Johnson County Community College  
Course Syllabus  
Mathematics Division  
Math 181: Statistics  
Section 450 (Self-Paced)  
Spring 2020 (CRN 11780)

Instructor Information

Primary Instructor: Prof. Phil Veer  
Campus Phone: 913-469-8500, ext. 4700  
Campus Office: CLB 235  
Campus E-mail: pveer@jccc.edu  
Web Site: http://www.jccc.edu/academics/math-science/mathematics/self-paced.html  
Division Office: CLB 243 (our mailboxes are here)  
Division FAX: 913-469-2537 (delivery to our mailboxes is not instantaneous)  

On Campus Office Hours:  
ATTENTION: Times other than posted office hours are available by appointment. Appointments are strongly recommended.  
Monday: 10 a.m. – 11:30 a.m.  
Tuesday: 1:00 p.m. – 2:00 p.m.  
Wednesday: 10 a.m. – 11:30 a.m.  
Thursday: 1:00 p.m. – 2:00 p.m.  

Other instructors:  
Stacey McMillen, CLB 221, ext. 4959, smcmill9@jccc.edu  
Melissa Weston, CLB 221, ext. 4215, mwleston5@jccc.edu

Course Information

Credit Hours: 3  
Prerequisite: Prerequisite: MATH 171 or MATH 173 or an equivalent course with a grade of "C" or higher or appropriate score on the Compass math placement test  
Supplies: A TI-83, TI-84 (best choice) or TI-Inspire graphing calculator is required.  
Kansas Regents Shared Number Courses Syllabus Statement: KRSN Course Mat 1020  
The learning outcomes and competencies detailed in this course outline or syllabus meet or exceed the learning outcomes and competencies specified by the Kansas Core Outcomes Groups project for this course as approved by the Kansas Board of Regents.  
System Requirements: The minimum software and hardware requirements for installing and using the Hawkes Learning Systems software are found at http://www.hawkeslearning.com/Support/SystemRequirements.htm
**Description:**
This is a beginning course in statistical analysis, the skill of making sense of raw data, constructing graphical representations of data, developing models for making predictions, performing tests to determine significant change and finding intervals for population values. Students will learn the basics of descriptive statistics, probability, sampling, confidence intervals, distributions, hypothesis testing, regression and correlation. Use of technology will be incorporated into course topics.

**Course Objectives:**
After completing this course, the student should be able to:

1. Use basic descriptive statistics to describe the distribution of univariate data indicating shape, center and spread.
2. Use appropriate rules and properties to determine the probability of events.
3. Classify random variables and use their associated probability distribution to solve problems.
4. Explain the importance of random sampling and the Central Limit Theorem for use in inferential statistics.
5. Use inferential statistics to estimate population parameters and perform hypothesis testing.
6. Display and analyze bivariate data using correlation and regression analysis.
7. Use technology to display and analyze data sets.

**Content Outline and Competencies:** [http://catalog.jccc.edu/coursedescriptions/math/#MATH_181](http://catalog.jccc.edu/coursedescriptions/math/#MATH_181)

**Caveats**
To successfully complete the pre-requisite(s) for this course, a student must earn at least a “C” or better in the pre-requisite course(s) or earn an appropriate score on a placement exam. If a student is found not to have successfully fulfilled the prerequisite(s) for this course, the student will not be allowed to enroll in a self-paced course.

**Important Dates**

- **January 14, 2020**
  Last day to pay without being dropped.
  (After this date, you must enroll and pay on the same day)

- 2 weeks from enrollment waiver date: Last day to drop with 100% refund.
- 6 weeks from enrollment waiver date: Last day to drop with no refund and without a withdrawal “W” on transcript.
- **May 21, 2020**
  Last day to complete course without an incomplete.
  (Caution: Incompletes can affect financial aid.)

- 6 months from enrollment waiver date: Last day to drop with a withdrawal “W” on transcript or request a Pass/Fail grade option.
- 9 months from enrollment waiver date: Length of time to complete a self-paced math course.
  (Extensions require extenuating circumstances.)

There is no attendance in a self-paced course. Students will be required to set up a reasonable testing schedule with the instructor. Students are encouraged not to procrastinate and begin the course immediately. By completing the first 2 unit exams within 10 weeks after the enrollment date, you and your instructor can then re-evaluate if self-paced (independent study) is right for you. Your success is important.
Course Requirements

Forty Certify assignments are required to be done in the Hawkes Software. Before a student attempts a Certify, he/she should go through both the Instruct and Practice phases of the software. In the Instruct phase students can read or listen to instruction about the lesson. A video is also available for viewing. (These videos can also be found at www.hawkestv.com) The Practice phase is where students can practice and receive help on the problems. In the Certify phase, students get no help and must complete the Certify Quiz with approximately a 90% success. If a student misses too many questions, they need to practice more and then try the Certify again. Homework from the textbook is optional but it is important to note that the Certifies in Hawkes may not be enough to master the material. Practice is important and a student may need to spend additional time reading the text and practicing problems from the software of text. To get started, you need to purchase the software and create an account with HawkesLearning. When asked, be sure to join the Self-paced Fall ’19 – Sum ’20 section in the software.

