DSCI 3710: Business Statistics with Spreadsheets
Course Outline: Summer 2022
Section 501: Monday & Wednesday
6:00 — 9:50 PM, Frisco Hall Park A 128

1. COURSE INTRODUCTION

Statistics has become an essential tool of modern management practice. This course is the second of two sequential courses (DSCI 2710 & DSCI 3710) that emphasize the introductory theory and application of statistical techniques for business decision-making. The focus will be on data collection and interpretation through the application of statistical inference. The statistical techniques taught in this course will be applicable to a variety of management disciplines, but most importantly they will provide you with the tools to assess the validity and significance of many of the analyses that will be presented to you during your studies as well as your career.

1.1 Course Goals

Our Goals from two courses (DSCI 2710 & DSCI 3710) are to:
1. Become more comfortable with data analysis
2. Learn how to quantify and present uncertainty
3. Learn the right questions to ask when presented with a data analysis

Practically speaking, by the end of these courses you should be able to:
1. Determine whether men are significantly better paid than women? Or does it depend on other factors?
2. Interpret a marketing survey
3. Design process factors to achieve the greatest impact on quality, speed, and performance of services for a financial services company
4. Understand how demand uncertainty can affect customer satisfaction
5. Calculate a stock's expected rate of return

The other courses that this course is most relevant to include: Marketing Management, Data Visualization, Operations Management, Corporate Finance, Investment Management, Financial Engineering, Decision Analysis

Prerequisite(s): To be eligible for enrollment in upper level business courses, students must have satisfied **all** of the following requirements:
 – A 2.70 grade point average
 – Completion of 45 hours of the pre-business course work
 – Completion of **DSCI 2710** or equivalent a grade of C or better. **DSCI 2710** requires **MATH 1100 and 1190** as well **BCIS 2610**. In addition, students are required to have completed: Accounting 2020 with grade "C" or better and Economics 1100.

If you are a business major (including business undecided or pre-accounting majors) enrolled in upper level business courses and do not meet these requirements, please drop the upper level courses immediately in order to receive a refund of your tuition. If you choose not to drop, the Dean's office will administratively cancel your enrollment in those courses. In that event, you will **not** receive a tuition refund.

2. INSTRUCTOR INFORMATION

Instructor: Fouad H. Mirzaei
Office: 319 E – BLB
E-mail: *fhmirzaei@unt.edu*
Telephone: (940) 369 5072

1.1 Office Hours

Regular office hours [via Zoom]: Thursday: 3:30 – 5:00 pm or By appointment
- − The regular office hours will be held between the first day of classes and the last day of classes.

Test office hours [via Zoom]: The details of test office hours to be announced during lectures.

2.2 Additional assistance

- − *If you need any additional assistance, simply contact me via email. I am here to help you.*

- − Statistics Lab (Online and In-person). This is available for students seeking additional help. Hours and venue will be announced in class and posted to the course website on Canvas. The purpose of the lab is to assist students to overcome difficulties they may encounter in attempting statistics problems. It is not meant to be an extensive tutoring service. Hours will be announced in class and/or posted on the course website.
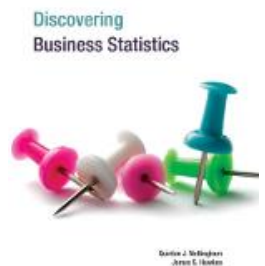
3. COURSE INFORMATION

3.1 Textbook and Software

Required: Discovering Business Statistics, by Hawkes Learning Systems (HLS), ISBN 13: 978-1-941552-85-8 (Courseware + eBook*). Included eBook can only be accessed online through the courseware.

The software access code is required to complete the assignments. If you took DSCI 2710/3710 and have an access code for the above product, then you can reuse it. If you have an access code for a different product, please buy a new code**.**

Recommended: Discovering Business Statistics by Nottingham/Hawkes, Hawkes Learning, ISBN 13: 978-1-941552-69-8 (Courseware + eBook* + Hardbound Textbook).

Note that, the textbook is also sold separately (Hardbound textbook only: ISBN-13: 978-1-935782-87-2). No need to bring the textbook to every lecture.

Optional Books: <u>Any Excel Primer</u> - Most of you had an Excel reference in BCIS 2610 that will suffice.

