



Course Syllabus

Course #: EST305

Application Software for Information Management

Spring 2020: February 24 – June 17

Credits:	3
Meeting Days:	Mondays and Wednesdays
Meeting Time:	3:30-4:50
Meeting Room:	TBA
Instructor:	Patrick Rose, Ph.D.
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I. Course Description

Introduction to the role of applications software in various types of organizations with emphasis on methods of formulating the requisite information flows to engender adequate communications, operation, and control. The importance of audit ability, maintainability, and recoverability in systems design is stressed. Provides students with knowledge of basic techniques and elementary skills in representing system structure with application of the principles in practical case studies using spreadsheet and database software. Extensive interaction with applications software reinforces concepts presented.

NOTICE: EST100 or CSE101 are required prerequisites for this course. If you have not already completed one of these, you are not eligible to take this course.

II. Objectives

- The student will become acquainted with management science methodologies used in quantitative decision-making.
- The student will learn how to apply these methodologies to model, solve and analyze problems encountered in the management of technological systems.
- The student will acquire insights into the interrelationships between information systems and management science.
- The student will develop skills in software development, research, working within a team, and making presentations.

III. General Class Format

1. Announcements & Attendance – 5 minutes
2. Previous Class Review – 5 minutes
3. Lecture – 30 minutes
4. Bootcamp or Group Project Work – 50 minutes

IV. Course Text & Software

Required:

1. **Management Information Systems: Managing Digital Firm, International Edition 15ed.**, Laudon, Kenneth C., and Laudon, Jane P. (\$89 Amazon Ebook)

<https://books.google.co.kr/books?id=IJ0jMQAACAAJ&dq=Management+Information+Systems:+Managing+the+Digital+Firm+15th+Edition&hl=en&sa=X&ved=0ahUKEwj3ubng1tnjAhUHvJQKH7mDH4Q6AEIKTAA>

2. **Microsoft Excel 2019 Data Analysis and Business Modeling 6ed.**, Winston, W. (\$24 Amazon Ebook)

<https://books.google.co.kr/books?id=b89DvAEACAAJ&dq=Microsoft+Excel+2019+Data+Analysis+and+Business+Modeling+6ed&hl=en&sa=X&ved=0ahUKEwj9ttGh1tnjAhWKv5QKHQrqCGkQ6AEILzAB>

3. **VBA for Modelers: Developing Decision Support Systems with Microsoft Excel 5ed.**, Albrigh, S. Christian (\$113 Amazon Ebook)

<https://books.google.co.kr/books?id=y13kBgAAQBAJ&printsec=frontcover&dq=VBA+for+Modelers:+Developing+Decision+Support+Systems+with+Microsoft+Office+Excel&hl=en&sa=X&ved=0ahUKEwjEueD91dnjAhVBGKYKHWTTCPEQ6AEILjAB#v=onepage&q=VBA%20for%20Modelers%3A%20Developing%20Decision%20Support%20Systems%20with%20Microsoft%20Office%20Excel&f=false>

4. **Microsoft Excel with the Solver Add-In and Visual Basic for Applications (VBA)**

Recommended Reading:

1. **Winning Decisions: Getting It Right the First Time**, Russo, E. & Schoemaker, P.
2. **Decision Support Systems: Concepts and Resources for Managers**, Power, D. J.
3. **Management Science: The Art of Modeling with Spreadsheets**, Powell, S.G. & Baker, K. R.
4. **Spreadsheet Modeling and Decision Analysis: A Practical Introduction to Business Analytics**, Ragsdale, C.
5. **Developing Spreadsheet-Based Decision Support Systems**, Eksioglu, S. D., Seref, M., Ahuja, R. K., & Winston, W. L.
6. **How to Measure Anything: Finding the Value of Intangibles in Business**, Hubbard, D.
7. **Algorithms to Live By: The Computer Science of Human Decisions**, Christian, B. & Griffiths, T.
8. **Super Crunchers: Why Thinking-by-Numbers Is the New Way to Be Smart**, Ayres, I.
9. **Blink: Power of Thinking Without Thinking**, Gladwell, M.
10. **The Wisdom of Crowds**, Surowiecki, J.

