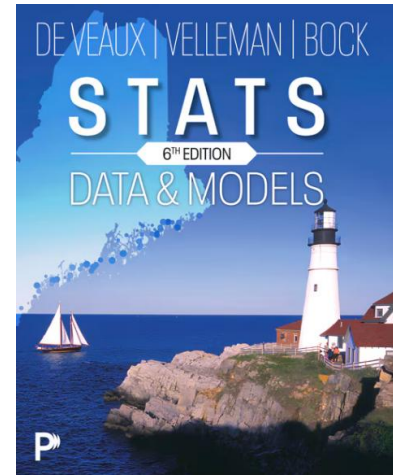


Time / Rooms	Monday, Thursday 2:30 – 3:45 pm in DMTI-121 and Wednesday 2:30 – 3:30 pm in DMTI-215
Instructor	Michael Baron
- Office	DMTI 106-D
- Office hours	Monday and Wednesday 1:00 – 2:00 pm in DMTI 106-D
- Email	baron@american.edu
- Website	https://dr-baron.github.io/
Assistant	Komal Patil
- Email	kp3911b@american.edu
- Office hours	Tuesday 7:30–8:30 pm, Friday 12:30–1:30 pm on https://american.zoom.us/j/95905235143

**Textbook:**

Stats: Data & Models, by DeVeaux, Velleman, and Bock; Pearson Publishing, 6th Edition, 2027.

Do not buy the book! You will gain full access to its e-version included in *MyLab*. Access *MyLab* from our **Canvas course** -> **Pearson Access**.

Software:

For computer mini-projects, we use *Statcrunch*. It is available to you through <http://statcrunch.american.edu>. It is also linked to our Canvas and Pearson course pages.

I also encourage you to explore *Microsoft Excel* and its Data Analysis ToolPak for everything that we learn in this course. See instructions on <https://dr-baron.github.io/Handouts/Excel/>.

Course description:

Data presentation, display, and summary, averages, dispersion, simple linear regression, and correlation, probability, sampling distributions, confidence intervals, and tests of significance. Use of statistical software both to analyze real data and to demonstrate and explore concepts.

Learning Outcomes:

STAT-202 is a Q1 ([Quantitative Literacy I](#)) course. To satisfy Q1 requirements:

- Students will solve quantitative problems including approaches that go beyond memorized procedures.
- Students will demonstrate an understanding of mathematical relationships from multiple perspectives, such as functions from graphical, verbal, numerical, and analytic points of view.

Besides these general outcomes, STAT-202 students will learn how to assess uncertainty in practical situations, summarize and visualize datasets, use basic probability rules and suitable distributions to compute probabilities, choose appropriate statistical methods and conduct statistical inference such as estimation and hypothesis testing, interpret results, and use computer software for the implementation of statistical routines.

Course schedule (can be slightly modified during the semester)

Aug 31 – Sep 3	Introduction. Population and sample. Statistics and data in practice. Displaying and visualizing data.	Ch. 1 (10 to read) Ch. 2 (2.1 – 2.3)
Sep 8 – 10	Descriptive statistics. Outliers. Transformations. <i>Labor Day on Sep 7</i>	Ch. 2 (2.4 – 2.5) Ch. 4 (4.2, 4.4)
Sep 14 – 17	Relationships among data. Two-way contingency tables. Comparing groups. Time series.	Ch. 3 Ch. 4 (4.1, 4.3)
Sep 21 – 24	Normal distribution. Calculating Normal percentiles. Checking Normality.	Ch. 5
Sep 28 – Oct 1	Relationships between variables. Regression and correlation. Scatterplots. <i>Midterm #1 (Descriptive statistics, graphical displays, and Normal distribution)</i>	Ch. 6, 7 (7.1-7.7.3) Ch. 1-5
Oct 5 – 8	Linear regression continued. Regression diagnostics, checking assumptions. Relations among many variables, and multiple regression.	Ch. 7-9 (7.5-7.7, 8.1-8.3, 9.1-9.5)
Oct 12 – 15	Probability rules. Independence. Conditional probability and Bayes rule.	Ch. 12-13
Oct 19 – 22	Random variables and their distributions.	Ch. 14
Oct 26 – 29	Discrete distributions: Bernoulli, Binomial, Geometric, Poisson. Calculation of probabilities.	Ch. 15
Nov 2 – 5	Sample mean and sample proportion. Their sampling distributions and confidence intervals. <i>Midterm #2 (Probability, random variables, regression)</i>	Ch. 16 Ch. 6-15
Nov 9 – 12	Testing statistical hypotheses. Level of significance. P-values and their interpretation.	Ch. 18-19
Nov 16 – 19	Two-sample tests and confidence intervals. Comparing means of two populations. Comparing proportions.	Ch. 20
Nov 23	Matched pairs. Related tests and confidence intervals. <i>Note: Nov 23 class will be online and synchronous, at 2:30-3:45 pm EST.</i>	Ch. 21 (21.1-21.3)
Nov 25–29	<i>Thanksgiving Break</i>	
Nov 30 – Dec 3	Chi-square tests. Testing multiple proportions. Testing independence.	Ch. 22
Dec 7 – 10	Analysis of variance (ANOVA). Testing multiple means. Practice final exam and review.	Ch. 25
Dec 14	<i>Final Exam</i>	Ch. 2-9, 12-22, 25

