

MEMORANDUM

TO: Committee on Academic Programs

FROM: Steering Committee

RE: Information Systems and Technology Minor Proposal

DATE: April 5, 2017

Background:

On April 2, 2017, Assistant Provost Jennifer Palmgren forwarded the attached proposal for a minor in Information Systems and Technology to Steering. This proposal has been approved by the School of Business Curriculum Committee and the Dean of Business. Also attached is an email chain clarifying the consultation which occurred during the school approval process.

Charge:

CAP should consider whether there are any units that might be affected by the proposal that have not been consulted and whether the proposal is consistent with the College's mission. If CAP agrees that all affected units have been consulted and that the new program is consistent with the College's mission, it may prepare a final recommendation without seeking further testimony.

Timeline:

CAP should complete its work on this charge by the end of the spring semester.

TCNJ Governance Processes

Step #1 -- Identifying and reporting the problem: When a Standing Committee receives a charge from the Steering Committee, the first responsibility is to clearly articulate and report the problem to the campus community. The problem may have been set out clearly in the charge received from the Steering Committee, or it may be necessary for the Standing Committee to frame a problem statement. The problem statement should indicate the difficulties or uncertainties that need to be addressed through new or revised policy, procedure, or program. The problem statement should be broadly stated and should include a context such as existing policy or practice. Problem statements may include solution parameters but should not suggest any specific solutions. Clearly stated problems will lead to better recommendations.

Step #2 -- Preparing a preliminary recommendation: Once the campus community has received the problem statement, committees can begin to collect data needed to make a preliminary recommendation. Committees should receive input from affected individuals and all relevant stakeholder groups prior to making a preliminary recommendation. For issues that have broad implications or that affect a large number of individuals, initial testimony should be solicited from the campus community at large. For some issues, sufficient initial testimony may come from input through committee membership or solicitation from targeted constituent groups. When, in the best judgment of the committee, adequate clarity of the principles contributing to the problem are known, a preliminary recommendation should be drafted and disseminated to the

campus community through regular updates and the Governance website. At this point, committees typically receive input or testimony through committee membership, formal testimony, and open comment from affected individuals and all stakeholder groups. Committees must be proactive in inviting stakeholder groups (including Student Government, Staff Senate and Faculty Senate) to provide formal testimony. In cases where testimony results in significant and substantive changes to the preliminary recommendation, the new recommendation will be considered to be in step #2.

Step #3 -- Making a final recommendation: Committees must use sound judgment to give the campus adequate time to review the preliminary recommendation before making their final recommendation. Again, committees are expected to be proactive in receiving feedback on the preliminary recommendation. If a full calendar year has passed since the formal announcement of the preliminary recommendation, the committee must resubmit a preliminary recommendation to the campus community. When, in the best judgment of the committee, the campus community has responded to the proposed resolution of the issue, the committee shall send its final recommendation (with documentation) to the Steering Committee. That final recommendation should include a suggested implementation date. Accompanying the final recommendation shall be a report of how testimony was gathered, the nature of that testimony, and how the Committee responded to that testimony, including a description of how the preliminary recommendation evolved as a result of testimony.

Testimony

The presenting of testimony, prior to both the preliminary and final recommendations, is central to the concept of shared governance. All stakeholder groups will have an opportunity to provide input into governance issues through direct membership as well as invited testimony. Individuals appointed or elected to the governance system are expected to take a broad institutional perspective relative to issues being considered. In contrast, invited testimony will reflect the stakeholder perspective on the issue being considered. Committees are expected to be proactive in inviting stakeholder groups to provide testimony at both steps # 2 and #3 of the process. Committees need to identify stakeholder groups that are interested in each particular issue and invite their testimony at scheduled Committee meetings or hearings. Committees should report in their transmittal memos which groups were targeted as stakeholders, how testimony was invited, the form of the testimony (written, oral, etc.), and the substantive content of the testimony.

To see the Steering Committee's guidelines for gathering testimony and making a final recommendation, see the "Governance Toolbox" at <http://academicaffairs.pages.tcnj.edu/college-governance/a-governance-toolbox/>

Good afternoon:

I am forwarding to you a proposal for a minor in Information Systems and Technology. The proposal has been approved by the School of Business Curriculum Committee and by the dean.

Part 3 of the Minors Approval Process policy states that "If recommended by the school committee(s), the minor is resubmitted to the relevant Dean(s) for final approval. After the relevant Dean(s) have approved the proposed minor, the proposal is submitted to the College's Steering Committee to be forwarded to the Committee on Academic Programs (CAP) for its review and recommendation, according to the steps of the Governance Process. During its review, CAP should consider whether there are any units that might be affected by the proposal that have not been consulted (e.g., Liberal Learning)."

Jennifer

Jennifer Palmgren.
Assistant Provost

----- Forwarded message -----

From: **Keep, William** <keep@tcnj.edu>
Date: Sun, Apr 2, 2017 at 8:26 AM
Subject: Fwd: IST Minor, V7
To: "Palmgren, Jennifer" <palmgrej@tcnj.edu>

Jennifer,

Attached you will find our proposed new minor in Information Systems & Technology. The School of Business Curriculum Committee approved the proposal, along with a revised IST 201 (currently MIT 201). I whole support this new minor as I believe it will be popular with students and employers. Below, Dr. Tricia Wallace, lead faculty on the minor, explains the process. Please let me know if you have any questions and/or what I need to do to obtain campus-wide approval. Thank you.

Bill

----- Forwarded message -----

From: **Wallace, Patricia** <pwallace@tcnj.edu>

Date: Wed, Mar 22, 2017 at 2:37 PM

Subject: IST Minor, V7

To: William Keep <keep@tcnj.edu>

Cc: Sunita Ahlawat <ahlawat@tcnj.edu>, Lynn Braender
<braender@tcnj.edu>

Greetings,

The Minor Committee is pleased to submit to you, as Dean of the School of Business, the Information Systems & Technology (IST) Minor Proposal which was approved by the Curriculum Committee on 3/22/17. This proposal is being submitted to you for final approval and forwarding to the College's Steering Committee and Committee on Academic Programs (CAP) for review and recommendation. To insure readability, you will find attached to this email two files: V7a, an 8-page proposal and V7b, the Appendix containing complete course syllabi for the Minor. Since the Accounting Department was the first level of review, the IST Minor was unanimously approved on 9/14/16 at the Accounting Department meeting. Following that approval, the IST proposal was sent to the Dean's Office on 9/15/16 and approved the following week with minor changes that were incorporated into the proposal. Again, to update you on the Process, Versions 1, 2, & 3 of the Proposal consisted of the Proposal Development phase and were edited and revised by the members of the Minor Committee during June & July, 2016. Version 4, consisting of files V4a & V4b, launched the Review Phase of the Minor Approval Process and was approved by the Accounting and IS Department with minor changes which were incorporated in the V5 version, as approved by the Dean's office. In October, 2016, The School of Business Curriculum Committee received Version 6 for their review. As suggested by the Curriculum Committee, the prerequisite course, IST 201, Introduction to Data and Information Science, was extensively revised to prepare students for the 'Big Data' focus of the new minor. Thus, the current V7 version of the minor includes the changes as approved by the Curriculum Committee at their meeting of 3/22/17.

In closing, I want to emphasize that Version 7 of the Proposal was created from the numerous discussions, meetings, and research of the IST Minor Committee over the past academic year. Thus, all recommendations

contained within were based on the consensus of the Minor committee as documented by committee minutes. Current prerequisites for the Minor were obtained from the TCNJ College Bulletin and noted in the course syllabi. The Minor was designed to fit seamlessly in the current SOB degree requirements. Prerequisites were noted in the proposal, and prerequisite course syllabi for IST 201 is included as part of this proposal.

In closing, thank you for your support during the past year; I look forward to receiving your final approval on this IST minor proposal.

Best Regards,

Patricia Wallace, Chair, IST Minor Committee

INFORMATION SYSTEMS & TECHNOLOGY (IST) MINOR PROPOSAL

ACCOUNTING AND INFORMATION SYSTEMS

September, 2016

INFORMATION SYSTEMS AND TECHNOLOGY

Students enrolled in the Information Systems and Technology (IST) minor will learn how to utilize technology in businesses and other organizations. Information Systems and Technology is an integral part of any business environment; students that understand the strategic value of information systems and how to utilize technology to gain a competitive advantage will find many employment opportunities in global organizations. Students pursuing the minor in Information Systems and Technology (IST) will learn about information systems, systems design, database, project management, web design, and business analytics. In addition, they will acquire the broad managerial and organizational knowledge that is necessary to work in today's technology-driven global economy.

INTRODUCTION

In the Spring of 2015, Dean William Keep informed the Accounting and Information Systems faculty that the Provost authorized a search for a new Information Systems (IS) faculty member. Thus, an IS faculty search committee was formed consisting of the following members:

- Sunita Ahlawat, Professor, Accounting Department Chair
- Lynn Braender, Associate Professor, Information Systems
- Ryan Gladsiewicz, Instructional Technology
- Peggy Hughes, Assistant Professor, Accounting
- Hossein Nouri, Professor, Accounting
- Patricia Wallace, Professor, Information Systems, Chair, MIT Search/Minor Committee

The faculty search commenced in late Spring, 2015, and continued throughout the Fall semester of 2015. At the same time, the IS Search Committee formed a sub-committee, the IST Minor committee. The Minor Committee, consisting of Sunita Ahlawat, Lynn Braender, and Chair Patricia Wallace commenced work on the new minor designated as Information Systems & Technology, with the acronym IST. In early Spring, 2016, the faculty search was successfully concluded with the hiring of a new IS faculty member who is scheduled to commence teaching in the Fall Semester, 2016. The IST Minor Committee continued its work on the IST Minor Proposal during the Summer of 2016 and hereby presents this IST minor proposal for approval.

RATIONALE

The rationale for the IST Minor is based on current research published by the Association of Information Systems (AIS), the Temple University Fox School of Information Systems, the Penn State University College of Information Sciences and Technology, and the Institute for Business and Information Technology (IBIT) at the Fox School of Business at Temple University.

The Association of Information Systems (AIS) is the premier professional association for individuals and organizations who lead research, teach, practice, and study information systems worldwide. AIS has about 4,000 members in 100 countries worldwide. (<http://aisnet.org>) The AIS society seeks to advance the knowledge and the promotion of excellence in the practice and study of information systems. The Institute for Business and Information Technology (IBIT) provides cutting-edge knowledge and valuable connections to sustain excellence in information technology. IBIT integrates industry perspectives with academic research expertise to create forums for generating and exchanging best practices (<http://ibit.temple.edu>)

Information Systems (IS) professionals apply and develop Information Technology (IT) in organizations, and now comprise a significant portion of the information systems and technology (IST) labor market. According to AIS research, there were an estimated 3 million jobs in the United States in 2015 related to Information Systems and Technology. In addition, there are approximately 1,300 IST programs in the United States, primarily offered in Business Schools, as well as in a few standalone Information Schools, such as Penn State's College of Information Sciences and Technology. Founded in 1997 with over 50 faculty members, The School of IST at Penn State University currently has over 2200 IST undergraduates as well as over 1,000 students taking IST courses online through their World Campus. (<http://ist.psu.edu>)

Thus, the rationale for the IST minor is that it is essential for continued attainment of the vision and mission of the School of Business at The College of New Jersey. The IST minor enables the School of Business to achieve their vision of being a premier undergraduate business school and the first choice of employers seeking business graduates. More importantly, the IST minor enables our School to deliver application-oriented business programs as stated in our mission statement. In addition, since IST programs are classified as a STEM field, the IST minor is in keeping with the College's mission of promoting STEM studies, as noted by the construction of the new STEM building on campus. Finally, technology is the core of our 21st century global society and offering the IST minor insures that the Department, School, and College are providing cutting-edge courses to undergraduate students.

NEED

Need is best identified by analyzing stakeholders' perspectives. Thus, students, parents and prospective employers are at the top the list to be considered.

Recent publications titled, "30 Best Paying College Majors: 2016" as well as "14 Best Paying Jobs for College Business Majors: 2014," both include Information Systems and Information Technology majors as top career choices. In fact, IST is ranked higher than all business majors for employability prospects. In the 30 Best article, Business Information Systems and Technology is the only Business major listed; the other majors are all Engineering. (www.thinkadvisor.com, 2016)

From a student/parent stakeholder position, prominent technology companies like Microsoft are seeking diversity in their new IS and IT hires (MACHS: Microsoft Academic Computing Hires, 2014). Such companies are seeking a variety of majors and backgrounds to insure creativity and diversity in the workplace. Thus, a minor in IST would be attractive to our most important stakeholder--students--as well as potential employers.

DEMAND

IST programs are classified as STEM majors, and a recent study found that IST graduates tend to be more diverse than their computer science peers. The difference between IST and computer science is that most IST programs are part of business programs, while computer science tends to standalone. (CIODIVE, 2016)

The Temple IST Job Index, from Temple University, also found IST grads are just as in-demand as computer science graduates. According to the study, minorities and women are better represented in IST compared to computer science. The job index is based on data from 30 universities across the United States (CIODIVE, 2016). Top jobs for graduates include IST consultants, Project Managers, and Systems Analysts.

According to the AIS Information Systems Job Index, salaries for IST graduates are about 17% higher than typical business majors for both bachelor's and master's degrees. (Nace, 2015). In fact, the average offer for IST graduates was \$57,817 in 2015 as compared to other business school graduates at \$49,536. In addition, as a further 'demand' example, IST graduates have an 80% placement rate at graduation; however, the percentage peaks to 89% six months after graduation from IST undergraduate programs.

Besides the compelling placement statistics, IST graduates ranked high in confidence, fit, and job satisfaction as noted below:

- 73% confident about the job market;
- 75% agreed that their job was a good fit;
- 86% satisfaction with job offer. (AIS, 2016)

In summary, according to an article titled, “Information Technology Students Get to Feel Pretty Smug,” one of the shortest paths to a stable, lucrative career is by targeting a career in Information Systems and Technology. With 61% of IST grads getting one “guaranteed” job offer, according to a study covering 48 universities and 1,200 students, the IST industry is deemed “healthy.” Employability prospects—demand—for IST graduates continues to grow and students are confident that they’ll have a long future in the industry. (Temple Fox School of Business, 2015).

CURRICULUM

The IST minor in Information Systems and Technology requires five course units in Information Systems consisting of four core courses and one elective course. With the exception of the newly created Business Analytics and Decision Making course, all the courses listed below currently exist in our course catalog. However, it should be noted that the Minor Committee updated all courses in the IST minor during the Summer of 2016. The Minor Committee is requesting that the curriculum code “MIT” be replaced with the “IST” course code, as noted below, to insure consistency and to reflect current terminology in the field of Information Systems.

Requirements:

Core – Students will complete the following:

- IST 310: Business Information Systems Technology (one course unit) *
- IST 320: Database Management for Business (one course unit) *
- IST 350: Business Analytics for Decision Making (one course unit) *
- IST 400: Seminar in Managing Technology (one course unit)

Options – Students will choose one course from the following:**

- IST 330: Managing Projects and Work Teams (one course unit)
- IST 340: Web Design and Development (one course unit)

Note: Course substitutions for core IST courses for non-business students will be examined on a case-by-case basis.

*IST 201 is a prerequisite for this course; for business students, IST 201 is a core course. Non-business majors will need to complete this prerequisite unless a course substitution is approved by the Department Chair.

**At the discretion of the Chair or IS faculty, course substitutions for IST option courses may include Special Topics IST 370, Independent Study IST 391, and/or Independent Study IST 393.

NOTE: Please refer to Appendix A for complete IST course syllabi; Appendix A is contained in the file IST Minor Proposal, V7b.

Course Overview and Purpose

IST 310, Business Information Systems Technology (One Course Unit)

IST 310 serves as a breadth course for Information Systems & Technology (IST) as specified in the Business Administration Major and a core course in the IST minor. This course is currently offered both in the fall and spring semesters. In addition, BIST is offered during the summer as a blended learning course.

Business Information Systems and Technology (BIST) engages students in the study of information systems and development concepts, information technology (IT), and business application software. It explains how information is used in organizations and how IT enables improvements in quality, timeliness, and competitive advantage. The course will provide discussions on the strategic value of information systems and on contemporary ethical and social issues.

This course provides the technical foundation for understanding information systems, describing technology and communication systems and how these technologies work together through the Internet to support electronic commerce and electronic business.

This course also focuses on the process of supporting organizations by reengineering information systems and critical business processes. Throughout the course, emphasis is placed on using information technology to redesign the organization's products, services, procedures, jobs and management structures; numerous case studies will be utilized from multinational systems and global business environments.

In summary, this course will focus on both business and managerial applications of information systems and technology in organizations and provide students with experiential learning activities to enhance learning and provide value for future employment

IST 320, Database Management for Business (one course unit)

IST 320 serves as a breadth course for Management Information Technology (IST) as defined in the Business Administration Major and a core course in the IST minor. This course will be offered fall and spring, and, can be offered as a blended course during the summer semester.

This course is an in-depth examination of database management with an emphasis on the use of relational database systems currently employed by most businesses and organizations. The use of database systems is routine and necessary in both profit and non-profit organizations today. Database systems represent the memory of a firm's formal information resource. They record transactions such as purchases and payments and provide the data used in analytical processing which supports management decision-making. Database management systems have a useful role in maintaining large quantities of long-lived, highly valuable data that have to be accessed in many different ways by many people, often simultaneously. A firm's data must be secured against unauthorized and malicious access. Students enrolled in this course will learn about these systems and about data, metadata, and the structural composition of a relational database system. Students will learn how to capture, manipulate and report relational data so that they are able to answer business questions posed to them.

IST 330, Managing Projects and Work Teams (one course unit)

IST 330 serves as an option for the IST minor as well as a business elective; it will be offered either in the fall or spring semester.

Project Management has been labeled by career experts as a top career choice for prospective graduates. With more organizations implementing project-based working methods, the need for a manager who oversees all elements of the undertaken project, is essential (buzzle.com) Increasingly, organizations are adopting project management techniques and structures within their business framework. Research has shown that a great many projects fail to produce the expected results or are not completed on time or on budget. Some of the primary reasons are poor definition of the project's requirements and objectives and lack of project management planning.

Organizations waste US \$122 million for every US \$1 billion invested due to poor project performance — a 12 percent increase over last year (pmi.org). In fact, the world of organizational life is experiencing a profound change. Increasingly, work is performed by people who come together temporarily to accomplish a specific task or respond to a particular concern. Organizational structures that were designed to tackle recurring situations, narrow job descriptions, and well-defined hierarchical relationships have been complemented, sometimes supplanted, by the dynamic organization of focused task forces, project teams, and program initiatives. The number and variety of demands that fall upon the organizations, the depth of knowledge that is required to respond to each situation, and the need for the organization to remain flexible and respond quickly demand that the critical work be performed in directed bursts of activity. Ever more, people work in teams, often in several teams concurrently, carrying out different responsibilities, seemingly tied together in a web of short- and long-term projects. Objectives, milestones, deliverables, resources, agendas, progress reports, and many other terms have entered the lexicon of the manager, the specialist, and of any one who aspires to a position of responsibility.

Project Management offers the advantage of allowing organizations to create products and processes efficiently, through optimal use of resources, in order to respond to rapid time-to-market demands. Managing Projects and Work Teams will prepare and equip business students for organizational environments that increasingly rely on qualified project managers who can assist the business firm to operate at its highest potential. In addition, Managing Projects and Work Teams is useful to any student at The College of New Jersey who would like to complement his or her studies with management skills that will be valuable in the workplace.

In summary, Managing Projects and Work Teams is a solutions-oriented, interdisciplinary course in project management concepts, principles, tools, and techniques. The widespread use of information technology to aid in project management means that Managing Projects and Work Teams will be complemented by working knowledge of the most popular software programs in this area. This combination will not only bring a more complete and pragmatic view of team work, but also make those students who take this course acquire a valuable asset for future employment.

IST 340, Web Design and Development (one course unit)

IST 340 serves as an option for the IST minor as well as a business elective; it will be offered either in the fall or spring semester.

Business systems are increasingly being developed for the web. These systems support communications, customer services, internal and external operations, data collection, and other business processes. Leveraging web-based technology improves business efficiency and competitiveness. To maintain a viable position in today's market, businesses need managers who understand the web and the technologies that support it. IST 340 provides students with a fundamental knowledge in contemporary web technologies in a business environment. Students will learn how to create websites that meet the professional standards set by the World Wide Web Consortium (W3C) and the Web Accessibility Initiative (WAI). When building these sites, students will utilize internal and external style sheets, tables, forms, navigation, and client-side scripting. Students will also learn techniques for collecting, storing and manipulating data generated by a web form to support business processes and decisions.

IST 350, Business Analytics for Decision Making (one course unit)

IST 350 serves as core course for the IST minor and a business elective. It will be offered in the fall semester and/or spring semester.

Today's companies are collecting tremendous amounts of data, known as 'Big Data.' Indeed, many companies have more data than they can handle. This data is meaningless unless it is analyzed for trends, patterns, relationships, and other useful information. This course on Business Analytics for Decision Making will present a variety of methods, from simple to complex, to analyze data sets and uncover important information. In most businesses, data analysis is only the first step in the solution of a problem. Acting on the solution and the information it provides to make good decisions is a critical next step. Thus, this course on Business Analytics for Decision Making emphasizes various analytical methods to equip students with decision-making tools that can be applied in their business careers.

Business Analytics for Decision Making is an interdisciplinary course that combines basic statistics, decision-making tools and management science concepts to provide an integrative approach to solving a wide variety of business problems. Business Analytics for Decision Making will be complemented by a working knowledge of the most popular software programs available including powerful Decision Tools, which are compatible with Microsoft Excel. This approach will provide many hands-on experiences with real problems and challenges for students to develop their intuition, logic, and problem-solving skills.

