



# Agricultural and Applied Economics (AAE) 375

## *Spreadsheet Fundamentals & Applications*

### **1. Administrative Details**

Credits: 2  
Instructional mode: Online  
Time/location: Online  
Semester: Summer 2019  
Dates: 5/28/2019 – 6/30/2019

Instructor: Jordan van Rijn  
E-mail: vanrijn@wisc.edu  
Office: Taylor Hall Room 323  
Office hours: Fridays, 9am – 11am (in office or online)  
Class website: Canvas

*Please contact me by e-mail if you have any questions or concerns. I commit to responding to e-mails within 24 hours during the week and 48 hours on weekends/Holidays. I also encourage you to stop by my office hours in person or via Canvas's Ultra video chat.*

### **2. Course description**

Introduction to fundamentals and applications of spreadsheets software to economics, business and finance, including data management and manipulation, formulas and calculations, charts and graphics, tables, functions, descriptive statistics, and basic data analysis.

### **3. Learning Objectives & Outcomes**

The ability to use spreadsheet software—such as Microsoft Excel—is critical for performing numerous important tasks in business, finance, economics, statistics and related fields. Most careers in these fields and many others require at least a basic understanding of spreadsheets. Some important applications include database management, statistical analysis, graphical presentation of data, and business intelligence, among others.

This course aims to provide students with an introduction to spreadsheet software—



using Microsoft Excel—and is primarily intended for students with zero or little prior experience with spreadsheets. By the end of this 2-credit course, students will be able to manage the basic navigation of Excel, enter and manipulate data, perform basic calculations, format data, create tables, perform descriptive statistics (e.g., average, sum, median), create and interpret charts and other visual graphics, and analyze data dynamically using Solver, Goal Seek and PivotTables. The course also aims to provide students with the foundational knowledge of spreadsheets as applied to economics, business and finance, so that they can quickly learn more advanced techniques used in more upper-level AAE courses, such as *AAE 419: Agricultural Finance*, *AAE 421: Economic Decision Analysis* and *AAE 526: Quantitative Methods in Agricultural & Applied Economics* (as well as related advanced courses in other departments, such as Finance, Consumer Science, Economics and Business).

The course will rely heavily on practical examples and assignments related to personal finance, business and economics. For example, students will create a personal budget in Excel, analyze business revenue and expenses, and graphically display economic data, such as indicators of inflation, gross domestic product (GDP) and employment. Thus, a secondary goal of the course is to provide students with sufficient experience with spreadsheets so as to be able to design and create tools that can help them analyze and manage their personal and/or business's finances, and be able to download, analyze and present economic data.

***Student Learning Outcomes:***

Specifically, by the end of the course students should be able to:

- Navigate the basic Excel software, download and manipulate data, and create basic formulas and functions.
- Create, refine and interpret Excel charts and other graphics with real world data, and display and organize data using tables and PivotTables.
- Present, analyze and interpret trends and relationships among and between various economic indicators, and identify optimal solutions using Solver and Goal Seek.

## **4. Required Textbook & Software**

### 3.1 Textbook

The only required textbook for this course is *Microsoft Excel 2016 Step by Step* by Curtis Frye (2015) (ISBN: 9780735697485), Microsoft Press, Redmond, Washington. This text or its e-version can be purchased directly from [Microsoft](#) or [Amazon.com](#). As I prepare this, the textbook is available for \$13.68 at Amazon and \$27.99 from



Microsoft Press. You will also need to download the practice files associated with the text at this website: <http://aka.ms/Excel2016SBS/files>.

### 3.2 Software

The software for this course is Microsoft Excel 2016, which is available to download for free from the [UW Campus Software Library](#). You will also need to download Microsoft Word and PowerPoint, which should download together in the Microsoft 365 suite. Although we will be using Excel, the general knowledge gained is easily extendable to other spreadsheet software, such as Google's [Sheets](#) and Apple's [Numbers](#).

It is my understanding that starting in 2016, Excel in Microsoft Windows is very similar to Excel using Mac. However, some differences may exist, and in my experience these differences can prove challenging for students learning Excel with Apple computers. For consistency, we will be using the Microsoft Excel version for PC computers (e.g., in Windows). For students using Apple computers, I would recommend one of the following options:

1. *Use Microsoft Excel in Windows in a [UW Computer Lab](#).* If you choose this option, you will need to be careful to save your work and maintain a copy in your e-mail, [Wisc Box](#) or other repository.
2. *Use Excel on your personal Apple computer.* If there appears to be a difference between what I am teaching and the formulas on the Mac version, notify me and search for a solution online. I will do my best to support you but cannot guarantee that I'll be able to help with technical questions.
3. *Use a [dual-boot system](#) to access both Windows and Mac operating systems on your personal computer.* The [DOIT Help Desk](#) should be able to help with changing your computer's setup to allow this option.
4. *Install the [Parallels Desktop for Mac software](#).* This allows you to run Windows apps on Mac computers and the student version is \$79.99.

