BA 386T - STATISTICS

TEXAS MBA PROGRAM AT DALLAS

FALL 2011

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Course Web Page	via Blackboard

Course Objectives

The focus of this course is on learning how to manage uncertainty in business decisions through the use of quantitative models. The topics covered include regression models, time series forecasting models, decision analysis and simulation, with a strong emphasis on how to apply these techniques to real-world problems that arise in business. The techniques taught in the course will also be useful in performing analysis in most other MBA courses.

Regression analysis is one of the most powerful methods in statistics. It is particularly useful for determining the relationships between variables and using these relationships to forecast future observations. You will learn how to apply a regression model to real-world data using Excel, test the validity of the model with the available data, draw inferences from the model, and summarize the uncertainty of the inferences. Time series forecasting models are used to forecast future observations of time series data. An example of time series data is the monthly sales of a company. The fundamental idea of time series forecasting models is to use the pattern in the past history of the data (which might include trend, seasonal and/or cyclical components) to forecast future observations. These models also provide a valuable method for quantifying the uncertainty associated with the forecasts.

Decision analysis is a framework that enables you to make decisions that are consistent with an objective in the face of uncertainty. This framework provides a method to evaluate alternatives and to determine the value of acquiring various types of information. Simulation is a computation-based procedure for quantifying the impact of multiple interacting sources of uncertainty on an outcome of interest. Understanding the distribution of the possible outcomes allows both for a better understanding of the risk involved in a particular project as well as the identification of the inputs that are most influential in the project's value.

By the end of the course, you will be able to build models to solve real-world business problems. This involves choosing the appropriate model, performing the correct analysis, validating the model, and drawing the appropriate conclusions.

Materials

Required:

Textbook: *Data Analysis and Decision Making with Microsoft Excel* (4th edition) by Albright, Winston and Zappe.

Course packets distributed by the MBA program office – These will be discussed further in class

Grading

Your grade in the course will be determined as follows:

	Percentage
Professor Shively's Homework	15%
Professor Shively's Exam	35%
Professor Dyer's Homework	20%
Professor Dyer's Exam	30%

There is no predetermined grade distribution for this class. However, the faculty MBA Policy Committee has recommended a GPA of 3.40 $\pm$ 0.05. Historically, this course has been fairly close to the recommended GPA, but we reserve the right to deviate.

Course Policies for Professor Shively's Part of the Course

Homework

- You will receive homework assignments throughout the semester. Although you may discuss the homework problems and solutions among yourselves, every student is expected to hand in a set of solutions that he or she alone has prepared.
- You must show a complete solution (all steps and calculations) to receive credit for a homework problem. However, you do not need to submit computer output used to obtain an answer.
- All homework assignments should be submitted as hard copies (on paper) at the beginning of the class following the one they were assigned.

Exams

- Professor Shively's exam will be given on Saturday, September 24 (this exam covers the material in his half of the course).
- You may bring one 8½ $\times$ 11 inch page of notes and formulas to this exam.
- You should bring a calculator to this exam.

Laptops

- It is not necessary to bring a laptop to Professor Shively's class sessions. We will make extensive use of the computer in homework assignments but you will not need to use one in class. You may use a laptop to take notes if you want to although I would recommend against it. There will be some notation used in class (e.g. a few Greek letters and summation signs) that can be difficult to type into a computer unless you are familiar with special symbols.
- Laptops will not be used on Professor Shively's exam.

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Daily Surveys

- I will ask eight people each class period to turn in a daily survey in which you answer a series of short questions about the course, including such things as clarity of the lectures, applicability of the material, usefulness of the homework, etc. The purpose of these surveys is to improve the quality of the course throughout the semester.
- The surveys must be turned in before the beginning of the class following the class you are assigned. This will be discussed further in class.

Helpful Hints

- You are responsible for material covered in class, whether or not it is in the text.

Course Policies for Professor Dyer's Part of the Course

Homework

- You will receive homework assignments throughout the semester, and some will be individual assignments while others will be study group assignments.
- When preparing an individual assignment you may discuss the homework problems and solutions among yourselves, but every student is expected to hand in a set of solutions that he or she alone has prepared.
- You must show a complete solution (all steps and calculations) to receive credit for a homework problem. Only relevant and clearly labeled computer output should be handed in.
- All homework assignments should be submitted as hard copies (on paper) at the beginning of the class following the one they were assigned.

