00 P.M.- 3:15 P.M.
Prerequisites: Grade of C or higher in MAT 101 and MAT 102, or permission of instructor.
Textbook: Louden, K. C., & Lambert, K. A. (2011). *Programming languages: principles and practices*. Cengage Learning.

Instructor Information

Name: Dr. Homer Simpson
Office: 123 Big Building
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Office Hours: 8:00 A.M.- 9:00 P.M.

Course description

Principles and techniques of high level programming language specification, including syntax and semantics, and implementation methods. Languages are considered as formal constructs representing computable functions and the course presents basic results of computability theory. Methods of recognition for regular and context free languages, the functional alternative to the state based imperative paradigm, use of parse trees as control constructs, and concurrent programming synchronization primitives are also covered.

Topics

- Generate data, create data frame (structure)
 - Data science knowledge and skills (background)
 - Data science careers (side focus)
 - Describe what Data Science is and the skill sets needed to be a data scientist.
 - Data acquisition (sql, csv, reading, loading, Web Scraping, etc.) and wrangling
 - Exploratory data analysis (visualization and description)
 - Communication (Rmd, shiny, and slidy)
 - Version control (git)
 - Tidyverse
 - BigData
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Learning Outcomes

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

- Discuss database management system concepts
- Design a database: This will include design philosophies such as E-R and Relational Algebra, along with studies of normal forms for databases
- Write SQL queries
- Explain Physical Representation. This will cover the basics of how the information in a database is stored, and accessed on various systems
- Explain about advanced NoSQL, and Big data frameworks
- Apply the database concepts to a real-world project
- Demonstrate knowledge of data science ethics in forum discussions.

Essential Equipment

Typical technical suggestions for users are:

- Computer or Laptop: A reliable computer or laptop is the foundation of your setup. Choose one that meets your requirements in terms of processing power, storage capacity, and portability.
- Operating System: Install a suitable operating system such as Windows, macOS, or Linux, depending on your preference and software compatibility.
- RAM (Random Access Memory): Opt for at least 8GB of RAM to ensure smooth multitasking and efficient performance. However, if you plan to run resource-intensive applications or perform data-intensive tasks like video editing or 3D rendering, consider getting 16GB or more.
- Storage Drive: Have a sufficient storage drive to store your files and applications. A solid-state drive (SSD) is recommended for faster boot times and improved overall system performance. Aim for a minimum of 256GB, but consider larger capacities if you work with large files or require extensive storage.
- Monitor: Invest in a good-quality monitor with a suitable size and resolution for your needs. Ensure it has the necessary ports to connect to your computer.
- Keyboard and Mouse: Choose a comfortable keyboard and mouse for easy navigation and typing. Wired or wireless options are available, depending on your preference.
- Internet Connectivity: Reliable internet connectivity is essential for accessing online resources, cloud storage, and software updates. Ensure you have a stable internet connection either through Ethernet or Wi-Fi.
- Speakers or Headphones: Consider having speakers or headphones for audio output, depending on your preference. This will enable you to listen to music, watch videos, or participate in online meetings.
- Webcam: If you plan to engage in video conferencing or online meetings, a webcam is necessary for video communication.

- Surge Protector or Uninterruptible Power Supply (UPS): Protect your computer and equipment from power fluctuations or outages by using a surge protector or UPS.

Course Evaluation and Grading Policies

Grades are based on Attendance/Participation (10%), Exams (2 @ 10%), homework (20%), projects (40%), and final exam (10%).

Topic Schedule

Week 1	.....	Introduction to data and R Studio (Cloud)
Week 2	.....	Acquiring Data (Basic) and Version Control (git)
Week 3	.....	Exploratory data analysis (visualization and description)
Week 4	.....	Data Wrangling (Base R and Hadleyverse)
Week 5	.....	Exploratory data analysis (visualization and description)
Week 6	.....	Statistics, models, and tests
Week 7	.....	Exam
Week 8	.....	Data models, make predictions (machine learning)
Week 9	.....	Data models, make predictions (machine learning)
Week 10	.....	Cross validation
Week 11	.....	Advanced data acquisition (sql)
Week 12	.....	Feature engineering
Week 13	.....	Data Privacy, Security, and Ethics
Week 14	.....	Communication (Rmd, shiny, and slidy)
Week 15	.....	Communication (Rmd, shiny, and slidy)

NOTE: Schedule is tentative and subject to change.

