

## ADVANCED STATISTICS MAT 4825 SPRING 2026

*Dual Credit with BSU MATH 221*

Mr. Asante

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### **Office Hours:**

Monday: 4:00 pm – 5:00 pm

Tuesday: 10:30 am – 1:30 pm

Wednesday: 4:00 pm – 5:00 pm

Thursday: 11:00 am – 4:00pm

Friday: 4:00 pm – 5:00 pm

*\*Also by appointment*

*If my door is open feel free to stop in!*

### **Required materials:**

**Textbook:** *Stats: Modeling the World* by Bock, Velleman, and De Veaux. Fourth edition. Pearson Education, Inc., 2015. ISBN 978-0-321-85401-8

**Calculator:** Graphing calculator with statistical test capabilities, like Casio FX-9750GIII, TI-84, or comparable.

### **Course objectives:**

This course covers the objectives of the Advanced Placement Statistics examination. The topics are broadly organized into exploring data, obtaining data (experiments and surveys), probability, and statistical inference.

### **Outline of content:**

#### *I. Exploring data.*

Describing and comparing distributions, Normal distributions as models or data, describing the relationship between two quantitative variables, predicting one quantitative variable from another, linear and nonlinear models of relationships, relationships between two categorical variables.

#### *II. Gathering data.*

Samples, surveys, experiments.

#### *III. Probability*

Simulations, randomness, probability models, random variables, binomial distributions, geometric distributions, sampling distributions, central limit theorem.

#### *IV. Statistical inference*

Confidence intervals, significance tests, inference for the mean of a population, comparing two means (independent samples and matched pairs), inference for a population proportion, comparing two proportions, test for goodness of fit, test for homogeneity of proportions, test for independence, inference about a regression model, inference about prediction, checking regression assumptions.

### **Attendance Policy:**

Attendance is mandatory. Students may receive excused absences at the professional discretion of the school nurse, the associate director of mental health services, the associate director of college counseling and student engagement, the director of academic affairs, and the executive director of the Indiana Academy. Unexcused absences occur when students miss class without prior approval from the aforementioned designated school officials. Continued absences (both excused and unexcused) from Academy classes increase the likelihood of unsuccessful completion.

Alongside steady attendance, students are expected to maintain consistent healthy habits of decorum, respect, and kindness towards their classmates, instructors, and teaching assistants. When students fail to meet these classroom behavioral standards and academic habits, it is the expectation faculty engage appropriately to bring quick and immediate resolution. When students consistently fail to meet these behavioral standards and academic habits in the classroom, an administrative consequence ladder will be adopted, and recorded, in attempt to administratively address, engage, and rectify ongoing challenges.

You are required to attend every class session, in accordance with Indiana Academy attendance policies. I understand clocks can be a minute or two off, so I will grant leniency for the first one or two minutes of class, but after 15 minutes you are officially “Absent.” However, class time is very valuable, so I strongly encourage you to get to class no matter how late you may be. This will make your process of learning what was covered in class that day much easier. Sleeping in class will result in an unexcused absence without notice.

**Absence Policy:**

It is the policy of the Indiana Academy that any absence from class is unexcused, except for illness, death in the family, college or school-related activities, and extenuating circumstances. When a student is absent from a class, the instructor reports the student absence to the Faculty Attendance Coordinator in the Office of Academic Affairs. Unless the absence is excused by a school official, it is considered unexcused. The decision as to whether an absence is excused is not determined by the instructor. Four or more unexcused absences in any particular class a student takes will lead to academic and residential consequences to be determined by the Office of Academic Affairs and the Office of Residential Life that may include detention, residential groundings, parent/principal conference, among others.

**Evaluation:**

In this course you will be given a homework assignment every night, periodic quizzes, and an exam after every unit. The homework assignments are due the following class day, as listed on the course assignment schedule. The quizzes will generally take about 20 minutes and be worth 20 points each. The exams are not cumulative in the sense that you will see questions directly from previous units, but statistics especially is a cumulative discipline so you will need to apply knowledge from previous units to help solve new problems. The due date for the projects will be communicated. The final exam will take place on the Final Exam Period, May 4 – 8, 2026.