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Exams

- Professor Dyer's exam will be given on Saturday, December 3 (this exam covers the material in his half of the course).
- You may bring one 8½ × 11 inch page of notes and formulas to this exam.
- You should bring a laptop to this exam.

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Laptops

- It is necessary to bring a laptop to Professor Dyer's class sessions. We will make extensive use of the computer in class to work examples, and in homework assignments.
- Laptops will be used on Professor Dyer's exam.

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Helpful Hints

- You are responsible for material covered in class, whether or not it is in the text.

McCombs Classroom Professionalism Policy

The highest professional standards are expected of all members of the McCombs community. The collective class reputation and the value of the Texas MBA experience hinges on this.

Faculty are expected to be professional and prepared to deliver value for each and every class session. Students are expected to be professional in all respects.

The Texas MBA classroom experience is enhanced when:

- **Students arrive on time.** On time arrival ensures that classes are able to start and finish at the scheduled time and enhances learning by reducing avoidable distractions.
- **Students display their name cards.** This permits fellow students and faculty to learn names.
- **Students are fully prepared for each class.** Much of the learning in the Texas MBA program takes place during classroom discussions. When students are not prepared they cannot contribute to the overall learning process. This affects not only the individual, but their peers who count on them, as well.
- **Students minimize unscheduled personal breaks.** The learning environment improves when disruptions are limited.
- **Students respect the views and opinions of their colleagues.** Disagreement and debate are encouraged. Intolerance for the views of others is unacceptable.
- **Phones and wireless devices are turned off.** Please be sure to turn off your phones and wireless devices before class begins.

Academic Dishonesty

I have no tolerance for acts of academic dishonesty. Such acts damage the reputation of the school and the degree and demean the honest efforts of the majority of students. The minimum penalty for an act of academic dishonesty will be a zero for that assignment or exam.

The responsibilities for both students and faculty with regard to the Honor System are described on http://mba.mccombs.utexas.edu/students/academics/honor/index.asp and on the final pages of this syllabus. As the instructor for this course, I agree to observe all the faculty responsibilities described therein. During Orientation, you signed the Honor Code Pledge. In doing so, you agreed to observe all of the student responsibilities of the Honor Code. If the application of the Honor System to this class and its assignments is unclear in any way, it is your responsibility to ask me for clarification.

- **As specific guidance for this course**, you may not use the homework answers of students in previous classes in any way to assist you in completing the homework questions this year. It is a violation of the honor code in this class to use such assistance.

Students with Disabilities

Upon request, the University of Texas at Austin provides appropriate academic accommodations for qualified students with disabilities. Services for Students with Disabilities (SSD) is housed in the Office of the Dean of Students, located on the fourth floor of the Student Services Building. Information on how to register, downloadable forms, including guidelines for documentation, accommodation request letters, and releases of information are available online at http://deanofstudents.utexas.edu/ssd/index.php. Please do not hesitate to contact SSD at (512) 471-6259, VP: (512) 232-2937 or via e-mail if you have any questions.

Honor Code Purpose

Academic honor, trust and integrity are fundamental to The University of Texas at Austin McCombs School of Business community. They contribute directly to the quality of your education and reach far beyond the campus to your overall standing within the business community. The University of Texas at Austin McCombs School of Business Honor System promotes academic honor, trust and integrity throughout the Graduate School of Business. The Honor System relies upon The University of Texas Student Standards of Conduct (Chapter 11 of the Institutional Rules on Student Service and Activities) for

enforcement, but promotes ideals that are higher than merely enforceable standards. Every student is responsible for understanding and abiding by the provisions of the Honor System and the University of Texas Student Standards of Conduct. The University expects all students to obey the law, show respect for other members of the university community, perform contractual obligations, maintain absolute integrity and the highest standard of individual honor in scholastic work, and observe the highest standards of conduct. Ignorance of the Honor System or The University of Texas Student Standards of Conduct is not an acceptable excuse for violations under any circumstances.

The effectiveness of the Honor System results solely from the wholehearted and uncompromising support of each member of the Graduate School of Business community. Each member must abide by the Honor System and must be intolerant of any violations. The system is only as effective as you make it.