While Business Analytics for Decision Making was created for any business major that needs to analyze data and make quantitative decisions, it is offered as part of the Information Systems and Technology (IST) minor. Business Analytics for Decision Making is designed to be a hands-on, example-based approach to Data Analytics utilizing fundamental concepts as needed. In addition, Business Analytics for Decision Making is useful to any student at The College of New Jersey who would like to complement his or her studies with the essentials of business analytics for their future careers in the global workplace.

IST 400, Seminar in Managing Technology (one course unit)

IST 400 serves as core course for the IST minor and will be offered in the spring semester. IST 400 provides students minoring in Information Systems and Technology an opportunity to research current and emerging technological issues and the relationship between these issues and the modern business. While conducting research, students will engage in critical thinking, persuasiveness, and oral and written communications.

Because technology drives the ways organizations conduct business, develop products, services and strategic directions, a deep understanding of current technological issues is crucial to their professional success. Students will gain a greater understanding of the tactical, operational and strategic relationships between information technologies and businesses. The topics in this course will vary year-to-year but will focus on the strategic use of information and the related role of information technology.

RESOURCES

Faculty and Support of Instruction

Starting with the Fall 2016 semester, the School of Business will employ three full-time faculty in the Information Systems area who possess the credentials, expertise, and experience to teach the courses listed in the IST minor. Dr. Patricia Wallace, Professor, currently teaches both core and upper-level courses in information systems and information systems technology as well as project management. Dr. Lynn Braender, Associate Professor, has taught the information systems, information systems technology, web design, and the seminar in managing technology courses; she currently teaches the database management course. Professor Abhishek Tripathi, Assistant Professor, our new hire, has taught information systems technology, database management, project management and business analytics at the University of Nebraska and the Rajiv Gandhi Indian Institute of Management; he will be teaching information systems and database management at TCNJ. In the past, the IS area has utilized adjuncts in various IST courses and will continue this practice as needed. No further resources for faculty are needed at this time.

Equipment, Laboratory Support, and Computer Support

Currently, the School of Business maintains two computer/classroom labs and one student computer lab. The labs have all the necessary software and hardware installed in them. In addition, the School of Business is currently installing a teamwork station in the business lounge that will facilitate team meetings and collaborative work. This station, which seats six to eight students, will allow them to connect their personal computers to the station, a large monitor, campus IT systems, Google Apps, and to the Internet. This workstation will allow students to collaborate on documents and meet in virtual as well as physical space. Finally, the computer lab in the library maintains all necessary software for the IST minor. No additional resources are needed at this time.

Library & Facility Resources

No additional library or facility resources are needed at this time.

IST MINOR PROPOSAL

APPENDIX A – COURSE SYLLABI

Prerequisite Course Syllabi

IST 201: Introduction to Data and Information Science, see Page 1

Existing Course Syllabi

1. IST 310: Business Information Systems & Technology; see Page 11
2. IST 320: Database Management for Business; see Page 21
3. IST 330: Managing Projects and Work Teams; see Page 39
4. IST 340: Web Design and Development; see Page 50
5. IST 400: Seminar in Managing Technology; see Page 67

New Course Syllabus

6. IST 350: Business Analytics for Decision Making; see Page 58

APPENDIX B - IST MINORS OFFERED BY PEER SCHOOLS—SEE PAGE 82

1. Boston College
2. Rutgers University
3. University of Delaware
4. William and Mary
5. Lehigh University
6. Wake Forest University
7. University of Virginia
8. Washington and Lee University
9. Trinity University

COURSE NAME – IST 201

IST 201, Introduction to Data and Information Science (Half Course)

COURSE TYPE

Breadth Course in the CBK

COURSE PREREQUISITES

Freshmen or Sophomore Level Standing

INSTRUCTOR

Dr. L. Braender
609.771.2366

braender@tcnj.edu
Business Building 309

Use Canvas Inbox for email and Google Hangout for chats.

CLASSES AND OFFICE HOURS

IST 201, T/F 11:00-12:20, BB 225
IST 320, T/F 2:00-3:20, BB 225
Office Hours, T/F 12:30-1:50, BB 309

COURSE DESCRIPTION

This course prepares students for the data driven business world by increasing their ability to understand the characteristics of data and how to effectively utilize it to make informed decisions. Topics will include data privacy, data security, and ethics relating to the recording, processing, and selling of business data, and, to prepare students for subsequent data-driven courses.

COURSE MATERIALS

Reading materials will be assigned from various websites, news items, and online magazines. You will find a list of readings in the calendar provided below and in Canvas.

If you need to brush up on your Excel skills, you can watch training videos at Lynda.com.

COURSE REQUIREMENTS

You will prepare for classes by reading a series of articles and listening to presentations made by leading voices and experts in this area. You will discuss these articles in class and in online discussions. At the beginning of class, you will complete a quiz on the assigned readings. You will also apply concepts learned in the class and from the readings about data by participating in class and online discussions and completing a series of data analysis cases using Excel.

LEARNING GOALS

Upon completion of IST 201, you will be able to:

1. Understand how businesses and governments acquire consumer data and the benefits and risks of engaging in these data acquisition practices.
2. Demonstrate an awareness of ethics, privacy, and security issues relating to a data-driven economy.
3. Demonstrate an awareness of current explorations in machine learning and the potential effects these explorations will have on business practices and employment opportunities.

4. Transform data obtained from the Internet and prepare it for analysis by rearranging merged data, changing incorrect data types, identifying and removing non-printable characters, and automatically searching and correcting data for inconsistencies.
5. Design effective pivot tables, pivot charts, and data tables to detect flaws in the data and to provide insights into a question posed about the data.

ASSESSMENT PLANS

To assess student knowledge after completing this course, students will be able to:

1. Transform a flawed data set into a clean one and then pivot the data to answer a question posed to them.
2. Participate in an online discussion and discuss current data acquisition methods used by contemporary business and the benefits and risks of employing these methods.
3. Answer questions on issues surrounding current security measures all employees should consistently employ to secure data for an organization and uphold existing privacy policies.

COURSE SCHEDULES

Table 1 – Class Activities

Table 2 – Links to Articles

Complete all reading assignments before coming to class. A complete schedule with assigned readings has also been posted to Canvas and can be viewed in your course stream.

Table 1 - Class Activities

Session	Class and Reading Schedule	Assignments
Week 1	Review Syllabus, Course Expectations, Schedules, and Team Requirements Topic: Personal Data Collection Preparation: Read articles and watch video posted to Canvas	Participate in Online Discussion on Data Privacy
Week 2	Topic: Big Data Preparation: Read articles and watch video posted to Canvas Lab: Scrubbing and Preparing Data	Quiz on Assigned Readings
Week 3	Topic: Protecting Business Information	Quiz on Assigned Readings

Session	Class and Reading Schedule	Assignments
	Preparation: Read articles and watch video posted to Canvas Lab: Complete Scrubbing and Data Preparation Project	Participate in the Online Discussion on Consumer Security Submit Excel Case on Scrubbing Data
Week 4	Topic: Data Privacy Preparation: Read articles and watch video posted to Canvas Lab: Analyzing Moderately Sized Data with Excel	Quiz on Assigned Readings
Week 5	Topic: Data Visualization Preparation: Read articles and watch video posted to Canvas Lab: Continue working with a moderately sized data table	Quiz on Assigned Readings Submit Excel Case with Moderately sized data set
Week 6	Topic: Ethics Preparation: Read articles and watch video posted to Canvas Lab: Analyzing Big Data	Quiz on Assigned Readings
Week 7	Complete Lab	Final Exam Submit Excel Case on Large Data from https://www.data.gov/

Table 2 - Reading Assignments

Topic	Links	Authors	Time
Personal Data	The Curly Fry Conundrum (Ted)	Jennifer Golbeck	9:51
	Phone Company (Ted) & Malte Spitz Traveling Map	Malte Spitz	9:45
			Map
	Police (Ted)	Catherine Crump	5:54

Topic	Links	Authors	Time
	Aisles Have Eyes (Radio Times)	Joseph Turow	35:00
Big Data	Intro to Big Data (Part I)	Dattatreya Sindol	Read
	Big Data is Better Data (Ted)	Kenneth Cukier	15:51
	The Next Web (Ted)	Tim Berners-Lee	16:23
	The Best Stats You've Ever Seen (Ted)	Hans Rosling	19:46
	Understanding Business Security	Business Security Website	
Protecting Business Information	Top Business Security Tips		
	Computer Security & Recovery		
	Network Security Software		
	Identity Theft Prevention		
	Preventing Business Espionage		
	Passwords	Lorrie Faith Cranor	17:41
Data Privacy	Why Privacy Matters	Glenn Greenwald	20:37
	Data Privacy: It's Easy as One-Two-Three	PC Magazine	
	Worried About Privacy?	Robbie Gonzalez	2:08
	Tracking Our Online Trackers (Ted)	Gary Kovacs	6:39
	Humanizing Analytics	Marie Wallace	10:17
	Email Privacy	Andy Yen	12:09
Data Visualization	The Beauty of Data Visualization (Ted)	David McCandless	17:56
	Visualizing Data (Ted)	Hans Rosling	19:50
	Visualizing Ourselves (Ted)	Aaron Koblin	18:18
	Too Many Rules (Ted)	Yves Morieux	16:38
	Social Maps Cities (Ted)	Dave Troy	5:29
Ethics in Designing Systems	Machine Learning (Ted)	Jeremy Howard	19:45
	Future of Machine Intelligence (Ted)	Nick Bostrom	16:31
	Machine Intelligence and Human Morals (Ted)	Zeynep Tufekci	17:42

GRADING

Overview

Your understanding of the concepts taught in this class will be assessed through a series of quizzes, online discussions and classroom discussion, Excel projects, and a final exam.

Quizzes (20%)

Short multiple-choice quizzes will be administered at the beginning of a class. Quizzes are based on the assigned readings.

Final Exam (20%)

A comprehensive exam will be administered at the end of the semester. The exam will contain both multiple-choice and essay questions. The multiple-choice questions will be based on the assigned readings and lectures. Student will prepare a data set in Excel for analysis and then answer questions posed to them about this data set.

Excel Assignments (30%)

You will work individually and in teams to complete a series of Excel projects. For some assignments, you may have the option to choose your own two-person team or work alone. You can change teams from one project to next. The last Excel project must be completed by yourself. You will be provided an Excel starter file with accompanying instructions. Assessment guidelines will be identified in this starter file.

Excel Project Descriptions

1. Data Preparation – In business, data is often generated online or by some database system. Before you can analyze this data, you must “scrub” it by removing unwanted space in tables, identifying and eliminating hidden characters, rearranging data within cells and within worksheets, splitting and joining data, automatically locating and fixing incorrect coding entries, and removing repeated records. You will be provided a table of data produced by some system outside of Excel. You will scrub this table and perform some simple analytical tasks.
2. Mid-size Analysis Project – You will be provided a medium-sized data table and a question to answer. You will “scrub” this table using the techniques learned from the first project and then analyze the data in a way that allows you to answer the question posed to you. You will apply visual techniques to highlight relevant findings and write a piece that answers the posed question.
3. Big Data Analysis Project – You will complete a task similar to project two but will use a data table containing thousands of records. You will choose a data set from <https://www.data.gov/>, scrub it, and then analyze it to answer some question of your choosing. You will apply visual techniques to highlight relevant findings and write a piece that answers the question you posed.

Discussions (30%)

Online Discussion (25%)

Two online discussions will be assigned to you relating to data privacy, security, and/or ethics. In each discussion, you need to create one original post and reply to at least two other posts. Class discussions

will help you articulate your thoughts and understand the issues highlighted in the assigned readings. You will then participate in online discussions through Canvas. Your goal is to earn 50 points per discussion. Here are the requirements you need to follow.

1. You will use the discussion tool in Canvas to respond to issues posed in the assigned articles. Your comments and questions should highlight relevant and conflicting information, identify ways that the issues being discussed will affect organizations, and extend the discussion when possible.
2. You will be evaluated on the extent and quality of your contributions. You will earn points on thoughtful responses to questions or comments. To successfully contribute, you must read the assigned articles beforehand and respond to questions and issues posted in the discussion by the instructor and other students.
3. Assigned readings will be posted to Canvas in advance of the discussion to ensure that you have ample time to read the articles and prepare for the discussion. When appropriate, additional readings may be added to the discussion to expand it. You will be notified when this occurs.
4. Discussions will have an opening date and an end date. You will not be able to participate after the end date.
5. You can earn between 0 and 25 points for your original post and 0 and 15 points per reply.
 - a. Original Post - To earn 25 points, you need to add new and relevant information from a new source (please leave a link to this source with your post) and then successfully tie this information into the discussion. Points will not be allocated to you if you repeat previous information from older posts. You can reiterate a point that someone else had made and, sometimes this is important, but you will not earn points for it.
 - b. Replies – You need to reply to at least two other posts made by your peers. You can earn between 5 and 15 points by *thoughtfully* responding to a new source of information provided by a peer. When doing so, you must demonstrate that you read the article they are referring to and then add to their point. At times, you may want to add a comment like “I agree with the previous post.” This type of post will be welcomed but will not earn any points towards a grade. In summary, a short but thoughtful reply that adds to the conversation can earn between 5 and 10 points. To earn more points per post, you need to add new information and/or insights to the post you’re replying to.

A grading rubric for online discussions can be found in the appendix of this document.

Class Discussion (5%)

Participation in class discussions and labs will be initially measured through Canvas' Roll Call tool and/or activities tools used in the class. At the end of the class, your grade in this category may be adjusted to correspond with my observations of your participation in class.

Calculating Final Grades

Your grade for the course will be determined according to the following scale.

Final Grade	Average Points	Final Grade	Average Points
A	94-100	C+	77-79.99
A-	90-93.99	C	74-76.99
B+	87-89.99	C-	70-73.99
B	84-86.99	D+	66-69.99
B-	80-83.9	D	60-65.99

COURSE POLICIES

Academic Integrity

<http://policies.tcnj.edu/policies/digest.php?docId=9394>

Students are responsible to know the Academic Integrity policy. Students may only represent work that is their own. Cheating on tests, failing to cite sources, or submitting someone else's work are just a few examples that may result in failing the entire course or dismissal from the college. In addition to academic performance, you are expected to demonstrate the qualities of honesty and integrity. All submissions by you or your team are expected to be your original work. Material that, in any way, violates this principle, or any form of dishonesty, cheating, fabrication, the facilitation of academic dishonesty, and/or plagiarism, may result in your receiving a failing grade for the assignment, quiz, test, or the course. In addition, further appropriate disciplinary action may be initiated.

Americans with Disabilities

<http://policies.tcnj.edu/policies/digest.php?docId=9206>

Assignments

There is an online schedule in Canvas which lists the due dates and requirements for each assignment. At times, this schedule may be adjusted because of circumstances that affect the class. You should regularly check this schedule since it may change.

Students' teams are expected to meet the due dates on this schedule. If the class seems to be struggling with meeting a date, the schedule will be adjusted and the online dates changed.

Individuals and teams who meet deadlines deserve higher grades than those who need more time to complete work. If you successfully complete your work in a timely manner, your performance is greater than that of those who need additional time. The policies of this class support this belief; late assignments will earn fewer points than assignments submitted by the due date. *All assignments need to be uploaded to Canvas.*

Attendance

<http://policies.tcnj.edu/policies/digest.php?docId=9134>

The course blends both theory and application into the learning environment. To accomplish this, we spend time working with theory and time working on tasks with a team of students. To learn, you must actively participate in both the classroom and the lab. To be successful in this course, you must be present in class and in team meetings. You are required to attend classes, labs, and team meetings that convene outside the classroom. If you have to miss a class or team meeting, you need to call my office at 609.771.2366 and leave a message with the reasons for the absence. You also need to notify your group. In addition, you should not schedule interviews, work, vacations, appointments, or any other non-course related event during scheduled classes.

Dean's Attendance Policy: Except in the case of a TCNJ authorized absence or documented personal emergency, faculty are encouraged NOT to make individual exceptions to course assignment due dates and exams. Our work is no less coordinated or time-sensitive than many tasks encountered in the workplace and meeting deadlines and obligations is simply one more step in preparation for a business career.

Classroom Behaviors

To enhance the learning environment and to keep with the values held by the college, we are all responsible for contributing to a respectful environment. To accomplish this, we all need to adhere to the following behaviors:

1. Refrain from using disruptive technology during the class or labs. Disruptive technology includes, but is not limited to, cell phones, email, Internet surfing, IM, and games. If a student expects an important call, the student needs to alert me before class begins, put their phone on the vibrator, and take the call away from any classroom.
2. Do not speak when someone else is speaking.
3. Do not work on projects that fall outside of this course.
4. Treat each person in the class with respect, consideration, and kindness.

Code of Conduct

<http://business.tcnj.edu/our-philosophy/code-of-conduct/>

You are responsible for awareness of the Code of Conduct.

Exams and Quizzes

<http://policies.tcnj.edu/policies/digest.php?docId=9136>

As per college policy, courses can have either a comprehensive final project or comprehensive final exam. In this course, we have a comprehensive final project. Save extraordinary situations, no "make-up" quizzes will be given.

Extra Credit and Replacement Points

There are no extra credit opportunities built into the course.

Fourth Hour Requirement

You will be completing projects and research that require additional individual work outside of the classroom. You will also be participating in online discussions to meet the 4th hour college requirement.

Teams

Because businesses rely heavily on teams working cooperatively, you need to learn how to effectively work with others to complete a project. You will work in a team made of two to three students of your choosing to complete assigned projects. When you submit your work, you need to list the names of the students who worked on the project on the first page of your project. Each team needs to submit to Canvas one file per team. If someone on your team does not share in the work in an equitable fashion, you should not include their name on the project file. Team sign-up sheets will be distributed in class. Make sure you list your team names on this sheet before work begins on any project.

Writing Policy

Because writing is a fundamental business skill, your grade for each assignment will reflect, among other things, your ability to write, even for assignments with minimum writing. Feedback on your writing will be provided as deemed necessary and, if your writing needs improvement, you should seek help from the Writing Center at (<http://tutoringcenter.pages.tcnj.edu/humanities/writers-place/>), from someone who writes well, or some other writing source. The responsibility to write well is yours. My responsibility is to hold you accountable for how well you write. Poor writing will be reflected in your final grade.

Academic Enhancement Center: The Academic Enhancement Center, which is in Roscoe West Hall 145, is an excellent place to get help on your papers. Call *The Write Place* at 771-2895 or 771-3325, or see the hours available online.

APPENDIX – GRADING RUBRIC FOR ONLINE DISCUSSIONS

Category	Criteria	Full Credit
Original Post	Informative original post that goes beyond simply answering questions or reporting on some issue in the article(s); attempts to stimulate further thought & discussion and brings in new sources.	25

Category	Criteria	Full Credit
	Provocative original post that goes beyond simply answering questions or reporting on some issue in the article(s); attempts to stimulate further thought & discussion based on the assigned articles.	20
	Substantial original post that provides most of the content required by the discussion but does not require further analysis of the subject.	15
	Minimal original post that provides obvious information without further analysis of the concept; lacks depth of knowledge or reasoning but provides an interesting comment.	10
	Incorrect original post that provides a small amount of information and/or ideas and may add some interesting comment; does not add to the discussion.	5
	No original post - Student may have added a comment to the discussion, and the comment may have been interesting, but no new thoughts were added to the discussion.	0
Reply to Post	Informative reply that goes beyond simply responding to another's post; ties in different concepts and adds new information and/or ideas to the post.	15
	Provocative reply that goes beyond simply responding to another's post and brings in a new perspective to the discussion.	10
	Substantial reply that is interesting and adds to the discussion.	5
	A reply that may be welcomed and interesting but is not intended to add to the discussion.	0
	Additional points for subsequent replies. Your goal is to accumulate 25 points for all replies.	10

COURSE NAME – IST 310

Business Information Systems and Technology (One Full Course)

COURSE TYPE

Breadth Course in the CBK

PREREQUISITES

IST 201: Introduction to Data and Information Science

INSTRUCTOR

Dr. Patricia Wallace

609-771-2220

Class Meeting Time: See PAWS, BB Room 205

Business Building, Office 310

Office Hours: Monday & Thursday, 12:30 – 1:30 p.m.

pwallace@tcnj.edu

COURSE OVERVIEW/PURPOSE

Business Information Systems and Technology (BIST) engages students in the study of information systems and development concepts, information technology (IT), and business application software. It explains how information is used in organizations and how IT enables improvements in quality, timeliness, and competitive advantage. The course will provide discussions on the strategic value of information systems and on contemporary ethical and social issues.

BIST builds upon the knowledge gained in IST 201, Introduction to Data and Information Science. In BIST, students will further extend their study of information systems and technology, and its impact on organizations by investigating information systems at a macro organizational level.

BIST provides the technical foundation for understanding information systems, describing technology and communication systems and how these technologies work together through the Internet to support electronic commerce and electronic business.

BIST also focuses on the process of supporting organizations by reengineering information systems and critical business processes. Throughout the course, emphasis is placed on using information technology to redesign the organization's products, services, procedures, jobs and management structures; numerous case studies will be utilized from multinational systems and global business environments.

In summary, this course will focus on both business and managerial applications of information systems and technology in organizations and provide students with experiential learning activities to enhance learning and provide value for future employment.

CATALOG DESCRIPTION

Business Information Systems and Technology engages students in the study of information systems, technology, and business application software. With a focus on business and managerial applications, BIST includes various experiential learning activities including team work projects, learning modules, cases studies, and computer lab assignments.

REQUIRED TEXT AND MATERIALS

Sousa, Kenneth J. and Oz, Effy. Management Information Systems. Seventh Edition, Boston: Course Technology, Cengage Learning, 2015.

COURSE REQUIREMENTS

1. Students will read the assigned chapters and any additional assigned readings before coming to class so that they can contribute to the class discussion.
2. Students will complete scheduled exams in the computer lab to demonstrate their knowledge of the material.
3. Students will complete assigned computer lab assignments and submit to Canvas as listed in the course Schedule of Dates.
4. Students will participate in an assigned Global Team project, complete individual assignments, prepare PowerPoint slides, and participate in the Project presentation to the class.
5. Students will participate in the assigned IT Small Business Consulting Project, complete individual assignments, contribute to the final written report, prepare PowerPoint slides, and participate in the Project presentation to the class.