**Grading Scheme:**

Your grade in this course will be determined by the following percentage values.

Activities – 10%  
Projects – 10%  
Homework – 20%  
Quizzes – 20%  
Exams – 20%  
Final Exam – 20%

Letter grades are determined by the following scale:

93-100	A
90-92	A-
87-89	B+
83-86	B
80-82	B-
77-79	C+
73-76	C
70-72	C-
69 and below	D*

**Make-up work Policy:**

Since some of the work will be done outside the classroom or in groups, late work should not be much of an issue. If you and/or your group need an extension you must contact me as early in advance of the deadline as you can to arrange that. If you will be missing an exam you must contact me as soon as you know you will be missing it and schedule a time for you to take the exam. **In the event of an unexcused absence, missed homework assignments, quizzes, exams, etc. will NOT be accepted for credit** (except when missed work would fail the student). Make-up quizzes, exams, etc. generally are not taken during class time.

**Cell Phone Policy:**

Students who have cellphones with them must turn them OFF, and place them in the provided receptacle when they enter the classroom. They will pick them up when they leave the classroom. There are two exceptions:

- Faculty can allow students to retain and use their cellphones for accessing educational material or other relevant activities during a class period. Any other use of cell phones that is not specifically approved by the instructor is strictly prohibited.
- Students who have a medical need, or documented learning accommodations that permit phone usage, may keep their cellphones on them if permission is granted from the Nurses' office or administrators.

**Other policies:**

- Laptops/tablets/other internet devices will be helpful in class for some activities and simulations. When you use your laptop, please keep the volume turned off, and use it exclusively for class related things. This means no email, Facebook, Twitter, games, etc. While on the device in class do not hide toolbars; keep all items you are working on visible on the screen and available for teacher inspection. Keep the internet device turned off and closed during tests

and quizzes. You are expected to bring your graphing calculator to class EVERY DAY, it will be absolutely necessary.

- Any and all work on exams, quizzes, and projects MUST be your own!

### **Academic Integrity**

I support and abide by the academic integrity policy as set forth in the Student Handbook. While you are encouraged to work together in this course often, here are a few examples of behavior subject to review under the Academic Integrity policy:

- Copying someone's work and turning it in as one's own.
- The use of aids or other materials on quizzes and exams without expressed permission.
- The use of calculators when explicitly asked not to do so.
- Copying another person's work or answers on a quiz or exam.
- Giving information about the content of quizzes or tests to students yet to take the exam or solicitation of such information is a severe violation of academic honesty standards.

### **Artificial Intelligence Policy:**

- Artificial intelligence (AI) provides exciting new tools for academic work.
- It is appropriate to use AI to explore solutions and to discover methods of approaching problems in homework situations. In such cases, AI should be a learning tool that increases and supports understanding.
- AI also poses significant dangers for academic integrity. Passing off as your own any research, words, ideas, work, or solutions which you did not create is plagiarism. Whether the source is print, internet content, or generated by AI, copying work from outside resources and presenting it as your original work is not allowed. Use of AI should be documented.
- In quiz or test situations, calculators or other materials should not be used unless the instructor expressly communicates that such aides are allowed on that section of a quiz or test.

### **IA Wireless Device Draft Policy**

Pursuant to Indiana Code 20-26-5-40.7, The Indiana Academy for Science, Mathematics, and Humanities prohibits student use of wireless communication devices for non-instructional purposes in the classroom. As such, any and all portable wireless devices, that have the capability to provide voice, messaging, or other data communication between two or more parties, must only be used for academic purposes directly tied to the classroom activity or related educational task. Exceptions to this wireless device policy are eligible through academic accommodations, individualized education programs, or with instructor approval permitting the use of a wireless device for justification related to health, safety, and/or well-being. The improper use of a wireless device in an active classroom setting is subject to disciplinary action including but not limited to; a verbal warning, temporary seizure of said device by a school official, an unexcused absence for the class in question, written communication to parent/guardian, among other elevated consequences for repeated improper use.