Faculty Involvement in the Honor System

The University of Texas at Austin McCombs School of Business Faculty's commitment to the Honor System is critical to its success. It is imperative that faculty make their expectations clear to all students. They must also respond to accusations of cheating or other misconduct by students in a timely, discrete and fair manner. We urge faculty members to promote awareness of the importance of integrity through in-class discussions and assignments throughout the semester.

Expectations under the Honor System

Standards

If a student is uncertain about the standards of conduct in a particular setting, he or she should ask the relevant faculty member for clarification to ensure his or her conduct falls within the expected scope of honor, trust and integrity as promoted by the Honor System. This applies to all tests, papers and group and individual work. Questions about appropriate behavior during the job search should be addressed to a professional member of the Career Services Office. Below are some of the specific examples of violations of the Honor System.

Lying

Lying is any deliberate attempt to deceive another by stating an untruth, or by any direct form of communication to include the telling of a partial truth. Lying includes the use or omission of any information with the intent to deceive or mislead. Examples of lying include, but are not limited to, providing a false excuse for why a test was missed or presenting false information to a recruiter.

Stealing

Stealing is wrongfully taking, obtaining, withholding, defacing or destroying any person's money, personal property, article or service, under any circumstances. Examples of stealing include, but are not limited to, removing course material from the library or hiding it from others, removing material from another person's mail folder, securing for one's self unattended items such as calculators, books, book bags or other personal property. Another form of stealing is the duplication of copyrighted material beyond the reasonable bounds of "fair use." Defacing (e.g., "marking up" or highlighting) library books is also considered stealing, because, through a willful act, the value of another's property is decreased. (See the appendix for a detailed explanation of "fair use.")

Cheating

Cheating is wrongfully and unfairly acting out of self-interest for personal gain by seeking or accepting an unauthorized advantage over one's peers. Examples include, but are not limited to, obtaining questions or answers to tests or quizzes, and getting assistance on case write-ups or other projects beyond what is authorized by the assigning instructor. It is also cheating to accept the benefit(s) of another person's theft(s) even if not actively sought. For instance, if one continues to be attentive to an overhead conversation about a test or case write-up even if initial exposure to such information was accidental and beyond the control of the student in question, one is also cheating. If a student overhears a conversation or any information that any faculty member might reasonably wish to withhold from the student, the student should inform the faculty member(s) of the information and circumstance under which it was

overheard.

Actions Required for Responding to Suspected and Known Violations

As stated, everyone must abide by the Honor System and be intolerant of violations. If you suspect a violation has occurred, you should first speak to the suspected violator in an attempt to determine if an infraction has taken place. If, after doing so, you still believe that a violation has occurred, you must tell the suspected violator that he or she must report himself or herself to the course professor or Associate Dean of the Graduate School of Business. If the individual fails to report himself or herself within 48 hours, it then becomes your obligation to report the infraction to the course professor or the Associate Dean of the Graduate School of Business. Remember that although you are not required by regulation to take any action, our Honor System is only as effective as you make it. If you remain silent when you suspect or know of a violation, you are approving of such dishonorable conduct as the community standard. You are thereby precipitating a repetition of such violations.

The Honor Pledge

The University of Texas at Austin McCombs School of Business requires each enrolled student to adopt the Honor System. The Honor Pledge best describes the conduct promoted by the Honor System. It is as follows:

"I affirm that I belong to the honorable community of The University of Texas at Austin Graduate School of Business. I will not lie, cheat or steal, nor will I tolerate those who do."

"I pledge my full support to the Honor System. I agree to be bound at all times by the Honor System and understand that any violation may result in my dismissal from the Graduate School of Business."

Syllabus for Professor Shively's part of the course

The information provided below gives the reading assignments for the different topics we will cover during the first half of the semester. All page numbers refer to *Data Analysis & Decision Making with Microsoft Excel* by Albright, Winston and Zappe. *Topic Summary Notes* and hard copies of the *Computer Slides* are included in the course packet and available on the course Blackboard site.