You can do your HLS assignments by accessing HLS over the web at:

> **https://learn.hawkeslearning.com/Portal**

- HLS training video: http://tv.hawkeslearning.com/Video.htm?PlayerID=2956123671001

Please see the Student Getting Started Directions page at the end of this document. If you wish to install the software on your personal laptop (optional), please see more information there.

3.2 Lecture Practice Questions

*Required***:** I send you a file that is ready to use and contains in-class practice questions.

3.3 Teaching Method:

1. Students are encouraged to pay attention to commercials and news items in print, as well as audiovisual media to become aware of the wide use of statistics in our daily lives. To better assist students in understanding the use of these methodologies in business, many of the class problems will be presented as simple business cases.
2. Students will observe and actively participate in the working of problems found in the textbook. In addition, students will be required to complete modules in Hawkes Learning Systems (HLS): Business Statistics. This process is intended to help students make more efficient use of their time in learning how to solve problems.
3. Students are required to participate in class discussions on statistical methodologies applied to non-trivial cases in various areas of business. The use of spreadsheets in analyzing business data will be stressed.
4. Students are required to complete tutorial assignments and computer projects.

3.4 General Comments

1. Doing the assignments is essential for success in this course. In fact, the assignments constitute a large portion of your grade in this course. Students are encouraged to keep up with the homework and meet the submission deadlines.
2. Students should not hesitate to ask questions in class. Usually someone else has the same question, so, by asking in class everyone can benefit from the question.
3. Regular and punctual attendance for the full period of each class is expected (irrespective of whether roll calls are made or otherwise). Absences and tardiness are likely to cause you to miss the presentation of significant material and this may result in a lower grade. The mid-term exam or the quizzes may be missed only if you have a University-approved excuse. Whenever applicable, such an excuse is to be provided to the instructor in writing, as early as possible.
4. Students have the final responsibility for seeing that they properly withdraw before the scheduled last drop day, in case they wish to withdraw from/ drop the course. A student who stops attending class should execute the drop procedure since failure to do so will result in a grade of "F" which cannot be changed.
5. Students are requested not to phone the ITDS department for their final grade in the course. Final grades are only available electronically.

3.5 Evaluation

Grades are a measure of the performance of a student in individual courses. Each student shall be judged on the basis of how well he or she has command of the course materials. To demonstrate their ability to use quantitative techniques in business, students will complete the tutorials (Hawkes Learning Systems: Business Statistics), analyze real business data for class cases using Excel and answer exam questions based on short data analysis situations. The exams and assigned work reinforce the course objectives by simulating real business problems that require students to communicate.

The 16 HLS modules are worth a total of 400 points (@ 25 points each); The 4 online Excel case quizzes are worth a total of 100 points (@25 pts. each); The two online HLS module quizzes are worth a total of 200 points (@ 100 pts. each); The mid-term exam and the final exam are worth 150 points each.

Mid-term Exam	250
HLS Tutorials (16*25 pts)	400
Excel Quizzes (4*25pts)	100
Final Exam	250
TOTAL:	1000

+ One Online Quiz (bonus)	40

Other Extra Credit: Each HLS Tutorial that you finish on time earns you 4 bonus points. That means a student who finishes all tutorials on time will receive additional 64 points. These extra credit points are added to your total but the maximum score is still out of 1,000 points.

Letter Grades:

900+ = A	800+ = B	700+ = C	600+ = D	Below 600 = F

Historically, the top 65% fall into the A & B categories. I reserve the right to give more A and B depending on merit. Attendance, class participation and in-class practices can positively impact a student's final grade. A & B percentages are not grounds for appeals.

3.6 DSCI 3710 Course- Specific Policies

1. **Homework:** Homework is assigned and should be completed when due. While only the HLS modules (tutorials), WEBTESTS and Quizzes on Excel cases are graded, all reading material is testable, even if it is not emphasized in the lecture.
2. **Excel Cases:** Projects involving the use of Excel to analyze business data are assigned. These are an important part of the course grade that is graded via an online Quiz that is available in the HLS software using WEBTEST on the dates they are due. Late Excel Cases are accepted by the last class before final but receive no bonus. Thereafter, the Excel case assignments receive no credit.
3. **Tutorial Exercises:** Tutorial exercises using the **Hawkes Learning Systems: Business Statistics (HLS)** are assigned. The due dates for the tutorials using **HLS** software are assigned in this syllabus. These form a significant part of the course grade and **must be registered onto the HLS Web database by the due date** to receive full credit and as well as bonus points (three extra credit points per module). On completion of a module in a COB lab, or at home, you should **save the HLS certification code to your disk**. **If you are connected to the internet**

the module will register automatically **but always double check that you have received credit by going to your progress report**. If there is any problem, exit HLS and then go to your course HLS Web site.

