ECON 293A Statistics for Economics
Syllabus: Course Logistics and Roadmap

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Lux Mentis Scientia

Colby College
Department of Economics

OUTLINE


新春大吉
兔
Happy new year
2023

New Year Greetings!

The Rabbit represents intelligence, compassion, and hope:
Wish you extradinary success in the Year of Rabbit 2023!

Contact and Office Hours

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Introduction

It is a great pleasure to meet you in ECON 293A!

To begin with, would you please introduce yourself?

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Next, we will have some warm-up activities in PollEv.

1. What is the primary reason you are taking this class?
2. What is Statistics? What can we use Statistics to do/for?
3. What are the benefits and future opportunities with Statistics?
4. Which field of Economics are you most interested in?
5. Most vitally, what shall we expect to learn and take away from this course?

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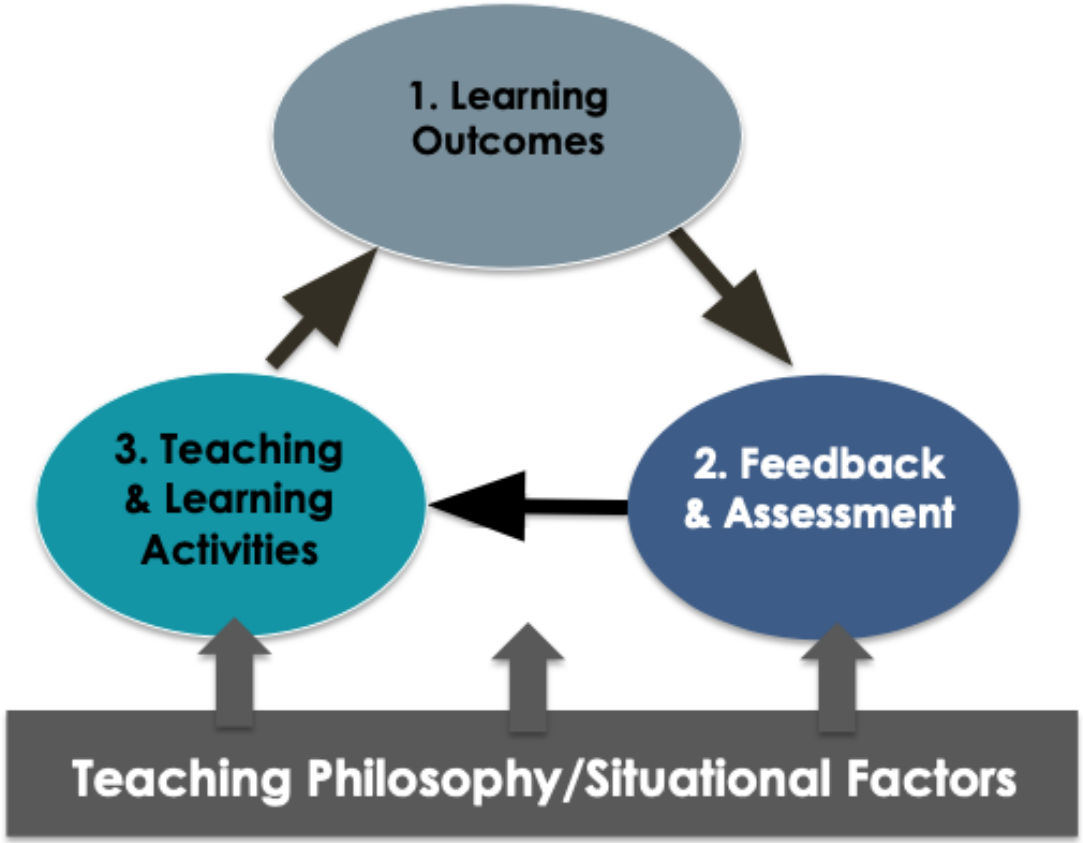
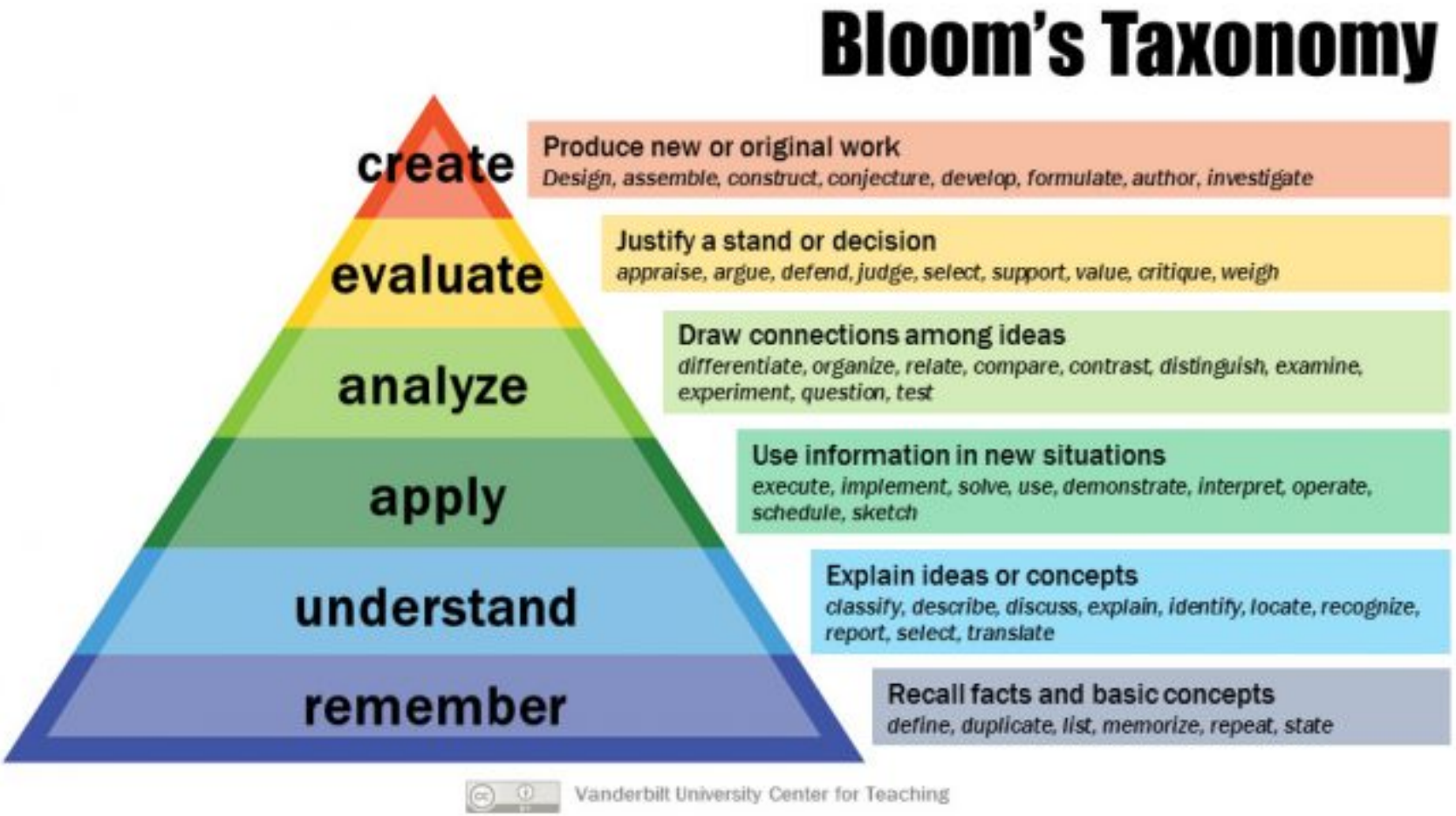
Backward Course Design: Architecture