Topic	**Reading Assignment**
Random Variables and Probability/ Normal Distribution	pp. 156-158, 166-168, 211-230; Section 1 of the *Computer Slides*; *Topic Summary Note: Probability Concepts and Normal Distributions*
Random Samples – Estimation and Sampling Distributions	pp. 352-354, 366-373; Section 2 of the *Computer Slides*; *Topic Summary Note: Estimation and Sampling Distributions*
Simple Linear Regression Model	pp. 529-535, 542-547, 603-606; Sections 3-5 of the *Computer Slides*; *Topic Summary Note: Regression Model and Its Estimation*
Multiple Regression Model	pp. 553-556; Sections 6-7 of the *Computer Slides*
Categorical Explanatory Variables	pp. 560-566; Section 8 of the *Computer Slides*
Regression Model for Nonlinear Relationships	pp. 571-574; Section 9 of the *Computer Slides*; *Topic Summary Note: Nonlinear Relationships*
Diagnostic Tests for the Assumptions of the Linear Regression Model	pp. 644-647; Section 11 of the *Computer Slides*
Explanatory Power of the Regression Model	pp. 549-551, 556-558; Sections 12-13 of the *Computer Slides*; *Topic Summary Note: Interpreting and Estimating Var(ε) in a Regression Model*; *Topic Summary Note: Computing and Interpreting R^2*
Forecasting Using a Regression Model	pp. 648-651; Section 15 of the *Computer Slides*

Determining the Quality of an Estimator in a Linear Regression Model	Section 16 of the *Computer Slides*; *Topic Summary Note: Measuring the Quality of the Estimate of* β
Hypothesis Testing in a Regression Model	pp. 610-611, 620-624; Section 17 of the *Computer Slides*; *Topic Summary Note: Hypothesis Testing in Regression*

Syllabus for Professor Dyer's part of the course

The information provided below gives the reading assignments for the different topics we will cover during the first half of the semester. All page numbers refer to *Data Analysis & Decision Making with Microsoft Excel* by Albright, Winston and Zappe. Case assignments, slides, and other materials will be provided in hard copy or on the course Blackboard site.

10/7-10/8 Session: Monte Carlo simulation

Time: (4 hours)

Learning Outcomes:

- Understand the basic concepts of Monte Carlo simulation using computer programs, including the ideas of random number generation

Topics/Agenda:

1. Simulation as a means of evaluating risk
2. Introduction to @Risk software

Required reading:

- Albright, Winston, and Zappe, Data Analysis and Decision Making, Ch. 16, Sections 16.5 and 16.6

Recommended practice problems:

1. Albright, Winston, and Zappe, Ch. 16: 19, 20, 29, 32

Assignment(s) due:

1. Install the @Risk add-in as part of the DecisionTools Suite. Download the software from the McCombs website:

http://www.mccombs.utexas.edu/tech/training/students/MBA/software.asp

10/21-10/22 Session: Assessing risks with simulation models

Time: (4 hours)

Learning Outcomes:

- Develop the ability to use an add-in simulation software program to evaluate risks in the context of EXCEL spreadsheets
- Develop an understanding of the use simulation as tool to evaluate the risks associated with real-world projects

Topics/Agenda:

1. Developing spreadsheet simulation models using @RISK

Required reading:

- Albright, Winston, and Zappe, Data Analysis and Decision Making, Ch. 17, Sections 17.1, 17.2, 17.3, 17.4
- The North Star Concert. *A hardcopy of this material is provided to you*.

Recommended practice problems:

1. Albright, Winston, and Zappe, Ch. 17: 31, 34, 38, 39

Assignment(s) due: *Individual assignment to be turned in for a grade.* The North Star Concert. Lucinda Rameriz has a nice business on the side, selling special events T-shirts for concerts, sporting events, and other occasions. She is in the process of planning for her next major event, a concert by the band North Star that will be held in a large football stadium in a college town. Unfortunately, her plans for ordering the T-shirts are complicated by the fact that the demand for them is very difficult to predict. Based on her assessments of the uncertainties associated with this decision, recommend how many T-shirts Lucinda should order. Justify your answer based on your analysis.