Five unit exams and a comprehensive final exam are required.

Most calculators are allowed on exams. It is important to be able to use a TI-83 or TI-84 for the exams. Show your work on your unit and final exams. Incorrect answers cannot receive partial credit without your accompanying work. When using technology, it is good to write down the commands that you are using so I can see how you are getting your answers.

Unit and final exams are taken in the JCCC Testing Center (SC 334), or in another approved location. When using the Testing Center, a photo ID and JCCC ID number are required. Typically, only one exam is available at any time. Usually within 2 school days, your grade will be posted online and your next exam will be available. Weekends and holidays will have a longer response time.

The unit exams may be retaken, but not the final exam. You may take unit exams two times each. If you score below 70% on your first attempt, then your next exam will be a retake. If you score above 70% or have made two attempts, then your next exam will be on the next unit. If you score above 70% and want to retake, you should contact your instructor. When an exam is taken more than once, the highest score for that exam is recorded. All retakes and homework must be completed before the final exam. The final exam is the last requirement for the class and may be taken only once. Taking the final exam, ends the course.

Evaluation: Your course grade will be determined by your exam scores, as follows:

<table>
<thead>
<tr>
<th>TYPE OF WORK</th>
<th>Number</th>
<th>Points each</th>
<th>Total points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certifies</td>
<td>40</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Unit Exams</td>
<td>5</td>
<td>100</td>
<td>500</td>
</tr>
<tr>
<td>Final Exam</td>
<td>1</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td>700</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90% - 100%</td>
</tr>
<tr>
<td>B</td>
<td>80% - 89%</td>
</tr>
<tr>
<td>C</td>
<td>70% - 79%</td>
</tr>
<tr>
<td>D</td>
<td>60% - 69%</td>
</tr>
<tr>
<td>F</td>
<td>0% - 59%</td>
</tr>
</tbody>
</table>
All JCCC Math students are expected to follow the Student Code of Conduct
http://www.jccc.edu/about/leadership-governance/policies/students/student-code-of-conduct/student-code-conduct.html,
and the Mathematics Division Policies. Grade penalties may be assessed for incidents of academic dishonesty. Further action may be taken based on the severity of the incident.

Motivation

The biggest hurdle in a self-paced math class is having the self-discipline to study on your own. Set goals for each chapter, and try to stick to them. Set aside regular times each week to work on your math, and don't let them get bumped by other activities. Read the textbook and Instruct phase of the software, study the examples, and work through the Practice phase in Hawkes until you have mastered the concepts. Seek help when you find the going difficult. If you feel the urge to put your work off for a week, beware! Procrastination can easily become a habit.

Assistance

- Your instructor can help you by email or telephone, or you may want to set up an appointment to visit in person (necessary to view your previously taken tests).
- The Math Resource Center, or MRC (CLB 212), is available for extra assistance, including free tutoring, group help sessions, videotapes, solutions manuals, and computer software.
- Videos available for this course include:
  - Graphing Calculator videotapes produced at JCCC, and available for viewing only in the MRC. Ask for the Introduction, Graphing, or Programming tape, for the TI-82, TI-83, TI-85, or TI-86 calculator. The TI-83 Introduction and Graphing tapes are also available from the JCCC library for a 3-day checkout.
  - Section videos are available in the software and at www.hawkestv.com
- Other assistance available includes:
  - JCCC provides a range of services to allow persons with disabilities to participate in educational programs and activities. If you are a student with a disability and if you are in need of accommodations or services, it is your responsibility to contact Access Services and make a formal request. To schedule an appointment with an Access Advisor or for additional information, you can contact Access Services at (913) 469-3521 or accessservices@jccc.edu. Access Services office is located in the Success Center on the second floor of the Student Center.

Campus Safety

Classroom and campus safety are of paramount importance at Johnson County Community College, and are the shared responsibility of the entire campus population. Please review the following:

- **Report Emergencies:** to Campus Police (available 24 hours a day)
  - In person at the Carlsen Center (CC115)
  - Call 913-469-2500 (direct line) – *Tip: program in your cell phone*
  - Phone app - download JCCC Guardian (the free campus safety app: www.jccc.edu/guardian) instant panic button and texting capability to Campus Police
  - Anonymous reports to KOPS-Watch www.jccc.edu/kops or 888-258-3230
• **Be Alert:**
  o You are an extra set of eyes and ears to help maintain campus safety
  o Trust your instincts
  o Report suspicious or unusual behavior/circumstances to Campus Police (see above)