Source: Course Design Institute, Colby College (2023)

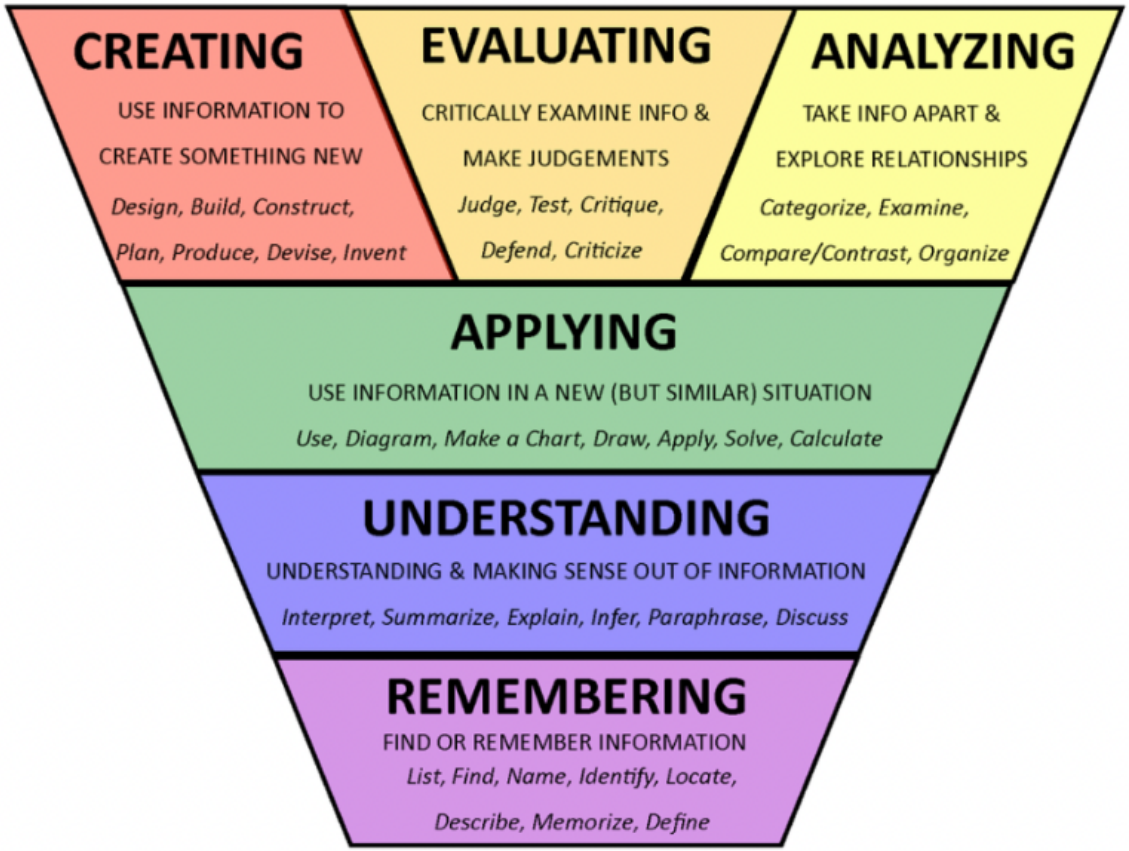
1. Learning outcomes
   - Knowledge
   - Priority
   - Values
   - Skills
2. Assessments & feedback
   - Accessible
   - Adaptable
   - Flexible
   - Timely
3. Learning activities
   - Synchronous
   - Asynchronous
   - Transparent
   - Engaging