Quizzes and exams:

Quiz 1	Thu, Sep 10	Quiz 7	Thu, Oct 22
Quiz 2	Thu, Sep 17	Quiz 8	Thu, Oct 29
Quiz 3	Thu, Sep 24	Midterm 2	Due Nov 1
Quiz 4	Thu, Oct 1	Quiz 9	Thu, Nov 5
Midterm 1	Due Oct 4	Quiz 10	Thu, Nov 12
Quiz 5	Thu, Oct 8	Quiz 11	Thu, Nov 19
Quiz 6	Thu, Oct 15	Quiz 12	Thu, Dec 3

Final Exam Monday, December 14, 2:30 – 4:30 pm

Grading:

Weekly homework	10%	Assigned and submitted via <i>MyLab</i> . Due each Wednesday.
Weekly quizzes	20%	10-minute quizzes every Thursday. The lowest quiz is dropped. Each quiz covers the material of the preceding week and the latest homework. Taken in class. Closed-books, closed-notes, and closed-computers. <i>One cheat sheet with formulas is allowed.</i>
Two midterm exams	15% each	Each midterm covers several chapters of the material. Taken at home, online (<i>MyStatLab</i>), within a given one-week slot.
Final exam	40%	The Final exam is effectively cumulative because the early material is used in later chapters. Taken in class. <i>Three cheat sheets are allowed.</i>

93 – 100% = A

90 – 93% = A-

87 – 90% = B+

83 – 87% = B

80 – 87% = B-

77 – 80% = C+

73 – 77% = C

70 – 73% = C-

60 – 70% = D

0 – 60% = F

Rules. On quizzes and the final exam, *show your work*. I will grade your solutions, not your answers. Therefore, no work – no credit.

No late assignments. However, it is possible to take an exam or quiz early, for a good reason, for example, a business trip or a religious holiday. So, plan ahead.

No electronic devices during lectures, exams, and quizzes, except for the course purposes. No iPods, telephones, playstations, and other gadgets, please. For exceptions, ask me for permission.

Calculators are allowed. Any simple calculator is sufficient.

According to the University's Academic Integrity Code, I am required to report cases of *academic dishonesty* to the Dean of the College of Arts and Sciences. AU's academic code is found at <http://www.american.edu/academics/integrity/>

Tips

- Collaboration on homework is ok. Even encouraged! Quizzes and exams are to be done individually.
- On quizzes and exams, *show your work*. I will grade your solutions, not your answers.
- *No late assignments.* Sometimes exceptions are granted, given a serious reason. However, it is possible to take an exam or quiz early, for example, because of a business trip or a religious holiday. So, plan ahead.
- A steady effort to review material and work out all the assigned problems is your best way to succeed in this course. Always keep up with the course because the material is built upon the previously covered concepts.
- Use your right to ask questions in class and during office hours.
- For each exam and quiz, review all the new concepts, methods, formulas, etc. Try to understand the methods rather than to memorize them.
- For each quiz, it may be useful to prepare a brief *summary* of important formulas and methods that you may need. Arrange it on a sheet of paper in the most convenient way. Do the same for the exams! Such summaries will help you use your exam time efficiently.

Support Services

A wide range of services is available to support you in your efforts to meet the course requirements.