### **Ball State University Beneficence Pledge:**

Ball State University aspires to be a university that attracts and retains outstanding faculty, staff, and students. Ball State is committed to ensuring that all members of the campus community are welcome through our practice of valuing the varied experiences and worldviews of the people whom we serve. We promote a culture of respect and civil discourse as evident in our Beneficence Pledge. As a reflection of Ball State's commitment to respect, civil discourse, and the Beneficence Pledge, inclusiveness at the Indiana Academy emerges as one of the priorities of our living and learning community. We strive to exist together respectfully and compassionately, creating an environment where every member can thrive.

**COURSE SCHEDULE FOR STATISTICS (MAT 4825)**

<b>01/05</b>	<b>Syllabus</b>	<b>Chpt1 / Chpt2</b>	<b>Chpt3</b>	<b>Chpt4 / <i>Quiz 1</i></b>
<b>01/12</b>	<b>Chpt5</b>	<b>Chpt5</b>	<b><i>Exam Review</i></b>	<b><i>Exam 1</i></b>
<b>01/19</b>	<b><i>MLK Day</i></b>	<b>Chpt6</b>	<b>Chpt7</b>	<b>Chpt8</b>
<b>01/26</b>	<b>Chpt9 / <i>Quiz 2</i></b>	<b>Chpt10 / <i>Project 1</i></b>	<b>Chpt11</b>	<b><i>Extended Weekend</i></b>
<b>02/02</b>	<b><i>Exam Review</i></b>	<b><i>Exam 2</i></b>	<b>Chpt11</b>	<b>Chpt12</b>
<b>02/09</b>	<b>Chpt12 / <i>Quiz 3</i></b>	<b>Chpt13</b>	<b>Chpt13</b>	<b><i>Exam Review</i></b>
<b>02/16</b>	<b><i>Exam 3</i></b>	<b>Chpt14</b>	<b>Chpt15</b>	<b>Chpt15</b>
<b>02/23</b>	<b>Chpt16</b>	<b>Chpt16 / <i>Quiz 4</i></b>	<b>Chpt17</b>	<b>Chpt18</b>
<b>03/02</b>	<b><i>Spring Break</i></b>	<b><i>Spring Break</i></b>	<b><i>Spring Break</i></b>	<b><i>Spring Break</i></b>
<b>03/09</b>	<b><i>Exam Review</i></b>	<b><i>Exam 4</i></b>	<b>Chpt18</b>	<b>Chpt19</b>
<b>03/16</b>	<b>Chpt19 / <i>Quiz 5</i></b>	<b>Chpt20</b>	<b>Chpt20</b>	<b>Chpt21</b>
<b>03/23</b>	<b>Chpt21</b>	<b>Chpt21 / <i>Quiz 6</i></b>	<b>Chpt22</b>	<b>Chpt22</b>
<b>03/30</b>	<b>Chpt22</b>	<b><i>Exam Review</i></b>	<b><i>Exam 5</i></b>	<b>Chpt23</b>
<b>04/06</b>	<b><i>Extended Weekend</i></b>	<b>Chpt23</b>	<b>Chpt24</b>	<b>Chpt24</b>
<b>04/13</b>	<b>Chpt24 / <i>Quiz 7</i></b>	<b>Chpt25</b>	<b>Chpt25</b>	<b><i>Exam Review</i></b>
<b>04/20</b>	<b><i>Exam 6</i></b>	<b>Chpt26</b>	<b>Chpt26</b>	<b><i>Final Exam Review</i></b>
<b>04/27</b>	<b><i>Final Exam Review</i></b>	<b><i>Final Exam Review</i></b>	<b><i>Final Exam Review</i></b>	<b><i>Final Exam Review</i></b>
<b>05/04</b>	<b><i>Final Exam</i></b>	<b><i>Final Exam</i></b>	<b><i>Final Exam</i></b>	<b><i>Final Exam</i></b>

*The teacher reserves the right to change this syllabus as situations arise,  
or add to it as needed.*