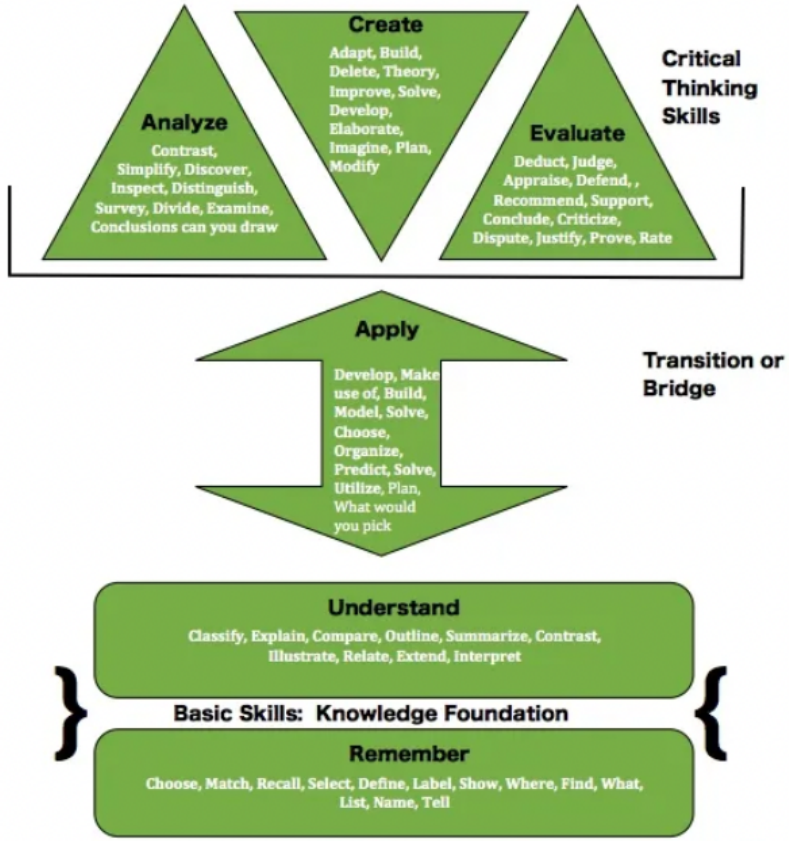
What are the Essential Learning Objectives (Skills) ?



Source: Revised Bloom's Taxonomy, Armstrong, P. (2010)
https://cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy/

