



# E370 - Statistical Analysis For Business and Economics

Indiana University, Department of Economics

Fall 2022, Syllabus  
Section 10906

**Instructor:** Alireza Marahel  
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**Class Dates:** 08/22/22 – 12/16/22  
**Class Time:** MW 4:45PM – 6PM  
**Class Location:** Lindley Hall (LH) 008

**Office Hours (in-person):** T 10:00AM – 11:00AM and by appointment<sup>1</sup>

## GENERAL INFORMATION

**Course Description:** The overall goal of this course is to introduce you to the discipline of statistics as a science of understanding and analyzing economic data and not as a branch of mathematics. The class is designed to *provide you with the tools* needed to answer real-world questions and better understand the process of statistical inference in economics. While a good understanding of these universal statistical tools is its own reward and can find applications in many areas<sup>2</sup>, our course will mostly discuss examples pertaining to the economics and business world (you are welcome to think about other applications and consult with me if necessary). Additionally, our focus in this course is not an in-depth analysis of a specific field of economics but *the tools* used in different areas. Therefore, be ready to see examples from different fields of economics (health, education, labor, etc.).

Our journey will start from graphical, tabular, and numerical summaries of different types of data and will take us through the topics of probability theory, population and sampling distributions, hypothesis testing, and regression analysis.

**Course Objectives:** At the completion of the course, you are expected to be able to:

- Translate between plain English and statistical terms and concepts before applying statistical tools. In other words, you are expected to be able to identify key information in the description of the economic problem and write down this information in statistical language/notation (regardless of the wording of the economic situation);
- Select a suitable statistical approach to analyze a new situation;
- Represent data using tables and graphs, and summarize data using a variety of numerical measures;
- Understand (and implement) the process of statistical inference;

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<sup>1</sup>If the office hours conflict with your schedule, please ask for an appointment. You can contact me via e-mail to ask questions but please realize that we may not be able to respond right away.

<sup>2</sup>For example, by introducing a variety of ways to summarize data in the large datasets, our course develops data analysis and presentation skills, and teaches you to express ideas in a language broadly understood by the researchers in biology, physics, sociology, and other areas.

- Understand (and perform) basic model building using regression tools;
- Understand the role of underlying assumptions in statistical analyses;
- Use Excel to produce graphs and calculate numerical measures in relation to your analysis. Proficiently read outputs produced by Excel add-ins;
- Interpret quantitative results of statistical analyses for the audience in plain English.

**Prerequisites:** MATH-M 118 (or equivalent) is required.

## TEXTBOOK

**Recommended Textbook:** Robert A. Donnelly. *Business Statistics*, Pearson. 3<sup>rd</sup> Edition, 2019 (ISBN-13: 978-0134685267).

Please note that you have access to the eText as a part of this course. Your copy is available on our Canvas page and you can access it through the link "*IU eTexts (Unizin Engage)*" on the left-sidebar. For more information and the Engage e-reader tutorial, I recommend you review "The Student Guide to IU eTexts"<sup>3</sup>.

If you prefer, you can purchase a print version of the textbook. In case of a print version, 2<sup>nd</sup> edition of the textbook is also available for purchase. Textbook material of the 2<sup>nd</sup> and 3<sup>rd</sup> editions are very similar. So, either edition will suit to study theoretical concepts of our class. However, examples and practice problems may differ between editions.

**Optional Reading:** Optional readings (readings recommended for boosting your interest in the subject) will sometimes be referenced on the lecture slides and in the modules on Canvas. These are non-technical (and fun) readings to demonstrate the use of statistics and help you develop intuition.

Please, consider *Naked Statistics: Stripping the Dread from the Data* by Charles Wheelan as an optional reading for our course.

## TECHNOLOGY AND SOFTWARE

Students are expected to have access to Canvas on a regular basis to keep abreast of course evolution as some important announcements and all assignments will be posted on Canvas. Additionally, students are expected to have access to *MS Excel* outside the class to be able to perform calculations in their assignments.