LEARNING GOALS

Upon completion of **BIST**, students will be able to:

- Identify current and emerging trends and technologies in business information systems.
- Describe the structure of business information systems and identify the technology and communication systems of such systems.
- Recognize current trends in information systems and the impact these trends have on organizational efficiency.
- Describe the role of information systems in capturing and distributing organizational knowledge and in enhancing management decision-making.
- Describe how information technology can be used to design, facilitate, and communicate management, organizational, and global goals and objectives.
- Discuss the professional and ethical responsibilities of the IT practitioner.

PERFORMANCE GOALS

Upon completion of **BIST**, students will be able to:

- Demonstrate proficiency in the use of various information technologies and business application software used in organizations.
- Demonstrate knowledge of the technical foundation of information systems including hardware, software, storage, and telecommunications technologies.
- Develop a business information system that applies key information systems concepts and technologies.

- Identify, analyze, and evaluate business information systems using systems analysis tools and reengineering processes.

COURSE SCHEDULE

<i>Session</i>	<i>Topic</i>
Sept. 1	Course Overview—The Role of Information & Technology in Organizations, Business Information Systems, Chapter 1
Sept. 6	Strategic Uses of Information Systems, Chapter 2; IST Global Projects: Research
Sept. 8	Information Systems in Business Functions, Chapter 3; IST Global Projects: Research
Sept. 12	Information Technology: Hardware, Chapter 4 IST Global Projects: Research
Sept. 15	Information Technology: Software, Chapter 5; IST Global Projects: Research
Sept. 19	IST Global Project Presentations
Sept. 22	IST Global Project Presentations
Sept. 26	IST Global Project Presentations
Sept. 29	Test No. 1, Chapters 1 – 5;
Oct. 3	Business Networks and Telecommunications, Chapter 6; IT Small Business Projects--Business Analysis
Oct. 6	Databases and Data Warehouses, Chapter 7
Oct. 10	FALL BREAK
Oct. 13	IT Small Business Projects--Business Analysis
Oct. 17	The Web-Enabled Enterprise, Chapter 8
Oct. 20	Global Information Systems, Chapter 9; IST Team Project Overview
Oct. 24	Decision Support and Expert Systems, Chapter 10

<i>Session</i>	<i>Topic</i>
Oct. 27	Test No. 2, Chapters 6 - 10 & Global Concepts
Oct. 31	Business Intelligence and Knowledge Management, Chapter 11
Nov. 3	Systems Planning and Development, Chapter 12; IT Small Business Consulting Projects—Team Meetings
Nov. 7	Choices in System Acquisition, Chapter 13; IT Projects
Nov. 10	Risks, Security, and Disaster Recovery, Chapter 14; Final IT Project Deliverables Review
Nov. 14	Test No. 3, Chapters 11 – 14
Nov. 17	IT Small Business Consulting Projects—Final Deliverables Review
Nov. 21	IT Small Business Consulting Projects—Final Write Up
Nov. 24	THANKSGIVING BREAK
Nov. 28	Team Project—Business Projects Due; Group Presentations Overview
Dec. 1	IST Teams—Group Presentations
Dec. 5	IST Teams—Group Presentations
Dec. 8	IST Teams—Group Presentations; Last Class of FALL Semester



STUDENT ASSESSMENT

Grading

Students are responsible for material covered in the readings, the lectures, and the textbook. Joining in discussions will positively influence the student's understanding of the course material. Students may at times work cooperatively with others in the learning process. Students, however, are responsible for their own work. In the event anyone is found to have copied part or all of another person's work, or any other assignment, both parties will receive a failing grade (i.e., a zero) for that week's work and possibly for the course. In addition, the School of Business will be notified of the student's actions and the Academic Honesty policy of TCNJ will be enforced.

Computation of Final Course Grade

<u>Items to be Evaluated</u>	<u>Percentage of Grade</u>
1. Tests (3) and Final Exam	50%

2. IST Projects and Team Work 40%
3. Class Participation & Teamwork Assignments 10%

Final Grade	Weight	Average Points
A	4.00	94 - 100
A-	3.67	90 - 93
B+	3.33	87 - 89
B	3.00	84 - 86
B-	2.67	80 - 83
C+	2.33	77 - 79
C	2.00	74 - 76
C-	1.67	70 - 73
D+	1.33	66 - 69
D	1.00	60 - 65

Grade Criteria for Writing Assignments

Criteria used in grading written assignments are as follows:

1. Content, Accuracy, and Completion of Task
2. Document Organization and Format.
3. Mechanics—grammar, spelling, and correct punctuation.
4. Research and Creativity.
5. Handing assignments in on time--deductions will be made for late assignments.

Letter Grade Designations on Writing Assignments, Projects, Case Studies

A = Excellent/Outstanding Submission—The student develops a complete and robust, thoroughly documented, and error-free solution.

B = Very Good/Above Average Submission—The student develops a complete and robust, thoroughly documented solution with minimal errors.

C = Satisfactory/Average Submission—The student develops a solution that is near complete, documented, and that is 80% error free.

D = Below Average Submission—The student develops a solution but this solution does not demonstrate rudimentary mastery of requisite knowledge.

F = Failing/Very Poor Submission—The student submits a solution that is unacceptable, late, and/or is missing critical components.

COURSE POLICIES

Academic Integrity

The College of New Jersey is a community of scholars and learners who respect and believe in academic integrity. This integrity is violated when someone engages in any of the dishonest behavior described below.

Academic dishonesty is any attempt by the student to gain academic advantage through dishonest means, to submit, as his/her own, work which has not been done by him/her or to give improper aid to another student in the completion of an assignment. Such dishonesty would include, but is not limited to: submitting as his/her own a project, paper, report, test, or speech copied from, partially copied, or paraphrased from the work of another (whether the source is printed, under copyright, or in manuscript form). Credit must be given for words quoted or paraphrased. The rules apply to any academic dishonesty, whether the work is graded or ungraded, group or individual, written or oral.

Students are responsible to know the Academic Integrity policy. Students may only represent work that is their own. Cheating on tests, failing to cite sources, or submitting someone else's work are just a few examples that may result in failing the entire course or dismissal from the college. TCNJ's academic integrity policy is available on the web:
<http://www.tcnj.edu/~academic/policy/integrity.html>.

Academic dishonesty is not tolerated at The College of New Jersey.

The Americans with Disabilities Act (ADA)

The College of New Jersey is committed to ensuring equal opportunity and access to all members of the campus community in accordance with Section 503/504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 (ADA). The College prohibits discrimination against any student, employee, or applicant on the basis of physical or mental disability, or perceived disability. The College will provide reasonable and appropriate accommodations to enable employees and students to participate in the life of the campus community. Individuals with disabilities are responsible for reporting and supplying documentation verifying their disability. Requests for accommodations must be initiated through the Office of Differing Abilities Services, Eickhoff Hall 159, 609.771.2571. For further information, please refer to (<http://www.tcnj.edu/~affirm/ada.html>).

Attendance

Every student is expected to participate in each of his/her courses through regular attendance at lecture and laboratory sessions. It is further expected that every student will be present, on time, and prepared to participate when scheduled class sessions begin. Grading is frequently based on participation in class discussion, laboratory work, performance, field experience, or other activities that may take place during class sessions. If these areas for evaluation make class attendance essential, the student may be penalized for failure to perform satisfactorily in the required activities. Students who must miss classes due to participation in a field trip, athletic event, or other official college function should arrange for such class absences well in advance. The Office of Academic Affairs will verify, upon request, the dates of and participation in such college functions. In every instance, however, the student has the responsibility to initiate arrangements for make-up work.

Attendance Policy from Dean's Office: Except in the case of a TCNJ authorized absence or documented personal emergency, faculty are encouraged NOT to make individual exceptions to course assignment due dates and exams. Our work is no less coordinated or time-sensitive than many tasks encountered in the workplace and meeting deadlines and obligations is simply one more step in preparation for a business career. TCNJ's Attendance Policy:
<http://www.tcnj.edu/~recreg/policies/attendance.html>.

Code of Conduct

Students are responsible for awareness of the Code of Conduct, online at:
<http://business.pages.tcnj.edu/our-philosophy/code-of-conduct/>

Exams

Schedules Exams: Student absence during a scheduled test or final exam:

1. The student must notify the professor prior to the day of the test (unless a documented emergency) and give a reason for the absence.
2. If the professor approves the absence, the test must be rescheduled within the following week unless there are extenuating circumstances.
3. If these procedures are not followed, the student will receive a zero for the missed test.

Final Exam: Students are responsible for being present for all exams as scheduled by the college. TCNJ's final examination policy is available on the web:
<http://www.tcnj.edu/~academic/policy/finaevaluations.htm>.

Fourth Hour Requirement

Today's organizations require employees to work successfully in a team environment. Because of this situation, students are often required to work with others on projects. At times, teams are faced with a difficult or uncooperative team member. This may take the form of a person who is autocratic, a person who is ill-equipped to contribute, or one who does not fully participate in team activities. The members of the group must attempt to effectively deal with difficult situations and/or people since this will be expected of them during employment. If, however, the situation becomes intolerable, the group should approach the instructor for guidance and support. Seeking the assistance of the instructor should be done before the project approaches the deadline; it would be unfair of the team to penalize a person without proper warning. With reasonable notification and approval from the instructor, the team can 'fire' a group member. The 'fired' person must then seek inclusion in another team or do the work on their own.

Consistent with the TCNJ course structure of 4-credit units, this course includes the "4th hour" of student engagement by participation in team project assignments

Writing Policy

Because writing is a fundamental business skill, your grade for each assignment will reflect, among other things, your ability to write, even for assignments with minimum writing. Feedback on your writing will be provided as deemed necessary and, if your writing needs improvement, you should seek help from the Writing Center at (<http://www.tcnj.edu/~tutoring/humanities/writing.html>), from someone who writes well, or some other writing source. The responsibility to write well is yours. My responsibility is to hold you accountable for how well you write. Poor writing will be reflected in your final grade.

Teams

As a team and using case materials, course content, and quality external resources, you and the members of your team will come to a decision about an assigned Information Systems and Technology (IST) Team Project. Your team will be required to present your final document and decision to the "Board of Directors" in person. During this problem solving process, teams may meet in person or virtually in the appropriate online forums. **Deliverables** for this project include an Executive Summary, Analysis Component, Business Plan, and a Team Presentation. Grading for the project will include both individual and group grades plus self and team evaluations. The grading rubric for the BIST Team Project is shown below:

BIST Team Project Grading Rubric:

Team Name:

Team Members:

Topic Area	Description of Achievement	Possible Points	Points Scored
Document Organization	<ol style="list-style-type: none"> 1. Document greatly enhanced the effectiveness of the project. 2. Extremely well organized and easy to follow with Table of Contents. 3. Included all document sections as listed in assignment. 4. Provided a one-page executive summary that accurately summarized the full report. 5. Document and Works Cited correctly and consistently followed APA or MLA format with internal citations. 6. Followed page limit guidelines. 7. Exemplary mechanics with very few, if any, grammatical or spelling errors. 	50	
Content Accuracy: Analysis Component	<ol style="list-style-type: none"> 1. Demonstrated understanding of assigned case/project. 2. Analyzed the infrastructure currently in place. 3. Described the market potential for the suggested IST project and analyzed competitors. 4. Identified future trends and services that may be integrated or investigated. 5. Came to a team decision regarding the IST Team Project (in house or outsource) and justified that decision appropriately. 6. Estimated the internal and external resources required to invest in this new/revised IST project. 7. Summarized the scope of services to be offered online. 8. Documented team use of the Decision Making Process for the in house vs. outsourcing problem. 9. Discussed the legal, ethical, global, and social issues related to this IST project. 	50	

Topic Area	Description of Achievement	Possible Points	Points Scored
Content Accuracy: Business Plan Component	<ol style="list-style-type: none"> 1. Summarize the IST Proposal to include the internal and external human resources required. 2. Described the client's business strategy and projected income sources. 3. Using Microsoft Excel, outlined the appropriate budget for the IST project. 4. Outlined the internal and external hardware and software needs. 5. Outlined the client's marketing plan. 6. Outlined the client's customer support plan. 7. Discussed the client's internal and external training needs. 8. Discussed the client's security needs and requirements. 9. Discussed the client's privacy policy and how users will be made aware of it. 	50	
Team Research, Presentation and Creativity	<ol style="list-style-type: none"> 1. Robust research and relevant, internal and external information. 2. Utilized course content material, case material, and quality external resources to enhance the project. 3. Extremely clever solution. 4. Document presentation was extremely unique and creative. 	50	
Total Points		200	

COURSE NAME – IST 320

Database Management for Business (1 Full Course)

COURSE TYPE

Breadth Course in the CBK

COURSE PREREQUISITES

IST 201: Introduction to Data and Information Science

Dr. L. Braender
609.771.2366

braender@tcnj.edu
Business Building 309

CLASSES AND OFFICE HOURS

IST 320-01, T/F 11:00-12:20, BB 225
IST 320-02, T/F 2:00-3:20, BB 225
Office Hours, T/F 12:30-1:50, BB 309

COURSE DESCRIPTION

No one can do his or her job without information, and, in today's environment most of this information comes from some sort of database. Students' professional success will, in part, depend on their ability to understand information and the technology that sustains it, specifically, its characteristics and one's ability to obtain, organize, and analyze it. Even though students are not majoring in IT, students will be expected to partner with IT in the business environment to build database systems. This course will provide students with this core knowledge. In this course, students will work in teams to design and develop a database system. Students will work with contemporary business software including modeling systems, new Web tools, and database management systems.

COURSE MATERIALS

Michael J. Hernandez, Database Design for Mere Mortals, 3rd Edition, 2013. Addison-Wesley (Pearson) with Access Code to MyITLab. Buy this book at the bookstore; this is the only place where the book is packaged with the access code to the website.

Students will learn MS Access 2013 through MyITLab.com. To gain access to the MyITLab learning environment, students must purchase the course book through the campus bookstore; an Access Code is bundled with the book. If students obtain the book outside the bookstore, they may purchase the Access Code online for approximately \$105 (instructions will be provided through email).

COURSE REQUIREMENTS

Students will complete a series of integrated design and development projects in a team environment. These projects begin with analyzing the data needed by a business and end with a full database that meets these needs. Each project will be due approximately every two weeks. Students will work individually with an online learning environment to learn a relational database. Students will complete a series of tutorials each followed by a graded project. Students will prepare for class by reading chapters in a book and listening to lectures. Since this is a "flipped class," most lectures will be available for review through Canvas; these lectures will allow students to work on team projects in the class. Students will be tested on concepts from readings and lectures at the beginning of class and with a midterm and a comprehensive final exam.

PURPOSE STATEMENT

This course is an in-depth examination of database management with an emphasis on the use of relational database systems currently employed by most businesses and organizations. The use of database systems is routine and necessary in both profit and non-profit organizations today. Database systems represent the memory of a firm's formal information resource. They record transactions such as purchases and payments and provide the data used in analytical processing which supports management decision-making. Database management systems have a useful role in maintaining large quantities of long-lived, highly valuable data that have to be accessed in many different ways by many people, often simultaneously. A firm's data must be secured against unauthorized and malicious access. Students enrolled in this course will learn about these systems and about data, metadata, and the structural composition of a relational database system. Students will learn how to capture, manipulate and report relational data so that they are able to answer business questions posed to them.

LEARNING GOALS

Upon completion of IST 320, students will be able to:

1. Identify and define the information that is needed to design a database management system for a business information problem.
2. Create conceptual and logical database designs for a business information problem.
3. Build a database management system that satisfies relational theory and provides users with business queries, business forms, and business reports.
4. Understand the core terms, concepts, and tools of relational database management systems.
5. Work in teams and utilize effective group techniques to manage a complex project.

COURSE SCHEDULE

Complete all reading assignments before coming to class.

Session	Class and Reading Schedule	Individual Assignments	Team Project Assignments
Week 1	<p>Preparation: Read Chapters 1 and 2</p> <p>Lecture: Syllabus, Course Expectations, Schedules, and Team Requirements; Defining & Characterizing Data</p> <p>Lab: Building the Data Dictionary. Review the completed Product Entity worksheet. The reports and template can be found in CANVAS.</p>	Complete team survey on http://www.catme.org	

Session	Class and Reading Schedule	Individual Assignments	Team Project Assignments
Week 2	Preparation: Read Chapters 3 and 4, Read Chapters 6 and 7 Lecture: The Relational Model Lab: Building the Data Dictionary continued.	Possible Online Quiz in Canvas Complete Access Grader Projects for Unit 1-3 by Sunday at 11:59 pm.	Finalize Teams
Week 3	Preparation: Read Chapters 8 and 9 Lecture: Defining Data Characteristics Lab: Complete the Data Dictionary for all entities identified in the reports posted to CANVAS; complete this with your team. You should have 1 file per team.	Possible Online Quiz in Canvas Complete Access Grader Projects for Unit 1-3 by Sunday at 11:59 pm.	Data Dictionary: Post to Canvas by Friday @ 11:59 pm.
Week 4	Preparation: Read Chapters 10 and 11 Lecture: Data Modeling (ERD) Lab: Complete the first set of ERD problems that are on CANVAS.	Possible Online Quiz in Canvas Complete Access Grader Projects for Unit 1-3 by Sunday at 11:59 pm.	
Week 5	Preparation: Continue Read Chapters 10 and 11 Lecture: Data Modeling (ERD) Lab: Complete the second set of ERD problems that are on CANVAS. Complete the Team ERD Case.	Possible Online Quiz in Canvas Complete Access Grader Projects for Unit 1-3 by Sunday at 11:59 pm.	ER Diagram: Post to Canvas by Friday @ 11:59 pm. Review the assessment rubric.
Week 6	Preparation: http://support.microsoft.com/kb/283878 http://tuxgeek.me/2001/04/02/demystified-database-normalization/	Possible Online Quiz in Canvas Complete Access Grader Projects for	

Session	Class and Reading Schedule	Individual Assignments	Team Project Assignments
	<p>Lecture: Normalization</p> <p>Lab: Complete the first set of FDD problems that are on CANVAS. Work with your team on the FDD Case; instructions are in CANVAS.</p>	Unit 4-5 by Sunday at 11:59 pm.	
Week 7	<p>Preparation:</p> <p>Lecture: Normalization</p> <p>Lab: Complete the second set of FDD problems that are on CANVAS. Work with your team on the FDD Case; instructions are in CANVAS.</p>	<p>Possible Online Quiz in Canvas</p> <p>Complete Access Grader Projects for Unit 4-5 by Sunday at 11:59 pm.</p>	<p>FDD Diagram: Post to Canvas by Friday @ 11:59 pm.</p> <p>Review the assessment rubric</p>
Week	Spring Break - NO CLASS	<p>Possible Online Quiz in Canvas</p> <p>Complete Access Grader Projects for Unit 4-5 by Sunday at 11:59 pm.</p>	
Week 8	<p>Preparation: No Reading Assignment</p> <p>Lecture: Building the DB</p> <p>Lab: With your team, build your Database in Access from your database design. Follow instructions on CANVAS. Use the Startup File posted to CANVAS.</p>	<p>Possible Online Quiz in Canvas</p> <p>Complete Access Grader Projects for Unit 4-5 by Sunday at 11:59 pm.</p>	
Week 9	<p>Preparation: Read Assignment TBD</p> <p>Lecture: Building Business Queries</p> <p>Lab: Complete the first set of Homework Practice for SQL; instructions are posted to CANVAS.</p>	<p>Possible Online Quiz in Canvas</p> <p>Complete Access Grader Projects for Unit 4-5 by Sunday at 11:59 pm.</p>	<p>Database with Tables, Data, Relationships: Post to Canvas by Friday @ 11:59 pm.</p>

Session	Class and Reading Schedule	Individual Assignments	Team Project Assignments
			Review the assessment rubric.
Week 10	<p>Preparation: Continue Reading Chapter 3</p> <p>Lecture: Building Business Queries</p> <p>Lab: Complete the second set of Homework Practice for SQL; instructions are posted to CANVAS.</p> <p>Lab: Complete the Graded Group Assignment for SQL; instructions are posted to CANVAS.</p>	<p>Possible Online Quiz in Canvas</p> <p>Complete Access Grader Projects 6 ONLY if you need replacement points by Sunday at 11:59 pm.</p>	
Week 12	<p>SQL Exam on Friday; Study Guide posted to CANVAS</p>	<p>Possible Online Quiz in Canvas</p> <p>Complete Access Grader Projects 6 ONLY if you need replacement points by Sunday at 11:59 pm.</p>	<p>Building Business Queries: Post to Canvas by Friday @ 11:59 pm.</p> <p>Review the assessment rubric.</p>
Week 13	<p>Preparation: No Reading Assignment</p> <p>Lab: Continue the Graded Group Assignment for Forms; instructions are posted to CANVAS.</p>	<p>Possible Online Quiz in Canvas</p> <p>Complete Access Grader Projects 6 ONLY if you need replacement points by Sunday at 11:59 pm.</p>	
Week 14	<p>Preparation: No Reading Assignment</p> <p>Lab: Continue the Graded Group Assignment for Forms; instructions are posted to CANVAS.</p>	<p>Complete Access Grader Projects 6 ONLY if you need replacement points by Sunday at 11:59 pm.</p>	<p>Building Business Forms: Post DB file to Canvas by</p>

Session	Class and Reading Schedule	Individual Assignments	Team Project Assignments
			Friday @ 11:59PM. Review the assessment rubric.
Week 15	Homework: No Reading Assignment Lecture: Building Business Reports Lab: Complete the Graded Group Assignment for Reports; instructions are posted to CANVAS.		Building Business Reports: Post DB file to Canvas By Friday @ 11:59PM. Review the assessment rubric.
Finals Week Final Database: Post to Canvas by the last Friday of class @ 11:59 pm. Review the assessment rubric posted to CANVAS under Assessments. Final Comprehensive Exam: See PAWS schedule.			