Bloom's Taxonomy for Learning Design





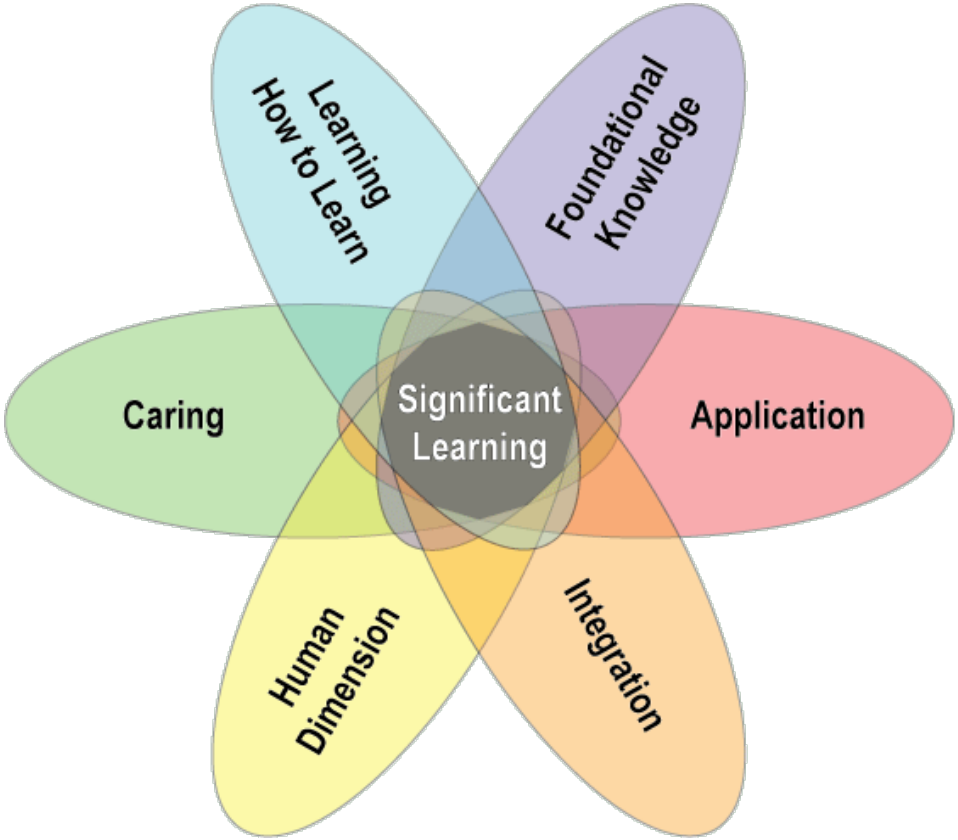
Source: Intentional College Teaching (2021) Bloom's Taxonomy: Benefits and Limitations. [Link]