**Excel:** To perform cumbersome calculations, our class will utilize *MS Excel* (Office 2011 or later is recommended). Excel can be accessed for free through IUB Citrix Cloud (<https://uits.iu.edu/iuanyware>). Alternatively, you can download Microsoft Office through IUB at <https://iuware.iu.edu/>, which includes Excel for your platform.

*Note:* Some Excel calculations in our class will require Data Analysis add-in of Excel. Mac users might find that general Excel instructions cannot be used to get Data Analysis running on their devices. I will post instructions on loading the Analysis ToolPak in Excel for Mac users on Canvas. If these instructions do not work on your device, please try an alternative source: <https://support.office.com/en-us/article/load-the-analysis-toolpak-in-excel-6a63e598-cd6d-42e3-9317-6b40ba1a66b4#OfficeVersion=MacOS>.

<sup>3</sup><https://expand.iu.edu/browse/etexts/courses/the-student-guide-to-iu-etexts>

You can also use Excel through IUanyWare at <https://uits.iu.edu/iuanyware>. While it should be straightforward to run Excel through IUanyWare, if you experience difficulties, please, contact IU tech support (contact information is listed on IUanyWare home page).

**Computers and Other Devices:** As an instructor, I will use Excel during the class to demonstrate some calculations and Excel features. Lecture slides on Canvas (*Files* link, folder *Slides*) include information relevant to these discussions (screenshots, Excel function descriptions, etc.). Pre-recorded videos demonstrating solutions to some exercises from the slides will be available on Canvas. Additionally, Excel files with solutions to all the exercises from the slides will be posted on Canvas (*Files* link, folder *Solutions to Excel Problems (Slides)*).

You are not expected to perform Excel calculations during the lecture. So, there is no requirement to bring a laptop to the class. But you are welcome to have your laptop and follow the steps of the analysis performed in Excel during the lecture. This will allow you to practice along, save you time on the Excel assignments, and make it easier to understand where you have questions and ask them right away in the class.

*Note:* No electronic devices are allowed during the exams except calculators.

**Canvas:** The course will use Canvas for posting class announcements, HWs, quizzes, grades, exam information, and any additional material. I will send messages through Canvas often, so please make sure to **read these messages carefully and check Canvas regularly**.

## COURSE ASSIGNMENTS

Our course includes several types of assignments:

- Graded Syllabus quiz and eText assignment to help you learn how to access your eText.
- Excel assignments. These assignments ask that you submit Excel files with your work for each chapter. Excel assignments are graded *on completion* meaning that the main requirement for getting a grade is that you complete all the work in the assigned problems.
  - I will discuss and demonstrate how to solve some/all of the exercises from the Excel assignments during the class.
  - You will be able to find pre-recorded videos demonstrating how to solve exercises from the Excel assignments on Canvas (to locate these videos, look for a component "*Videos with Excel Exercises (Chapter #)*" in the modules).
  - Excel files with suggested solutions will be posted on Canvas shortly after the deadline (folder *Solutions to Excel Problems (Slides)* under the *Files* link).
- Reading assignments. While reading in statistics may sound like a difficult task, the selected readings in our class are non-technical, easy to read, and even fun. The main goal is to discuss some important concepts in an intuitive way and develop a deeper intuition. On the reading assignments, you will be required to write a short reflection on the reading or answer questions related to the reading. Reading assignments are graded *on completion*.