Policies, Support Services, and Other Information

Attendance

Requirements for students' attendance and participation will be defined by each instructor based on the following policy:

- Tuesday of the first week is considered the first day of class for online term with subsequent Monday's serving as the first day of instruction each week. Assignments each week are due on Thursdays and/or Sundays. Please see the course schedule for specific due days.
- Regular online attendance/participation and engagement is expected for student success in fully online courses. Online participation is evident through posting to a discussion board, completing real-time activities or quizzes, or other course-related activities.
- Weekly deadlines for deliverables are Thursdays and Sundays by 11:59pm.

Brightspace Support Services

The ITS Service Desk, located in the ABC Library, is prepared to help students should they encounter problems with Brightspace. Please read through the following information:

- For login problems, call the Service Desk at 874-4357.
- The Service Desk Website, <https://web.ABC.edu/its servicedesk> opens in new window, posts the semester operating schedule as well as a link on the right index to the self- help technical wiki. That site contains Brightspace help and instructions for both students and faculty.

Recommended browsers (those with the most QA testing effort against them) are Google Chrome, Safari, and Mozilla Firefox. The mobile versions of these browsers also work well with the majority of operations in Brightspace. Internet Explorer is not recommended.

Netiquette for Online Courses

- Be polite and respectful of one another.
- Avoid personal attacks. Keep dialogue friendly and supportive, even when you disagree or wish to present a controversial idea or response.
- Be careful with the use of humor and sarcasm. Emotion is difficult to sense through text.
- Be helpful and share your expertise. Foster community communication and collaboration.
- Contribute constructively and completely to each discussion. Avoid short repetitive “I agree” responses and don’t make everyone else do the work.
- Consider carefully what you write. Re-read all e-mail and discussion before sending or posting.
- Remember that e-mail is considered a permanent record that may be forwarded to others.
- Be brief and succinct. Don’t use up other people’s time or bandwidth.
- Use descriptive subject headings for each e-mail message.
- Respect privacy. Don’t forward a personal message without permission.
- Cite references. Include web addresses, authors, names of articles, date of publication, etc.
- Keep responses professional and educational. Do not advertise or send chain letters.
- Do not send large attachments unless you have been requested to do so or have permission from all parties.
- 2 word postings (e.g.: I agree, Oh yeah, No way, Me too) do not “count” as postings.

ABC Academic Writing Standards

Specific writing standards differ from discipline to discipline, and learning to write persuasively in any genre is a complex process, both individual and social, that takes place over time with continued practice and guidance. Nonetheless, ABC has identified some common assumptions and practices that apply to most academic writing done at the university level. These generally understood elements are articulated here to help students see how they can best express their ideas effectively, regardless of their discipline or any particular writing assignment.

Venues for writing include the widespread use of e-mail, electronic chat spaces and interactive blackboards. ABC is committed to guaranteeing that students can expect all electronic communication to meet Federal and State regulations concerning harassment or other “hate” speech. Individual integrity and social decency require common courtesies and a mutual understanding that writing—in all its educational configurations—is an attempt to share information, knowledge, opinions and insights in fruitful ways.

Academic writing (as commonly understood in the university) always aims at correct Standard English grammar, punctuation, and spelling.

The following details are meant to give students accurate, useful, and practical assistance for writing across the curriculum of ABC.

Students can assume that successful collegiate writing will generally:

- Delineate the relationships among writer, purpose and audience by means of a clear focus (thesis statements, hypotheses or instructor-posed questions are examples of such focusing methods, but are by no means the only ones) and a topic that's managed and developed appropriately for the specific task.
- Display a familiarity with and understanding of the particular discourse styles of the discipline and/or particular assignment.
- Demonstrate the analytical skills of the writer rather than just repeating what others have said by summarizing or paraphrasing
- Substantiate abstractions, judgments, and assertions with evidence specifically applicable for the occasion whether illustrations, quotations, or relevant data.
- Draw upon contextualized research whenever necessary, properly acknowledging the explicit work or intellectual property of others.
- Require more than one carefully proofread and documented draft, typed or computer printed unless otherwise specified.

