 **Course Syllabus**

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| **A.** | **Course Number-Section Number, and Course Title:** | **MT143 IS1**  **INTRODUCTORY STATISTICS I** |

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| **B.** |  |  |
|  | **Instructor Name:** | **Colleen P. Quinn** |

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| **C.** | **Contacting the Instructor –** |  |
|  | Campus and Office Number: | **South, 3201d** |
|  | Instructor Phone: | **851-1652** |
|  | Department Secretary Phone: | **851 – 1782** |
|  | e-Mail: | [**quinn@ecc.edu**](mailto:quinn@ecc.edu) |
|  | Office Hours: | **By appointment only** |

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| **D.** | **Course Description:** | This four-credit course includes concepts and computer skills which are valuable in a variety of life and work applications, as well as in more advanced coursework. This course will include topics from descriptive and inferential statistics, such as graphing, measures of central tendency and dispersion, probability frequency distributions, Central Limit Theorem, the normal distribution, sampling concepts, estimation, hypothesis testing, linear regression, correlation, utilization of a statistical software package, interpretation of computer output, and explaining and interpreting statistical analysis.  Prerequisites: MT 013 or appropriate college equivalent and /or appropriate mathematics level code.\*  F/S (C, N, S)   \*Level code is determined by Mathematics Department placement test and/or successful completion of math courses. |

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| **E.** | **Text / Course Materials:** | Require   1. Internet Access to Blackboard. This class is 100% online. 2. **TEXTBOOK:** *Statistics using technology by Kathryn Kozak.* ISBN: 978-1-329-75725-7   This text is an OER which is ***free*** to view online or may be printed cheaply from Lulu.com for about $25.   1. **Graphing Calculator** – I recommend the TI – 84. There is a **free** emulator provided within the course. 2. **A STUDENT VERSION OF MINITAB*:***  This is a free download.   **This is necessary to complete required labs and projects at home. Minitab works best on a P C. There is a “lite” version for Macs, but most students find this difficult. Using a PC will make this course significantly easier to navigate the technology required.**  **Download instructions for Minitab:**    You will find Minitab at the SUNY Erie helpdesk. You may need to copy and paste this URL into your internet browser or simply right click the link and choose ‘Open Hyperlink’.  Minitab for Windows: <https://sunyecc.service-now.com/sp?id=kb_article&sys_id=98c16899db725f40e6f718df4b961981>  Minitab Express for Mac Users: <https://sunyecc.service-now.com/sp?id=kb_article&sys_id=cd49f46bdbba9780e6f718df4b9619aa>  ·     When you download the file it will do so as a zipped file.  For those of you who may not know what to do next...to   save the zipped file to your desktop (for ease of finding).  On the zipped file simply right click and choose "extract all".  Again, save the extracted file to the desktop.  Before running the installer, make sure that the included license file (minitab.lic) is in the same folder as the Minitab 18 installer and double-click the Minitab 18 installer.  If you have trouble, please call the computer help desk: (719) 851 -1852 |

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| **F.** | **Library Resources:** |
|  | Minitab is available in all of the library computer labs on each campus (and also each Math Tutoring Lab).  It is located in the "Math Applications" folder on the desktop (If you cannot find it just ask the librarian/lab tech and they can help you find it; DO NOT leave the library without asking for help)  Here is a link for the various computer labs at each campus. Call the one you plan to go to ahead of time to verify their open lab hours. <https://www.ecc.edu/computing-services/> |
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| **G.** | **Course and Laboratory Outcomes:** |
|  | **COURSE OUTCOMES:**  At the conclusion of this course the student should be able to  1. Define basic statistical terms.  2. Use key characteristics of a distribution to quantify the shape, center, and spread of the distribution. 3. Compute probabilities and apply the concepts of probability to confidence intervals and hypothesis  tests.  4. Use a table, MINITAB, and the binomial probability density function to compute expected values and probabilities associated with binomial experiments.  5. Use a table of areas, and MINITAB to compute relative frequencies and percentages associated with a continuous random variable with a normal distribution.  6. Use hypothesis tests to weigh inferences concerning means and proportions.  7. Use a confidence interval to estimate and measure the accuracy of means and proportions.  8. Use a scatter plot of bivariate data to visualize the relationship between variables, use the correlation coefficient to measure the strength and direction of the relationship, and compute and use a linear function (where appropriate) to describe a linear relationship between the variables and make predictions.  **Laboratory Outcomes:**  At the conclusion of this course the student should be able to   1. Draw a histogram, stem-and-leaf diagram, dotplot, boxplot, and compute measures of central tendency and dispersion.   2. Make random selections of data and simulate experiments.  3. Compute probabilities for various distributions.  4. Compute normal distributions and sampling distributions of the mean.  5. Conduct hypothesis tests to weigh inferences concerning means and proportions.  6. Find interval estimates concerning means and proportions.  7. Draw a scatter plot and regression line of a linear relationship between two variables, measure  the strength and direction of the relationship, and where appropriate, make predictions using  the aforementioned relationship. |