- Homeworks. Homework assignments will be graded *on accuracy* in this course. They are constructed to prepare you for the exams and include various types of questions that may as well require short answers and extensive explanations. There may be questions requiring you to analytically, graphically or numerically with the help of Excel analyze a problem. Suggested solutions to the HWs will be posted on Canvas shortly after the deadline.
- Exams. Exams are a culmination of your work on a particular topic (-s). Obviously, exams are graded *on accuracy*.
- Occasional extra credit activities are possible in the class. Extra credit points will be added to the total score you earn in the class and, therefore, should be regarded as an opportunity to improve your grade (you should not, however, expect that it will be a significant portion of the grade). Extra credit activities may include, but are not limited to, extra credit questions on the HWs and exams, Canvas quizzes, etc. No makeups or deadline extensions will be given for extra credit activities.
- Ungraded self-assessment quizzes (Quick Checks). These quizzes are optional and the main goal is to give you an opportunity to practice and check your understanding before you start working on your assignments.

**Collaboration:** Discussion of class assignments with peers is permissible, may be highly beneficial, and is encouraged. However, your answers submitted for a grade should represent your own work. Note that **offering** and **accepting** Excel files with solutions and answers to the assignment questions on Canvas from others (including students in your class, former students, or any other people) is an academic misconduct and **all involved parties will be penalized** following IU Code of Student Rights, Responsibilities, & Conduct<sup>4</sup>. Please submit your own work!

**NO COLLABORATION IS ALLOWED DURING EXAMS!**

## COURSE GRADE

Your course grade will be based on the score (out of total 1,000 points) you earn for<sup>5</sup>:

- Departmental Final Exam (comprehensive, multiple choice, maximum 253 pts which is 25.3% of the grade);
- Three midterm exams (multiple choice, maximum 165 pts for each exam or 495 pts in total which is 49.5% of the grade);
- Eight homework assignments (maximum 20 pts for each HW or 160 pts in total which is 16% of the grade). There will be nine homework assignments in total, each worth 20 pts. The lowest homework score will be dropped and eight best scores will be counted towards your final grade;

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<sup>4</sup>According to this policy, submitting Excel files previously posted by any E370/S370 instructors or created and used by former E370/S370 students is an academic misconduct and will be treated accordingly.

<sup>5</sup>Students who enroll in the course after the first week of classes should contact me to take the syllabus quiz and eText assignment.

- Eight Excel assignments showing your work on the assigned Excel exercises for each chapter (maximum 9 pts for each assignment or 72 pts in total which is 7.2% of the grade). There will be nine Excel assignments in total, each worth 9 pts. The lowest Excel assignment score will be dropped and eight best scores will be counted towards your final grade;
- Two reading assignments (maximum 5 pts for each assignment or 10 pts in total which is 1% of the grade);
- Graded Syllabus quiz (maximum 7 pts which is 0.7% of the grade);
- Graded eText assignment (maximum 3 pts which is 0.3% of the grade).

Missed assignments are counted as zero points towards your final grade.

**Grade Scale:** The final letter grade for the course will be based on the following scale:

A+	(970 - 1000)	B+	(870 - 899)	C+	(760 - 789)	D+	(620 - 649)	F	(Below 500)
A	(920 - 969)	B	(820 - 869)	C	(680 - 759)	D	(550 - 619)		
A-	(900 - 919)	B-	(790 - 819)	C-	(650 - 679)	D-	(500 - 549)		

I reserve a right to make *advantageous* adjustments to this scale in student's favor (curve). Such adjustments will NOT be applied on an individual basis and will be only applied to all students in the class if necessary. However, you should not rely on a possibility of such adjustments when forming your expectations about the grade because curving is neither guaranteed nor is a regular practice in this course.

Scores on the border of the letter grade are decided in student's favor towards a higher letter grade. Please, note that this bumping up rule applies only if the **total points** (not the percentage!) are exactly on the border of the letter grade<sup>6</sup>.

No grade pleading will be entertained in this class. I very well understand difficulties of the situations faced by the students when I receive their individual requests about raising the grade. But I cannot deviate from the rules I apply to other students in the class. To avoid unpleasant grades in the end, please remember that every bit helps. So, do not miss assignments and extra credit opportunities even if they don't offer a lot of points, and work on earning your grade from the start of the class.