GRADING

Overview

We are using the gaming-learning model in this course where students work in teams and individually to earn points. See the Appendices for details about the process and for grading information. For most group assignments, there will be an assessment rubric available to you in CANVAS.

Rubrics

For group assignments, there will be a detailed assessment rubric available to you in CANVAS. An example of a grading rubric can be found in Appendix C.

Your goal is to earn points towards specific letter grades. Here are the ways that you will do this.

Quizzes and Exams (400 Points)

1. SQL Exam (Midterm) – In-class exam on SQL
2. Quizzes – Short Canvas Quizzes administered at the beginning of a class. Quizzes are based on the lectures and readings. Since many lectures are flipped to allow teams to work on projects in class, you will listen to the lecture outside the class and complete the quiz in class.
3. Comprehensive Final – These points are replacement points for either the Total Quiz Points or the SQL Exam. For example, if a student were to earn an 85% of the points for this exam, they can apply that 85% to the Total Quiz Grade or the SQL Exam.

Individual Assignments (500 Points)

MyITLab – Complete a series of online training projects with MS Access. See below for more details for this category.

Team Projects (700 Points)

Teams will work through a series of database design and development projects. Each project is listed in the Course Calendar and on the Home page in Canvas. Teams will have approximately 2 weeks to complete each project. Each project will have a soft due date and a hard due date. The hard date is the last date you can submit an assignment. Every late day after the soft due date, comes with a reduction in earned points; usually 10 points per missed day. No project will be accepted after the hard date.

Participation (100 Points)

Whenever possible, I will “flip the class” so that you listen to the lecture outside of the class and complete team projects in the class. This means that most classes will be dedicated in part or whole to team activities. If you are not present, you are not completing work and, therefore, will earn fewer points than team members who do attend. Attendance will be recorded in Canvas. Each student will be excused for two classes and attendance points will be adjusted at the end of the semester.

Peer Evaluations (Percentage of Team Projects)

At mid-semester and end-of-semester, you will complete a peer evaluation for yourself and your team members. Both evaluations are anonymous; only I can see your submissions. The purpose of the mid-semester evaluation is informational only. I use it to identify potential team problems and to support the end-of-semester findings. The end-of-semester evaluations are used to help determine your grade for this category. The evaluation system will determine a grade based on your responses. In general, the percentage you earn will be multiplied against your Team Projects grade to determine your final grade for that category. For example, if you earn 100% from these evaluations then you earn 100% of the Team Projects grade. If you earn 50% from the evaluations then you earn 50% of Team Project grade.

If at any time, I don't agree with the findings from the peer evaluations, I reserve the right to override or adjust these grades.

COURSE POLICIES

Academic Integrity

<http://policies.tcnj.edu/policies/digest.php?docId=9394>

Students are responsible to know the Academic Integrity policy. Students may only represent work that is their own. Cheating on tests, failing to cite sources, or submitting someone else's work are just a few examples that may result in failing the entire course or dismissal from the college. In addition to academic performance, you are expected to demonstrate the qualities of honesty and integrity. All submissions by you or your team are expected to be your original work. Material that, in any way, violates this principle, or any form of dishonesty, cheating, fabrication, the facilitation of academic dishonesty, and/or plagiarism, may result in the your receiving a failing grade for the assignment, quiz, test, or the course. In addition, further appropriate disciplinary action may be initiated.

Students should be aware that individual work that is completed in MyITLab is strongly monitored for cheating in part or whole. Students who share any part of their work run a strong risk of being flagged for violations of the college's academic integrity policy.

Americans with Disabilities

<http://policies.tcnj.edu/policies/digest.php?docId=9206>

Assignments

There is an online schedule in Canvas which lists the due dates and requirements for each assignment. At times, this schedule may be adjusted because of circumstances that affect the class. Students should regularly check this schedule since it may change.

Students' teams are expected to meet the due dates on this schedule. If the class seems to be struggling with meeting a date, the schedule will be adjusted and the online dates changed.

Those groups who meet deadlines deserve higher grades than those who need more time to complete work. If a student can successfully complete his/her work in a timely manner, their performance is greater than that those who need additional time. The policies of this class support this belief; late assignments will earn fewer points and cannot be submitted after the "Hard Due Date". *All assignments need to be uploaded to Canvas.*

Students will complete a series of tutorials to learn Access. These assignments need to be completed by the individual and not by the team. The system will pick up on any part of the assignment that does not belong to the student who is uploading the file for grading. When students submit files that contain, in part or whole, another student's file, an Integrity Violation Notice is sent to the instructor. Any student who receives or is associated with an Integrity Violation will be reported to the School of Business. Refer to the section above for the Academic Integrity Policy. In addition, teams will work through a series of database design and development projects and are held to the same Academic Integrity Policies as those associated with individual assignments.

Attendance

<http://policies.tcnj.edu/policies/digest.php?docId=9134>

The course blends both theory and application into the learning environment. To accomplish this, we spend time working with theory and time working on tasks with a team of students. To learn, students must actively participate in both the classroom and the lab. To be successful in this course, students must be present in class and in student meetings. Students are required to attend classes, labs, and team meetings that convene outside the classroom. If students have to miss a class or team meeting, they need to call my office at 609.771.2366 and leave a message with the reasons for the absence; students also need to notify their group. In addition, students should not schedule interviews, work, vacations, appointments, or any other non-course related event during scheduled classes.

Dean's Attendance Policy: Except in the case of a TCNJ authorized absence or documented personal emergency, faculty are encouraged NOT to make individual exceptions to course assignment due dates and exams. Our work is no less coordinated or time-sensitive than many tasks encountered in the workplace and meeting deadlines and obligations is simply one more step in preparation for a business career.

Classroom Behaviors

To enhance the learning environment and to keep with the values held by the college, we are all responsible for contributing to a respectful environment. To accomplish this, we all need to adhere to the following behaviors:

5. Refrain from using disruptive technology during the class or labs. Disruptive technology includes, but is not limited to, cell phones, email, Internet surfing, IM, and games. If a student expects an important call, the student needs to alert me before class begins, put their phone on the vibrator, and take the call away from any classroom.
6. Do not speak when someone else is speaking.
7. Do not work on projects that fall outside of this course.
8. Treat each person in the class with respect, consideration, and kindness.

Code of Conduct

<http://business.tcnj.edu/our-philosophy/code-of-conduct/>

Students are responsible for awareness of the Code of Conduct.

Exams and Quizzes

<http://policies.tcnj.edu/policies/digest.php?docId=9136>

As per college policy, courses can have either a comprehensive final project or comprehensive final exam. In this course, we have a comprehensive final project. You will also have an option to take a comprehensive Final Exam scheduled during the Final Exam Period that can be used to replace your midterm grade or your quiz grade. In the spirit of the gaming paradigm, you have an opportunity to replace a grade but, because the exam is comprehensive, the task is more

difficult than the midterm or the quizzes. Save extraordinary situations, no "make-up" exams will be given. If you miss the midterm, you take the comprehensive final.

In this course we are constantly building on core concepts throughout the entire semester. The concepts students learn in week 1 will be concepts you work with in week 14. In essence, the course focuses upon depth of learning, not a broad range of related topics. The testing practices employed in this class support this type of learning.

There will be a series of quizzes and exams in this class. Quizzes will test students' knowledge of terms and theory. Exams will test students' ability to apply these terms and theory to practice. The quizzes and exams will be completed through Canvas.

Extra Credit and Replacement Points

There are no extra credit opportunities built into the course. Because we are using a gaming paradigm, there are *limited* opportunities to replace an assignment grade with a more challenging assignment. These include the following. See the Appendices for details.

1. Data Dictionary – Correct errors and walkthrough the changes with the teacher during an office hour. Points will be awarded based on your ability to demonstrate a clear understanding of the error and the needed modifications. You can earn back half of the lost points by walking through the changes you made. You have one month after you receive your grade to complete the walkthrough process.
2. SQL Assignment – You can replace your initial grade by completing a second SQL assignment.
3. Database Structure – Correct errors and walkthrough the changes with the teacher during an office hour. Points will be awarded based on your ability to demonstrate a clear understanding of the error and the needed modifications. You can earn back half of the lost points by walking through the changes you made. You have one month after you receive your grade to complete the walkthrough process.
4. My IT Lab with Access – Correct errors and resubmit the changes to the online system for complete re-grading. Projects can be submitted up to three times.

Fourth Hour Requirement

Students will be completing a semester-long database design and development project in this course. The project will consist of seven interconnected investigation, design, and development activities. Because these are group assignments, student team will need to participate in dedicated labs and meet outside of the classroom when additional time is needed. In addition, because this course is often “flipped,” students will often be required to watch lectures outside the classroom.

Teams

Because businesses rely heavily on teams working cooperatively to develop IT systems, you need to learn how to effectively work with others to complete a project. You will be assigned to work in groups of approximately three people. Each team member will be responsible to

contribute to each group assignment. Each group will assign roles to members of the team; these roles include the following:

- Project Leader
 - ✓ Confirm Meetings Time and Place
 - ✓ Confirming Frequency of Meetings
 - ✓ Establishing Agenda for Meetings
 - ✓ Run Meetings
 - ✓ Confirm Task Assignments and Completion Times to Members
 - ✓ Follow-up on Assignments
 - ✓ Encourage Participants
 - ✓ Act as Liaison to Teacher
- Content Leader
 - ✓ Review Task Requirements with Team
 - ✓ Confirm Task Requirements are Reflected in Document
 - ✓ Review Assessment Document and Compare to Final Assignment
 - ✓ Confirm the Status of Meeting Requirements with Team
 - ✓ Ensure that the Team Space in CANVAS is Organized, Complete, and Properly Documented
- Applications Expert
 - ✓ Ensure that assignments use applications resources available in Excel, Visio, and Access
 - ✓ Closes each assignment to ensure technical requirements are met
 - ✓ Learns the necessary tools to complete technical tasks

Your team will be assigned virtual space in Canvas that only your team and I have access to. You can use this space to hold virtual meetings through chats, email team members, store and collaborate on team documents, develop study guides, leave messages, and document group activities and meeting times.

At times, teams are faced with a difficult or uncooperative team member. This may take the form of a person who is autocratic, a person who is ill equipped to contribute, or one who does not fully participate in team activities. The members of the group must attempt to effectively deal with difficult situations and/or people since this will be expected of them during employment. If, however, the situation becomes intolerable, the group should approach me for guidance and support. Seeking my assistance should be done before any project approaches a deadline so that the problematic team member has an opportunity to change the situation or behavior before receiving their grade. With reasonable notification and approval from the instructor, the team can 'fire' a group member. The 'fired' person must then seek inclusion in another team, do the work independently, or receive a failing grade for their work.

At any time during the semester, I maintain the right to remove a team member or members from a group and either place them in another group or require that they complete the work independently.

Students who are working in a group are required to schedule weekly meetings. The group will determine the regular meeting time and place for the group and post this information to the team's assigned space in Canvas; the team leader needs to do this before the end of the third week of class. Changes to the meeting schedule should be posted to Canvas. In addition, the type of meeting (virtual vs. physical) and the team leader should be posted to Canvas. Students are required to meet with each other on a regular basis. If a student repeatedly misses meetings, the group may 'fire' this person after consultation and agreement with me. The 'fired' person must then seek inclusion in another team or do the work independently.

Teams will have an opportunity to assess the quality of themselves and their team members. This assessment will be used to calculate part of the student's grade for each member of your team. The assessments will be completed in CatMe.org mid-semester and again at the end of the semester. If the team does not demonstrate some consensus in their assessment of its members or if the assessments seem unfair or unreasonable in any way, I will use my professional judgment to determine how your assessments will be used to calculate each other's grades. To protect the individual and the integrity of this class, I maintain the right to ignore any assessment completed in this class.

Students may request to be reassigned to another team during the semester. This request will be honored when reasonable and possible.

Writing Policy

Because writing is a fundamental business skill, your grade for each assignment will reflect, among other things, your ability to write, even for assignments with minimum writing. Feedback on your writing will be provided as deemed necessary and, if your writing needs improvement, you should seek help from the Writing Center at <http://tutoringcenter.pages.tcnj.edu/humanities/writers-place/>), from someone who writes well, or some other writing source. The responsibility to write well is yours. My responsibility is to hold you accountable for how well you write. Poor writing will be reflected in your final grade.

Academic Enhancement Center: The Academic Enhancement Center, which is located in Forcina Hall 145, is an excellent place to get help on your papers. Call *The Write Place* at 771-2895 or 771-3325, or see the hours available at <http://www.tcnj.edu/~assstn/lhw.htm>.

IST 320, DATABASE MANAGEMENT FOR BUSINESS GAME RULES

APPENDIX A – GAME RULES

The class will be split into three realms, the Elven People, the Druids and the Rock Trolls. (I read a book by Terry Brooks and the Elven People, Druids, and Rock Trolls were noble races of the Free People.) Each realm will be split into three regions. The regions will be called North Elven, Central Elven, South Elven, North Druids, Central Druids, South Druids, North Rock Trolls, Central Rock Trolls and South Rock Trolls.

You will be randomly assigned to one group. Within your group, you will work together to complete tasks and earn game points (grade points). There are also times when you may roam outside your group to work on a special project to earn game points with a peer. These points will also be added to your grades. For a limited number of tasks, you will have an opportunity to replace the original points earned. See Extra Credit, Replacement Points for details. Keep in mind, the second task will always be a bit harder than the first task.

The purpose of the game is to earn as many points needed to obtain a desired grade. We do not work with averages.

Players

Class Leader

The Class Leader provides additional support for the learning environment in the form of an advisor, listener, and advocator. The class leader is responsible for reminding students of upcoming activities, helping students work through conflicts, and advocating for the class to me.

Each class will either choose a Leader or have a Leader assigned to them by me. The Class Leader will be responsible for monitoring the activities in the classroom and help you plan your strategy to earn points. To do this, the Class Leader will need to monitor discussion boards, remind students of upcoming opportunities to earn points, and, help students who are experiencing troubles in their groups. In addition, the Class Leader will meet with me once a week before class to discuss game strategy and student problems (e.g., conflicts in groups). If a Leader is active and earns the respect of their peers, they can earn up to 100 game points, 50 points for each $\frac{1}{2}$ semester. If a Leader misses more than two classes in a seven-week period, they will forfeit their position and their game points for that period, and, a new Leader will take their place.

Oracle

The Oracle provides additional support to students outside the classroom usually in the form of a group chat or email. The Oracle is responsible for helping you understand how to complete an assignment. Whereas the Class Leader helps you with “people problems,” the Oracle helps you with “assignment problems.” Note, the Oracle *cannot give you an answer* or solution; s/he can only guide you on how to come by an answer or solution.

Each class will choose an Oracle or have an Oracle assigned to them by me. The Oracle is responsible for helping students understand the requirements for group projects and the online training projects. An Oracle may also organize study opportunities for students (e.g., group study guide). The Oracle will be judged by the evaluations they earn from their peers and observations from me. If an Oracle is active and earns the respect of their peers, they can earn up to 200 game points, 100 points for each $\frac{1}{2}$ semester. If an Oracle does not respond to student questions within a timely period (e.g., 24 hours), they will forfeit their position and their game points for that period, and, a new Oracle will take their place. I will ultimately decide if answers are posted in a timely manner.

Group Projects

You will complete a series of interrelated group projects with members of your team. These projects will begin within the first week of class and end with the last week. While each member of a team is responsible for his or her work, team members will help teammates understand the material and work up to the standards for course.

If a team member comes unprepared to class on a regular basis or misses classes and/or outside meetings, the team should speak with the Class Leader and/or me to seek guidance and sometimes permission to remove the student from the team. The banished student would then seek membership in another team or complete all tasks by themselves. Under certain conditions, you may seek permission to move to another team by speaking to the Class Leader and/or with me. *Changes in membership should occur early in the semester.*

If a student is disruptive, repeatedly misses classes or does not contribute equally to team projects, I reserve the right to remove that student from a team. Under some circumstances, the removed student could then seek membership in another team. Generally, they would complete all remaining tasks by themselves. Students will be flagged for this and consideration for removal from a team when they miss three classes.

Details on Assignments

My IT Labs

These projects are individual projects and not team projects. The purpose for these projects is to prepare you to work with MS Access and on the team projects.

There are 5 projects in this category; each is weighted equally. Each project consists of a tutorial and a graded project. You earn points only on the graded project.

Within this system, you will have access to the “Exploring Microsoft Access 2015 Comprehensive” book. You can read this book on your iPads, online, or through traditional print (the eText will need to be printed locally). You will also complete online tutorials that will teach you Access concepts. Within each tutorial, you can watch videos, can read instructions, and gain hints on how to complete tasks. During the tutorial, you will be asked to demonstrate your understanding by completing a series of tasks. Since the goal for these tutorials is to learn, they will not be submitted for a grade even though you may get feedback on your performance. Training can be completed on Windows or Apple computers. Graded Projects can only be completed on a Windows system that has MS Access 2015 installed on it. The business labs and the library computers have Access installed on them. You are advised to use Google Chrome for this application.

With the graded project, you will need to download a file for each project from the My IT Lab site. Each file is tagged with a unique and hidden ID associated with you. If you share any part of this file with another person, the tag will be in the shared file and the system will flag you and the other person with an integrity violation. I will be alerted immediately and will inform the college of this violation. When you complete the graded project, you will upload it to the My IT

Lab site where it will be graded. Afterwards, you can access a detailed graded report identifying your accomplishments and mistakes. You can fix your mistakes and upload the modified file for re-grading. You have three opportunities to upload the file for grading. The highest grade will count towards your final grade. If you believe that you were unfairly graded by the system, you may review your work with me. If a mistake was made, I will adjust your grade. It's rare but occasionally the system makes mistakes.

Team Projects (Database Design and Development)

There are 7 group tasks in this category; each is weighted equally. Tasks include the following.

1. Data Dictionary – You may self-correct the graded data dictionary for additional points. The final grade will be the original grade plus half of the missed points that the team earns on the revised dictionary. To earn additional points from the original grade, team members must review the revised document with me.
2. ERD – Entity Relationship Diagram. You may not resubmit this assignment for re-grading. Teams must correct their mistakes before moving to the next assignment. If they do not, errors will likely cascade down to the next assignment.
3. FDD – Functional Database Design. You may not resubmit this assignment for re-grading. Teams must correct their mistakes before moving to the next assignment. If they do not, errors will likely cascade down to the next assignment.
4. Database Structure – You will implement your FDD and Data Dictionary into a Functional Database. You may self-correct the graded database structure for additional points. The final grade will be the original grade plus half of the missed points that your team earns on the revised structure. To earn additional points from the original grade, team members must review the revised database with me. Teams must correct their mistakes before moving to the next assignment. If they do not, errors will likely cascade down to the next assignment.
5. Business Queries – Teams will answer a series of business questions by developing SQL statements. You will develop code, not “queries by design.” You may replace your points by completing a more difficult set of SQL statements.
6. Business Forms – You will develop a multi-part business form. Teams or team members may not resubmit this assignment for re-grading.
7. Business Reports – You will develop a complex business reports built on a query. You may not resubmit this assignment for re-grading.

POINT STRUCTURE

Your success in this game depends on the number of points you earn throughout the course. Here is the point structure to this game. You will begin on the first day of class as a Level Zero player. Level fifteen is the highest level you can achieve in this game.

Table 1: Point Structure

1,700	Total Points	Percentage	Grade
Level 15	1,598	94%	A

Level 14	1,530	90%	A-
Level 13	1,479	87%	B+
Level 12	1,428	84%	B
Level 11	1,360	80%	B-
Level 10	1,309	77%	C+
Level 9	1,258	74%	C
Level 8	1,190	70%	C-
Level 7	1,139	67%	D+
Level 6	1,020	60%	D
Level 5	850	50%	
Level 4	680	40%	
Level 3	510	30%	
Level 2	340	20%	
Level 1	170	10%	

Table 2: Point Strategy

Category (Total Points)	Task (# of Tasks)	Points
Quizzes/Exams (400)	SQL Exam (1)	200
	Online Quizzes (Approx. 10)	200
	Comprehensive Final Exam (1) *	200 (Replacement Points)
Individual Projects (500)	My IT Labs - Solo (5) **	500
Team Projects (700)	Team Projects - Shared (7) ***	700
Participation	Peer Evaluations *****	% Of Team Project
	Attendance (Roll Call)	100
Total Points		1,700
<p>* The final can replace the SQL exam or the total quiz grade. ** Can be resubmitted for re-grading. Three uploads for grading are allowed. *** Some replacement grades are possible. ***** Your Team Projects Points may be reduced by the Participation Grade</p> <p>See syllabus for details</p>		
Leader Quests (100-200)	Oracle *	200
	Class Leader *	100
<p>* These points may be used as a buffer grade or a replacement grade.</p>		

COURSE NAME – IST 330

Managing Projects and Work Teams

COURSE TYPE

Business Elective

COURSE PREREQUISITE

IST 310 or 320 and Junior Standing

INSTRUCTOR

Dr. Patricia Wallace, 609-771-2220
Office Hours: Monday & Thursday, 1- 2 p.m.

Business Building, Office 310, x2220
pwallace@tcnj.edu

CLASSES AND OFFICE HOURS

Monday and Thursday 12:30-1:30

COURSE DESCRIPTION

Managing Projects and Work Teams engages students in the study of project management concepts, principles, tools, and techniques. With a focus on business and managerial cases, *Managing Projects and Work Teams* enables students to gain real-time experience in the challenges of creating a unified team, solving problems, decision making, tracking projects, dealing with conflict resolution, preparing project deliverables, and presenting team projects and reports to the class.

COURSE MATERIALS

Larson, Eric and Clifford Gray. Project Management: The Managerial Process with MS Project. New York: McGraw-Hill Book Company, 2014.

Pinto, Jeffrey K. Project Management: Achieving Competitive Advantage. Boston: Pearson Education, Inc., 2016.