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| **H.** | **SUNY Erie Institutional Learning Outcomes (ILOs):** |
|  | Learning Outcome 5. Quantitative Reasoning-LV3 Related Course Outcomes: 1-8  Learning Outcome 6. Technological Competence Related Course Outcomes: -1-7 |

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| **I.** | **Testing / Means of Evaluation:**  Your grade is a weighted average comprised of the following:  Tests – 50%  Minitab Lab/Project work – 20%  Quizzes– 20%  Homework– 10% | Grade:   |  | | --- | |  |   **Letter Grade Percent Letter Grade Percent**  **A 92 – 100 C 72 – 77.99**  **A - 90 – 91.99 C- 70 – 71.99**  **B+ 88 – 89.99 D+ 68 – 69.99**  **B 82 – 87.99 D 62 – 67.99**  **B- 80 – 81.99 D- 60 – 61.99**  **C+ 78 – 79.99 F Below 60** |

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| **J.** | **Grading Determination:** |
|  | |  | | --- | | **Evaluation of Student Learning –** |   Homework: We will use an online homework program through lumen learning to complete homework – linked to our course in Blackboard. Homework MUST be completed to gain a better understanding of the material presented.  Homework will be crucial to your success in this course.  Students who succeed in Statistics do so because they keep up with the material and complete their homework!!!    ***Remember: Homework is the key to success in a math class!***  Quizzes: There will be a quiz given every unit; you will have 3 opportunities to take each quiz. Only the highest of the 3 scores will count towards your final average. You will see success on quizzes if you complete the weekly homework assignments (see above).  The quizzes MUST be completed in the time frame allowed and will not be accepted if late. If you do not take a quiz by its deadline, you will receive a grade of zero. There are no make-ups. The dates for these exams can be found in Blackboard on the “Due Dates” Pdf File.  Minitab Assignments: will be assigned on a Unit basis.  **Only ON TIME submissions receive full credit.** Students will lose 2% each day the assignment late. Late submissions will not be accepted at the end of the semester. All deadlines are clearly indicated at the beginning of each Unit and can be found in Blackboard on the “Due Dates” Pdf File at the top of the lessons page.  \*\*ALL Minitab assignments that are turned in more than 24 hours before the due date will be corrected and returned to students for a chance to make corrections before the due date.  Tests: There will be 4 tests given in class. The tests will include both textbook and Minitab material. The last test will be a cumulative final exam. Details will be posted on the course calendar. |

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| **K.** | **Attendance Requirements:** |
|  | Although this is an on-line course, ECC uses Blackboard for tracking student participation. I would highly recommend logging into Blackboard several times per week to access course materials and view any important email messages or announcements. I will use Blackboard logins for attendance reporting. |

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| **L.** | **Classroom Expectations:** |
|  | Complete all assigned readings and assignments and be prepared to make sense of questions and the texts; participate actively in online class discussions; weekly, consistent participation and social presence is extremely important.  Follow appropriate online netiquette and respect for your fellow learners. |