I recommend that you choose one of these options as early in the semester as possible to ensure that you are up and running smoothly well before the first assignment is due.



## 5. Course Requirements & Grading

The distribution of points for your final grade in this course is as follows:

Quizzes (12)	15%
Class participation	5%
Assignments (4)	40% (10% each)
Final project	40%

Grades will be allocated as follows:

A	93% - 100%
AB	87% - 92%
B	80% - 86%
BC	74% - 79%
C	68% - 73%
D	60% - 67%
F	< 60%

### 4.1 Course videos & quizzes

Since this is an online course, the main mode of instruction is online instructional videos that I have recorded. As with any course, it is imperative that you **view all of the video lectures** in sequence and in a timely manner. To help the class progress at a comparable pace, I will release the videos in one-week modules. Each video will be approximately 10 – 15 minutes in length and you are encouraged to stop, replay and review the videos as needed to fully understand the material.

15% of your grade will be based on **weekly quizzes** based on the material in the videos and related reading assignments. The quizzes are mostly multiple choice and are not intended to be tricky or overly difficult but simply to ensure that you have viewed the videos and completed the required reading material. Quizzes will also be immediately available on the course website every week and can be completed anytime up to the end of the week, at which point the quiz will be closed and you will receive a 0% if not completed by then. Quizzes must be completed independently but you can refer to the textbook and videos (open book). However, they are timed such that you will not have sufficient time to look up all of the answers and should not simply rely on the textbook.

While you should do your best to complete all of the quizzes, in recognition of unexpected emergencies and other unavoidable situations, I will **drop your lowest**



**quiz score.** However, this means that I will not accept other excuses for missing quiz deadlines except in exceptional circumstances.

## 4.2 Class participation

Although this is an online course, it is helpful to you and other students if we can create as collaborative a learning environment as possible. Students do not learn in isolation nor only from the instructor or textbook; you are tremendous resources to each other and often in the best position to help and support each other with questions and concerns. To encourage you in this, I expect you to **post at least two questions and/or responses to the online discussion board** throughout the duration of the course. In general, I will wait for students to answer questions of other students before posting myself. You will also be asked to **post a brief introduction** to yourself in Week 1 stating your major (or intended) major, interest in the course and how you hope to use Excel in your future goals and career. Class participation will constitute 5% of your grade, but I will also keep in mind students that are particularly helpful when considering marginal grades.

## 4.3 Assignments

There will be **four assignments** throughout the course with each posted approximately once every week throughout the semester. You will have one week to work on each assignment but must e-mail me your completed spreadsheets by 11pm on the posted due date. Each assignment is worth 10% of your grade (40% total). The assignments will build on each other and follow the material in the videos and textbook. Generally, they will cover the following topics:

*Assignment #1:* Creating a workbook, modifying a workbook, entering data, creating tables, basic calculations.

*Assignment #2:* Formatting data and cells, downloading data, data manipulation, sorting and summarizing data.

*Assignment #3:* Creating and refining charts and other graphics, and interpreting trends in data.

*Assignment #4:* Solver, Goal Seek and PivotTables.

If you have trouble with a particular assignment, feel free to contact me via e-mail, visit me during office hours, or post your question to the course website. You may also work on the assignments in groups as long as you do not directly copy each other's work or share files—each student must turn in his or her own spreadsheet. Copying another student's spreadsheet is not allowed and will be dealt with per



UW policies and procedures. At a minimum, no credit will be given for the plagiarized material and a report will be forwarded to the Dean of CALS. Given the nature of the assignments, it will be very clear if there is direct copying or sharing of files.

#### 4.4 Research project

To provide students with experience in preparing a complete research report using spreadsheet tools, graphics and analysis, students will prepare a final research project to be completed by the end of class. This will constitute 40% of your grade.

The final research project will include choosing a country or U.S. state, downloading data of economic indicators related to your state or country (e.g., GDP, unemployment, inflation, population), creating tables and graphics to summarize and present your data, and interpreting the graphics and tables. You will also compare your country or state's economic indicators to a region, country or the world, as appropriate. For example, if you choose a country, you should compare that country's economic growth to the world or a larger region (e.g., for Brazil you might compare its economic growth with the rest of Latin America or with the world); if you choose a U.S. state (e.g., Wisconsin), you might compare Wisconsin's unemployment rate to the rest of the U.S.