Project Management Institute. A Guide to the Project Management Body of Knowledge. Newtown Square, PA: PMI, 2013, 5th Edition. www.pmi.org

Schwalbe, Kathy. Information Technology Project Management. Boston: Cengage Learning, 2016, 8th Edition.

COURSE REQUIREMENTS

- Students will read the assigned chapters and any additional assigned readings before coming to class so that they can contribute to the class discussion.

- Students will complete scheduled exams in the computer lab to demonstrate their knowledge of the material.
- Students will complete assigned computer lab assignments and submit to Canvas as listed in the course Schedule of Dates.
- Students will participate in assigned Team projects, complete individual assignments, prepare PowerPoint slides, and participate in the Project presentation to the class.

COURSE PURPOSE

Project Management has been labeled by career experts as a top career choice for prospective graduates. With more organizations implementing project-based working methods, the need for a manager who oversees all elements of the undertaken project, is essential (buzzle.com) Increasingly, organizations are adopting project management techniques and structures within their business framework. Research has shown that a great many projects fail to produce the expected results or are not completed on time or on budget. Some of the primary reasons are poor definition of the project's requirements and objectives and lack of project management planning.

Organizations waste US \$122 million for every US \$1 billion invested due to poor project performance — a 12 percent increase over last year (pmi.org). In fact, the world of organizational life is experiencing a profound change. Increasingly, work is performed by people who come together temporarily to accomplish a specific task or respond to a particular concern. Organizational structures that were designed to tackle recurring situations, narrow job descriptions, and well-defined hierarchical relationships have been complemented, sometimes supplanted, by the dynamic organization of focused task forces, project teams, and program initiatives. The number and variety of demands that fall upon the organizations, the depth of knowledge that is required to respond to each situation, and the need for the organization to remain flexible and respond quickly demand that the critical work be performed in *directed bursts of activity*. Ever more, people work in teams, often in several teams concurrently, carrying out different responsibilities, seemingly tied together in a web of short- and long-term projects. Objectives, milestones, deliverables, resources, agendas, progress reports, and many other terms have entered the lexicon of the manager, the specialist, and of any one who aspires to a position of responsibility.

Project Management offers the advantage of allowing organizations to create products and processes efficiently, through optimal use of resources, in order to respond to rapid time-to-market demands. *Managing Projects and Work Teams* will prepare and equip business students for organizational environments that increasingly rely on qualified project managers who can assist the business firm to operate at its highest potential. In addition, *Managing Projects and Work Teams* is useful to any student at The College of New Jersey who would like to complement his or her studies with management skills that will be valuable in the workplace.

In summary, *Managing Projects and Work Teams* is a solutions-oriented, interdisciplinary course in project management concepts, principles, tools, and techniques. The widespread use of

information technology to aid in project management means that *Managing Projects and Work Teams* will be complemented by working knowledge of the most popular software programs in this area. This combination will not only bring a more complete and pragmatic view of team work, but also make those students who take this course acquire a valuable asset for future employment.

LEARNING GOALS

Upon completion of *Managing Projects and Work Teams*, students will be able to:

- Describe project management concepts, terminology, current trends, and practices as identified by the Project Management Institute (PMI), the leading nonprofit professional association in project management.
- Identify, analyze, manage, and evaluate projects using project management principles, tools, and techniques as identified by PMI.
- Describe teamwork skills that include structuring tasks, selecting people, decision making, communicating with team members, fostering team relationships and conflict resolution.
- Discuss the professional and ethical responsibilities of the Project Management Professional (PMP), including certification and standards.

PERFORMANCE GOALS:

Upon completion of *Managing Projects and Work Teams*, students will be able to:

- Demonstrate familiarity with project tracking and performance measurement techniques in project management.
- Demonstrate proficiency in the use of project management software when planning, executing, and managing projects.
- Demonstrate knowledge of the technical foundation of project management including techniques of project estimation, resource allocation, risk management, and information technology tools.
- Demonstrate interpersonal skills that include participating in teams as well as leading, directing, and managing others in team and work groups.

COURSE OUTLINE

Introduction to Project Management

- Project and project management terminology
- Reviewing project processes

- Project Management Body of Knowledge
- The project manager's role in the project
- The project team's role in the project
- Lifecycles of a project

Project Initiation

- Developing the scope statement
- Defining project deliverables
- Conducting a feasibility study
- Implementing a task control process
- Crafting the project charter

Project Planning

- Identifying deliverable milestones
- Generating project tasks
- Developing the project budget
- Sequencing tasks with the network diagram
- Calculating project critical path
- Determining task start and finish
- Assigning task responsibility
- Allocating resources to the critical path
- Developing a risk management plan

Project Execution

- Ensuring quality assurance thru Six Sigma principles
- Managing issues and changes

- Managing performance
- Communicating results
- Managing multiple projects
- Managing stakeholder commitment

Project Control

- Tracking and managing the project plan
- Identifying and managing issues
- Collecting time and cost data
- Creating activity/project variance reports
- Taking corrective actions and implementing project scope changes

Project Close Phase

- Performing the post-project review
- Conducting a lessons learned
- Preparing close-out reports
- Building team skills for future projects

Project Communication Skills

- Conducting team meetings
- Leadership Skills
- Conflict Resolution
- Motivating/Coaching team members
- Using Listening skills
- Developing team member skills

Project Management Tools

- Gantt charts

- Network diagrams
- Quality control charts
- Project software
- Quality audits

COURSE SCHEDULE

<i>Session</i>	<i>Topic</i>
Week 1 1/18/17	Course Overview—Project Management: History, Careers, Research, Tools, Certification, Standards, and Ethics—Appendix A
Week 2 1/25/17	Project Management in Organizations: Management and other Stakeholders, Project Phases and Life Cycles—Appendix A Computer Lab Tutorial: Planning a Project
Week 3 2/1/17	Project Management Teams and Groups—Conclude Appendix A Case Study: JWD Consulting
Week 4 2/8/17	Project Development, Execution, and Control—Appendix C Computer Lab Module: Using Software to Assist in Project Integration
Week 5 2/15/17	Project Strategic Planning, Work Definition, and Scope Computer Lab Module: Creating a Project Schedule
Week 6 2/22/17	Project Time Management Computer Lab Tutorial: Using Software to Assist in Time Management
Week 7 3/1/17	Midterm & Team Project Deliverables
Week 8 3/8/17	Project Cost Management Computer Lab Tutorial: Assigning Resources and Costs
Week 9 3/15/17	<i>Spring Break</i>

<i>Session</i>	<i>Topic</i>
Week 10 3/22/17	Project Quality Management Computer Lab Module: Using Software to Assist in Project Quality
Week 11 3/29/17	Project Human Resource Management Computer Lab Module: Using Software to Assist in HR
Week 12 4/5/17	Project Communications Management Computer Lab Tutorial: Communicating Project Information
Week 13 4/12/17	Project Risk Management Case Study: Risk Monitoring
Week 14 4/19/17	Project Procurement Management Computer Lab Tutorial: Tracking Progress and Closing the Project
Week 15 4/26/17	Team Projects/Group Presentations
Week 16 5/1/17	<i>Final Examination Period</i>

STUDENT ASSESSMENT

Overview

Students are responsible for material covered in the readings, the lectures, and the textbook. Joining in discussions will positively influence the student's understanding of the course material. Students may at times work cooperatively with others in the learning process. Students, however, are responsible for their own work. In the event anyone is found to have copied part or all of another person's work, or any other assignment, both parties will receive a failing grade (i.e., a zero) for that week's work and possibly for the course. In addition, the School of Business will be notified of the student's actions and the Academic Honesty policy of TCNJ will be enforced.

Computation of Final Course Grade

<u>Items to be Evaluated</u>	<u>Percentage of Grade</u>
1. Midterm and Final Exam	40%
2. Projects, Team Work, & Lab Work	40%

COURSE POLICIES

Academic Integrity

The College of New Jersey is a community of scholars and learners who respect and believe in academic integrity. This integrity is violated when someone engages in any of the dishonest behavior described below.

Academic dishonesty is any attempt by the student to gain academic advantage through dishonest means, to submit, as his/her own, work which has not been done by him/her or to give improper aid to another student in the completion of an assignment. Such dishonesty would include, but is not limited to: submitting as his/her own a project, paper, report, test, or speech copied from, partially copied, or paraphrased from the work of another (whether the source is printed, under copyright, or in manuscript form). Credit must be given for words quoted or paraphrased. The rules apply to any academic dishonesty, whether the work is graded or ungraded, group or individual, written or oral.

Students are responsible to know the Academic Integrity policy. Students may only represent work that is their own. Cheating on tests, failing to cite sources, or submitting someone else's work are just a few examples that may result in failing the entire course or dismissal from the college. TCNJ's academic integrity policy is available on the web:
<http://www.tcnj.edu/~academic/policy/integrity.html>.

Academic dishonesty is not tolerated at The College of New Jersey.

The Americans With Disabilities Act (ADA) Policy

The College of New Jersey is committed to ensuring equal opportunity and access to all members of the campus community in accordance with Section 503/504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 (ADA). The College prohibits discrimination against any student, employee, or applicant on the basis of physical or mental disability, or perceived disability. The College will provide reasonable and appropriate accommodations to enable employees and students to participate in the life of the campus community. Individuals with disabilities are responsible for reporting and supplying documentation verifying their disability. Requests for accommodations must be initiated through the Office of Differing Abilities Services, Eickhoff Hall 159, 609.771.2571. For further information, please refer to (<http://www.tcnj.edu/~affirm/ada.html>).

Attendance Policy

Every student is expected to participate in each of his/her courses through regular attendance at lecture and laboratory sessions. It is further expected that every student will be present, on time, and prepared to participate when scheduled class sessions begin. Grading is frequently based on participation in class discussion, laboratory work, performance, field experience, or other activities that may take place during class sessions. If these areas for evaluation make class

attendance essential, the student may be penalized for failure to perform satisfactorily in the required activities. Students who must miss classes due to participation in a field trip, athletic event, or other official college function should arrange for such class absences well in advance. The Office of Academic Affairs will verify, upon request, the dates of and participation in such college functions. In every instance, however, the student has the responsibility to initiate arrangements for make-up work.

Attendance Policy from Dean's Office

Except in the case of a TCNJ authorized absence or documented personal emergency, faculty are encouraged NOT to make individual exceptions to course assignment due dates and exams. Our work is no less coordinated or time-sensitive than many tasks encountered in the workplace and meeting deadlines and obligations is simply one more step in preparation for a business career. TCNJ's Attendance Policy: <http://www.tcnj.edu/~recreg/policies/attendance.html>.

Code of Conduct

Students are responsible for awareness of the Code of Conduct, online at:

Final Exam

Students are responsible for being present for all exams as scheduled by the college. TCNJ's final examination policy is available on the web:
<http://www.tcnj.edu/~academic/policy/finaevaluations.htm>

If a student needs to miss an exam, the student must follow these procedures.

1. The student must notify the professor prior to the day of the test (unless a documented emergency) and give a reason for the absence.
2. If the professor approves the absence, the test must be rescheduled within the following week unless there are extenuating circumstances.
3. If these procedures are not followed, the student will receive a zero for the missed test.

Fourth Hour Requirement

Consistent with the TCNJ course structure of 4-credit units, this course includes the "4th hour" of student engagement in two ways—participation in team project assignments and completion of project management lab exercises.

Grading

The following grade designations will be the basis for grading:

Final Grade	Weight	Average Points
A	4.00	94 - 100
A-	3.67	90 - 93

Final Grade	Weight	Average Points
B+	3.33	87 - 89
B	3.00	84 - 86
B-	2.67	80 - 83
C+	2.33	77 - 79
C	2.00	74 - 76
C-	1.67	70 - 73
D+	1.33	66 - 69
D	1.00	60 - 65

Grade Criteria for Writing Assignments

Criteria used in grading written assignments are as follows:

1. Content, Accuracy, and Completion of Task
2. Document Organization and Format.
3. Mechanics—grammar, spelling, and correct punctuation.
4. Research and Creativity.
5. Handing assignments in on time--deductions will be made for late assignments.

Letter Grade Designations on Writing Assignments, Reports, and other Project Deliverables:

A	Excellent/Outstanding Submission	The student develops a complete and robust, thoroughly documented, and error-free solution.
B	Very Good/Above Average Submission	The student develops a complete and robust, thoroughly documented solution with minimal errors.
C	Satisfactory/Average Submission	The student develops a solution that is near complete, documented, and that is 80% error free.
D	Below Average Submission	The student develops a solution but this solution does not demonstrate rudimentary mastery of requisite knowledge.
F	Failing/Very Poor Submission	The student submits a solution that is unacceptable, late, and/or is missing critical components.

Writing Policy

Because writing is a fundamental business skill, your grade for each assignment will reflect, among other things, your ability to write, even for assignments with minimum writing. Feedback on your writing will be provided as deemed necessary and, if your writing needs improvement, you should seek help from the Writing Center at (<http://www.tcnj.edu/~tutoring/humanities/writing.html>), from someone who writes well, or some other writing source. The responsibility to write well is yours. My responsibility is to hold you accountable for how well you write. Poor writing will be reflected in your final grade.

Team Projects

Today's organizations require employees to work successfully in a team environment. Because of this situation, students are often required to work with others on projects. At times, teams are faced with a difficult or uncooperative team member. This may take the form of a person who is autocratic, a person who is ill equipped to contribute, or one who does not fully participate in team activities.

The members of the group must attempt to effectively work with difficult situations and/or people since this will be expected of them in future work environments. If, however, the situation becomes intolerable, the group should approach the instructor for guidance and support. Seeking the assistance of the instructor should be done before the project approaches the deadline; it would be unfair of the team to penalize a person without proper warning. With reasonable notification and approval from the instructor, the team can 'fire' a group member. The 'fired' person must then seek inclusion in another team or do the work on their own.

Finally, students in teamwork environments will be expected to work with changing conditions and/or "fuzzy requirements" as part of the experiential learning process. Thus, team membership and project deliverables may be changed, enhanced, or downsized during the course of the semester.

COURSE NAME – IST 340

Web Design and Development (One Full Course)

COURSE TYPE

Business Elective

INSTRUCTOR

Dr. Lynn Braender
609.771.2366

Business Building 309
braender@tcnj.edu

COURSE PREREQUISITE

IST 310 or 320 and Junior Standing

CLASSES AND OFFICE HOURS

IST 320-01, T/F 11:00-12:20
IST 340-01, T/F 2:00-3:20
Office Hours, T/F 12:30-1:45

COURSE DESCRIPTION

This hands-on course provides you with the foundational knowledge needed to create a web site. You will learn to design and develop web pages using HTML, CSS, and JavaScript. In this project-based course, you will learn how to develop web applications that adhere to industry standards and best practices. You will also learn about web technologies and emerging trends in business.

COURSE MATERIALS

A computer with access to the Internet to complete work outside of class

Joel Sklar. Principles of Web Design. Boston, MA: Cengage Learning, Sixth Edition, 2015.

Robert W. Sebesta. Programming the World Wide Web. New York, NY: Pearson Education, Inc. Eighth Edition, 2015.

COURSE REQUIREMENTS

Students will work individually to develop a series of web pages that adheres to industry standards developed by the World Wide Web Consortium (W3C) and support the Web Accessibility Initiative. Students will complete exercises and assignments, review existing business web pages, critique other students' web page in terms of functionality and design, and create a portfolio consisting of a series of web pages that demonstrate an understanding of the material taught in class. Students will prepare for class by reading chapters from the assigned books and will be tested on these concepts through quizzes and exams.

PURPOSE STATEMENT

Business systems are increasingly being developed for the web. These systems support communications, customer services, internal and external operations, data collection, and other business processes. Leveraging web-based technology improves business efficiency and competitiveness. To maintain a viable position in today's market, businesses need managers who understand the web and the technologies that support it. IST 340 provides you with a fundamental knowledge in web design and development. You will learn how to create websites that utilize internal and external style sheets, tables, forms, navigation, and client-side scripting.

LEARNING GOALS

Course Learning Goals

1. To expand students technical knowledge and skill in the field of information systems and technology.
2. To provide students an opportunity to learn contemporary and relevant coding skills.
3. To provide students an opportunity to learn industry standards regarding the World Wide Web.
4. To improve students' ability to think critically about contemporary issues affecting business and the environment they work in.
5. To improve students' ability to analyze business artifacts and suggest ways to advance them.
6. To improve students' ability to grow intellectually from critiques provided by peers.

Course Performance Goals

1. Identify and define web technologies including web protocols, languages, services, standards, and emerging technologies.
2. Design and develop a website using texts, links, tables, lists, forms, images, style sheets, and embedded objects.
3. Design and develop Web pages using HTML, CSS and JavaScript.
4. Style your web pages using internal and external style sheets.
5. Apply standards for web accessibility to a website so that people with disabilities can use it.
6. Critique web pages on technical and design issues, and their applicability to contemporary businesses.

COURSE REQUIREMENTS:

1. You will read assigned chapters and external readings before coming to class so that you are prepared to contribute to the discussions and projects. Assigned readings will be posted to Canvas at least one week in advance of the class. You need to read these materials and be prepared to participate in a class discussion to ensure you understand the material.
2. You will complete periodic exams in class to demonstrate your understanding of the material.
3. You will work independently to create a series of web pages. You will have some time in class to work on projects and you will need additional time outside of class to complete these projects.
4. You will be evaluated on the technical and design qualities of your projects. Your code needs to meet requirements, and, be clean, documented, and available on the college server. Your design needs to be adhere to web accessibility standards, use white space appropriately, be based on Cascading Style Sheets, and, be complete and professional.
5. You will conduct critiques of your peers' web pages using the rubric provided you on Canvas. Critiques will be based on technical and design issues and will provide valuable feedback to the author of the web page. Your grade will be based on the quality and degree of feedback.

COURSE SCHEDULE

NOTE: Drafts are due online by the conclusion of the Sunday before the due date. Critiques are due by the next Tuesday. Final projects are due by the conclusion of Friday on the due date.

WEEK	CLASS ASSIGNMENTS	Due Date
Introduction to HTML 5 and CSS		
Week 1	Review Syllabus and Course Expectations READ: Chapter 1 in Sebesta book on Internet and Web Usability	
Week 2	READ: Chapter 1 in Sklar book on HTML 5 PROJECT 1: Home Page	
Week 3	READ: Chapters 2 and 3 in Sklar book on design principles and site planning PROJECT 1: Home Page (cont.)	Project 1 Home Page
Web Site Design Principles		

NOTE: Drafts are due online by the conclusion of the Sunday before the due date. Critiques are due by the next Tuesday. Final projects are due by the conclusion of Friday on the due date.

WEEK		CLASS ASSIGNMENTS	Due Date
Week 4	READ: Chapters 4 and 5 in Sklar book on Advanced Design Principles PROJECT 2: Informative Page Using Advanced CSS Principles and Lists		
Intermediate CSS			
Week 5	READ: Chapters 6 and 7 in Sklar book on Layouts PROJECT 2: Informative Page (cont.)		Project 2 Informative Page
Space Design			
Week 6	READ: Chapter 8 in Sklar book on Graphics, Color, and Navigation PROJECT 3: Fixed Three-column Web Page with Site Navigation		
Week 7	READ: Chapters 9 in Sklar book on Navigation PROJECT 3: Fixed Three-column Web Page (cont.)		Project 3 Fixed Columns
Tables and Forms			
Week 8	READ: Chapter 10 in Sklar book on Tables PROJECT 4: Web Page with Tables and Forms		
Week 9	READ: Chapter 11 in Sklar book on Forms PROJECT 4: Web Page with Table and Forms		Project 4 Table/Form
Scripting			
Week 10	READ: Chapter 4 in Sebesta book on JavaScript PROJECT 5: Adding JavaScript to the Home Page		
Week 11	READ: Chapter 5 in Sebesta book on JavaScript PROJECT 5: Adding JavaScript to the Home Page (cont.)		Project 5 Home Page JavaScript
Week 12	READ: Chapter 6 in Sebesta book on Dynamic Documents PROJECT 6: Creating a Dynamic Web Page		
Week 13	READ: Chapter 7 in Sebesta book on XML PROJECT 6: Creating a Dynamic Web Page (cont.)		

NOTE: Drafts are due online by the conclusion of the Sunday before the due date. Critiques are due by the next Tuesday. Final projects are due by the conclusion of Friday on the due date.

WEEK	CLASS ASSIGNMENTS	Due Date
Week 14	FINALIZE PROJECT 6	Project 6 Dynamic Web Page
Week 15 Final Exam		

GRADING

Assignments & Grading

Category	Percentage of Grade
Web Projects (6)	60%
Quizzes	10%
Critiques	15%
Final Exam	15%
Total	100%

Grading Scale

Your grade for the course will be determined according to the following scale.

Final Grade	Average Points	Final Grade	Average Points
A-	94-100	C+	77-79.99
A	90-93.99	C	74.76.99
B+	87-89.99	C-	70-73.99
B	84-86.99	D+	66-69.99
B-	80-83.9	D	60-65.99

Grading Rubrics:

Your grade for projects will be determined by your adherence to the following criteria.

Grading Rubric I

DESIGN CATEGORIES					
CATEGORY	MET REQUIREMENTS				SCORE
	All	Most	Many	Few	1-4
CONTENT					
The site has a well-stated clear purpose and theme that is carried out throughout the site					
LAYOUT					
The Web site has an attractive and usable layout. It is easy to locate					

DESIGN CATEGORIES					
CATEGORY	MET REQUIREMENTS				SCORE
	All	Most	Many	Few	1-4
important elements. White space, graphic elements and/or alignment are used effectively to organize material.					
GRAPHICS Graphics are related to the theme/purpose of the site, are thoughtfully cropped, are of high quality and enhance reader interest or understanding.					
FONTS The fonts are consistent, easy to read and point size varies appropriately for headings and text. Use of font styles is used consistently and improves readability					
WRITING There are no errors in spelling, punctuation or grammar in the final draft of the Web site.					
CONTENT ACCURACY All information provided by the student on the Web site is accurate and all the requirements of the assignment have been met.					
NAVIGATION Links for navigation are clearly labeled, consistently placed, allows the reader to easily move from a page to related pages (forward and back), and take the reader where s/he expects to go. There are an adequate number of links.					
OVERALL QUALITY Website is of high quality. Layout and design are visually striking. All links and pages are complete and working.					