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| **M.** | **Students with Disabilities:** | | | |
|  | SUNY Erie Community College recognizes the right of qualified individuals with disabilities to access an education through appropriate accommodations. Some examples of disabilities are physical limitations, chronic medical conditions, mental health disorders (ie anxiety, depression, panic attacks, PTSD, etc), learning disorders, Attention Deficit Disorder, head injuries, Substance Abuse Recovery, etc. The Student Access Center Counselors encourage you to contact them if you feel like your ability to participate in class will be effected. The counselor will provide you with information which you will share with your instructor and which will allow appropriate academic accommodations to be made for you.  The student is required to provide the appropriate forms from the Student Access Center to the instructor. | | | |
|  | **City Campus**  Susan McLaughlin | Student Access Center:  121 Ellicott St. | Room 266 | 851-1189 |
|  | **North Campus**  Aaron Garmon | Student Access Center:  Spring Center | Room 213 | 851-1495 |
|  | **South Campus** | Counseling Center:  Building 3 | Room 3120 | 851-1933 |

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| **N.** | **Topical Outline:** |
|  | TOPICS: COMPUTER AND CALCULATOR LAB TOPICS: COURSE OUTLINE ACTIVITIES  I. Introduction I. Introduction  A. Course requirements A. Getting familiar with Minitab  B. What is statistics B. Saving and retrieving files  C. Basic definitions II. Organization of Data  II. Organization of data A. Grouped-data tables  A. Frequency distributions B. Histograms  B. Graphic representations C. Dot Plot  III. Measures of Central Tendency D. Pie Charts  A. Three measures of central tendency E. Bar Graphs  B. Comparisons of mean, median, mode F. Stem-and-leaf diagrams  IV. Measures of dispersion and position G. Boxplots  A. Measures of dispersion III. Descriptive Statistics  B. Chebyshev's Theorem A. Measure of Central Tendency  C. Empirical Rule 1. Mean  D. Measures of position 2. Median 3. Mode  V. Probability B. Measures of Dispersion and Position  A. Sample spaces and events 1. Range  B. Rules of elementary probability 2. Sample Standard Deviation  C. Compound events 3. Five Number Summary  D. Addition and multiplication rules IV. Probability  E. Conditional probability A. Simulation of probability  experiments  VI. Discrete Probability Distributions V. Discrete Probability Distributions  A. General definition of a probability distribution A. Binomial probabilities  B. Probability distributions for discrete random variables B. Poisson probabilities (optional)  C. Expected value of discrete random variables VI. Normal Probability Distribution  D. Mean and standard deviation of a discrete A. Simulating normally  probability distribution distributed variables  E. Binomial probability distribution  F. Other discrete probability distributions (optional) B. Obtaining probabilities for  normally distributed values  C. Finding observations given a specified area  VII. Normal Probability Distribution under the normal curve  A. The standard normal distribution D. Normal probability plots (optional)  B. Non-standard normal distribution VII. Estimation and Sample Sizes  C. Normal approximation to the binomial variable A. One sample z-interval  D. The Central Limit Theorem B. One sample t-interval  VIII. Estimation and Sample Sizes C. Confidence interval for one population  proportion  A. Point and interval estimates of means VIII. Hypothesis Testing  B. Point and interval estimates of proportions A. One sample z-test of the mean  C. Sample sizes needed for interval estimates B. One sample t-test of the mean  IX. Hypothesis Testing C. Chi-square goodness of fit test  (optional)  A. Type of errors D. Chi-square independence test  B. Testing of a claim about a mean (z-test & t-test) (optional)  C. P values E. Hypothesis test for population proportions  D. Tests of proportions F. Two sample t-tests (optional)  E. Chi-square procedures (optional) IX. Linear Regression and Correlation  F. Tests of means (optional) A. Scatter diagram and fitted line plot  B. Obtaining linear correlation coefficient  X. Linear Correlation and Regression C. Obtaining regression equations  A. Correlation coefficient D. Obtaining coefficient of determination  B. Linear regression XI. Evaluation  C. Inferences concerning correlation and regression A. Tests and/or  D. Coefficient of Determination (Optional) B. Assignments  XI. Evaluation C. Projects |