11/4-11/5 Session: Introduction to risk analysis and decision trees

Time: (4 hours)

Learning Outcomes:

- Develop a skill in decomposing and structuring risky problems
- Provide an understanding of the use of decision and risk analysis for the evaluation of real world projects and opportunities
- Develop a skill in using PrecisionTree for evaluating risky decisions

Topics/Agenda:

1. Decision trees as a means of structuring risky problems
2. Applications of decision trees to real world problems

Required reading & preparation:

- Albright, Winston, and Zappe, Data Analysis and Decision Making, Ch. 7, Sections 7.1-7.3
- Freemark Abbey Winery. *A hardcopy of this material is provided to you.*
- GPC's New Product Decision. *A hardcopy of this material is provided to you.*
- Genzyme/Geltex Pharmaceuticals Joint Venture. *A hardcopy of this material is provided to you.*

Recommended practice problems:

1. Albright, Winston, and Zappe, Ch. 7: 35, 37, 38, 64

Assignment(s) due:

1. Freemark Abbey Winery: Read the case prior to class. Be prepared to discuss your recommendations to Mr. Jaeger. Develop a simple decision tree to support your analysis, either by hand or with the use of PrecisionTree.
2. GPC's New Product Decision. Develop a decision tree analysis of the three alternative products that could be selected for development by GPC, either by hand or with the use of PrecisionTree. Be prepared to discuss your analysis and your recommendations in class.
3. Install the PrecisionTree add-in that accompanies the text. See the file INSTALL.HTM on the CD-ROM for instructions.
4. Genzyme/Geltex Pharmaceuticals Joint Venture: *Group assignment to be turned in for a grade.* Consider the following questions.
   a) Why is Genzyme engaged in joint venture negotiations with GelTex? How does a joint venture compare to other possible forms of corporate affiliation such as acquisition and supplier-customer relationships?
   b) Please assess Exhibits 3 and 4 of the case. What is the maximum that Genzyme should be willing to pay for its interest in the joint venture? On what assumptions is it based?
   c) What would you guess to be the key assumptions that drive the venture's enterprise value? Are there any qualitative issues that might affect value?

d)What should Greg Phelps recommend?

Your assignment is to prepare a 20-minute presentation that that is responsive to the issues raised in the case. I will ask a couple of groups to give their presentation in class, so please bring a "thumb drive" with a PowerPoint presentation for use on the classroom computer.Prior to class, each group should hand in the following:

- A copy of the presentation you prepared. If there are comments you planned to make but did not put on the slides, you may include them in the "speaker notes' feature of PowerPoint and then print the notes along with the presentation.
- Please include the following supporting information in an appendix to your presentation:
    - Two copies of your spreadsheet showing row and column headings (File…Page Setup…Row and Column headings checkbox)
    - One with values
    - One with formulas (Tools…Options…View Tab…Formulas checkbox on the older Excel or on the Formulas tab in the newer version)
    - An @Risk report documenting assumptions and results for the analysis

11/18-11/19 Session: Perfect and imperfect information

Time: (4 hours)

Learning Outcomes:

- Ability to determine when it is worthwhile to obtain information, and how much that information is worth
- An understanding of the concept of subjective probabilities, and the methods that are useful in assessing them

Topics/Agenda:

1. The value of perfect information
2. The value of imperfect information

Required reading:

- Albright, Winston, and Zappe, Data Analysis and Decision Making, Ch. 7, Sections 7.4 and 7.5
- Integrated Siting Systems, Inc.. *A hardcopy of this material is provided to you.*
- The Atimus (A) and (B) cases. *A hardcopy of this material is provided to you.*

Recommended practice problems:

1. Albright, Winston and Zappe, Ch. 7: 49, 50, 52, 56, 79

Assignment(s) due:

1. The Artimus (A) and (B) Cases. *Individual assignment to be turned in for a grade*. What would be your recommendation to Armstrong regarding his response to Avion's proposal for the development of the new valve system? In your evaluations, ignore the time value of money. Be clear about your assumptions, show the details of your work, be explicit about which alternatives you are evaluating and how you calculated the monetary consequences, and offer meaningful sensitivity analysis where appropriate. Given Armstrong's understanding of the situation, what would you recommend and why? (Please be sure to show your analysis, and comment on how sensitive your recommendation is to your assumptions.)
2. Integrated Siting Systems, Inc. Prepare an analysis of the alternative ways that ISSI can implement a system to meet their contract obligations, and make a recommendation. What is the

value of the information that is provided by the test that is available? You might consider performing some sensitivity analysis on some of the key problem parameters.