Some sources of data you may wish to use include:

World Bank: <https://data.worldbank.org/indicator>

International Monetary Fund: <https://www.imf.org/en/Data>

U.S. Federal Reserve: <https://fred.stlouisfed.org/>

The report should include **at least 4-5 economic indicators** covering a time period of at least 20 years to allow you to explore trends over time. You should also include **at least four graphs and two tables** that summarizes your indicators, as well as an executive summary, and at least one paragraph that briefly interprets the data in each table/graph. The full report should be roughly 10 - 12 pages (single-spaced) including all tables and graphics (please do not exceed 15 pages).

This type of report is common among business economists and international economists that seek to analyze trends in an economy's performance to consider its economic development over time, potential for investment, or impact on other countries/states. I create a similar report in my work as Senior Economist for the Credit Union National Association (CUNA) and will provide examples both online and through videos to ensure that you understand exactly what is expected of you. I will also include a video reviewing the main important economic indicators you

may wish to include.

Finally, while I will reserve the last week of the course for you to work on finalizing the project, I strongly recommend that you do not wait until the last week to begin working on it. To encourage you to make progress on the project throughout the semester, I will set the following deadlines:

<b>Task</b>	<b>Deadline</b>
Choose country / state	End of week 1
Choose economic indicators & download data	End of week 2
Final project due	End of week 5

## 6. Course Outline

<b>Week</b>	<b>Topics</b>	<b>Videos</b>	<b>Tasks</b>
Week 1	Excel basics Work with data Tables Formulas Functions Summarizing data	Welcome (~5 min.) Syllabus review (~15 min.) Overview of course website (~10 min) Intro. to spreadsheets Part 1 (~15 min.) Intro. to spreadsheets Part 2 (~15 min.) Working with data Part 1 (~15 min.) Working with data Part 2 (~15 min.) Intro to Tables (~15 min.) Intro to formulas & functions (~15 min) Data sources & downloading data (~20 min) Conditional formulas & errors (~15 min)	Read Chs. 1-3 Post introduction on Canvas Quizzes #1-3 Choose project topic
Week 2	Appearance Formatting Reordering data Look up info Basic finance	Workbook appearance (~10 min) Conditional Formatting (~9 min) Example: Creating a Personal Budget (~15 min) Filtering data (~12 min) Sorting data (~7 min) Look up info / vlookup (~15 min) Finance basics (~15 min) Research project overview (~15 min)	Read Chs. 4-6 Quizzes #4-#6 Indicators & data due Assignment #1 due Indicators & data due
Week 3	Charts & graphics Charts in PowerPoint Charts in Word Alternative data sets Quick Analysis	Intro to Graphs: Bar Chart (~19 min) Graph Example #2: Stacked Column (~15 min) Graph Example #3:	Read Chs. 8-9, 13 Quizzes #7-#9 Assignment #2 due



		Multiple Category Line Graph (~17 min)	
		Graph Example #4:	
		Combo / Dual Axis Graph (~15 min)	
		Graph Example #5:	
		Clustered Column (~13 min)	
		Working with Excel Charts in MS Word (~16 min)	
		Quick Analysis (~10 min)	
Week 4	Optimization	Data Tables #1: Intro (10 min)	Read Chs. 10-11
	Data Tables	Data Tables #2: Finance Example	Read p. 431-432
	Descriptive Stats	(16 min)	Read p. 389-402
	PivotTables	Goal Seek (~5 min)	Quizzes #10-#12
	Advanced Stats	Solver (~19 min)	Assignment #3 due
	Misc. Topics	Data Analysis: Descriptive Statistics	
		(~11 min)	
		Data Analysis: Histogram (~18 min)	
		Data Analysis: T-test of means (~10 min)	
		Data Analysis: Regression (~18 min)	
		PivotTables - Introduction (~8 min)	
		PivotTables – More advanced (~9 min)	
		Printing (~10 min)	
		Collaborating / Security (~15 min)	
Week 5	Final project	<i>Finish research project</i>	Final project due
			Assignment #4 due

## 7. Other Resources

### 6.1 Lynda

While all of the material necessary to succeed in this course is included in my online lectures and the textbook, it is often helpful to have additional resources for students that want to spend more time with the material or experience an alternative/additional explanation. Fortunately, there are many online resources that also teach Excel. One helpful resource is [Lynda.com](http://Lynda.com), which includes an extensive online database of videos for learning Excel (and other software).