DSS Resources Website:

The DSS Resources website which contains useful information on decision support systems can be found at the following URLs: <http://www.dssresources.com>, <https://github.com>, <https://chandoo.org>.

V. Course Schedule

This calendar represents the intended sequence of topics included in this course. It is, however, subject to change at my discretion and in response to students' expressed interests and needs. If changes are made, this calendar will be updated.

Week	Class session
1-1	Managerial Decision-making Frameworks Reading: Laudon Chapters 7-10: Telecommunications, Internet, Wireless; Winston Chapters 1-2: Basics, Ranges Technology, E-Commerce, Digital Markets, Digital Goods
1-2	Overview of Decision-making Tools and Analytical Methods Reading: Laudon Chapters 11-12: Managing Knowledge, Decision-Making, Why Systems Work, Don't Work, Traps and Opportunities; Winston Chapters 3-7: Lookup, Index, Match, Text, Dates Functions Excel Boot Camp 1
2-1	Introduction to Information Systems Reading: Laudon Chapters 6-14: Managing Projects, Places to Intervene in a System; Winston Chapters 8-9, 12: NPV, IRR, IF Excel Boot Camp 2
2-2	DSS Architecture, Business Intelligence, Data Management, Networks and Security Issues Tutorial: Financial Functions, & IF Statements Excel Boot Camp 3
3-1	Utility Theory and Decision Trees Tutorial: Conditional Countifs, Sumifs, Offset, Indirect Reading: Winston Chapters 20-23: COUNTIF, SUMIF, Offset, Indirect Excel Boot Camp 4
3-2	Linear Programming Tutorial: Optimization and Excel Solver Reading: Winston Chapters 28-40: Analytics, Using Solver Excel Boot Camp 5-6
4-1	Homework #1: Solver Demonstrations
4-2	Homework #1 Cont.: Solver Demonstrations
5-1	Sensitivity Analysis Reading: Winston Chapters 17-19, 93: Sensitivity Analysis, Goal Seek, Scenario Manager, Advanced Sensitivity Analysis Quiz 2: Excel Skills Test
5-2	Forecasting Tutorial: Forecasting Reading: Winston Chapters 64-67: Moving Averages, Winters, Ratio

6-1	<p>Simulations Tutorial: Operational Simulations, Monet Carlo Simulations Reading: Winston Chapters 77-89: Monte Carlo Simulations Homework #2: Team Project Topic Pitch Excel Boot Camp 7</p>
6-2	<p>Introduction to VBA Tutorial: VBA Editor, Recording Macros, Ranges Reading: Albright Chapters 1-6: Intro to VBA, Excel Object Model, Recording Macros, Getting Started with VBA, Working with Ranges; Winston Chapters 92: Macros</p>
7-1	<p>Using Excel to Design and Develop DSS Reading: Laudon Chapters 2-3: Information Systems, Global E-Business; Albright Chapters 11-14: User Forms, Error Handling, Files and Folders, Importing Data; Winston Chapters 28-40, 91-92: Import Data, Get and Transform, Validating Data, Array Formulas Excel Boot Camp 8</p>
7-2	<p>Designing DSS User Interfaces / GUI Reading: Albright Chapters 7-10: Control Logic and Loops, Excel Objects, Arrays, More Variables; Winston Chapters 24-25: Conditional Formatting, Sorting</p>
8-1	<p>DSS Project Design Proposal Sharing & Feedback Assignment: DSS Class Project Proposal (Part 1) Excel Boot Camp 9</p>
8-2	<p>DSS Project Design Proposal Sharing & Feedback Cont.</p>
9-1	<p>Descriptive Statistics, Visualizing Data, Charting Reading: Albright Chapters 15-18: Pivot Tables, Ribbons/Toolbars, Automating Solver, User-Defined Types; Winston Chapters 43-49: Histograms, Descriptive Stats, Pivot Tables, Data Model, Filled Maps</p>
9-2	<p>Pivot Tables Reading: Winston Chapters 50-53: Database Stats, Removing Duplicates, Consolidating Data, Creating Subtotals, Charting Tricks, Power Pivot, Sparklines</p>
10-1	<p>Homework #3: MS Applications Demos Reading: Albright Chapters 19-35: Basic Ideas, Applications</p>
10-2	<p>Homework #3: MS Applications Demos Cont.</p>