GRADING RUBRIC II

CODING CATEGORIES					
CATEGORY	MET REQUIREMENTS				SCORE
	All	Most	Many	Few	1-4
SPECIFICATIONS The program works and meets all requirements.					
READABILITY The code is well organized and very easy to follow.					
REUSABILITY The code could be reused as a whole or each routine could be reused.					
DOCUMENTATION The documentation is well written and clearly explains what the code is accomplishing.					

DELIVERY					
The program was delivered on time.					
EFFICIENCY					
The code is efficient without sacrificing readability and understanding.					

COURSE POLICIES

Academic Integrity

<http://policies.tcnj.edu/policies/digest.php?docId=9394>

Students are responsible to know the Academic Integrity policy. Students may only represent work that is their own. Cheating on tests, failing to cite sources, or submitting someone else's work are just a few examples that may result in failing the entire course or dismissal from the college. In addition to academic performance, you are expected to demonstrate the qualities of honesty and integrity. All submissions by you or your team are expected to be your original work. Material that, in any way, violates this principle, or any form of dishonesty, cheating, fabrication, the facilitation of academic dishonesty, and/or plagiarism, may result in the your receiving a failing grade for the assignment, quiz, test, or the course. In addition, further appropriate disciplinary action may be initiated.

Attendance

<http://policies.tcnj.edu/policies/digest.php?docId=9134>

You are expected to be present for each class. If you miss a class, for whatever reason, you will miss the participation points for the class you missed. If you have to miss a class, you need to send a message through Canvas with the reasons for the absence. In addition, you should not schedule interviews, work, vacations, appointments, or any other non-course related event during scheduled classes.

Dean's Attendance Policy

Except in the case of a TCNJ authorized absence or documented personal emergency, faculty are encouraged NOT to make individual exceptions to course assignment due dates and exams. Our work is no less coordinated or time-sensitive than many tasks encountered in the workplace and meeting deadlines and obligations is simply one more step in preparation for a business career.

Code of Conduct

Students are responsible for awareness of the Code of Conduct located at <http://business.tcnj.edu/our-philosophy/code-of-conduct/>.

Disability Support Services

We adhere to TCNJ's Americans with Disabilities Act (ADA) policy, which is available at <http://policies.tcnj.edu/policies/digest/digest.php?docId=9206>. Disability Support Services are available at: <http://differingabilities.pages.tcnj.edu/>.

Discrimination in the Workplace/Educational Environment

Under this policy, forms of discrimination or harassment based upon specific protected categories are prohibited and will not be tolerated. If you wish to report a concern, please contact Kerri Thompson Tillett, Chief Diversity Officer, at 771-3139, or via email at thompsok@tcnj.edu.

Exams

<http://policies.tcnj.edu/policies/digest.php?docId=9136>

As per college policy, the Final Exam will be comprehensive and will be scheduled during the Final Exam Period. Save extraordinary situations, no "make-up" exams will be given.

Feedback

It is my goal to make this an excellent course. If at any time you feel that the course is not meeting your expectations or you want to provide feedback to me on how the course is progressing for you, I encourage you to contact me.

Fourth Hour

Consistent with the TCNJ course structure of 4-credit units to promote deep learning, this course includes a "4th hour" of student engagement in the following manner: a) writing assignments require online and library research, and are to be completed outside of class; b) research, discussion with web-page author, and critique for individual assignments; c) online learning activities with Lynda.com. In addition, it is expected that pairs (presenter and discussion leader) will meet outside of classroom to work together on the assigned readings for presentations/discussion.

Writing Policy

Because writing is a fundamental business skill, your grade for each assignment will reflect, among other things, your ability to write, even for assignments with minimum writing. Feedback on your writing will be provided as deemed necessary and, if your writing needs improvement, you should seek help from the Writing Center at (<http://tutoringcenter.pages.tcnj.edu/humanities/writers-place/>), from someone who responsibility is to hold you accountable for how well you write. Poor writing will be reflected in your final grade.

Academic Enhancement Center: The Academic Enhancement Center, which is located in Roscoe West Hall, is an excellent place to get help on your papers. Call *The Write Place* at 771-2985 or 771-3325, or see the hours available at <http://www.tcnj.edu/~assistn/lhw.htm>.

COURSE NAME – IST 350

BUSINESS ANALYTICS FOR DECISION MAKING

Syllabus Author: Patricia Wallace

COURSE TYPE

Business Elective

COURSE PREREQUISITE

IST 310 or 320 and Junior Standing

INSTRUCTOR

Professor Abhishek Tripathi

Office Hours: TDB

tripathi@tcnj.edu

COURSE DESCRIPTION

Business Analytics for Decision Making includes the broad concepts of business intelligence, business analytics, data science, visualization, and visual analytics. It is intended as an introductory course, designed to provide a basic level of knowledge and to spur interest in further study in these areas. *Business Analytics for Decision Making* focuses on the various topics of knowledge management by utilizing both behavioral approaches and information technology tools such as Excel, Tableau, SPSS, and R, including powerful Decision Tools, which are compatible with Microsoft Excel.

COURSE MATERIALS

Albright, S. Christian and Wayne L. Winston. Business Analytics: Data Analysis and Decision Making. Boston: Cengage Learning, 2016.

Camm, Jeffrey D., Cochran, James J., Fry, Michael J., Ohlmann, Jeffrey W., Anderson, David R., Sweeney, Dennis J. and Williams, Thomas A. Essentials of Business Analytics. Boston: Cengage Learning, 2016.

Foreman, John W. Data Smart: Using Data Science to Transform Information into Insight. New York: John Wiley Publishing Company, 2013.

Milton, Michael. Head First Data Analysis: A Learner's Guide to Big Numbers, Statistics, and Good Decisions. O'Reilly Media, 2009.

COURSE REQUIREMENTS

1. Students will read the assigned chapters and any additional assigned readings before coming to class so that they can contribute to the class discussion.
2. Students will complete scheduled exams to demonstrate their knowledge of the material.
3. Students will complete Homework assignments and submit to Canvas as listed in the course Schedule of Dates.
4. Students will complete assigned papers, projects, and presentations in a timely fashion as listed in the course Schedule of Dates

COURSE PURPOSE

Today's companies are collecting tremendous amounts of data, known as 'Big Data.' Indeed, many companies have more data than they can handle. This data is meaningless unless it is analyzed for trends, patterns, relationships, and other useful information. This course on *Business Analytics for Decision Making* will present a variety of methods, from simple to complex, to analyze data sets and uncover important information.

In most businesses, data analysis is only the first step in the solution of a problem. Acting on the solution and the information it provides to make good decisions is a critical next step. Thus, this course on *Business Analytics for Decision Making* emphasizes various analytical methods to equip students with decision-making tools that can be applied in their business careers.

Business Analytics for Decision Making is a solutions-oriented, interdisciplinary course that combines basic statistics, decision-making tools and management science concepts to provide an integrative approach to solving a wide variety of business problems. *Business Analytics for Decision Making* will be complemented by a working knowledge of the most popular software programs available including powerful Decision Tools, which are compatible with Microsoft Excel. This approach will provide many hands-on experiences with real problems and challenges for students to develop their intuition, logic, and problem-solving skills.

While *Business Analytics for Decision Making* was created for any business major that needs to analyze data and make quantitative decisions, it is offered as part of the Information Systems and Technology (IST) minor. *Business Analytics for Decision Making* is designed to be a hands-on, example-based approach to Data Analytics utilizing fundamental concepts as needed. In addition, *Business Analytics for Decision Making* is useful to any student at The College of New Jersey who would like to complement his or her studies with the essentials of business analytics for their future careers in the global workplace.

LEARNING GOALS

Upon completion of *Business Analytics for Decision Making*, students will be able to:

5. Discuss how managers use business analytics to formulate and solve business problems and to support managerial decision-making.
6. Describe the processes needed to develop, report, and analyze business data.
7. Utilize and apply selected business analytics software.

PERFORMANCE GOALS

Upon completion of ***Business Analytics for Decision Making***, students will be able to:

1. Demonstrate the ability to analyze business problems with tools they have access to and will use in their careers.
2. Demonstrate proficiency in the use of business analytics tools including spreadsheet add-ins that enable advanced data analysis.
3. Demonstrate knowledge of the concepts, analytical methods, and decision-making tools to solve a wide variety of business problems in various business disciplines.

COURSE SCHEDULE

Date	Topic / Readings	Notes
Week 1	Introduction / Motivation (brief)	<ul style="list-style-type: none">• <i>Introduce concepts of BI / BA / DA</i>• <i>Define course goals</i>• <i>Describe course structure</i>• <i>Define tools to be used</i> <p>Homework #1: Examine dataset(s), develop questions that would interest you</p> <p><i>Students will establish accounts with Tableau and IBM (and maybe others), and will upgrade personal copy of Excel to include Solver and Analysis ToolPak</i></p>
Week 2	Concepts / Definitions / Motivation <ul style="list-style-type: none">• Book A – Intro and Chapter 1• Book B – Intro and Chapter 1• Visualization Readings	<ul style="list-style-type: none">• <i>Extended discussion and motivation for BI / DA / VA – who, what, when, why, how?</i>• <i>Discuss homework #1</i>• <i>Quick check of Excel review</i>• <i>Check of tool install progress</i>• <i>Basic statistical concepts</i>• <i>Demo of Tableau, R, Cognos, (others?)</i>• <i>Discuss Semester Project</i>

Date	Topic / Readings	Notes
Week 3	Visualization / Visual Analytics	<ul style="list-style-type: none"> • <i>Supplemental readings from IBM, etc.</i>
Week 4	Traditional BI (OLAP, data cubes, etc.)	<ul style="list-style-type: none"> • <i>Supplemental readings</i>
Week 5	Clustering <ul style="list-style-type: none"> • Book A – Chapter 2 	<ul style="list-style-type: none"> • <i>Discussion of concept of and need for clustering, followed by hands-on project - first using Excel, then using Tableau</i>
Week 6	Bayesian Statistics <ul style="list-style-type: none"> • Book A – Chapter 3 • Book B – Chapter 6 	<ul style="list-style-type: none"> • <i>Similar</i>
Week 7	Optimization <ul style="list-style-type: none"> • Book A – Chapter 4 • Book B – Chapter 3 	<ul style="list-style-type: none"> • <i>Similar</i>
Week 8	Cluster Analysis (Part 2) <ul style="list-style-type: none"> • Book A – Chapter 5 	<ul style="list-style-type: none"> • <i>Similar</i>
Week 9	Regression <ul style="list-style-type: none"> • Book A – Chapter 6 • Book B – Chapter 10 	<ul style="list-style-type: none"> • <i>Similar</i>
Week 10	Ensemble Models <ul style="list-style-type: none"> • Book A – Chapter 7 	<ul style="list-style-type: none"> • <i>Similar</i>
Week 11	Forecasting <ul style="list-style-type: none"> • Book A – Chapter 8 	<ul style="list-style-type: none"> • <i>Similar</i>
Week 12	Outlier Detection / Errors / Uncertainty <ul style="list-style-type: none"> • Book A – Chapter 9 • Book B – Chapters 11 and 13 	<ul style="list-style-type: none"> • <i>Similar</i>
Week 13	Text Analysis / Sentiment Analysis	<ul style="list-style-type: none"> • <i>Similar</i>

Date	Topic / Readings	Notes
	<ul style="list-style-type: none"> Readings provided separately 	
Week 14	Wrap-Up / Student Presentations	
Final Week	Final Comprehensive Exam	

GRADING

Overview

Students are responsible for material covered in the readings, the lectures, and the textbook. Joining in discussions will positively influence the student's understanding of the course material. Students may at times work cooperatively with others in the learning process. Students, however, are responsible for their own work. In the event anyone is found to have copied part or all of another person's work, or any other assignment, both parties will receive a failing grade (i.e., a zero) for that week's work and possibly for the course. In addition, the School of Business will be notified of the student's actions and the Academic Honesty policy of TCNJ will be enforced.

Computation of Final Course Grade

	<u>Items to be Evaluated</u>	<u>Percentage of Grade</u>
1.	Midterm and Final Exam	50%
2.	Projects/Research Presentations	30%
3.	Homework Assignments/Lab Work	20%

Scale

A scale may be applied to class grades. This scale will use the average class grade and standard deviation to determine grades. However, the following grade designations will be the basis for grading:

Final Grade	Weight	Average Points
A	4.00	94 - 100
A-	3.67	90 - 93
B+	3.33	87 - 89

Final Grade	Weight	Average Points
B	3.00	84 - 86
B-	2.67	80 - 83
C+	2.33	77 - 79
C	2.00	74 - 76
C-	1.67	70 - 73
D+	1.33	66 - 69
D	1.00	60 - 65

Criteria for Writing Assignments

Criteria used in grading written assignments are as follows:

1. Content, Accuracy, and Completion of Task
2. Document Organization and Format.
3. Mechanics—grammar, spelling, and correct punctuation.
4. Research and Creativity.
5. Handing assignments in on time--deductions will be made for late assignments.

Letter Grade Designations on Writing Assignments, Reports, and other Project Deliverables:

A	Excellent/Outstanding Submission	The student develops a complete and robust, thoroughly documented, and error-free solution.
B	Very Good/Above Average Submission	The student develops a complete and robust, thoroughly documented solution with minimal errors.
C	Satisfactory/Average Submission	The student develops a solution that is near complete, documented, and that is 80% error free.
D	Below Average Submission	The student develops a solution but this solution does not demonstrate rudimentary mastery of requisite knowledge.

F	Failing/Very Poor Submission	The student submits a solution that is unacceptable, late, and/or is missing critical components.
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COURSE POLICIES

Academic Integrity

The College of New Jersey is a community of scholars and learners who respect and believe in academic integrity. This integrity is violated when someone engages in any of the dishonest behavior described below.

Academic dishonesty is any attempt by the student to gain academic advantage through dishonest means, to submit, as his/her own, work which has not been done by him/her or to give improper aid to another student in the completion of an assignment. Such dishonesty would include, but is not limited to: submitting as his/her own a project, paper, report, test, or speech copied from, partially copied, or paraphrased from the work of another (whether the source is printed, under copyright, or in manuscript form). Credit must be given for words quoted or paraphrased. The rules apply to any academic dishonesty, whether the work is graded or ungraded, group or individual, written or oral.

Students are responsible to know the Academic Integrity policy. Students may only represent work that is their own. Cheating on tests, failing to cite sources, or submitting someone else's work are just a few examples that may result in failing the entire course or dismissal from the college. TCNJ's academic integrity policy is available on the web:
<http://www.tcnj.edu/~academic/policy/integrity.html>.

Academic dishonesty is not tolerated at The College of New Jersey.

Attendance Policy

Every student is expected to participate in each of his/her courses through regular attendance at lecture and laboratory sessions. It is further expected that every student will be present, on time, and prepared to participate when scheduled class sessions begin. Grading is frequently based on participation in class discussion, laboratory work, performance, field experience, or other activities that may take place during class sessions. If these areas for evaluation make class attendance essential, the student may be penalized for failure to perform satisfactorily in the required activities. Students who must miss classes due to participation in a field trip, athletic event, or other official college function should arrange for such class absences well in advance. The Office of Academic Affairs will verify, upon request, the dates of and participation in such college functions. In every instance, however, the student has the responsibility to initiate arrangements for make-up work.

Dean's Attendance Policy

Except in the case of a TCNJ authorized absence or documented personal emergency, faculty are encouraged NOT to make individual exceptions to course assignment due dates and exams. Our work is no less coordinated or time-sensitive than many tasks encountered in the workplace and meeting deadlines and obligations is simply one more step in preparation for a business career. TCNJ's Attendance Policy: <http://www.tcnj.edu/~recreg/policies/attendance.html>.

Americans with Disabilities Act (ADA)

The College of New Jersey is committed to ensuring equal opportunity and access to all members of the campus community in accordance with Section 503/504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 (ADA). The College prohibits discrimination against any student, employee, or applicant on the basis of physical or mental disability, or perceived disability. The College will provide reasonable and appropriate accommodations to enable employees and students to participate in the life of the campus community. Individuals with disabilities are responsible for reporting and supplying documentation verifying their disability. Requests for accommodations must be initiated through the Office of Differing Abilities Services, Eickhoff Hall 159, 609.771.2571. For further information, please refer to <http://www.tcnj.edu/~affirm/ada.html>.

Code of Conduct

Students are responsible for awareness of the Code of Conduct, online at: <http://business.pages.tcnj.edu/our-philosophy/code-of-conduct/>

Final Exam

Students are responsible for being present for all exams as scheduled by the college. TCNJ's final examination policy is available on the web: <http://www.tcnj.edu/~academic/policy/finaevaluations.htm>

Students plan to be absent for an exam must following these procedures.

1. The student must notify the professor prior to the day of the test (unless a documented emergency) and give a reason for the absence.
2. If the professor approves the absence, the test must be rescheduled within the following week unless there are extenuating circumstances.
3. If these procedures are not followed, the student will receive a zero for the missed test.

Fourth Hour Requirement

Consistent with the TCNJ course structure of 4-credit units, this course includes the "4th hour" of student engagement in two ways—participation in team project assignments and completion of computer lab exercises.

Teams

Today's organizations require employees to work successfully in a team environment. Because of this situation, students are often required to work with others on projects. At times, teams are

faced with a difficult or uncooperative team member. This may take the form of a person who is autocratic, a person who is ill equipped to contribute, or one who does not fully participate in team activities. The members of the group must attempt to effectively deal with difficult situations and/or people since this will be expected of them during employment. If, however, the situation becomes intolerable, the group should approach the instructor for guidance and support. Seeking the assistance of the instructor should be done before the project approaches the deadline; it would be unfair of the team to penalize a person without proper warning. With reasonable notification and approval from the instructor, the team can 'fire' a group member. The 'fired' person must then seek inclusion in another team or do the work on their own.

Writing Policy

Because writing is a fundamental business skill, your grade for each assignment will reflect, among other things, your ability to write, even for assignments with minimum writing. Feedback on your writing will be provided as deemed necessary and, if your writing needs improvement, you should seek help from the Writing Center at (<http://www.tcnj.edu/~tutoring/humanities/writing.html>), from someone who writes well, or some other writing source. The responsibility to write well is yours. My responsibility is to hold you accountable for how well you write. Poor writing will be reflected in your final grade.

COURSE NAME – IST 400

Seminar in Managing Technology (One Full Course)

COURSE TYPE

Business Elective

COURSE PREREQUISITE

Senior Standing and one from IST 310 or 320

INSTRUCTOR

Dr. Lynn Braender
609.771.2366

Business Building 309
braender@tcnj.edu

CLASSES AND OFFICE HOURS

IST 320-01, T/F 11:00-12:20
IST 400-01, T/F 2:00-3:20
Office Hours, T/F 12:30-1:45

COURSE DESCRIPTION

The Seminar in Managing Technology is a four-credit seminar course for students minoring in Information Systems and Technology. This senior-level course will prepare student for the transition into a professional career by exploring current and emerging technology affecting the way we conduct business. Students will engage in collaborative and individual study to investigate current trends in information systems and technology. Classroom time will be dedicated to discussing these trends and presenting results from investigations. Through the analysis and debate of concepts and consequences, and through writing of papers, students will learn to form educated positions on issues that are current and will continue to be important in the future.

COURSE MATERIALS

Reading materials will be assigned in professional journals in the information systems and technology area. Students will find a list of readings on Canvas.

COURSE REQUIREMENTS

Students will engage in researching contemporary business issues in information systems and technology. Students will read, analyze, and discuss articles and cases, and, from them develop the ability to identify (1) key issues, (2) conflicting information, and (3) potential recommendations. Students will write a series of papers, each focusing on a different but interrelated topic. These papers will develop students' ability to educate business professionals on important issues affecting modern organizations.

Student learning will be assessed through written reports, presentations, and class participation. Written reports and discussions in class will be used to assess course content and performance objectives. Feedback on both written and oral exercises will provide opportunities to improve student knowledge of the subject matter and also to improve written and oral communication skills.

Students may improve on their work by resubmitting the first paper for re-grading. Except for the final paper, if a student chooses to resubmit a paper, the student must do so within two weeks of receiving the graded paper from me. The new grade will be the average of the two grades (original and the resubmission) minus any points deducted for lateness.

Other requirements include the following.

1. Students will read articles assigned by the instructor before coming to class so that they are prepared to contribute to the discussions.
2. Students will be partnered with another student to lead a discussion of the readings. At least two days before the assigned discussion, leaders will post comments and questions about the readings to guide the discussion. Comments and questions should highlight relevant and conflicting information, identify ways that organizations will be affected by the issues presented in the paper, and extend the topic when possible. Discussions will generally occur on Tuesdays. Assigned readings will be posted to Canvas at least one week in advance of the discussion to ensure that students have ample time to read the articles and prepare for the discussion.
3. Participants will be evaluated on the extent and quality of their contributions. Students will earn points on thoughtful responses to questions or comments. Attendance is important but will not earn participation points alone; students need to make significant contributions to discussions both in class and in Canvas. To successfully contribute, students must read the assigned articles before class and post responses to the leaders' question on Canvas prior to the class meeting. Class leaders must read these responses and plan potential response when possible prior to the class meeting. Assigned readings will be posted to Canvas at least one week in advance of the discussion to ensure that students have ample time to read the articles and prepare for the discussion.
4. Students will write two papers that are ten pages in length. Students will write one individual paper and can partner with another student for the second paper. Partnered papers are expected to be longer and more thorough than individual papers.
5. Students will conduct walkthroughs in class to review findings before submitting any paper. During these walkthroughs, student presenters will discuss their findings while their peers provide thoughtful critiques aimed at improving the final document. Walkthroughs will generally occur on Fridays.
6. Students will blind review two assigned papers by applying a rubric provided to them on Canvas. Grades will be based on the quality and degree of feedback.