**Grade Contests:** Except for the final exam, any concerns regarding assignment grades must be contested **within a week** of posting. The window to address such concerns for the final exam will be announced later (but you should expect it to be much shorter than a week). The scores become a permanent part of your record if not contested.

#### TIMING OF THE ASSIGNMENTS AND LATE SUBMISSIONS

There are several things to keep in mind about timing and assignment submission in this class:

**Timing:** There is no time limit set on any assignments posted on Canvas in this class. This means that you do NOT need to complete HWs, quizzes, etc. in one sitting. For example,

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<sup>6</sup>For example, let us imagine a student whose score is close to the border between A- and A. If their total score is equal to or slightly less than 919, then the score is converted into A- (even if the score is 0.1 below 919). At the same time, if the score is anywhere between 919 and 920, it is converted into A (even if a score is 0.1 above 919).

you can start working on a HW and leave it without submitting. Canvas will save your answers. Next time when you open your HW, you will see previously entered answers and will be able to continue working on the HW.

### Late Submissions:

*Syllabus Quiz, eText assignment, and Canvas Extra Credit Quizzes.* No late submissions is allowed on these types of assignments (no exceptions will be made). Syllabus quiz, eText assignment, and all extra credit quizzes on Canvas have to be submitted on/before the announced deadline.

*Quick Checks.* These are ungraded optional quizzes and do not have deadlines on them. You can refer to them at any point in the class as needed.

*HWs, Excel Assignments, and Readings.* These assignments will be accepted late within 48 hours of the deadline with a penalty. Assignments submitted after the deadline will receive a flat point deduction for each 24-hour period following the due date:

- HWs: 3 points;
- Excel assignments: 1.35 points;
- Readings: 0.75 points.

More specifically, students who submit their HW within 24 hours after the deadline receive a deduction of 3 points (independent of their earned score). Students who submit their HW within 24 – 48 hours after the deadline receive a 6-point deduction (3 points for each 24-hour period). After 48 hours, HWs will not be accepted. Late submissions on Excel and reading assignments will be treated similarly except for a different point deduction<sup>7</sup>.

*Note 1:* Recall that, in addition to an opportunity to submit HWs and Excel assignments late, there is also a policy that the lowest score assignment is dropped towards the final grade (please, refer to the Course Grade section of the syllabus).

*Note 2:* It is expected that you submit your work on Canvas. Your work will NOT be accepted via e-mail (unless the instructions specifically say otherwise). For the file submission assignments, please attach your files in the designated space of an assignment or a quiz and avoid submitting your files for grading in the Comments to the assignment. It is not guaranteed that your work will be graded if you submit your file in the Comments section.

### EXAM DATES

Exam dates are tentatively set in the syllabus and are subject to change in the extreme circumstances:

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<sup>7</sup>Let's think about specific example with Excel assignments. Suppose that the Excel assignment has a due date on Sunday midnight. You were not able to submit it on time and turned in your work on Tuesday afternoon. Let's also imagine that, after reviewing your work, the grader gives you 6 points out of 9 because you haven't completed all the problems. After the grader puts in the score on Canvas, the late submission penalty is applied and your assignment receives 3.3 points (6 points you get for your work – 1.35 points for the first 24-hour period – 1.35 for the second 24-hour period = 3.3 points).

Exam 1	September, 21 (W)
Exam 2	October, 17 (M)
Exam 3	November, 14 (M)
<b>Final Exam</b>	<b>December, 16 (F), 3:00PM – 5:00PM</b>

Topics covered in midterms will be specified prior to each exam. Midterms are NOT cumulative and cover only the part of the course that was not tested in the previous midterm (-s). The Final Exam is cumulative and covers all topics discussed in the class.

Please, notice that the final exam for our class is Department-wide. The time for the Departmental final exams is determined by the IU Office of the Registrar and is outside of my control. Therefore, no alternative schedule for the final exam will be considered (please, plan your travel at the end of the semester carefully accounting for the schedule of your E370/S370 final exam!!!).