11-1	Inferential Statistics Tutorial: Z-Score, T-test, ANOVA Reading: Winston Chapters 55-64: Straight-line Relationships, Exponential Growth, Power Curve, Correlations, Correlations, Regression, Nonlinearity, ANOVA Quiz 2: VBA Skills Test
11-2	Tutorial: Correlation, Regression Reading: Winston Chapters 68-76, 90-91: Probability, Random Variables, Binomial, Poisson, Z-scores, Making Probability from Forecasts, Lognormal Random Variable
12-1	DSS Project Prototype Sharing & Feedback Assignment: DSS Class Project Prototype (Part 2)
12-2	DSS Project Prototype Sharing & Feedback Cont.
13-1	Bayesian Statistics Homework #4: Data Visualization
13-2	Web-based DSS / BI Systems
14-1	Ethics Check Comprehensive Exam
14-2	Working Day
15-1	Group Project Presentations Assignment: DSS Final & Presentation (Part 3)
15-2	Group Project Presentations Cont.

V. Evaluation & Grading

You can access class information on-line at <http://blackboard.stonybrook.edu>. The course website will contain important information and documents. You should visit the site on a daily basis. The Announcements page will indicate the latest additions/updates to the website and where these additions/updates can be found. Project and homework assignments will be posted on the Assignments page. Links to course notes and spreadsheet files will be placed in folders on the Course Documents page. A link to the syllabus will be placed on the Course Information page. You will also be able to check your grades by selecting the Check Grade link on the Student Tools page.

Grade Calculation

Activity	Points Possible
Participation / Attendance	20
DSS System Design Proposal	10
DSS Prototype	10
DSS Final & Presentation	20
Homework Assignments	20
Skills Tests	10
Comprehensive Exam	10
Total	100

Course Assignments

Homework Assignments (20 points)

You will be expected to complete four in-class or out-of-class assignments (5 points each). Submit your homework through the Assignments feature on Blackboard by the start of class on the due date. Late homework will NOT be accepted. A grade of zero will be assigned to missed homework assignments.

Practice What You've Learned Skills Tests (10 points)

There will be two tests (5 points each), one for Excel and one for VBA, given to assess your understanding of Excel, VBA and appropriate coding practice. Solutions to the tests will require the use of a computer.

Exam (10 points)

There is one comprehensive exam covering lectures and reading assignments. The exam will include a mix of questions, possibilities include short answer, short essay, mini-case analysis, and multiple-choice questions. It may also include hands-on skill questions. The actual format of the exam will be discussed in class prior to each exam.

Group Project (40 points)

A major part of the course will be the group project. The groups will have 4 or 5 members each. Each project will involve the planning and development of a Spreadsheet Decision Support System (DSS) for a hypothetical client. Students will select a project and form groups based on their interests. You will develop a custom DSS to help you develop your understanding of how application software works. Your software will address an information management challenge your client is experiencing. The semester project will consist of 3 phases:

Part 1: System Design Proposal (10 points)– Each group will prepare a proposal for the DSS. The design or plan will have answers to questions you might ask to get at what might help the decision-maker (user) and what they might need. A detailed outline will be provided in class, but will generally include:

1. The Decision Environment (Situation, Background and Problem)
2. Mission and Scope of the Project (Goal & Solution)
3. Literature Review (Research & Inspiration)
4. Methodology (Model and Data Source)
5. DSS Architecture and Variable Relationships (Structure and Flow)
6. DSS Interface, Navigation and Data Visualization (Interaction)
7. Project Plan (Tasks & Timeline)

Part 2: Prototype DSS (10 points) – Each group will prepare a prototype DSS. The prototype should be functional and demonstrate the key features included in the DSS. Groups should keep change logs of key challenges on how the prototype DSS evolved to a finished state.