Late tutorial submissions still receive full credit, provided they are registered by the last class day before the final; however, no bonus points are earned. No credit is awarded for any tutorial exercise completed after the last class day before the final. To get your authorization code for using the HLS software, if you are a new purchaser of the software, you will need to visit HLS web site. PLEASE SEE PAGE 11 of this syllabus for detailed instructions. If you previously purchased the software (DISCOVERING BUSINESS STATISTICS) and lost your code you should either visit http://www.hawkeslearning.com/Support/GetYourAccessCode/AccessCodeLookup.htm or send an E-mail to HLS customer service at codes@hawkeslearning.com. It would be best to send your name as you had registered with HLS originally, the name of the software, the prior term instructor's name, the term and year of the purchase, and the course for which you made the purchase (DSCI2710 or DSCI3710). See page 11 of this syllabus for a full set of HLS instructions. You can also download (save) a comprehensive set of instructions directly from the HLS web site by going to:

http://www.hawkeslearning.com/Support/InstallationInstructions.htm. In addition, there is a more detailed or full set of student directions that walk through the product completely on that page.

4. **Exams:** There is one online mid-term exam worth 150 points and a comprehensive in-class final worth 150 points. The midterm will be available on Canvas. The **department final exam is scheduled as listed at the end of this syllabus. Please check for the time and location of your exam later.** No make-up exams are given, however, if a student misses the first exam (with an appropriate University approved excuse, as mentioned above) the final will be used to substitute for the missed exam (as well as for the final exam). For each exam you will be allowed to use formula sheets, notes, textbooks, any calculator, and Tables. Each of the **two (100 points each) HLS quizzes** is a summary test of the modules completed prior to them. The quizzes can be done **only** on certification of these component/ prerequisite modules. Late registration of the modules may disable you from the HLS Quizzes. Any issues related to on time completion or credit for the modules and online quizzes should be resolved with the instructor within one week following their respective due dates. Such issues cannot be considered weeks later and especially not during compilation of the final grades, at the end of the semester.

5. **Taking Online Excel and HLS Quizzes:** To take a quiz in HLS, open the software as usual and select Web Test at the bottom of the page. This will open the Web Test area. Select Take Test on the left side of the page. When a new window opens, select Assigned Test and OK. From the Select a Test Menu you can select the appropriate Excel Quiz, Practice HLS Quiz, or Online HLS Quiz. These Quizzes will not open until the dates as posted in the progress report or as announced in class. Once you select the Begin Test button the clock is running for the assigned time allotted for the Quiz. If you log off before completing the Quiz/Exam, you will receive either a -0- or partial credit for what portion you did complete. Therefore get everything you need BEFORE opening the Quiz.

3.7 Department, College, and Other Policies

1. If you wish to register a complaint, please first discuss your complaint with me. If you wish to carry it further after this step, please contact our course coordinator, Dr. Hakan Tarakci, and then the ITDS Department Chair. I will provide you their contact information.
2. As a general rule, the course format requires **no make-up exam** be given. The grade of "I" is not given except for rare and very unusual emergencies, as per University guidelines.
3. You are required to take all exams, unless a written medical excuse is provided. In that case, you should discuss the alternative arrangements with your instructor. Please have a picture ID in your possession when taking all exams.

4. Dates of drop deadlines, final exams, etc., are published in the university catalog and the schedule of classes. Please be sure you keep informed about these dates (and any change thereof).
5. Grounds for Dismissal from the Course: A student can be dismissed from the course with a grade of "WF" for reasons of unsatisfactory progress. Some grounds for unsatisfactory progress are as follows:
   − The student has more than 3 un-excused assignment returns (such as Excel or HLS, on their final due dates) / absences.
   − The student misses (providing no reason)/ or is caught cheating on an examination.