#### ATTENDANCE AND MAKEUP EXAMS

**Attendance:** If you have a positive COVID-19 test or have been instructed to isolate or quarantine, you should not attend class. To ensure that you can do this, attendance in this class will NOT be taken.

If you miss a class, please refer to the lecture slides and relevant textbook chapters, and other material on Canvas to help you keep up with the class progress. The best way to get information on what you have missed is the overview page in a weekly module.

I urge you not to abuse the opportunity to miss a class without penalty unless your situation absolutely requires to. You should know that topics in this course are interrelated and build on each other. So, missing a discussion of one class has a potential to set you back in future classes. This also makes it hard to catch up with the class discussion on the fly if you missed previous class and have not done an independent review. So, I strongly encourage you to overview the lecture slides and read the textbook if you had to miss a class.

**Late Arrivals to Exams:** Arriving late to the exam *after any student has submitted their work* means that you will be asked to take a makeup exam at an alternative time/date.

**Makeups:** Students are expected to attend class and participate in all graded activities, including midterms and final examinations. Missing an assignment or exam earns zero points.

A student who is anticipating being absent from exam or not being able to submit their graded assignments before the deadline due to official religious holidays for which the work is not allowed or university-approved activities should provide a written notice to the instructor ahead of time (more information is provided in the section on class rule and policies below). Provided that the instructor was notified on time, students who miss their exam due to these reasons will be granted accommodations in the form of a makeup exam. The instructor will also determine if other graded assignments can be rescheduled or an equivalent work can be done as a makeup, as determined by the instructor.

Student who are directed to isolate and quarantine will be granted an opportunity to take a makeup exam at a later date.

If you have a hardship or other significant circumstances (including medical conditions) requiring longer-term absences from classes and assignments, or have a death in your immediate

family, please contact the Dean of Students Office to request an absence notification memo. The Office will verify documentation related to your absence and contact your instructors, including me, requesting to develop accommodations for these circumstances.

I reserve the right to pick a time and location for the makeup exam depending on the proctor and classroom availability. Students who have a time conflict with the time suggested by the instructor will be suggested an alternative option to take their makeup exam during the class time (the location will be determined by the instructor and will not be the same classroom where the regular class takes place).

While the topical coverage of the makeup exams is guaranteed to be the same as the original exams, makeup exams are not guaranteed to preserve the same format. Makeup exams may utilize some short-answer and open-ended questions while the original exams will include all multiple-choice questions. The extent of a makeup exam given in a short-answer and open-ended format may be anywhere from 0% to 100% and may vary from one exam to another.

It is imperative that your schedule permits you to take the final exam. No alternative schedule will be considered for the Final Exam in this class!!! Students who fail to attend the final exam because of catastrophic occurrence, which is beyond the student's control and necessitates their absence, and who have a passing grade up to that point should contact me as soon as possible.

**Please bring your Indiana University ID to each exam.**

#### IMPORTANT DATES

**Course Deadlines:** You are responsible for changing your status in the course (drop or withdraw) within school established time period. I will not be able to drop the course for you if you miss the deadline. Some important deadlines are listed below and additional information is available at <https://utilities.registrar.indiana.edu/calendars/official-calendar/>.

Add/Drop Deadline (no W grade)	Aug 28, 2022
Course Withdrawal Deadline (automatic W)	Dec 9, 2022
Complete Session Withdrawal Deadline	Dec 9, 2022

#### Other Important Dates:

Labor Day	September 5, 2022 (no classes)
Thanksgiving Break	November 20 – November 27, 2022 (no classes)