12/2-12/3 Session: Review and final examination

Time: (4 hours)

Learning Outcomes:

- Review of materials covered in class and final examination

Topics/Agenda:

1. *Final examination.*

Assignment(s) due: Harriman International: *Group assignment to be turned in for a grade.* Please consider the following questions.

1. What is your appraisal of Dhawan's preliminary evaluation of the Pioneer order?
2. What would you recommend to Dhawan regarding the Pioneer order? Are there means by which he can reduce the risks of accepting the order?
3. Dhawan observed, "It seems to me that the sources of my troubles are delays arising from problems in my internal controls and the embroiderer's completion date. To which one of these uncertainties would it be more fruitful for me to direct my attention—either to eliminate it or to learn more about it—before I make my decision this afternoon?"
4. Of what value would it be to Dhawan to guarantee that there would be no delays due to internal problems? Of what value would it be to Dhawan to guarantee that the embroiderer would complete the job on March 20?

The following pages provide specific guidance about the Standard of Academic Integrity at the University of Texas at Austin. Please read it carefully and feel free to ask me any questions you might have.

Excerpts from the University of Texas at Austin Office of the Dean of Students website (http://deanofstudents.utexas.edu/sjs/acint_student.php)

The Standard of Academic Integrity

A fundamental principle for any educational institution, academic integrity is highly valued and seriously regarded at The University of Texas at Austin, as emphasized in the standards of conduct. More specifically, you and other students are expected to "maintain absolute integrity and a high standard of individual honor in scholastic work" undertaken at the University (Sec. 11-801, *Institutional Rules on Student Services and Activities*). This is a very basic expectation that is further reinforced by the University's Honor Code. At a minimum, you should complete any assignments, exams, and other scholastic endeavors with the utmost honesty, which requires you to:

- acknowledge the contributions of other sources to your scholastic efforts;
- complete your assignments independently unless expressly authorized to seek or obtain assistance in preparing them;
- follow instructions for assignments and exams, and observe the standards of your academic discipline; and
- avoid engaging in any form of academic dishonesty on behalf of yourself or another student.

For the official policies on academic integrity and scholastic dishonesty, please refer to Chapter 11 of the *Institutional Rules on Student Services and Activities*.

What is Scholastic Dishonesty?

In promoting a high standard of academic integrity, the University broadly defines scholastic dishonesty—basically, all conduct that violates this standard, including *any act designed to give an unfair or undeserved academic advantage*, such as:

- Cheating
- Plagiarism
- Unauthorized Collaboration
- Collusion
- Falsifying Academic Records
- Misrepresenting Facts (e.g., providing false information to postpone an exam, obtain an extended deadline for an assignment, or even gain an unearned financial benefit)
- Any other acts (or attempted acts) that violate the basic standard of academic integrity (e.g., multiple submissions—submitting essentially the same written assignment for two courses without authorization to do so)

Several types of scholastic dishonesty—unauthorized collaboration, plagiarism, and multiple submissions—are discussed in more detail on this Web site to correct common misperceptions about these particular offenses and suggest ways to avoid committing them.

For the University's official definition of scholastic dishonesty, see Section 11-802, *Institutional Rules on Student Services and Activities*.

Unauthorized Collaboration

If you work with another person on an assignment for credit *without the instructor's permission to do so*, you are engaging in unauthorized collaboration.

- This common form of academic dishonesty can occur with all types of scholastic work—papers, homework, tests (take-home or in-class), lab reports, computer programming projects, or any other assignments to be submitted for credit.

- For the University's official definitions of unauthorized collaboration and the related offense of collusion, see Sections 11-802(c)(6) & 11-802(e), *Institutional Rules on Student Services and Activities*.

Some students mistakenly assume that they can work together on an assignment as long as the instructor has not expressly prohibited collaborative efforts.

- Actually, students are expected to complete assignments independently unless the course instructor indicates otherwise. So working together on assignments is *not* permitted unless the instructor specifically approves of any such collaboration.

Unfortunately, students who engage in unauthorized collaboration tend to justify doing so through various rationalizations. For example, some argue that they contributed to the work, and others maintain that working together on an assignment "helped them learn better."

