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| Joliet Junior College 1901 logo with belltower  ***Department of Mathematics*** | **STAT101**  **Introduction to Data Science** |

**Course Description**

This is an introductory course to the field of data science and roles of a data scientist. Topics will include: history of data science, ethics, available tools, methodology, visualization and pathways to data science careers. This course will expose students to applications in various fields and prepare them to be critical thinkers of future career paths. An introduction to R is included.

**Illinois Articulation Initiative (IAI) number:** N/A

**Credit and Contact Hours:**

**Lecture 3**

**Lab 0**

**Credit Hours 3**

**Prerequisites**: Placement into Math 094 or minimum grade “C” in Math 090 or equivalent.

**Books, Supplies, and Supplementary Materials**

1. **Required Textbooks**

O’Neil, Cathy. *Weapons of Math Destruction*. Broadway Books, NY.

1. **Other Required Materials**

Excel Software

R or R-Studio free download

1. **Methods of Instruction:**

Lecture, Hybrid, or Online

**General Education Student Learning Outcome**

1. Applied Knowledge: Students draw from learning experiences/concepts to solve a variety of problems or challenges.

**Course Learning Outcomes (CLO’s)**

1. Students recognize and explain the central role of data scientists.
2. Students apply critical thinking to understand statistical reasoning.
3. Students examine importance of ethics in research.
4. Students describe importance of methodology.
5. Students organize the cycle of data analysis: understand, prepare, model, evaluate.
6. Students present findings from analysis cycle.

**Lesson Learning Outcomes (LLO’s)**

1. Students describe big data.
2. Students discuss examples of data science.
3. Students explain how data is used in a wide range of fields, including those that are traditionally part of the liberal arts.
4. Students describe the difference between data science tools available to them.
5. Students calculate the probability of basic events in real-life data.
6. Students calculate descriptive statistics on data from a variety of disciplines.
7. Students consider case studies.
8. Students discuss identity, privacy, ownership, and reputation.
9. Students identify a problem which needs data influence to solve.
10. Students explain possible solutions.
11. Students identify available data sources.
12. Students find a data set and prepare the data.
13. Students identify types of data.
14. Students find sources of data.
15. Students extract data from data sources.
16. Students explain storage of data.
17. Students illustrate structured versus unstructured data.
18. Students prepare solution documents.
19. Students justify solutions orally.
20. Students present visualizations.
21. Students identify building blocks of R.
22. Students identify workspace and files in R.
23. Students evaluate sequences of numbers in R.
24. Students evaluate vectors in R.
25. Students evaluate Missing Values in R.
26. Students evaluate subsetting vectors in R.
27. Students evaluate matrics and data frames in R.
28. Students evaluate logic in R.
29. Students evaluate functions in R.

## Final Course Grading Scale

Grade Percentage

A 90-100%

B 80-89%

C 70-79%

D 60-69%

F lower than 60%

## Faculty Commitment

Faculty members are committed to providing a quality learning experience through thoughtful planning, implementation, and assessment of course activities. They are also committed to being readily available to students throughout the semester by returning e-mails and phone calls within 48 hours and to returning graded course work within a week. Furthermore, they are committed to selecting appropriate course materials and making them available in an organized and timely manner.

## Student Commitment

For every credit hour a student is enrolled in, they should expect to spend at least 2 hours outside of class studying, working on assignments, and preparing for classeach week of the fifteen-week semester. For example, for this three credit-hour class, students can expect to spend three hours per week in class actively engaged in learning the material by participating in face-to-face classes or viewing lectures and instructional material online. In addition, students should expect to spend another six hours per week outside of class completing homework and assignments, posting to discussion boards online, or studying for quizzes and tests. This means students should spend a minimum of 9 hours per week engaged in achieving the learning outcomes for this course. If you are not achieving your desired results in this class, you should consider increasing your prep time outside of class, in addition to using available resources such as instructor office hours and tutoring services.

By registering for this course, you commit yourself to active participation in course activities as well as the submission of all assignments and exams on time. Furthermore, you commit to accessing the course site and checking your JJC e-mail several times a week.