## TENTATIVE COURSE SCHEDULE<sup>8</sup>

<b>Week</b>	<b>Topic</b>	<b>Assignments</b>
Week 1	Course Introduction. Ch 1. Statistics and Data.	Syllabus Quiz eText Assignment
Week 2	Ch 2. Displaying Descriptive Statistics.	Excel Assgnmt (Ch 2) Reading (Ch 2) HW1
Week 3	Ch 3. Calculating Descriptive Statistics.	Excel Assgnmt (Ch 3) HW2
Week 4	Ch 4. Introduction to Probability. Ch 5. Discrete Probability Distributions (Binomial Distribution).	Excel Assgnmt (Ch 5) HW3
Week 5	Finish Ch 5. Discrete Probability Distributions (Binomial Distribution). Exam 1.	
Week 6	Ch 6. Continuous Probability Distributions (Normal Distribution).	Excel Assgnmt (Ch 6) HW4
Week 7	Ch 7. Sampling and Sampling Distributions.	
Week 8	Ch 7. Sampling and Sampling Distributions.	Excel Assgnmt (Ch 7) HW5
Week 9	Exam 2. Start Ch 8. Interval Estimation.	
Week 10	Finish Ch 8. Start Ch 9. Hypothesis Testing, Single Parameter (Mean).	Excel Assgnmt (Ch 8) HW6
Week 11	Ch 9. Hypothesis Testing, Single Parameter (Mean).	Excel Assgnmt (Ch 9, P1) Reading (Ch 9) HW7
Week 12	Ch 9 Hypothesis Testing, Single Parameter (Proportion).	Excel Assgnmt (Ch 9, P2) HW8
Week 13	Exam 3. Start Ch 14. Simple Linear Regression.	
Week 14	THANKSGIVING BREAK	
Week 15	Ch 14. Simple Linear Regression.	
Week 16	Ch 14. Simple Linear Regression. (If time permits) Ch 15. Multiple Regression.	Excel Assgnmt (Ch 14) HW9

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<sup>8</sup>Schedule may be adjusted depending on our progress in class (changes will be announced in class and on Canvas).

## SOME POLICIES AND CLASS RULES

**Phones:** Please put your cell phones in the silent mode while in class!

**Emails:** Please adhere to the following guidelines when emailing the teaching team:

- All course-related emails need to be sent using your IU email or Canvas. Failing to use these tools for email communication might send your email to the spam folder.
- Please, be sure to insert section number or the class time in the email (especially if your request requires looking up your grade or your submission on Canvas). This helps me speed up the response.
- While you are welcome to email me with questions about the material, some things are better discussed in person. For emails that require a lengthy answer, please consider attending office hours. Some examples of appropriate email questions and office hours questions are below:

### *Email:*

- You are working on an assignment and you want to make sure your understanding of a particular issue is correct before moving on (e.g., "I believe the standard deviation given in the problem is the sample standard deviation, but I'm not confident; is this correct?").
- You have a good understanding of a topic, but there is a small point you think you might have missed (e.g., "I believe you mentioned we need to know the range of values for the correlation coefficient, but I'm not sure I wrote it down; what is it?").

### *Office Hours:*

- You are working on an assignment and you do not have a very solid understanding of a particular issue (e.g., "I am unsure how to conduct a hypothesis test for the proportion. Can you explain it to me?").
- You have some understanding of a topic, but there is a large, important portion of the argument that you don't understand (e.g., "How do we state conclusions in the hypothesis tests?").

## **Responding to Emails:**

- Please keep in mind that I receive a great deal of emails from many sources, including a big volume of emails from students. Besides, I have many responsibilities that also require my attention. So, you should not expect an immediate response when you send me a message. Generally, 24-72 hours is considered a reasonable amount of time to receive a reply from me, but I do not typically respond to email after 6:00PM or on weekends.
- I tend to get a high volume of email when a deadline or an exam is approaching. So, you should expect a slower response from me during these times.
- I reserve a right not to respond or reply with a short "Please, check the Canvas page" to the emails asking me to reiterate information from an announcement on Canvas.