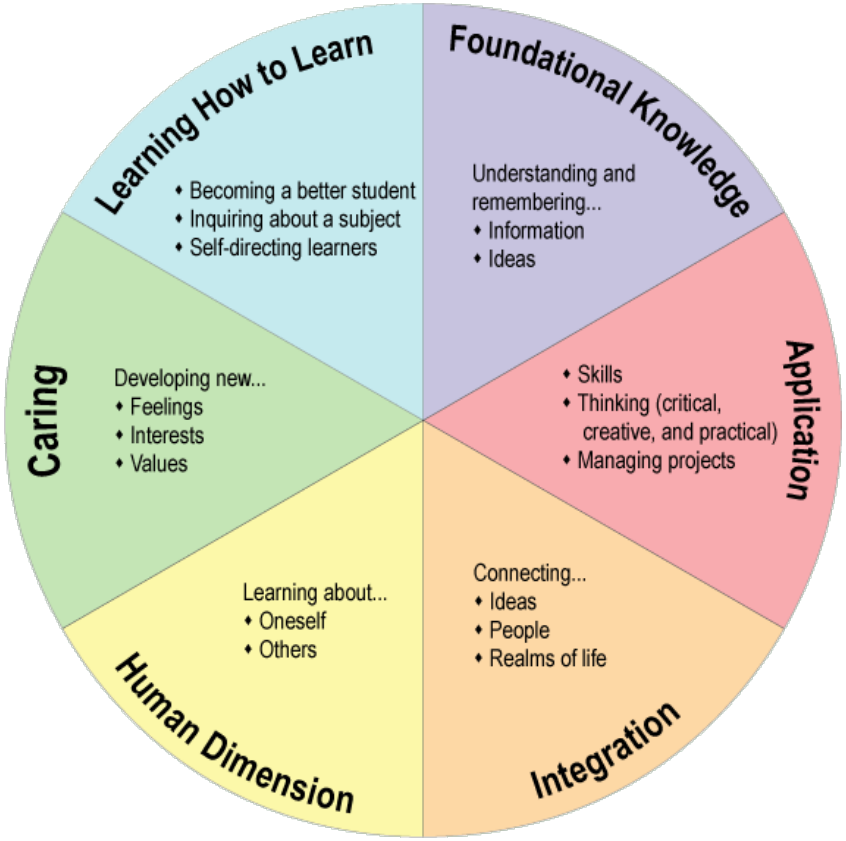
Learning Objectives Matrix

Knowledge Dimension → / Cognitive Process Dimension ↓	**FACTUAL** The basic elements a student must know to be acquainted with a discipline or solve problems in it.	**CONCEPTUAL** The interrelationships among the basic elements within a larger structure that enable them to function together.	**PROCEDURAL** How to do something, methods of inquiry, and criteria for using skills, algorithms, techniques, and methods.	**METACOGNITIVE** Knowledge of cognition in general as well as awareness and knowledge of one's own cognition
REMEMBER Retrieve relevant knowledge from long-term memory.	**List** primary and secondary colors	**Recognize** the symptoms of exhaustion	**Recall** how to perform CPR.	**Identify** strategies for retaining information.
UNDERSTAND Construct meaning from instructional messages, including oral, written, and graphic communication.	**Summarize** the features of a new product	**Classify** adhesive by toxicity	**Clarify** assembly instructions	**Predict** one's response to culture shock
APPLY Carry out or use a procedure in each situation.	**Respond** to frequently asked questions	**Provide** advice to novice	**Carry out** pH tests of water sample	**Use** techniques that math one's strength
ANALYZE Carry out or use a procedure in each situation	**Select** the most compels list of activities	**Differentiate** between writing registers	**Integrate** compliance with regulations	**Deconstruct** one's biases
EVALUATE Make judgments based on criteria and standards.	**Check** for consistently among sources	**Determine** relevance of results	**Judge** efficiency of sampling technique	**Reflect** on one's progress
CREATE Put elements together to form a coherent whole; reorganize into a new pattern or structure.	**Generate** a log of daily activities	**Assemble** a team of experts	**Design** efficient project workflow	**Create** a learning portfolio

Source: UW-Platteville Teaching & Technology Center (2022) [Link]

What is Significance Learning? (Fink, 2003)





https://uwpttc.edublogs.org/2022/03/25/finks-taxonomy-of-significant-learning/

What is Transformational Learning?

"Transformational teaching is about employing strategies that promote positive changes in students' lives. **The goal is not simply to impart certain information to students, but rather to change something about how students learn and live.** *If a particular lecture or course project excites a student so much that he or she becomes and remains interested in the field, then transformational teaching has occurred."*

- Transformational learning was a term developed by Slavic and Zimbardo (2012). Slavich, who teaches at the University of Oregon, says transformational teaching goes beyond both passive lecturing and active learning.
- Within the liberal arts context and along the dimensions of core values, essential skills, and critical thinking, **what do I expect my students to learn and take home many years after completing this course?**

Source: Course Design Institute - Participant Workbook, Colby College (2023)

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What are the Big Questions in this Course?

This course invites students to develop answers to the following questions

1. What is Statistics? Why do we need Statistics?
2. What is Data Analysis? How to best summarize and visualize data?
3. What is Probability? What are the essential rules, laws, and models?
4. What is Statistical Inference? How to perform Statistical Inference?
5. What are the relationships between Data, Statistics, and Probability?
6. How to combine Probability and Statistics in Data Analysis?
7. What constitute empirical economic research?
8. How to apply Statistics in economic research?

Our Primary Objective

Together, our main objective is to learn and apply just enough statistics to make scientific decisions in general and address data-driven economics, finance, and policy research questions in particular.

What are the Transformational Learning Outcomes?

This course invites students to pursue the following educational outcomes

1. Explain the role of data and statistics plays in scientific decision-making
2. Build a solid foundation for understanding probability rules and models
3. Appreciate the philosophy behind and procedure for statistical inference
4. Develop statistical ways of thinking and apply them in decision-making
5. Master common tools for data analysis (description and visualization)
6. Perform basic data analysis and statistical inquiry using Excel & Stata
7. Engage in and communicate empirical economics research to non-technical audience
8. Value and embrace an inclusive and welcoming learning environment

What are the Essential Learning Activities?

Transformational Learning Outcomes

1. Explain the role of data and statistics plays in scientific decision-making
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Essential Activity – Constructive Alignment				
Learning Outcome	**Formative Assessment**	**Summative Assessment**	**Diagnostic Assessment**	**Priority ("Stakes")**
1-5 & 8	Readings and discussion	Reflections	Reflections	Low (15%)
1-5	Quizzes		Quizzes	Low (10%)
5 & 6 & 8	Stata labs		Stata labs	
2-6 & 8	Problem sets		Problem sets	Medium (20%)
1-5	Midterm exam	Midterm and final exams	Midterm exam	High (40%)
3-8	Research project	Research project	Research project	Medium (15%)

Note: Adapted from the 2023 Course Design Institute, Center for Teaching & Learning at Colby College

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Student Evaluation

1. Discussion Board in Moodle (10%)
2. Student-Led Discussion in Class (5%)
3. Problem Sets (20%): Eight in total.
4. Weekly Quizzes (10%): Highest ten.
5. Midterm (20%) and Final Exams (20%)
6. Research Project and Presentation (15%)

Due to various extra opportunities (discussions, problem sets, and quizzes), all assignments deadlines are firm and late submission will not be accepted.

Follow the link below for instructions and updates:
`https://sites.google.com/view/stat-econ/assignments`
`https://sites.google.com/view/stat-econ/projects`

Classroom Agreement

- Attendance is both a collegial courtesy and an obligation in the course.
- To foster a class atmosphere conducive to teaching and learning, all participates are expected to not engage in behaviors that are disruptive.
- These include, but are not limited to, talking during the lecture, reading materials unrelated to the course, use of any electronic device, including laptops and phones, unless specifically approved (tablets for note taking are ok), coming to class late, leaving early or in the middle of class.
- Behaviors that create a hostile, offensive or intimidating environment based on gender, gender identity, race, national or ethnic origin, color, religion, age, disability, caste, marital status or sexual orientation will not be tolerate

Classroom Note-Taking and Use of Digital Devices

To enhance active learning and study skills, all students are advised to take handwritten notes throughout the course. Here are the occasions in this course when taking notes are necessary and most helpful.