If a student is suspected of unsatisfactory progress, the instructor will first issue a warning (oral) to the student. Upon issuance of the warning, the student has three (3) actual days to provide evidence supportive of the student's position. For any missed exam the following evidence will be accepted as tenable excuse:
   − Written and valid doctor's excuse for illness
   − Inability to reach class due to inclement weather (i.e. ice and/or snow, flooding, etc.)
   − Valid UNT sponsored event (must provide signed reference from head of sponsoring department.)
If the student provides satisfactory evidence, the instructor will reinstate him or her into the class.

If a student misses the final exam, he or she must provide the information stipulated above. If the excuse is acceptable, the instructor will submit an "I" for the final grade and the student must make up the exam within the first two (2) weeks of the following term. **This is the <u>only</u> circumstance in which an "I" grade will be awarded. If you think you will not be able to complete the class satisfactorily, please drop the course. An "I" grade cannot be used to substitute your poor performance in class.**

If a student is caught cheating, he or she will be immediately removed from the class with a "WF" grade. To be reinstated, the student must provide <u>substantial</u> evidence to the contrary in a hearing held in the Dean of Students Office, University of North Texas.

University Academic Integrity Policy

This course adheres to the UNT policy on academic integrity. The policy can be found at http://vpaa.unt.edu/academic-integrity.htm. If you engage in academic dishonesty you will receive a failing grade on the test or assignment, or a failing grade in the course. In addition, the case may be referred to the Dean of Students for appropriate disciplinary action.

Disability Accommodation Policy

The College of Business Administration complies with the **Americans with Disabilities Act** in making reasonable accommodations for qualified students with disability. If you have an established disability as defined in the "Act" and would like to request accommodation, please see your instructor as soon as possible. Office hours and phone number are shown at the top of this syllabus.

Campus Closing Policy

In the event of an official campus closing, please check your UNT e-mail account (EagleConnect) or the HLS notice system for instructions about how to turn in various assignments, how the due dates are modified, etc.

4. TOPICS AND LECTURE SCHEDULE

This schedule is <u>subject to change</u> according to the needs of the class. I will try my best to give you advance notice about any changes**. (HLS#** means **HLS: Business Statistics tutorials, HT** means **Hypothesis Testing.)**

W	Topics	Sections, HLS and Excel Assignments
1	*Introduction to the course* Background overview 2710	**7.2, 7.3, 8.2, 8.3 HLS: Obtain authorization code**
	Chapter 10: Hypothesis testing for population mean - large samples. *Exclude calculations of power and beta; concepts only*	**Dates assignments are covered in class – due dates are listed in HLS**
	Chapter 10: One-tailed test for μ with large n Use of p-values Hypothesis tests for population mean – small n introduction to t-tables	**HLS1: 10.4a HT means (Z-value)** **HLS2: 10.4b HT mean (t-value)** **HLS3: 10.4c HT means (p-value)**
	7/16: Quiz 1. Exam will be available online.	
2	**Chapter 11:** C.I. & hypothesis test for two populations means - large independent samples C.I. & hypothesis test for two populations means - small independent samples. *Exclude hand calculation for DF with unequal variance case* Paired (dependent) small samples from two populations	**HLS4:11.1 HT 2 means (σ known)** **HLS5: 11.2 HT 2 means (σ – unknown)** **Download Excel 1 Assignment** **HLS6: 11.3 Compare μ's (dep. n)**
	Chapter 12: F-test for two variances *right tailed tests - concept only* One-way analysis of variance. *Exclude calculations for test for equality of variance and hand calculation for Tukey test*	**Download Excel 2 Assignment** **HLS 7: 12.2-12.4 ANOVA** **CASE 1: Comparing population Means - Excel Quiz 1 (Multicultural)**
	Chapter 10: C.I. for population proportion: **large samples only**. Determination of sample size Hypothesis test for population proportion: Large samples	**CASE 2: One-way ANOVA** **Excel Quiz 2 (Marketing / Management)**