COURSE PURPOSE

IST 400 provides students minoring in Information Systems and Technology an opportunity to research current and emerging technological issues and the relationship between these issues and the modern business. While conducting research, students will engage in critical thinking, persuasiveness, and oral and written communications.

Because technology drives the ways organizations conduct business, develop products, services and strategic directions, and, communicate with internal and external stakeholders, a deep understanding of current technological issues is crucial to their professional success. Students will gain a greater understanding of the tactical, operational and strategic relationships between information technologies and businesses. The topics in this course will vary year-to-year but will focus on the strategic use of information and the related role of information technology.

LEARNING GOALS

Course Learning Goals:

1. To foster intellectual curiosity in students.
2. To introduce students to writing business reports that focus on educating and persuading the reader on key topics in information systems and technology.
3. To improve students' ability to think critically about contemporary issues affecting business and the environment they work in.
4. To improve students' ability to present research findings to an audience.
5. To improve students' ability to grow intellectually from critiques provided by peers.

Course Performance Goals:

1. Describe how technology transforms organizations and presents opportunities to redefine how work is completed.
2. Identify key issues in a complex environment, evaluate opportunities to solve problems or enhance this environment, and make recommendations that can be implemented and will keep the organization responsive to technological changes.
3. Describe how business processes alone, are not enough, when a solution or process involves the use of information technology.
4. Analyze complex management problems within the information technology environment and develop appropriate recommendations.
5. Professionally communicate in writing and orally to a business audience.
6. Describe the ethical and security issues organizations face when using information systems.

7. Demonstrate an understanding of the importance and global impacts of networking, telecommunications, and Internet applications.

Essential Questions:

Consistent with professional organizations within the Information Systems areas (ACM, AIS, and AITP), upon completion of this course, students will be able to answer the following questions.

1. What are some of the current issues in Information Systems and Technology that managers in modern times must face?
2. How can technology transform the way we work?
3. How can technology affect the way we manage people and projects?
4. How can technology affect the way we communicate with one another in a business environment?
5. What role does the Internet and Telecommunication system play in our global environment?
6. What ethical responsibility does the IT professional have in today's society?

COURSE SCHEDULE

Tentative Schedule (Since this is a senior-level course, it will be offered in approximately three years. This schedule will evolve to reflect changes in the business environment.)

Week	Articles to Read
Introduction to the IT Profession	
Week 1	<p>Review Syllabus and Course Expectations</p> <p>Peter J. Denning. The Profession of IT: Great Principles of Computing. <i>Communications of the ACM</i>. 46[11], 15-20, November 2003. http://denninginstitute.com/pjd/PUBS/CACMcols/cacmNov03.pdf</p> <p>Peter J. Denning. The Profession of IT: Who Are We? <i>Communications of the ACM</i>. 44[3], 15-19, February 2001.</p> <p>Peter J. Denning. The Technological Singularity. <i>Ubiquity</i>, Volume 20014, Issue December 2014, Article No. 1.</p>

Week	Articles to Read
IT Profession and Innovation	
Week 2	<p>Peter J. Denning and Dorothy E. Denning. Artificial Stupidity <i>Communications of the ACM</i>. 47[5], 112, May 2004.</p> <p>Peter J. Denning. The Field of Programmers Myth. <i>Communications of the ACM</i>. 47[7], 15-20, July 2004.</p> <p>Peter J. Denning. The Profession of IT: Crossing the Chasm <i>Communications of the ACM</i>. 44[4], 21-25, April 2001.</p> <p>Peter J. Denning. The Profession of IT: How to Produce Innovations. <i>Communications of the ACM</i>, Volume 59, Number 6, July 2016, pp. 28-30.</p> <p>Bob Metcalfe. Invention is a Flower, Innovation is a Weed. <i>MIT Technology Review</i>, November 1, 1999. https://www.technologyreview.com/s/400489/invention-is-a-flower-innovation-is-a-weed/.</p>
Security	
Week 3	<p>Peter J. Denning and Dorothy E. Denning. Cyber Security Is Harder Than Building Bridges. <i>American Scientist</i>, Volume 104, 154-157, May-June 2016.</p> <p>Anti-Phishing Working Group. 2015. Phishing Activity Trends Report 1st-3rd Quarters 2015: Unifying the Global Response to Cybercrime. https://docs.apwg.org/reports/apwg_trends_report_q1-q3_2015.pdf</p> <p>The Center for Strategic and International Studies and McAfee. 2014. Net Losses: Estimating the Global Cost of Cybercrime. http://www.mcafee.com/hk/resources/reports/rp-economic-impact-cybercrime2.pdf http://denninginstitute.com/pjd/PUBS/2016-05-cybersecurity.pdf</p> <p>Jardine, E. 2015. Global Cyberspace Is Safer Than You Think: Real Trends in Cybercrime. Centre for International Governance Innovation and Chatham House. https://www.cigionline.org/sites/default/files/no16_web_1.pdf</p>

Week	Articles to Read
	<p>Sans Institute. A Preparation Guide to Information Security Policies. SANS Institute, 2002. https://www.sans.org/reading-room/whitepapers/policyissues/preparation-guide-information-security-policies-503</p> <p>Jason R. C. Nurse. Exploring the Risks to Identify Security and Privacy in Cyberspace. <i>Crossroads</i>. Volume 21, Number 3, Spring 2015, pp. 42-47.</p>
Business and Technology	
Week 4	<p>Azmat Ullah and Richard Lai. A Systematic Review of Business and Information Technology Alignment, <i>Journal ACM Transactions on Management Information Systems</i>, Volume 4 Issue 1, April 2013</p> <p>Article No. 4</p> <p>Ericsson. Ericsson Digital Business Transformation Report: Organizing for Change - Creating Business Value in the Age of Connectivity (2016). https://www.ericsson.com/industry-transformation/wp-content/uploads/sites/7/2015/09/organizing-for-change.pdf</p> <p>Ericsson. Ericsson Digital Business Transformation Report: The New Consumers (2016). https://www.ericsson.com/networked-society/trends-and-insights/commerce-reports</p> <p>Ronald W. Costello. The Leadership Role in Making the Technology Connection. <i>The Journal (Technological Horizons in Education)</i>. Volume 25, Issue 4, November 1997.</p>
Big Data	
Week 5	<p>Tim McGuire, James Manyika and Michael Chui. Why Dig Data is the New Competitive Advantage. <i>Ivey Business Journal</i>, July/August 2012. http://iveybusinessjournal.com/publication/why-big-data-is-the-new-competitive-advantage/</p> <p>Jonathan Shaw. Why “Big Data” is a Big Deal. <i>Harvard Magazine</i>, March/April 2014. http://harvardmagazine.com/2014/03/why-big-data-is-a-big-deal</p> <p>Sachin Date. Should You Upload or Ship Big Data to the Cloud? <i>Communications of the ACM</i>, Volume 59, Number 7, July 2016, pp. 44-51.</p> <p>Logan Kugler. What Happens When Big Data Blunders? . <i>Communications of</i></p>

Week	Articles to Read
	<p><i>the ACM</i>, Volume 59, Number 6, July 2016, pp. 15-16.</p> <p>David Lazer, Ryan Kennedy, and Alessandro Vespignani. The Parable of Google Flu: Traps in Big Data Analysis. <i>Science</i>, Volume 343, March 14, 2014, pp. 1203-1205.</p> <p>Ashwin Machanavajjhala and Jerome P Reiter. Big Privacy: Protecting Confidentiality in Big Data. <i>Crossroads</i>. Volume 19, Number 1, Fall 2012, pp. 20-23.</p>
Best Practices	
Week 6	<p>Thomas A. Limoncelli. The Small Batch Principle. <i>Communications of the ACM</i>, Volume 59, Number 7, July 2016, pp. 52-57.</p> <p>Henry W. Chesbrough. Why Companies Should Have Open Business Models. <i>MIT Sloan Management Review</i>. Volume 48, Issue 2, Winter 2007, pp. 21-28.</p> <p>Stephen J. Andriole. The Collaborative/Integrate Business Technology Strategy. <i>Communications of the ACM</i>, Volume 49, Number 5, May 2006, pp. 85-90.</p> <p>Stephen J. Andriole. The 7 Habits of Highly Effective Technology Leaders. <i>Communications of the ACM</i>, Volume 50, Number 3, March 2007, pp. 66-72.</p> <p>Stephen J. Andriole. Who Owns IT. <i>Communications of the ACM</i>, Volume 58, Number 3, March 2015, pp. 50-57.</p> <p>Amrit Tiwana, Benn Konsynski, and N. Venkatraman. Information Technology and Organizational Governance: The IT Governance Cube. <i>Journal of Management Information Systems</i>, Volume 30, Issue 3, Winter 2013-2014, pp. 7-12.</p>
Week 7 – Student Presentations	
Bots	
Week 8	<p>Emilio Ferrara, Onur Varol, Clayton Davis, Filippo Menczer, and Alessandro Flammini. The Rise of Social Bots. <i>Communications of the ACM</i>, Volume 59, Number 7, July 2016, pp. 96-104.</p> <p>Norah Abokhodair, Daisy Yoo and David W. McDonald. Dissecting a Social Botnet: Growth, Content, and Influence in Twitter. <i>Proceedings of the 18th ACM Conference on Computer-Supported Cooperative Work and Social Computing</i>,</p>

Week	Articles to Read
	<p>ACM 2015, pp. 839-851.</p> <p>Johan Bollen, Huina Mao, and Xiao-Jun Zeng. Twitter Mood Predicts the Stock Market. <i>Journal of Computational Science</i>. Volume 2, Issue 1, March 2011, pp. 1-8. https://arxiv.org/pdf/1010.3003.pdf</p> <p>Elyashar, A., Fire, M., Kagan, D. and Elovici, Y. Homing Socialbots: Intrusion on a Specific Organization's Employee using Socialbots. <i>Proceedings of the 2013 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining</i>. ACM, pp. 1358–1365.</p>
The Cloud	
Week 9	<p>Libor Sargo. Cloud Computing: An Overview. <i>Journal of Systems Integration</i>, 2012, Volume 3, Issue 4, pp. 3-14</p> <p>Dennis Abts, Bob Felderman, and Google. A Guided Tour Through Data-Center Networking. <i>ACM Queue</i>. May 2012, Volume 10, Issue 5. http://queue.acm.org/detail.cfm?id=2208919</p> <p>Robert L. Scheier. What to do if Your Cloud Provider Disappears. <i>InfoWorld, San Francisco California</i>, 2009.</p> <p>V. Rajaraman. Cloud Computing. <i>Resonance</i>. March 2014, Volume 19, Issue 3, pp. 242-258</p> <p>Issam MF Saltaji. Business Cloud and Corporate Governance: Making High Quality Decisions and Sustainable Growth. <i>Internal Auditing and Risk Management</i>. Volume 41, Issue 1, 2016, pp. 73-79.</p>
Privacy	
Week 10	<p>Jean-Perre Hubauz and Ari Juels. Privacy is Dead, Long Live Privacy: Protecting Social Norms as Confidentially Wantes. <i>Communications of the ACM</i>, Volume 59, Number 6, July 2016, pp. 39-41.</p> <p>Tom Geller. In Privacy Law, It's the U.S. vs. the World. <i>Communications of the ACM</i>, Volume 59, Number 2, February 2016, pp. 21-23.</p> <p>Carl Landwehr. Privacy and Security – Privacy Research Directions. <i>Communications of the ACM</i>, Volume 59, Number 2, February 2016, pp. 28-31.</p>

Week	Articles to Read
	<p>Jonathan T. Weinberg. Law and Technology – Biometric Identity. <i>Communications of the ACM</i>, Volume 59, Number 2, January 2016, pp. 30-32.</p> <p>Steven B. Lipner. Security Assurance – How Can Customers Tell They are Getting It? <i>Communications of the ACM</i>, Volume 58, Number 11, November 2015, pp. 24-26.</p> <p>Andreas Birkbak. What is Public and Private Anyway? A Pragmatic Take on Privacy and Democracy. <i>Crossroads</i>. Volume 20, Number 1, Fall 2013, pp. 18-21.</p> <p>Iain Bourne. Personal, Pseudonymous, and Anonymous Data: The Problem of Identification. <i>Crossroads</i>. Volume 20, Number 1, Fall 2013, pp. 27-31.</p>
The Internet of Things	
Week 11	<p>Rolf H. Weber. Internet of Things – New Security and Privacy Challenges. <i>Computer Law & Security Review</i>, Volume 26, Issue 1, January 2010, pp. 23-30</p> <p>Sarita Agrawal and Manik Lal Das. Internet of Things – A Paradigm Shift of Future Internet Applications. <i>2011 Nirma University International Conference on Engineering (NUicone)</i>, December 2011, pp. 1-7.</p> <p>Jason Schultz. Law and Technology – The Internet of Things We Don’t Own. <i>Communications of the ACM</i>, Volume 59, Number 5, May 2016, pp. 36-38.</p> <p>George Hurlburt. The Internet of Things ... of All Things. <i>Crossroads</i>. Volume 22, Number 2, Winter 2015, pp. 22-27.</p> <p>Vinton G. Cerf. Prospects for the Internet of Things. <i>Crossroads</i>. Volume 22, Number 2, Winter 2015, pp. 28-31.</p>
Internet	
Week 12	<p>Kentaro Toyama. Global Computing – The Internet and Inequality. . <i>Communications of the ACM</i>, Volume 59, Number 4, April 2016, pp. 28-30.</p> <p>Ericsson. Ericsson Digital Business Transformation Report: The Economics of the Networked Society (2016). https://www.ericsson.com/industry-transformation/wp-content/uploads/sites/7/2015/09/the-economics-of-the-networked-society.pdf</p> <p>A Discussion with Amin Vahdat, David Clark, and Jennifer Rexford. A Purpose-</p>

Week	Articles to Read
	<p>Built Global Network: Google's Move to SDN. <i>Communications of the ACM</i>, Volume 59, Number 3, March 2016, pp. 46-54.</p> <p>Nick Feamster, Jennifer Rexford, and Ellen Zegura. The Road to SDN – An Intellectual History of Programmable Networks. <i>ACM Queue</i>, December 2013, Volume 11, Issue 12. http://queue.acm.org/detail.cfm?id=2560327</p> <p>Logan Kugler. How a Supervillain (or a Hacker in His Basement) Could Destroy the Internet. <i>Communications of the ACM</i>, Volume 59, Number 2, February 2016, pp. 16-20.</p>
Strategic Initiatives	
Week 13	<p>Anandhi Bharadwaj, Omar A. El Sawy, Paul A. Pavlou, and N. Venkatraman. Digital Business Strategy: Toward a Next Generation of Insights. <i>MIS Quarterly</i>. Volume 37, Number 2, June 2013, pp. 471-482.</p> <p>Anandhi Bharadwaj, Omar A. El Sawy, Paul A. Pavlou, and N. Venkatraman. Visions and Voices on Emerging Challenges in Digital Business Strategy. <i>MIS Quarterly</i>. Volume 37, Number 2, June 2013, pp. 633 -634.</p> <p>Sunil Mithas, Ali Tafti, and Will Mitchell. How a Firm's Competitive Environment and Digital Strategic Posture Influence Digital Business Strategy. <i>MIS Quarterly</i>. Volume 37, Number 2, June 2013, pp. 511 -536.</p>
Week 14 Student Presentations	
Week 15 Final Exam	

GRADING

Overview

Category	Percentage of Grade
Research Papers	50%
Individual	(25%)
Partnered	(25%)
Class Engagement	30%

Category	Percentage of Grade
Participation in Class Discussions & Walkthroughs	(10%)
Lead Discussions	(10%)
Presentations	(10%)
Other	20%
Peer Review	(10%)
Final Exam	(10%)
Total	100%

Scale

Students' grades for the course will be determined according to the following scale.

Final Grade	Average Points	Final Grade	Average Points
A-	94-100	C+	77-79.99
A	90-93.99	C	74.76.99
B+	87-89.99	C-	70-73.99
B	84-86.99	D+	66-69.99
B-	80-83.9	D	60-65.99

Assignments

Research Papers:

Students will work individually to complete one research paper. In addition, students may work alone or partner with another student to complete a second research paper. The purpose of these papers is for students to argue, analyze, and discuss the issues relating to information in our society rather than merely passively absorbing the knowledge presented in class. If one hopes to excel in his or her profession, one must be able to move past the simple process of repeating information reported in current literature. One must understand the reported concepts and apply these concepts to answering complex questions. In addition, one must understand that writers write to argue for a point. What is in print is not necessarily the gospel, and students need to

learn how to argue with written sources effectively so that they can establish their own position about the topic. One need not agree with everything they read. If we do, we may never come to compose our own argument or main point. Summary of other people's arguments is a good skill to have, but we also need to know how to critique others' arguments. So, students need to critically think about the articles and find what they agree with along with the gaps and problems in the publications. This type of critical thinking is what students need to strive for in this course.

Students' individual research project will focus on a topic of their choosing. This topic, however, must focus on some IT issue that managers working in an information technology environment will need to grapple with within the next five years. This topic may deal with various subjects including, but not limited to, the Internet, big data, cloud computing, cyber security, strategic initiatives, etc. Students are encouraged to begin identifying their topic quickly. Topics need to be approved by the instructor before the student begins writing their research paper or developing their presentation.

Each research paper will be composed of ten written pages. This page limit does not include references, a title page, or a table of contents. Guidelines for organizing and writing this paper include the following *report organizational guidelines*:

1. Introduce the topic, explaining why it is important (in terms of the impact it has on the organization and, possibly, society). Within the introduction, include sections for research methodology and report organization.
2. Identify opposing issues in the assigned topic.
3. Summarize the main arguments in favor of one viewpoint. Elaborate with analogies and/or examples.
4. Summarize the main arguments against the viewpoint. Again, elaborate with analogies and/or examples.
5. State forcefully your position on the topic. Justify your position with logical arguments, using analogies if appropriate. Keep in mind while preparing your thoughts, you will choose one side and present arguments in support of your position. Also, you will need to respond to any arguments for the other side that you deem important enough to refute. Finally, such support is often a matter of opinion than actual proof.
6. Provide concluding remarks. Identify the main issues and arguments in the topic and briefly restate your position.
7. All papers must utilize headings and subheadings.

Writing Guidelines:

1. Students need to follow these *writing guidelines*; students will be judged upon the following elements and the students' ability to demonstrate mastery of these abilities:

2. The topic is supported by research found in appropriate sources such as refereed journals, proceedings, professional websites, and recognized sources.
3. The topic has the potential to be focused into a statement with a point of view, it is neither too broadly nor too narrowly defined
4. Within boundaries set by the topic, there is evidence of adequate coverage.
5. The paper reflects a systematic search of the literature of the field.
6. A main idea or point of view about the topic is clearly expressed
7. Scope or content - the scope is comprehensive and objective rather than superficial and/or biased.
8. Intended audience - the paper is written for an informed audience rather than for the general public.
9. Evaluation and analysis of information is balanced, accurate and fair.
10. The writer's point of view is clear and objective.
11. Differing points of view are acknowledged.
12. Material taken from others is acknowledged; credit is given for both direct and indirect quotations.
13. Quotations are accurate; they are neither taken out of context nor distorted.
14. Citations are consistent with the chosen format.
15. General organization of the paper is clear.
16. Paragraphs follow each other; within each paragraph sentences follow each other.
17. Sentences are checked for usage, punctuation, and style.
18. Sources are written by someone with expertise and presented objectively.
19. The content from sources reflects the knowledge of today's society (historical perspective will require different material than will recent theories).

A writing rubric will be utilized in the grading process. Students can find this rubric at <http://business.pages.tcnj.edu/files/2013/11/RubricWritingV6-1.pdf>.

COURSE POLICIES

Academic Integrity

<http://policies.tcnj.edu/policies/digest.php?docId=9394>

Students are responsible to know the Academic Integrity policy. Students may only represent work that is their own. Cheating on tests, failing to cite sources, or submitting someone else's work are just a few examples that may result in failing the entire course or dismissal from the college. In addition to academic performance, you are expected to demonstrate the qualities of honesty and integrity. All submissions by you or your team are expected to be your original work. Material that, in any way, violates this principle, or any form of dishonesty, cheating, fabrication, the facilitation of academic dishonesty, and/or plagiarism, may result in the your receiving a failing grade for the assignment, quiz, test, or the course. In addition, further appropriate disciplinary action may be initiated.

Attendance

<http://policies.tcnj.edu/policies/digest.php?docId=9134>

You are expected to be present for each class. If you miss a class, for whatever reason, you will miss the participation points for the class you missed. If you have to miss a class, you need to send a message through Canvas with the reasons for the absence. In addition, you should not schedule interviews, work, vacations, appointments, or any other non-course related event during scheduled classes.

Dean's Attendance Policy

Except in the case of a TCNJ authorized absence or documented personal emergency, faculty are encouraged NOT to make individual exceptions to course assignment due dates and exams. Our work is no less coordinated or time-sensitive than many tasks encountered in the workplace and meeting deadlines and obligations is simply one more step in preparation for a business career.

Code of Conduct

Students are responsible for awareness of the Code of Conduct located at <http://business.tcnj.edu/our-philosophy/code-of-conduct/>.

Disability Support Services

We adhere to TCNJ's Americans with Disabilities Act (ADA) policy, which is available at <http://policies.tcnj.edu/policies/digest/digest.php?docId=9206>. Disability Support Services are available at: <http://differingabilities.pages.tcnj.edu/>.

Discrimination in the Workplace/Educational Environment

Under this policy, forms of discrimination or harassment based upon specific protected categories are prohibited and will not be tolerated. If you wish to report a concern, please contact

Kerri Thompson Tillett, Chief Diversity Officer, at 771-3139, or via email at thompsok@tcnj.edu.

Exams

<http://policies.tcnj.edu/policies/digest.php?docId=9136>

As per college policy, the Final Exam will be comprehensive and will be scheduled during the Final Exam Period. Save extraordinary situations, no "make-up" exams will be given.