As a member of the UW community you have unlimited access to the *Lynda.com* website. However, to utilize the UW site license you must login to your *MyUW* account and add the *Lynda.com* app to your *MyUW* webpage. You do this by clicking on the *MyUW* “Add more to home” button (top right). After you have added the *Lynda.com* app, click on the *Lynda.com* icon on your *MyUW* webpage. (Do not go directly to [www.lynda.com](http://www.lynda.com)). Once you click on the *Lynda.com* icon from within *MyUW*, you should be directed to a login form where you input your UW NetID information. Once



in, you can search for the Excel playlists and any particular topic you may be interested in learning more about. I will also post links to relevant Lynda videos on the course discussion board throughout the semester. For additional information, this [DoIt Knowledgebase document](#) contains a series of questions/answers concerning how to access *Lynda.com*.

## 6.2 Youtube

In addition to *Lynda.com*, there are numerous free [Youtube](#) videos that also explain various functions and methods in Excel. You can easily search for these videos by typing the desired topic into the Youtube search bar (i.e., “[vlookup](#)” or “[PivotTables](#)”). Some Youtube playlists that you might find helpful include:

1. [Excel for Beginners](#) by Technology for Students and Teachers
2. [Intro to Excel](#) by FreeTutorials
3. [Microsoft Excel 2016 Tutorial for Beginners](#) by Subjectmoney

## 6.3 Statistics: Khan Academy

While there are no prerequisites for this course, some basic knowledge of statistics—such as averages and medians—is necessary to fully understand the material. In my videos, I will review the statistics necessary for the course, but if you feel you need additional resources, the [Khan Academy](#) is an excellent source of video tutorials on statistics (and many other topics). You can easily search their videos for any topic you might be having trouble with (e.g., “[medians](#)”).

While I may briefly discuss more sophisticated statistics in my videos—such as t-tests and regressions—you will not be required to master these topics or use them in your assignments or research project; the purpose of that material is simply to provide examples of more advanced statistical techniques that can be done in Excel, for those that are interested or already have the statistical background.

# 8. How Course Hours are Met by the Course

In accordance with the [UW-Madison Credit Hour Policy](#) (b), it is expected that students in this course will engage in at least 90 hours of learning activities (45 hours per credit), including viewing weekly instructional videos, taking weekly quizzes, four at-home assignments, weekly reading and studying of the textbook, class participation, and a final research project. Specifically, students should expect to spend at least 4.5



hours per week, on average, viewing and replaying the instructional videos (22.5 total hours); 3 hours per week reading the textbook and reviewing important material (15 total hours); 90 minutes per week preparing for and taking weekly quizzes (7.5 total hours); and 60 minutes per week engaging in class participation (i.e., posting questions and answers to the course website, and reading others' posts) (5 total hours). In addition, students should spend at least five hours on each of the four assignments (20 total hours) and 20 hours on the final research project. For an intensive 5-week course, this means at least 18 hours per week of dedicated study time.

## **9. Academic Integrity**

By enrolling in this course, each student assumes the responsibilities of an active participant in UW-Madison's community of scholars in which everyone's academic work and behavior are held to the highest academic integrity standards. Academic misconduct compromises the integrity of the university. Cheating, fabrication, plagiarism, unauthorized collaboration, and helping others commit these acts are examples of academic misconduct, which can result in disciplinary action. This includes but is not limited to failure on the assignment/course, disciplinary probation, or suspension. Substantial or repeated cases of misconduct will be forwarded to the Office of Student Conduct & Community Standards for additional review. For more information, refer to [studentconduct.wiscweb.wisc.edu/academic-integrity/](http://studentconduct.wiscweb.wisc.edu/academic-integrity/).

## **10. Accommodations for Students with Disabilities**

The University of Wisconsin-Madison supports the right of all enrolled students to a full and equal educational opportunity. The Americans with Disabilities Act (ADA), Wisconsin State Statute (36.12), and UW-Madison policy (Faculty Document 1071) require that students with disabilities be reasonably accommodated in instruction and campus life. Reasonable accommodations for students with disabilities is a shared faculty and student responsibility. Students are expected to inform me of their need for instructional accommodations by the end of the third week of the semester, or as soon as possible after a disability has been incurred or recognized. I will work either directly with the you or in coordination with the McBurney Center to identify and provide reasonable instructional accommodations. Disability information, including instructional accommodations as part of a student's educational record, is confidential and protected under FERPA.

<http://mcburney.wisc.edu/facstaffother/faculty/syllabus.php>



## **11. Diversity & Inclusion**

Diversity is a source of strength, creativity, and innovation for UW-Madison. We value the contributions of each person and respect the profound ways their identity, culture, background, experience, status, abilities, and opinion enrich the university community. We commit ourselves to the pursuit of excellence in teaching, research, outreach, and diversity as inextricably linked goals.

The University of Wisconsin-Madison fulfills its public mission by creating a welcoming and inclusive community for people from every background – people who as students, faculty, and staff serve Wisconsin and the world. <https://diversity.wisc.edu/>