1. In-class discussions, exercises, and end-of-class reflections
2. Lots of models, graphs, equations, and problem-solving!
3. Analyze and correct mistakes in assignments and exams.
4. Wait for the "Aha" or "Whoa" moments. Don't let go!

Unless otherwise instructed, please refrain from the use of any electronic device, including laptops and phones (tablets for note taking are ok)

Academic Integrity Policy

Honesty, integrity, and personal responsibility are cornerstones of a Colby education and provide the foundation for scholarly inquiry, intellectual discourse, and an open and welcoming campus community. These values are articulated in the Colby Affirmation and are central to this course. Students are expected to demonstrate academic honesty in all aspects of this course.

- Discussion activities: avoid copy and paste; summarize and analyze in your own words
- Problem sets: students are encouraged to work in groups but must submit own (independent) solutions
- Presentations: all data sources, citations, and references must be accurately recorded and properly accredited
- Research: all data, figures, citations, references, and computer codes
- More detailed and specific guidance will be provided in time

Avoiding Plagiarism: Academic Honesty `https://libguides.colby.edu/avoidingplagiarism`

Grade Standards and Important Dates

Grading Metrics and Letter Grades (100% scale)			
A+ 97~100	B+ 87~89	C+ 77~79	D+ 67~69
A 93~96	B 83~86	C 73~76	D 63~66
A- 90~92	B- 80~82	C- 70~72	D- 60~62

Note: This standard follows department requirements and Colby College Catalog, P34

`https://www.colby.edu/cataloguestatic/catalogue.pdf`

No classes from March 18-26.
Last day of class May 5. Final week May 10-15.
Last day to add/drop Feb 10; last day to withdraw May 5 (Class of 2026)

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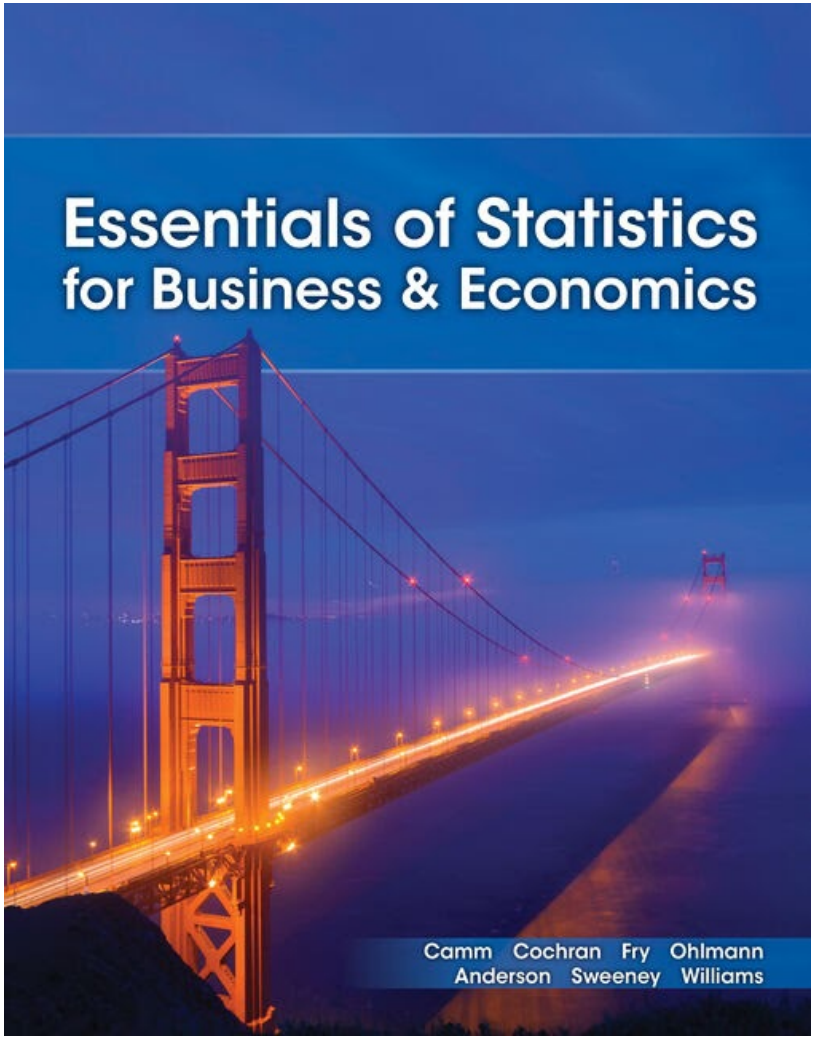
Textbook and WebAssign



Camm et al. (2024) Purchase option [Link] ←

WebAssign is the learning management system accompanying the textbook. This course will use it for textbook readings, quizzes, and exams in WebAssign.
Single-term access: $150.