- The instructor—not the student—determines the purpose of a particular assignment *and* the acceptable method for completing it. Unless working together on an assignment has been specifically authorized, always assume it is not allowed.

- Many educators do value group assignments and other collaborative efforts, recognizing their potential for developing and enhancing specific learning skills. And course requirements in some classes do consist primarily of group assignments. But the expectation of individual work is the prevailing norm in many classes, consistent with the presumption of original work that remains a fundamental tenet of scholarship in the American educational system.

Some students incorrectly assume that the degree of any permissible collaboration is basically the same for all classes.

- The extent of any permissible collaboration can vary widely from one class to the next, even from one project to the next within the same class.

- Be sure to distinguish between collaboration that is authorized for a particular assignment *and* unauthorized collaboration that is undertaken for the sake of expedience or convenience to benefit you and/or another student. By failing to make this key distinction, you are much more likely to engage in unauthorized collaboration. To avoid any such outcome, always seek clarification from the instructor.

Unauthorized collaboration can also occur in conjunction with group projects.

- How so? If the degree or type of collaboration exceeds the parameters expressly approved by the instructor. An instructor may allow (or even expect) students to work together on one stage of a group project but require independent work on other phases. Any such distinctions should be strictly observed.

Providing another student unauthorized assistance on an assignment is also a violation, even without the prospect of benefiting yourself.

- If an instructor did not authorize students to work together on a particular assignment *and* you help a student complete that assignment, you are providing unauthorized assistance and, in effect, facilitating an act of academic dishonesty. Equally important, you can be held accountable for doing so.

- For similar reasons, you should not allow another student access to your drafted or completed assignments unless the instructor has permitted those materials to be shared in that manner.

Plagiarism

Plagiarism is another serious violation of academic integrity. In simplest terms, this occurs if you represent *as your own work* any material that was obtained from another source, regardless how or where you acquired it.

- Plagiarism can occur with *all* types of media—scholarly or non-academic, published or unpublished—written publications, Internet sources, oral presentations, illustrations, computer code, scientific data or analyses, music, art, and other forms of expression. (See Section 11-802(d) of the *Institutional Rules on Student Services and Activities* for the University's official definition of plagiarism.)

- Borrowed material from written works can include entire papers, one or more paragraphs, single phrases, or any other excerpts from a variety of sources such as books, journal articles, magazines, downloaded Internet

documents, purchased papers from commercial writing services, papers obtained from other students (including homework assignments), etc.

- As a general rule, the use of any borrowed material results in plagiarism if the original source is not properly acknowledged. So you can be held accountable for plagiarizing material in either a final submission of an assignment *or* a draft that is being submitted to an instructor for review, comments, and/or approval.

Using *verbatim* material (e.g., exact words) without proper attribution (or credit) constitutes the most blatant form of plagiarism. However, other types of material can be plagiarized as well, such as *ideas* drawn from an original source or even its *structure* (e.g., sentence construction or line of argument).

- Improper or insufficient paraphrasing often accounts for this type of plagiarism. (See additional information on paraphrasing.)

Plagiarism can be committed intentionally *or* unintentionally.

- Strictly speaking, any use of material from another source without proper attribution constitutes plagiarism, regardless why that occurred, and any such conduct violates accepted standards of academic integrity.

- Some students deliberately plagiarize, often rationalizing this misconduct with a variety of excuses: falling behind and succumbing to the pressures of meeting deadlines; feeling overworked and wishing to reduce their workloads; compensating for actual (or perceived) academic or language deficiencies; and/or justifying plagiarism on other grounds.

- But some students commit plagiarism without intending to do so, often stumbling into negligent plagiarism as a result of sloppy notetaking, insufficient paraphrasing, and/or ineffective proofreading. Those problems, however, neither justify nor excuse this breach of academic standards. By misunderstanding the meaning of plagiarism and/or failing to cite sources accurately, you are much more likely to commit this violation. Avoiding that outcome requires, at a minimum, a clear understanding of plagiarism *and* the appropriate techniques for scholarly attribution. (See related information on paraphrasing; notetaking and proofreading; and acknowledging and citing sources.)