|  | **TOPICAL OUTLINE:**  TOPICS: COMPUTER AND CALCULATOR LAB TOPICS: COURSE OUTLINE ACTIVITIES  I. Introduction I. Introduction  A. Course requirements A. Getting familiar with Minitab  B. What is statistics B. Saving and retrieving files  C. Basic definitions II. Organization of Data  II. Organization of data A. Grouped-data tables  A. Frequency distributions B. Histograms  B. Graphic representations C. Dot Plot  III. Measures of Central Tendency D. Pie Charts  A. Three measures of central tendency E. Bar Graphs  B. Comparisons of mean, median, mode F. Stem-and-leaf diagrams  IV. Measures of dispersion and position G. Boxplots  A. Measures of dispersion III. Descriptive Statistics  B. Chebyshev's Theorem A. Measure of Central Tendency  C. Empirical Rule 1. Mean  D. Measures of position 2. Median 3. Mode  V. Probability B. Measures of Dispersion and Position  A. Sample spaces and events 1. Range  B. Rules of elementary probability 2. Sample Standard Deviation  C. Compound events 3. Five Number Summary  D. Addition and multiplication rules IV. Probability  E. Conditional probability A. Simulation of probability  experiments  VI. Discrete Probability Distributions V. Discrete Probability Distributions  A. General definition of a probability distribution A. Binomial probabilities  B. Probability distributions for discrete random variables B. Poisson probabilities (optional)  C. Expected value of discrete random variables VI. Normal Probability Distribution  D. Mean and standard deviation of a discrete A. Simulating normally  probability distribution distributed variables  E. Binomial probability distribution  F. Other discrete probability distributions (optional) B. Obtaining probabilities for  normally distributed values  C. Finding observations given a specified area  VII. Normal Probability Distribution under the normal curve  A. The standard normal distribution D. Normal probability plots (optional)  B. Non-standard normal distribution VII. Estimation and Sample Sizes  C. Normal approximation to the binomial variable A. One sample z-interval  D. The Central Limit Theorem B. One sample t-interval  VIII. Estimation and Sample Sizes C. Confidence interval for one population  proportion  A. Point and interval estimates of means VIII. Hypothesis Testing  B. Point and interval estimates of proportions A. One sample z-test of the mean  C. Sample sizes needed for interval estimates B. One sample t-test of the mean  IX. Hypothesis Testing C. Chi-square goodness of fit test  (optional)  A. Type of errors D. Chi-square independence test  B. Testing of a claim about a mean (z-test & t-test) (optional)  C. P values E. Hypothesis test for population proportions  D. Tests of proportions F. Two sample t-tests (optional)  E. Chi-square procedures (optional) IX. Linear Regression and Correlation  F. Tests of means (optional) A. Scatter diagram and fitted line plot  B. Obtaining linear correlation coefficient  X. Linear Correlation and Regression C. Obtaining regression equations  A. Correlation coefficient D. Obtaining coefficient of determination  B. Linear regression XI. Evaluation  C. Inferences concerning correlation and regression A. Tests and/or  D. Coefficient of Determination (Optional) B. Assignments  XI. Evaluation C. Projects |
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| **O.** | **Starfish® Integrated Course:** | SUNY Erie Community College has partnered with Starfish® Retention Solutions as a continual effort to enable student success, both in the classroom and in meeting overall educational goals. The Starfish® system may be used to provide feedback on course progress. Throughout the semester, emails may be sent via Starfish® regarding grades, performance in the classroom, and access to supplemental services, such as library resources and skills labs. This information will be shared with student support professionals on campus who will reach out to help ensure your success at SUNY Erie. Starfish® is also a way to receive kudos, designed to encourage progress. Please be sure to read your SUNY Erie email on a timely basis, so you are aware of your progress in this course. |

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| **P.** | **Academic Integrity:** | SUNY Erie Community College assumes that students will behave with integrity. Academic dishonesty, as defined in the Student Code of Conduct, will be actionable by the department and faculty, working within the procedures defined by the college. Academic dishonesty accusations must be documented and investigated. Students have the right to dispute accusations of academic dishonesty through the student academic grievance policy. |

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| **Q.** | **Syllabus Prepared By:**  **Last Updated Date:** | Colleen P. Quinn  April 29, 2019 |

\*\*Syllabus is subject to change