• **Be Prepared:**
  o Identify the red/white stripe Building Emergency Response posters throughout campus and online that show egress routes, shelter, and equipment
  o View A.L.I.C.E. training (armed intruder response training - Alert, Lockdown, Inform, Counter and/or Evacuate) – Student training video: [https://www.youtube.com/watch?v=kMcT4-nWSq0](https://www.youtube.com/watch?v=kMcT4-nWSq0)
  o Familiarize yourself with the [College Emergency Response Plan](#)

• **During an Emergency:** Notifications/Alerts (emergencies and inclement weather) are sent to all employees and students using email and text messaging
  o students are automatically enrolled, see [JCCC Alert - Emergency Notification](#)

**Weapons Policy:** Effective July 1, 2017, concealed carry handguns are permitted in JCCC buildings subject to the restrictions set forth in the Weapons Policy. Handgun safety training is encouraged of all who choose to conceal carry. Suspected violations should be reported to JCCC

**Section**    **Topic**

1.1 Getting Started
1.2 Data Classification
1.3 The Process of a Statistical Study
1.4 How to Critique a Published Study
2.1 Frequency Distributions
2.2a Graphical Displays of Data: Pie Charts & Bar Graphs
2.2b Graphical Displays of Data: Histograms, Polygons, Stem and Leaf Plots
2.3 Analyzing Graphs

**EXAM 1**

3.1 Measures of Center
3.2a Measures of Dispersion
3.2b Applying the Standard Deviation
3.3 Measures of Relative Position
4.1 Classical Probability
4.2 Addition Rules of Probability
4.3 Multiplication Rules of Probability

**EXAM 2**
<table>
<thead>
<tr>
<th>Section</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1</td>
<td>Discrete Random Variables</td>
</tr>
<tr>
<td>5.2</td>
<td>Binomial Distribution</td>
</tr>
<tr>
<td>6.1</td>
<td>Introduction to the Normal Distribution</td>
</tr>
<tr>
<td>6.2</td>
<td>Finding Area Under a Normal Distribution</td>
</tr>
<tr>
<td>6.3</td>
<td>Finding Probability Using a Normal Distribution</td>
</tr>
<tr>
<td>6.4</td>
<td>Finding Values of a Normally Distributed Random Variable</td>
</tr>
<tr>
<td>7.1</td>
<td>Central Limit Theorem (CLT) – No Certify, but important to do</td>
</tr>
<tr>
<td>7.2</td>
<td>Central Limit Theorem with Means</td>
</tr>
<tr>
<td>7.3</td>
<td>Central Limit Theorem with Proportions</td>
</tr>
<tr>
<td></td>
<td><strong>EXAM 3</strong></td>
</tr>
<tr>
<td>8.1</td>
<td>Estimating Population Means (Sigma Unknown)</td>
</tr>
<tr>
<td>8.2</td>
<td>Students $t$-distribution</td>
</tr>
<tr>
<td>8.3</td>
<td>Estimating Population Means (Sigma Unknown)</td>
</tr>
<tr>
<td>8.4</td>
<td>Estimating Population Proportions</td>
</tr>
<tr>
<td>9.2</td>
<td>Comparing Two Population Means (Sigma Unknown)</td>
</tr>
<tr>
<td>9.3</td>
<td>Comparing Two Population Means (Sigma Unknown, Dependent Samples)</td>
</tr>
<tr>
<td>9.4</td>
<td>Comparing Two Population Proportions</td>
</tr>
<tr>
<td></td>
<td><strong>EXAM 4</strong></td>
</tr>
<tr>
<td>10.1</td>
<td>Fundamentals of Hypothesis Testing</td>
</tr>
<tr>
<td>10.3</td>
<td>Hypothesis Testing for Population Means (Sigma Unknown)</td>
</tr>
<tr>
<td>10.4</td>
<td>Hypothesis Testing for Population Proportions</td>
</tr>
<tr>
<td>10.6</td>
<td>Chi-Square Test for Goodness of Fit</td>
</tr>
<tr>
<td>10.7</td>
<td>Chi-Square Test for Association</td>
</tr>
<tr>
<td>11.2</td>
<td>Hypothesis Testing: Two Population Means (Sigma Unknown)</td>
</tr>
<tr>
<td>11.3</td>
<td>Hypothesis Testing: Two Population Means (Sigma Unknown, Dependent Samples)</td>
</tr>
<tr>
<td>11.4</td>
<td>Hypothesis Testing: Two Population Proportions</td>
</tr>
<tr>
<td>12.1</td>
<td>Scatter Plots and Correlation</td>
</tr>
<tr>
<td>12.2</td>
<td>Linear Regression</td>
</tr>
<tr>
<td></td>
<td><strong>EXAM 5</strong></td>
</tr>
<tr>
<td></td>
<td><strong>COMPREHENSIVE FINAL EXAM</strong></td>
</tr>
</tbody>
</table>