By merely changing a few words or rearranging several words or sentences, you are *not* paraphrasing. Making minor revisions to borrowed text amounts to plagiarism.

- Even if properly cited, a "paraphrase" that is too similar to the original source's wording and/or structure is, in fact, plagiarized. (See additional information on paraphrasing.)

Remember, your instructors should be able to clearly identify which materials (e.g., words and ideas) are your own *and* which originated with other sources.

- That cannot be accomplished without proper attribution. You must give credit where it is due, acknowledging the sources of any borrowed passages, ideas, or other types of materials, and enclosing any verbatim excerpts with quotation marks (using block indentation for longer passages).

Plagiarism & Unauthorized Collaboration

Plagiarism **and** unauthorized collaboration **are often committed jointly.**

By submitting *as your own work* any unattributed material that you obtained from other sources (including the contributions of another student who assisted you in preparing a homework assignment), you have committed plagiarism. And if the instructor did not authorize students to work together on the assignment, you have also engaged in unauthorized collaboration. Both violations contribute to the same fundamental deception—representing material obtained from another source as your own work.

Group efforts that extend beyond the limits approved by an instructor frequently involve plagiarism in addition to unauthorized collaboration. For example, an instructor may allow students to work together while researching a subject, but require each student to write a separate report. If the students collaborate while writing their reports *and* then submit the products of those joint efforts as individual works, they are guilty of unauthorized collaboration as well as plagiarism. In other words, the students collaborated on the written assignment without authorization to do so, and also failed to acknowledge the other students' contributions to their own individual reports.

Multiple Submissions

Submitting the same paper (or other type of assignment) for two courses *without prior approval* represents another form of academic dishonesty.

You may not submit a substantially similar paper or project for credit in two (or more) courses unless expressly authorized to do so by your instructor(s). (See Section 11-802(b) of the *Institutional Rules on Student Services and Activities* for the University's official definition of scholastic dishonesty.)

You may, however, re-work or supplement previous work on a topic with the instructor's approval.

Some students mistakenly assume that they are entitled to submit the same paper (or other assignment) for two (or more) classes simply because they authored the original work.

Unfortunately, students with this viewpoint tend to overlook the relevant ethical and academic issues, focusing instead on their own "authorship" of the original material and personal interest in receiving essentially double credit for a single effort.

Unauthorized multiple submissions are inherently deceptive. After all, an instructor reasonably assumes that any completed assignments being submitted for credit were actually prepared for that course. Mindful of that assumption, students who "recycle" their own papers from one course to another make an effort to convey that impression. For instance, a student may revise the original title page or imply through some other means that he or she wrote the paper for that particular course, sometimes to the extent of discussing a "proposed" paper topic with the instructor or presenting a "draft" of the paper before submitting the "recycled" work for credit.

The issue of plagiarism is also relevant. If, for example, you previously prepared a paper for one course and then submit it for credit in another course without citing the initial work, you are committing plagiarism—essentially "self-plagiarism"—the term used by some institutions. Recall the broad scope of plagiarism: all types of materials can be plagiarized, including unpublished works, even papers you previously wrote.

Another problem concerns the resulting "unfair academic advantage" that is specifically referenced in the University's definition of scholastic dishonesty. If you submit a paper for one course that you prepared and submitted for another class, you are simply better situated to devote more time and energy toward fulfilling other requirements for the subsequent course than would be available to classmates who are completing all course requirements during that semester. In effect, you would be gaining an unfair academic advantage, which constitutes academic dishonesty as it is defined on this campus.

Some students, of course, do recognize one or more of these ethical issues, but still refrain from citing their authorship of prior papers to avoid earning reduced (or zero) credit for the same works in other classes. That underlying motivation further illustrates the deceptive nature of unauthorized multiple submissions.

An additional issue concerns the problematic minimal efforts involved in "recycling" papers (or other prepared assignments). Exerting minimal effort basically undercuts the curricular objectives associated with a particular assignment and the course itself. Likewise, the practice of "recycling" papers subverts important learning goals for individual degree programs and higher education in general, such as the mastery of specific skills that students should acquire and develop in preparing written assignments. This demanding but necessary process is somewhat analogous to the required regimen of athletes, like the numerous laps and other repetitive training exercises that runners must successfully complete to prepare adequately for a marathon.