Feedback

It is my goal to make this an excellent course. If at any time you feel that the course is not meeting your expectations or you want to provide feedback to me on how the course is progressing for you, I encourage you to contact me.

The Fourth Credit Hour

Consistent with the TCNJ course structure of 4--- credit units to promote deep learning, this course includes a ""4th hour"" of student engagement in the following manner: a) writing assignments require online and library research, and are to be completed outside of class; b) it is expected that pairs (presenter and discussion leader) will meet outside of classroom to work together on the assigned readings for presentations/discussion.

Writing Policy

Because writing is a fundamental business skill, your grade for each assignment will reflect, among other things, your ability to write, even for assignments with minimum writing. Feedback on your writing will be provided as deemed necessary and, if your writing needs improvement, you should seek help from the Writing Center at (<http://tutoringcenter.pages.tcnj.edu/humanities/writers-place/>), from someone who writes well, or some other writing source. The responsibility to write well is yours. My responsibility is to hold you accountable for how well you write. Poor writing will be reflected in your final grade.

Academic Enhancement Center: The Academic Enhancement Center, which is located in Roscoe West Hall, is an excellent place to get help on your papers. Call *The Write Place* at 771-2985 or 771-3325, or see the hours available at <http://www.tcnj.edu/~assistsn/lhw.htm>.

APPENDIX B - IST MINORS OFFERED BY PEER SCHOOLS

10. Boston College
11. Rutgers University
12. University of Delaware
13. William and Mary
14. Lehigh University
15. Wake Forest University
16. University of Virginia
17. William and Lee University
18. Trinity University

Out of the eight peer schools listed below, six have either a technology based minor offered by the School of Business (4) or with the Computer Science Department (2). The MIS minor offered by the University of Delaware seems like it would be a good fit for us. Our faculty have taught courses in Business Programming, Web Design, Database Management, Software Engineering, and Project Management. We could also build on this minor to include courses in Business Analytics when we hire a new faculty member. The minor from William and Mary focuses on Business Analytics. With preparation, we could move into a similar minor. The Computer Science minors are preparing students to be programmers with either a primary or secondary program in business. These programs are not interdisciplinary.

When reading the following, keep in mind that the text was taken verbatim from the related website.

BOSTON COLLEGE – COMPETITIVE SCHOOL

Information Systems Description

Information systems are the lifeblood of the modern enterprise, making up the single largest portion of capital spending among U.S. corporations. They have the power to create and restructure industries, empower individuals and firms, and dramatically reduce costs. As a result, organizations desperately need well-trained information systems specialists and technology-savvy managers. Today's managers simply cannot effectively perform without a solid understanding of the role of information systems in organizations, competition, and society.

The Information Systems Department in the Carroll School of Management is committed to providing undergraduate and graduate students with the knowledge and skills required to plan, develop, and deploy technology-based business solutions. Students are equipped with a solid understanding of the strategic role of information systems in organizations and the influential role of technology in society.

Concentration

The objectives of the undergraduate concentration are to develop managers who can:

- Understand how to analyze the linkages between information technology (IT), innovation, business strategy, and competitive advantage
- Possess the technical skills (related to programming and databases) and managerial concepts needed to effectively plan, develop, and implement IT
- Understand how to promote more effective use of IT in organizations, taking into how IT aligns with an organization's strategic focus, culture, business processes, etc.
- Appreciate the broader ethical and societal implications of the burgeoning application of information technologies

All Information Systems students take:

- **ISYS 1021** Computers in Management

The following three courses are required for the IS concentration:

- **ISYS 2157** Introduction to Programming for Management (or CSCI 1101)
- **ISYS 3257** Database Systems and Applications
- **ISYS 4258** Systems Analysis and Design
- One additional ISYS course level 1000 or above

Electives include:

- **ISYS 2267** Technology and Culture
- **ISYS 3161/MKTG 3161** Customer Relationship Management
- **ISYS 3205/MKTG 3205** TechTrek West
- **ISYS 3215** Technology & Economic Development (with Ghana field study)
- **ISYS 3253/MKTG 3253** E-Commerce
- **ISYS 3345/MGMT 3345** Managing for Social Impact
- **ISYS 2255/OPER 2255** Managing Projects
- **ISYS 3266** Technology and Society
- **ISYS 3315** Management of Innovation
- **ISYS 3340/MKTG 3340** Analytics and Business Intelligence
- **ISYS 6618/ACCT 6618** Accounting Information Systems
- **ISYS 6620** Marketing Information Analytics
- **ISYS 6621/MKTG 6621** Social Media for Management
- **ISYS 6635** New Media Industries
- **ISYS 6640** Analytics and Business Intelligence

RUTGERS UNIVERSITY, NEW BRUNSWICK

Management Information Systems Concentration

The concentrations are applicable only to students in the Rutgers Business School undergraduate New Brunswick program whose major is not Business Analytics and Information Technology.

Core Requirements (6 credits)

Course #	Title	Credits
33:136:470	Business Data Management	3
33:136:388	Foundations of Business Programming	3

Electives (3 credits)

Course #	Title	Credits
33:136:494	Data Mining for Business Intelligence	3
33:136:465	Enterprise Architecture	3
33:136:471	Information System Security	3
33:136:450	Investment Modeling With 'R'	3

Business Analytics Concentration

Core Requirements (6 credits)

Course #	Title	Credits
33:136:400	Business Decision Analytics under Uncertainty	3
33:136:485	Time Series Modeling for Business	3

Electives (3 credits)

Course #	Title	Credits
33:136:494	Data Mining for Business Intelligence	3
33:136:450	Investment Modeling With 'R'	3
33:136:487	Large-Scale Business Data Analysis	3
33:136:486	Optimization Modeling	3
33:136:405	Risk Modeling	3

MIS Minor

The MIS Minor enables students to solve business problems by applying their knowledge of technology in the workplace. In addition to courses that utilize database and structured problem-solving, MIS minor students also participate in the MIS capstone course. This project-based course provides the student with an opportunity to work in teams to develop a solution to a client's actual business problem.

Who Should Take the MIS Minor?

The MIS Minor is designed to complement the knowledge business students receive in their major field of study, but it is not limited to students within the Alfred Lerner College. Students in majors outside of the College may be able to participate as well. The eight (8) required courses integrate fundamental business knowledge with technical skills to expand career options beyond traditional opportunities presented by the student's major course of study.

Courses

1. MISY 160 Business Computing: Tools and Concepts
Introduction to computers: components and operations. Introduction to management information/decision support systems and the system development process. Emphasis on microcomputers and software packages used in business. MISY 160 is a pre-requisite for MISY 225
2. ACCT 207 Accounting I
3. BUAD 306 Service and Operations Management
4. MISY 225 Modern Business Computing 3
Use of higher level contemporary computing languages to structure Prototyping applications of systems.
5. MISY 330 Database Design and Implementation 3 * Fall or Spring of Junior Year
Covers the design and implementation of enterprise databases in the business environment. A networked setting and its effect on database management will be emphasized.
6. MISY350 Web Design
Covers concepts related to client side development, including cascading style sheets and JavaScript.
7. MISY 430 Systems Analysis and Implementation
Covers the challenges of developing and managing systems analysis and design projects. Students learn to determine systems requirements, analyze systems problems, model

potential solutions and design and implement these solutions. Other current topics will be included to reflect the changing information systems environment.

8. MIS 431 Project Management
MISY431 and MISY432 serve as the MIS program capstone. Students learn project management techniques, and working in teams, apply this knowledge by developing technology-based business solutions for various enterprises.
9. MISY 432 MIS Projects
MISY431 and MISY432 serve as the MIS program capstone. Students learn project techniques, and working in teams, apply this knowledge by developing technology-based business solutions for various organizations.

WILLIAM AND MARY UNIVERSITY – ASPIRANT SCHOOL

Business Analytics

1. BUAD 330 Computer Skills for Business (1 credit)
2. This course is designed to complement functional courses in the Integrated Foundation Semester by providing instruction in the use of application software. Typically the course will cover presentation software, spreadsheets, and database application. This course is graded pass/fail.
3. BUAD 350 Introduction to Business Analytics
I could only find Process Management and Control: The theme of this course is “business process excellence.” This course considers business processes at the strategic level of the firm, at the tactical level, and in day-to-day operations. The course shows how viewing “things that get done” as processes is an effective mindset and it describes the key operations management and information technology tools required for executing processes competently.
4. BUAD 351 Operations Management (1.5 credits)
5. BUAD 352 Decision-making through Visualization & Simulation (1.5 credits)
I could only find Information Technology: 352. Information Technology (Core Curriculum)
This course focuses on core technologies and management practices essential for competitive leadership in the digital world. Topics change from year to year due to the rapid pace of technological innovation, but certain baseline themes are always relevant. Examples include advances in business intelligence tools, the semantic web and electronic commerce, data and text mining, and the increasing use of artificial intelligence tools as the basis for innovative business solutions. Data security and privacy, ethical issues in the collection and use of information, and sustainability are also enduring themes.
6. BUAD 466 Developing Business Intelligence
The course focuses on the collection, representation and analysis of evidence in support of decision making and process improvement. The course will examine hard and soft measures, criteria for evaluation, and performance measurement.

7. BUAD 467 - Advanced Data Management and Modeling
This course emphasizes spreadsheet-based modeling of business problems in a variety of contexts. Topics vary, but will include some combination of the following: data visualization and manipulation, data description, predictive analysis, forecasting, simulation and optimization.
8. BUAD 468 - Analytical Tools for Consulting
The course focuses on the use of information technology tools in supporting the analysis and consulting process. Students will create and analyze models of complex business processes to enable better decision-making. Model-building tools will include computer simulations, data mining, and decision analysis.
9. BUAD 459 - Lean Processes
This course focuses on developing lean processes within a variety of operating environments. Tools and strategies leading to improved process management are included.
10. BUAD 459 Lean Six Sigma Toolkit
This course focuses on Six Sigma approaches to process quality and includes emphasis on tools and procedures for implementing Six Sigma strategies within organizations.
11. BUAD 465 Supply Chain Management
12. BUAD 469 - Visual Basic for Business
An introductory course in practical computer programming using Visual Basic.Net, the leading tool for designing user interfaces and web services. Topics include basic principles of programming and of the Visual Basic.Net language, including the architecture of Windows applications, control structures, arrays, functions, object-oriented programming, Visual Basic.Net class libraries, and event-driven programming. Students will also learn how to make user interfaces friendly and efficient and utilize VB with other software such as Excel. Intended for students with little or no programming experience.
13. BUAD 482 Project Management
14. BUAD 46W Healthcare Informatics
15. BUAD 46X Applied Predictive Analytics – Could not find it in the course catalog
16. BUAD 46Z Big Data Analytics – Could not find it in the course catalog

LEHIGH UNIVERSITY

Computer Science & Business

Lehigh's program in Computer Science and Business (CSB) is a joint initiative between the College of Business and Economics and the Department of Computer Science and Engineering in the P.C. Rossin College of Engineering and Applied Science. CSB students enroll—and are assigned faculty advisors—in both colleges. Students completing this demanding program are awarded a unique joint degree from both colleges. It equips students with the high-tech and business skills they need at a time when the boundaries between the two fields are becoming increasingly blurred.

The CSB program offers these key advantages:

Depth in curriculum: The program is the only one of its kind to be accredited in both computer science and in business. Students obtain the skills and training needed to understand business functions and business-related problems, to analyze business-user information needs, to design computer-based information systems and to implement systems solutions in business organizations.

Balance: The program requires CSB students to complete all the core courses required for a business degree and all the courses required for a B.S. in computer science. Students can select a concentration in any of several areas, such as finance, accounting, economics and various areas of computer science.

Required courses cover structured programming, operating systems, algorithms, computer architectures, programming languages, software engineering, networking, accounting, finance, marketing, management and economics.

Sample Computer Courses:

1. CSE 001 Breadth of Computing (2)
2. CSE 002 Fundamentals of Programming (2)
3. CBE Excel Competency Exam (0)
4. CSE 017 Programming and Data Structures (3)
5. CSE 109 Systems Software (4)
6. CSE 202 Computer Organization and Architecture (3)
7. CSE 241 Data Base Systems (3)
8. CSE 261 Discrete Structures (3)
9. CSE 303 Operating System Design (3)
10. CSE 216 Software Engineering (3)
11. CSB 311 Computer Applications in Business (3)
12. CSB 312 Design of Integrated Business Applications I (3)
13. CSE 252 Computers, the Internet, and Society (3)
14. CSB 313 Design of Integrated Business Applications II (3)
15. CSE 340 Design and Analysis of Algorithms (3)
16. CSE 262 Programming Languages (3)

WAKE FOREST UNIVERSITY

I did not find any technology related minors in the School of Business

Concentration in Information Technology

McIntire's Information Technology concentration prepares students to become business analysts and consultants ready to apply their skills in project management and leading-edge technologies to solve business problems in accounting, finance, marketing, management, and international business.

Course material in the IT concentration focuses on project management, consulting, financial systems, innovation, database management, business analytics, and e-commerce.

To complete the IT concentration, students must complete COMM 3200 Project Management (during the third or fourth year) and an additional 6 credit hours of IT elective courses from the list below. All courses are 3 credits unless otherwise noted.

1. COMM 3220 Database Management Systems and Business Intelligence
Provides an introduction to the management of database systems and how business intelligence can be used for competitive advantage. The course uses an applied, problem-based approach to teach students the fundamentals of relational systems including data models, database architectures, database manipulations (e.g., SQL), and BI tools.
Prerequisite: Undergraduate Commerce or Instructor Permission
2. COMM 4230 Information Technology in Finance
This class aims at giving you a competitive advantage in your next IT, Finance or Accounting job. You will learn commercial-grade IT tools and techniques commonly used in business organizations (e.g., advanced excel, SQL, accessing and manipulating information in enterprise databases). By the end of the class, you will be able to tell an exciting story about your participation in the yearly McIntire Hedge Tournament.
3. COMM 4240 Electronic Commerce and Web Analytics (4.5 credits)
This course provides an overview of the concepts, technologies, and tools necessary for designing and implementing information systems that support electronic commerce and online analytics initiatives; including web development, web and social media analytics, online marketing tactics, Internet fraud detection, online security, and emerging Web 2.0 technologies. Prerequisite: Fourth-year Commerce standing or instructor permission.
4. COMM 4250 Digital Innovation (1.5 credits)
We will examine state-of-the-art innovations in many industries. We will focus on understanding what these innovations are, & how they generate business value. You will learn practical tools to analyze innovation such as hype cycles & business models. Working both individually & as a team you will be engaged in radically reinventing common consumer or business experiences (e.g. watching TV, going to a restaurant, answering email).
5. COMM 4260 Business Analytics
Business analytics leverages the vast data resources available today to identify trends and patterns that are critical to enhancing business performance. This course introduces students to contemporary business analytics methods, including predictive and

descriptive analytics techniques, and demonstrates how to practically apply analytics to real-world business decisions.

6. **COMM 4280 - Data Communications**
Focuses on understanding the strategic value of networks and data communications technologies for organizations. Introduces contemporary technologies and methodologies used in the development and administration of computer-based networks including the Internet.
7. **COMM 4290 - Selected Topics in Information Technology**
This course introduces students to contemporary concepts, methods, tools, and technologies necessary for collecting and examining various forms of structured and unstructured data and demonstrates how to practically apply analytics to real-world business decisions (e.g., identify trends and patterns that are critical to enhancing business performance). Prerequisite: Fourth-year Commerce standing or instructor permission.
8. **COMM 4293 GCI: IT Project Practicum in Argentina**
Provides a comprehensive application of the concepts, methodologies, tools, and techniques necessary for the analysis and design of business systems. Students gain hands-on consulting experience in a real world project setting.
9. **COMM 4520 Topics in IT: Big Data (1.5 credits)**
Presents the opportunity to examine new and emerging IT topics or study a particular IT related area in greater depth than is covered in other courses.
10. **COMM 4520 Topics in IT: Business System Dynamics**
Presents the opportunity to examine new and emerging IT topics or study a particular IT related area in greater depth than is covered in other courses.
11. **COMM 4520 Topics in IT: Digital Safari (1.5 credits)**
Presents the opportunity to examine new and emerging IT topics or study a particular IT related area in greater depth than is covered in other courses.
12. **COMM 4299 - Global Commerce Immersion: Topics in Information Technology**
Global Commerce courses that count in the Information Technology concentration.

WILLIAM & LEE

I did not find a minor but there are their MIT courses.

1. **BUS 310 - Management Information Systems**
The objective is to build an understanding of the value and uses of information systems for business operations, management decision making, and strategic advantage. Topics include basic systems concepts and major roles of information systems; computer, telecommunications, and database management concepts; and management issues in the implementation of information systems, including international, security, and ethical considerations.
2. **BUS 312 - Computer Forensics**
Prerequisite: At least sophomore standing. This course introduces computer forensic

investigation and provides insight to the importance of computer security in organizations, present and future. Computer forensics involves obtaining and analyzing digital information for use as evidence in civil, criminal, or administrative cases. The course examines computer-related crimes such as hacking, theft of intellectual property, identity theft, and fraud. Students learn how consumer and citizen information is stored and shared, how electronic financial transactions are conducted, and the importance of computer forensics within areas such as accounting, business, and the law. Students also learn about the tools and methods used by law enforcement when investigating cybercrimes, how to perform computer crime investigations, and the recovery and analysis of digital evidence. The course provides hands-on experience in applying digital forensic tools and basic understanding of computer networks, including their components, functionality, and vulnerabilities.

3. **BUS 315 - Database Management for Business**
An introduction to the theories, concepts, features, and capabilities of database management systems in a business environment. This course provides a greater understanding of how to design, develop and access database-driven business applications and emphasizes the use of database-management systems in real-world business settings and how this technology can be applied effectively to solve business problems. In this project-oriented course, students acquire the skills to document, design, create, test, and access a fully functional Oracle business database application. No prior programming or application development experience is assumed.
4. **BUS 317 - Data Mining for Sales, Marketing and Customer Relationship Management**
This course provides an introduction and overview to data mining as a means to understanding customers (existing and potential) in a broad sense, rather than focusing on underlying theory. Many organizations have a wealth of data residing in their databases. Business data mining is the process of collecting and turning this resource into business value. Basic data-mining methods have broad applications: market-basket analysis of scanner data, customer relationship management, churn analysis, direct marketing, fraud detection, click-stream web mining, personalization and recommendation systems, risk management, and credit scoring. The course provides hands-on experience in applying these techniques to practical real-world business problems using commercial data-mining software.
5. **BUS 321 - Multimedia Design and Development**
This course is an introduction to the study and creation of multimedia content primarily used in business. Students explore the steps used to plan and create multimedia content that effectively targets and delivers business information. This is a hands-on, project-oriented course with emphasis on the design and creation of media elements such as interactive web, graphic, audio, and video content. The course focuses on using Adobe Dreamweaver with emphasis on Cascading Style Sheets, Adobe Photoshop, Audacity, and Final Cut Express as the foundation for creating online multimedia content.
6. **BUS 325 - E-Commerce Development**
An introduction to the benefits, capabilities and related information technologies, which comprise the current state and emerging technologies of e-commerce. This course

provides an understanding of how to design, develop and implement e-commerce order processing websites using industry leading e-commerce shopping cart software. In this project-oriented course, students acquire the skills to design, create, and administer a fully functional Web-based e-commerce solution. Students learn how to leverage features of the e-commerce software to attract consumers, increase conversion rates, and maximize the return on their ecommerce investment. No prior e-commerce or Web development experience is assumed. Laboratory fee.

TRINITY UNIVERSITY (TX)

Management Information Systems – offered by the Computer Science Department

This minor provides business-oriented students with the computer skills needed to efficiently manage and transmit information.

1. CSCI 1120 Low Level Computing
Seminar on concepts of computing that are close to the machine level. The course teaches skills such as command line processing and programming in a language that exposes more of the underlying machine. Internal data representations will also be explored.
2. CSCI 1320 Principles of Computer Science I
Concept-oriented introduction to programming and algorithmic problem solving principles in relation to computer solutions. Top-down design and analysis of algorithms. Searching and sorting strategies; recursion. Computer organization. Computer programming solutions to several laboratory exercises.
3. CSCI 1321 Principles of Computer Science II
Focus on object-oriented programming and the development of software to solve larger problems that can benefit from this approach. Abstraction, polymorphism, multithreading, and networking. Program correctness and program verification, algorithm analysis, and computational complexity. User defined structures, data types. Abstract data types including stacks, queues, linked lists, trees, and heaps. Computer programming solutions to several laboratory exercises.
4. CSCI 2320 Principles of Data Abstraction
Abstract data types and their implementation in an object-oriented environment. Axiomatic systems describing the classical computer science data structures: stacks, queues, lists, trees, graphs, and the like. Analysis of the computational complexity of alternative implementation strategies in the context of the typical algorithmic applications.
5. CSCI-3321 Principles of Software Engineering
Issues involved in developing large-scale software systems. Models for the software lifecycle; techniques and tools of analysis, design, programming, testing, debugging, and maintenance. May include formal methods, CASE, expert systems, case studies.
6. CSCI-3384 Advanced Software Engineering
In-depth experience with integrated cyclic design/development models with emphasis on testing and validation methods. Extensive application of proper testing and evaluation techniques will be applied to the previous year's senior software project.

7. CSCI-3-94 Seminar
Topics will vary depending on student interest. May be taken for a maximum of six (6) semester hours credit.
8. CSCI-4385 Senior Software Project I
The analysis and design of an actual large-scale software system. Application of the analysis and design tools within the software life cycle presented in CSCI 3321 (Principles of Software Engineering). Students work in teams under direct supervision of the faculty.
9. CSCI-4386 Senior Software Project II
The implementation, testing, and maintenance of the large-scale software systems designed in CSCI 4385. Students working in teams under direct supervision of faculty implement and demonstrate the deliverable software package.

UNIVERSITY OF RICHMOND

No technology related minor