		HLS 8: 10.7a HT proportions (Z)
3	Hypothesis test for population proportion: Large samples (continued) **Chapter 11:** Comparing two population props. – Large samples. *Catch-up and Review*	**HLS 9: 10.7b HT prop. (p-value)* (*HLS 9: 10.7b not on the HLS Quiz 1) HLS 10:11.4 HT 2 proportions* (*HLS 10: 11.4 not on the HLS Quiz 1)**
	Catch up and Review (continued) **Utilize this time to certify any pending HLS modules**	**Download Excel 3 Assignment**
	*** Exam 1 on HLS modules 10.4a, 10.4b, 10.4c, 11.1, 11.2, 11.3, 12.2-12.4 and 10.7a*** Certification on these lessons (HLS assignments 1-8) is required to take the quiz	
	7/30: EXAM 1. Exam will be available online.	
4	**Chapter 15:** Chi-Square test for independence/homogeneity *Exclude pooling of contingencies* Chi-Square test: p-values using chi-square tables	**HLS 11: 15.3 Chi-sq. test for association**
	Chapter 4: Bi-variate data & correlation **Chapter 13:** Covariance & Least Squares Line Simple linear regression, model assumptions, meaning of s^2 Simple linear regression: hypothesis test and C.I. for slope Coefficient of determination, danger of assuming causality. *Exclude t-test for ρ*	**HLS12: 4.8 Scatter Plots & Corr HLS13: 13.1-13.5 Fit linear model** **CASE 3: Chi-Square test - Excel Quiz 3 (Marketing)** **HSL 14: 13.8 Regression I**
	Chapter 14: Estimation/Prediction Residual analysis Multiple regression: using Excel Global F- test vs individual t-tests	**HLS 15: 14.5a Multi regression HLS 16: 14.5b ANOVA regression Download Excel 4 Assignment**
5	Multicollinearity Dummy variables. Multiple regression using Excel	**CASE 4: Multiple Regression – Excel Quiz 4 (Real-Estate)**

| Multiple Regression Cases and Example
Step-wise Procedures, further residual analysis
Catch-up and review | |

*** Exam 2 on HLS modules 10.7b, 11.4, 15.3, 4.8, 13.1-13.5, 13.8, 14.5a and 14.5b***
Certification on these modules (HLS assignments 9-16) is required to take the quiz.

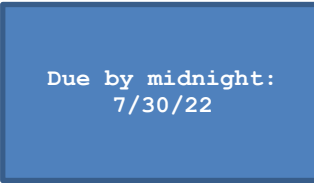**8/12: COMPREHENSIVE FINAL EXAM. Exam will be available online.**

LAPTOPS & CELL PHONES

You may bring your laptop/tablet computers to class, but you will NOT be permitted to have them open during the lectures, unless authorized by the instructor. You may not use cell phones or other electronic communication devices in class. Out of respect for your classmates, please turn your cell phones off, or set to vibrate mode.
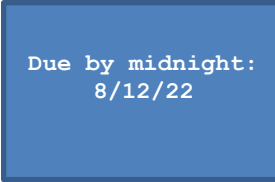
Please do not hesitate to contact me, if you need to discuss anything.

Assignment Due dates: Online registration due dates for the HLS: Business Statistics (HLS) Modules are shown in your <u>HLS Progress Report</u>. All modules are due by 11:59 pm of the slated due date.

(16 x 25 pts. = 300 pts)

No.	Module #	Module Name	Due Date
1	10.4a	Hyp. test for μ (Z-value)	
2	10.4b	Hyp. test for μ (t-value)	
3	10.4c	Hyp. test for μ (p-value)	
4	11.1	Comparing two means (sigma known)	Due by midnight:
5	11.2	Comparing two means (sigma unknown)	7/30/22
6	11.3	Comparing means (dependent samples)	
7	12.2-12.4	ANOVA	
8	10.7a	Hyp. test for proportions (Z-value)	

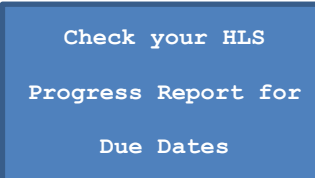**HLS Quiz #1 (covering modules 1-8, certification is required to take the quiz)**

No.	Module #	Module Name	Due Date
9	10.7b	Hypothesis test for proportions (p-value)	
10	11.4	Comparing 2 proportions (large independent samples)	
11	15.3	Chi-sq. test for association	Due by midnight:
12	4.8	Scatter plots and Correlation	8/12/22
13	13.1-13.5	Fit linear model	
14	13.8	Regression analysis I	
15	14.5a	Multiple Regression	
16	14.5b	ANOVA regression	

HLS Quiz #2 (covering modules 9-16, certification is required to take the quiz)

  Module registration is due by (11:59pm) of due date as "logged-in" on the WEB registration system. After completing a module in a COB lab, campus lab or done at home you should save the HLS certification code to your disk. You cannot enter certification codes by typing in the code.