Registration https://getenrolled.com
Course key: colby 8971 4496

Sign in portal after registration
https://account.cengage.com/login
Technology support: 800-354-9706

Please use authentic name and Colby email to register. Keep track of login information.

Excel, Stata, and Calculator

- Excel: "Industry leading spreadsheet software program, a powerful data visualization and analysis tool."
- Stata: "Statistical software for data science." Throughout the course, there are six Stata lab sessions in DIAM 322. Refer to EC293A Syllabus for schedules.
- Students are recommended to install Stata on personal computers. Follow the instruction via the link below

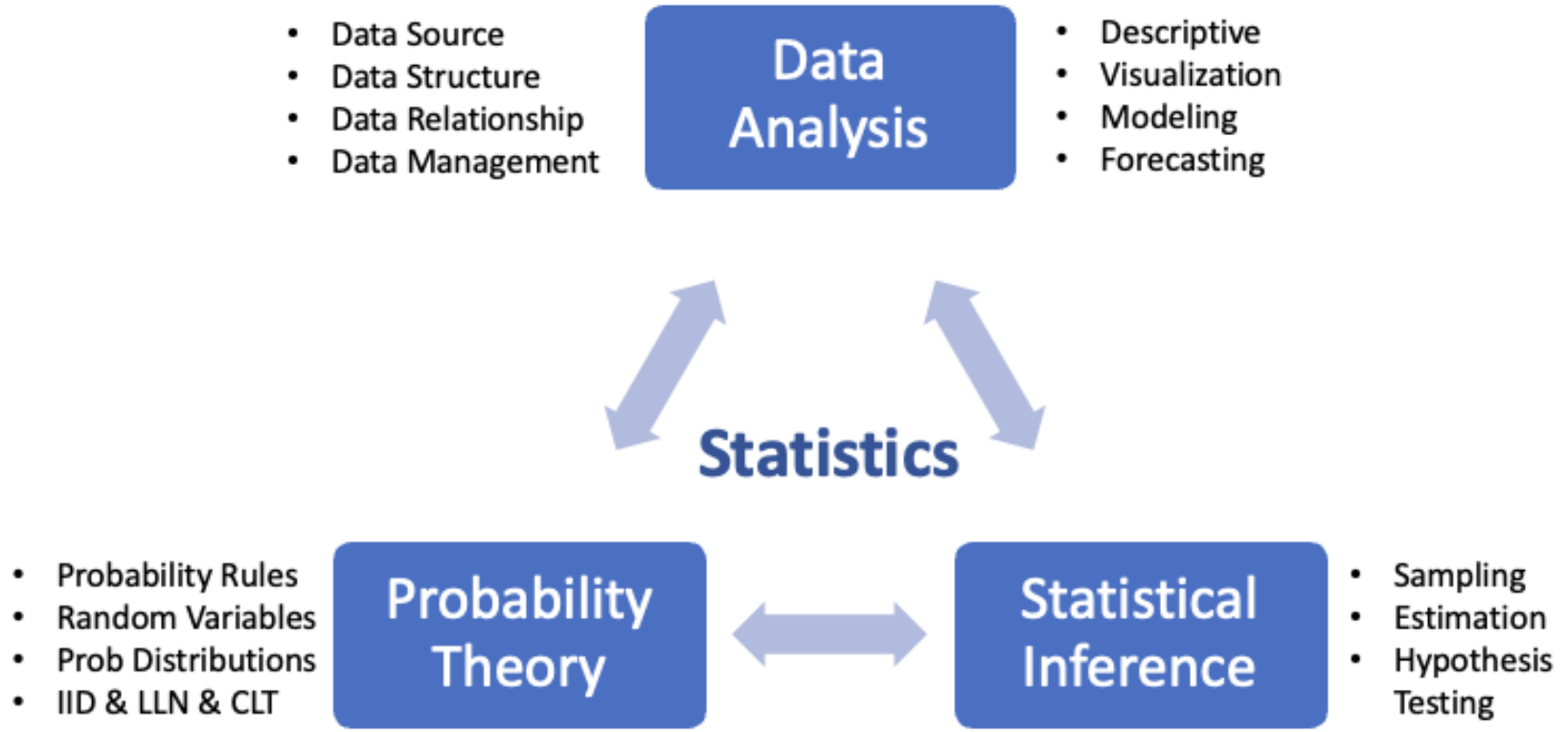
  https://colby.teamdynamix.com/TDClient/1928/Portal/KB/ArticleDet?ID=138444
- Calculator: Bring a calculator to class to use for in-class exercises and exams. Graphing calculators and cell phone calculators must NOT be used. Simple calculators that suffice can be had for about $10 (TI-30X).