**Copyright:** The instructor of course holds the exclusive right to distribute, modify, post, reproduce, and link to course materials, including all notes, videos, lecture slides, assignments, Excel files with solutions, and exams. You cannot distribute, post, or alter this material. You are encouraged to take notes and make copies of course materials for your own educational use. But you may not, nor may you knowingly allow others, to re-post in other forums, distribute, or reproduce content from this course without the express written permission of the instructor (this also includes providing materials to commercial course material suppliers such as CourseHero and other similar services).

Any violation of this course rule will be reported to the appropriate university offices, including the Dean of Students, as academic misconduct.

**Final Exam Policies:** You can find IU Final Exam policies at <http://enrollmentbulletin.indiana.edu/pages/finexpol.php> and should appeal to them if you 1) have more than three final exams in one day, 2) have final exams conflicts, 3) missed the final exam.

**Disability Accommodations:** Accommodations will be made for students registered with Office of Disability Services for Students (DSS). If you need an accommodation for a disability, then it is your responsibility to register with DSS and contact me outside of class to present the written supporting memorandum of accommodation. Note that requests for accommodations for disability must be received and authorized by your instructor in written form no less than two weeks in advance of need, in order to allow adequate time to review and make appropriate arrangements. No accommodations should be assumed until authorized by your instructor. Additional information can be found at <https://studentaffairs.indiana.edu/disability-services-students/>.

**Religious Accommodations:** Accommodations will be made for students who want to observe their religious holidays provided that the student notifies the instructor no later than two weeks prior to the anticipated absence. Students needing accommodations for a religious observance must submit a request using officially approved form located here: <https://vpfaa.indiana.edu/faculty-resources/teaching-resources/religious-observances-information.html>.

**University-Approved Activities:** Accommodations will be made for students who miss the schoolwork because of university-approved activities. If you are participating in a university-approved activity (<https://studentaffairs.indiana.edu/student-support/dean-of-students/attendance.html>), please let me know as early in the course as possible so that accommodations can be made (beginning of the semester or at least two weeks in advance of the absence).

**Academic Integrity and Ethical Behavior:** In addition to skills and knowledge, IU aims to teach you appropriate ethical and professional standards of conduct and inform you of obligations in upholding the highest standards of professional and ethical integrity. You will find an extensive information on these matters in IU Code of Student Rights, Responsibilities, and Conduct (<http://studentcode.iu.edu/>).

In line with these policies, dishonesty of any kind will not be tolerated in this course. Dishonesty includes, but is not limited to, cheating, plagiarizing, fabricating information, facilitating acts of academic dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with academic work of other students. Whenever in doubt, ask me about ap-

propriateness of your actions. Students who are found dishonest will receive the most severe academic sanction consistent with IU policies.

#### SOME Q&A's

**Why is there so much work in this class?** First, in E370/S370 each new concept requires a deep understanding of the previously studied ones. Frequent assignments ensure that you master each part of the course at a sufficient level before we move on. Second, statistics is learned by *doing* it. Assignments ask you to *do* statistics, i.e. focus on actually doing it rather than passively reviewing and reading.

**Do I need to remember all formulas for the exams?** No! You will be provided with the formula sheet including the most important formulas covered in the course up to the exam date. Sample formula sheets are already posted on Canvas (*Files* link, folder *Exams*). Adjustments are possible depending on the class progress towards the exam date.

**How am I going to do complicated calculations that require Excel in the exam?** Exam questions are designed to avoid complex and time-consuming calculations including those for which Excel is required. It is achieved through several channels. First, the numbers are selected such that calculations are easy to do on a calculator. Second, questions limit complexity of calculations by reducing the amount of data in the problem. Third, questions formulate a problem with "ready-to-use" numbers calculated in Excel (so that no additional Excel calculations are necessary) and ask you to focus on interpretation.

**Do I need to bring a calculator to the exam?** Yes, it is recommended that you have a calculator during the exam. Majority of calculations in the exams can be done "by hand". But some of them might be time-consuming to perform manually. To save time (and release stress related to the calculation part), it is recommended that you have a calculator.