Professional Conduct

Cheating and plagiarism are serious academic offenses, which are dealt with firmly by the College and University. Scholastic integrity presumes that students are honest in all academic work. Cheating is the failure to give credit for work not done independently (i.e., submitting a paper written by someone other than yourself), unauthorized communication during an examination, or the claiming of credit for work not done (i.e., falsifying information). Plagiarism is the failure to give credit for another person's written or oral statement, thereby falsely presuming that such work is originally and solely your own.

If you have any doubt about what constitutes plagiarism, visit the following website:

<https://honorcouncil.georgetown.edu/whatisplagiarism>

the ABC Student Handbook, and University Manual sections on plagiarism and cheating at

<http://web.ABC.edu/studentconduct/student-handbook>.

Students are expected to be honest in all academic work. A student's name on any written work, quiz or exam shall be regarded as assurance that the work is the result of the student's own independent thought and study. Work should be stated in the student's own words, properly attributed to its source. Students have an obligation to know how to quote, paraphrase, summarize, cite and reference the work of others with integrity. The following are examples of academic dishonesty.

- Using material, directly or paraphrasing, from published sources (print or electronic) without appropriate citation;
- Claiming disproportionate credit for work not done independently;
- Unauthorized possession or access to exams;

- Unauthorized communication during exams;
- Unauthorized use of another's work or preparing work for another student;
- Taking an exam for another student;
- Altering or attempting to alter grades;
- The use of notes or electronic devices to gain an unauthorized advantage during exams;
- Fabricating or falsifying facts, data or references;
- Facilitating or aiding another's academic dishonesty;
- Submitting the same paper for more than one course without prior approval from the Instructor.

Please note the following section from the University Manual: **8.27.17**. Instructors shall have the explicit duty to take action in known cases of cheating or plagiarism. The instructor shall have the right to fail a student on the assignment on which the instructor has determined that a student has cheated or plagiarized. The circumstances of this failure shall be reported to the student's academic dean, the instructor's dean, and the Office of Student Life. The student may appeal the matter to the instructor's dean, and the decision by the dean shall be expeditious and final. Such action will be initiated by the instructor if it is determined that any written assignment is copied or falsified or inappropriately referenced.

Any good writer's handbook as well as reputable online resources will offer help on matters of plagiarism and instruct you on how to acknowledge source material. If you need more help understanding when to cite something or how to indicate your references, PLEASE ASK.

Please note: Students are responsible for being familiar with and adhering to the published "Community Standards of Behavior: University Policies and Regulations" which can be accessed in the University Student Handbook.

Student Support Services

The following student support services are provided by the university and available to all ABC students:

- Student support services such as counseling center: <https://web.ABC.edu/counseling>
- Food assistance: <https://web.ABC.edu/rhody-outpost>
- Bias resource team: <https://web.ABC.edu/brt>

Academic Support Services

Office of Disability Services

Americans With Disabilities Act Statement

Any personal learning accommodations that may be needed by a student covered by the "Americans with Disabilities Act" must be made known to the university as soon as possible. This is the student's responsibility. Information about services, academic modifications and documentation requirements can be obtained from the The Office of Affirmative Action, Equal Opportunity and Diversity (AAEOD). <https://web.ABC.edu/affirmativeaction/>

Any student with a documented disability is welcome to contact me early in the semester so that we may work out reasonable accommodations to support your success in this course. Students should also contact Disability Services for Students, Office of Student Life, 123 Student Union, 123-456-7890.

Students are expected to notify faculty at the onset of the semester if any special considerations are required in the classroom. If any special considerations are required for examinations, it is expected the student will notify the faculty a week before the examination with the appropriate paperwork.

ABC Online Library Resources

<https://web.ABC.edu/library/>