Course Portals

1. Course Website https://sites.google.com/view/stat-econ
   - Post and update lecture and lab materials
   - Assign problem sets and research projects
   - Share and update readings and videos
2. WebAssign https://account.cengage.com/login
   - Textbook readings, datasets, applets
   - Quizzes, midterm and final exams
3. Moodle for announcements, online discussions, and problem sets
   - Newsletters announcement
   - Discussion board activities
   - Problem sets submissions

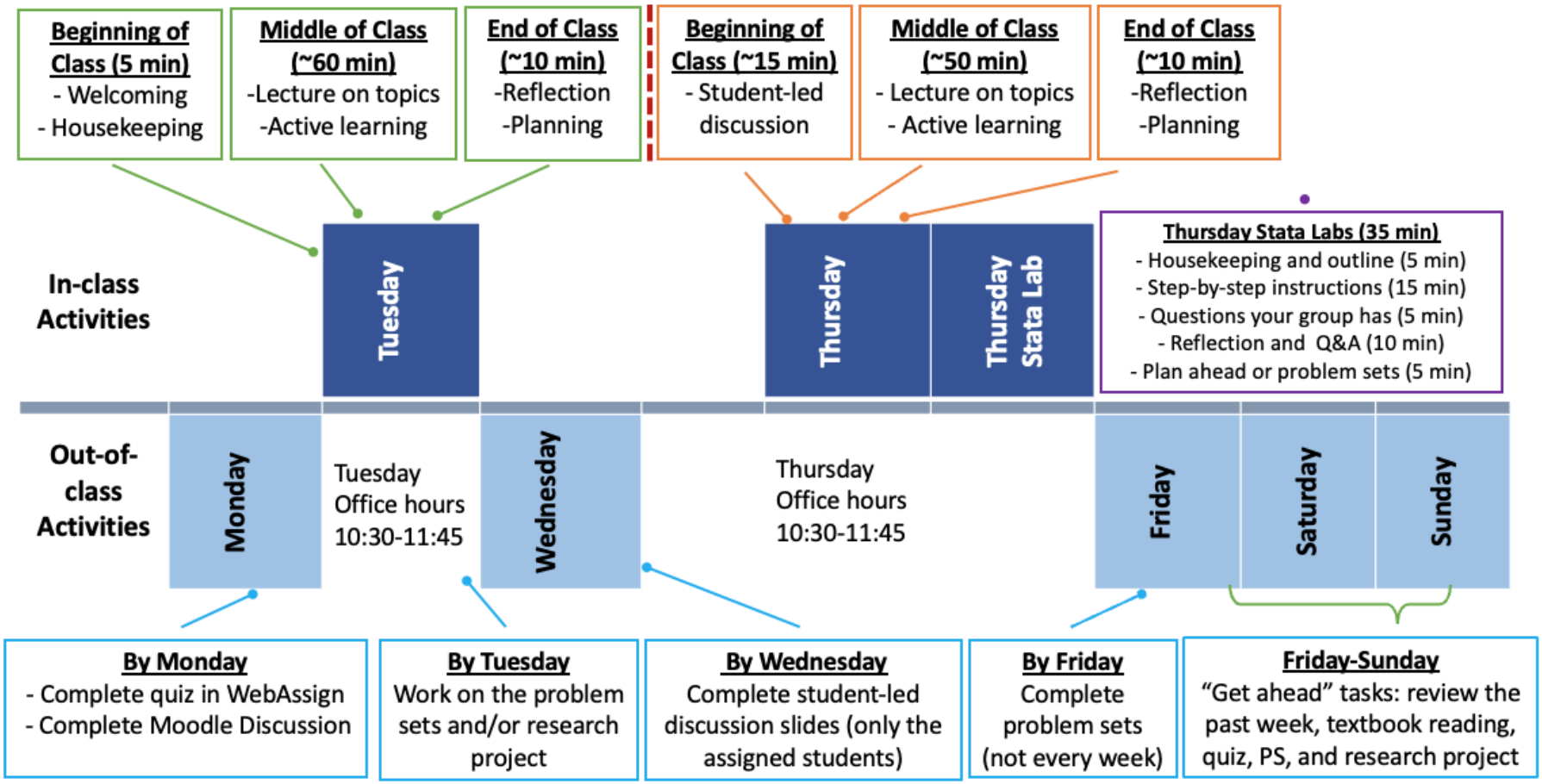
OUTLINE

Statistics: The Big Picture



Source: Biwei Chen (2023)

ECON 293A What a Typical Week Look Like?



Study Advice and Guide

1. Prepare the textbook readings and questions
2. Attend lectures and participate in discussions
3. Review the lectures in study groups and alone
4. Take handwritten notes during lectures and other times
5. Follow closely course announcements and instructions
6. Start early to work on assignments in groups and alone
7. Clarify confusion and correct mistakes. Write it down!
8. Seek instructor's help and guidance when puzzled or stuck
9. Ask questions! Practice makes perfect.