Quantitative Tutoring Lab and Online Statistical Software Support. Tutors should be able to help you with Calculus, Algebra, and basic Statistics, maybe statistical software, but you should not count on getting all homework solutions! The Tutoring Lab offers both one-on-one and drop-in tutoring. Check back on <https://www.american.edu/provost/eagle-learning-center/quantitative.cfm> or email quantsupport@american.edu for more information and tutoring hours. Online tutoring is available on <https://american.mywconline.net/>. This service is *free* for all our students.

Software support - [CTRL Connect, ctrl@american.edu](mailto:ctrl@american.edu), 202-885-2117.

Counseling Center (x3500, <https://www.american.edu/ocl/counseling/>) offers counseling and consultations regarding personal concerns, self-help information, and connections to off-campus mental health resources.

Eagle Learning Center offers free, student-centered services including the Writing Center, Academic Coaching, Supplemental Instruction, Peer-Assisted Student Support (PASS), and more. You can book an academic coaching appointment [online](#).

Office of Student Disability Support provides AU students with equitable access to the university environment through reasonable accommodations.

The **Center for Well-Being** has a full range of wellness-related services, including individual psychotherapy, group psychotherapy, victim/survivor advocacy services, crisis intervention, consultations, and other wellness-related programming.

Mantra Health (mantrahealth.com/American) offers free psychotherapy and coaching for AU students. Students are matched with a licensed provider. Mantra Health also offers drop-in counseling hours from 8 am to 12 am EST.

Help@American is a self-service library of knowledge articles about technology and student services in the areas of financial aid, billing, registration, housing, One Card, and dining. This service is available to all students, parents, and other AU community members and can be accessed via the AU portal and at <https://help.american.edu> (login required). Students can also chat with AU Central if they are not sure where to go for assistance with their concern.

Religious Holidays. Students may receive accommodation in the course for the observance of a religious and/or cultural holiday. The student should notify the professor as soon as possible should such a need exist. More information about accommodations for religious and/or cultural holidays can be found at www.american.edu/ocl/kay/request-for-religious-accommodation.cfm.

Emergency Preparedness. In the event of an emergency, students should refer to the AU Web site (<http://www.american.edu/emergency>) and the AU information line at (202) 885-1100 for general university-wide information. In case of a prolonged closure of the University, I send updates to you by email and will post all announcements on the course web site.

Software guidance

In STAT-202, we'll actively use *statistical software*: StatCrunch and Excel. Both of them are available to AU students free of charge, and both are integrated with MyLab.

You can access Statcrunch in two ways:

- from MyLab on Canvas course navigator panel or
- using the <http://statcrunch.american.edu>

To get Microsoft Office, including Excel, for free: click on <https://www.american.edu/oit/software/free-microsoft-office.cfm>

1. StatCrunch

StatCrunch is an educational statistical software package available free of charge to students at AU. It is available with MyLab Stats and can also be accessed through <https://statcrunch.american.edu/>. Your AU username (xxxxxxx@american.edu) and password are required to login into AU's site license for the software. You may need to use Duo multifactor authentication when signing into AU's site license for StatCrunch. AU's StatCrunch license is available for the entirety of your time at AU. StatCrunch through MyLab Stats is only available for the duration of the course.

2. Excel

Microsoft Excel is a very popular component of the Microsoft Office. Excel is suitable for basic statistics and graphical representation of data. More advanced statistical tools are available in Excel's **Data Analysis Toolpak**.

To activate the Data Analysis Toolpak in [Microsoft Excel](#) (2013, 2016, 2019, 2021, and MS 365) on Windows, open Excel, go to **File > Options > Add-Ins**, select **Excel Add-ins** from the Manage menu, click **Go**, check **Analysis ToolPak**, and click **OK**.

Steps to Enable the Toolpak

- Open **Microsoft Excel** on your computer.
- Click the **File** tab in the top-left corner.
- Select **Options** at the bottom of the left-hand menu.
- Click **Add-Ins** on the left side of the Excel Options window.
- Look at the bottom of the window for the **Manage** box and make sure **Excel Add-ins** is selected, then click the **Go...** button.
- In the small **Add-Ins** dialog box that pops up, check the box next to **Analysis ToolPak**.
- Click **OK**.

See my Excel instructions on <https://dr-baron.github.io/Handouts/Excel/>