  Late certifications are accepted for full credit but no bonus points. If you certify but are unable to register, send an Email with your certification code and describing the problem to your instructor within 24 hours of the system error. Any issue related to tardy/ late submission of modules are to be taken care of as soon as possible but not later than the last class before final. Please understand that such late certifications may result in your losing full score on the HLS Quizzes. No late modules are taken after **the last class day before the final**.

Quizzes: Printed analysis results are required for completion of online quiz on each Excel case.
Your grade on the Excel case is based on the quiz: <u>4 x 25 pts. = 100 pts.</u>

No	Topic	Due Date
Excel CASE 1	**Comparing population Means (Multicultural)**	Check your HLS
Excel CASE 2	**1 way ANOVA (Marketing/ Management)**	
Excel CASE 3	**Chi-Square test (Marketing)**	Progress Report for
Excel CASE 4	**Multiple Regression (Real-Estate)**	Due Dates

Excel case details are available through the Excel page on our course Web site.

Each excel case is evaluated using a short quiz based on it, given using WEBTEST on the due date. The quiz contains 5 questions (25 points) and students need to use their own analysis printout to answer the questions.

Student Getting Started Directions – see http://www.hawkeslearning.com/ for help

TO GET THE ACCESS CODE FOR YOUR COURSE:
1. Go to http://www.hawkeslearning.com/Support/GetYourAccessCode.htm. Phone HLS at 843-571-2825 for help
2. There will be three options on the above link and each option is explained clearly.
3. Choose the appropriate option that is applicable to you (for example "Purchase an access code")
4. If you are purchasing the access code anew, you will be taken to a secure site, where you will be asked to enter your credit card information. Please note that the address information MUST match the billing address of the credit card.
5. After your credit card information has been verified, you will be taken to a page where you will request an Access Code by entering your name, school, and email address. Upon submitting the Access Code request, your Access Code will be emailed to you as well as displayed on the screen.

TO DOWNLOAD and INSTALL THE HLS SOFTWARE AT HOME: use the update option instead if you have a version from a prior term. Hawkes Course ID is "UNTDBS" for installation. You may find direct download here:
Student Compact or Complete (larger file with audio/video Install for PC, Version 15.0.1.
(**http://fileburst.hawkeslearning.com/v15/dbs-student-setup.exe**) (Compact)
http://fileburst.hawkeslearning.com/v15/dbs-student-setup-full.exe (Complete) followed by its update at
http://fileburst.hawkeslearning.com/v15/v15-cumulative-updates.exe

Or follow the instructions below:
1. Go to the HLS site and select the "Students" -> "Download the Software" link or go directly to http://www.hawkeslearning.com/Support/Downloads.htm
2. Select "**Discovering Business Statistics (textbook by Nottingham, Hawkes)**" from the drop down list.
3. Click on the "**Student Complete Install for PC**" download option. (**Release date: 07/17/2015, Version: 15.0.1).**
4. When prompted, save the Installer program to your Desktop folder. Download an install any update files too.
5. After the file is saved to your desktop, double click on it to begin the installation. Please follow the prompts.
6. When prompted for the **Hawkes Course ID** enter **UNTDBS** in the box provided. **If you do not have internet access**, select "No, I will not be accessing an online progress report from this computer."

TO ENTER THE SOFTWARE AND SAVE YOUR ACCESS CODE:
1. Double-click on the purple diamond icon on your Desktop (or go to Start, Programs, Hawkes Learning Systems).
2. Enter your access code when prompted. You may type it, paste it, or load it from a disk (if you saved it from e-mail) by clicking the "F1-Load From Disk" option and browsing to the path where you saved it. If you type or paste your access code, you will be prompted to save it. Save your access code to a floppy disk or another option to avoid typing it each time.

TO ENROLL IN YOUR INSTRUCTOR'S GRADEBOOK:
1. **If you have internet access** and have entered your **Hawkes Course ID** (which is **UNTDBS**), you will automatically be asked to enroll in your instructor's gradebook the first time that you log in to the software. Choose your instructor's name and the correct section from the pull-down menus.
2. **If you do not have internet access** on the computer where the software is installed, you will need to enroll in your instructor's gradebook by going to www.hawkeslearning.com/UNTDBS . After entering your Access Code, you will be prompted to choose your instructor's name and the correct section from the pull-down menus.