Part 3: Final DSS & Presentation (20 points) – Each group will complete their DSS. The completed DSS should be fully functional, meet all the design specifications, and be easy to use. The system should be responsive to faulty data and present useful and clear output. It should include advanced built-in functions, dynamic calculations and data visualizations (a dashboard). Formal presentations of the completed DSS will be made to the final week of class that explains how the DSS support the hypothetical decision-maker; and, describes how the group approached the problem, what data what considered, and its predictions. The spreadsheet application should include a good amount of Visual Basic applications on both the front end and the back end. A short write-up should accompany the spreadsheet. Part of the evaluation criteria will include a “coolness” or “wow” factor. Hopefully, students will be able to include the finished products in their electronic portfolios as evidence to potential future employers about their decision-making, Excel and programming skills. Any material produced during the proposal part may be included in the final DSS documentation. The document must also contain any references to materials and publication used in developing the DSS.

VI. Additional Course Information

Class Participation: An important aspect of this class is discussion, and therefore, class attendance is important. Each student should read the material in advance and be prepared to offer their insight into class topics. Participation is required – both in class as well as outside of class. Outside of class, students should complete the reading assigned materials and work on their group project. Failure to participate in class discussions and to prepare for leading class discussion as assigned will affect your grade.

Late Work Policy: No assignment can be submitted late and no test can be take early or late, unless there is a university excused absence. Exceptions will only be given considering a university excused absence. Inform me of your absence before or within 2 days after the date.

Grading Scale: Grading will follow a standard scale: 94%-100% is an A, 90-93% is an A-, 88%-89 is a B+, 84%-87% is a B, 80%-83 is a B-, 78%-79 is a C+, 74%-77% is a C, 70%-73 is a C-, and so on. Grades cannot be changed unless the instructor makes a computational error. Moreover, grades will not be revealed via e-mail or telephone. Students' grades will be posted on Blackboard.

Connected Mobile Devices: Turn off mobile phones. If you leave class to take a call, do not come back in the classroom until class is finished. The instructor prefers that you take handwritten notes because this method enhances learning and retention, notebook computers will only be used during free study time. Students may not use connected mobile devices to engage in activities unrelated to the course.

Class Start Time: Show up for class at the starting time, not a few minutes late. If you are not in class at the starting time, you are considered absent.

Class Attendance: Attendance will be taken daily throughout the semester. You are responsible for attending class and for all materials covered in class. If you miss more than 5 classes, you will lose a letter grade; and more than six unexcused absences (20% of the course) will result in an 'F' grade. If you are seeking an excused absence, you must notify me as soon as possible after the absence, but no later than the end of the second working day after the last date of absence. If the absence occurs the same day as a scheduled assignment or other graded procedure, the student must notify the instructor or department by the end of the next working day after the absence to ensure full rights. You are responsible for providing satisfactory evidence to the instructor within one week of your return to substantiate the reason for the absence (see Absentee Policy from University Conduct Code and Student Handbook).

VII. University Policies

Class Disruptions: Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Judicial Affairs any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures.

Plagiarism Statements and Academic Dishonesty: Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty are required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website at <http://www.stonybrook.edu/uaa/academicjudiciary/>

The Americans with Disabilities Act: If you have a physical, psychological, medical or learning disability that may impact your course work, please contact the One-Stop Service Center, Building A201, (82) 32-626-1117. They will determine with you what accommodations, if any, are necessary and appropriate. All information and documentation is confidential. Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and Disability Support Services. For procedures and information go to the following website: <http://www.sunysb.edu/ehs/fire/disabilities.shtml>.

Sexual Misconduct: Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran's status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it.

Appendix A

Project Presentation Rubric

Criteria	
Organization	information is presented in a logical sequence that flows well and the audience can follow
Content	material presented is logical and relevant, there are obvious objectives, main points and conclusions
Presentation	the presentation is interesting, speaker engages the audience and speaks loudly, clearly and precisely, information is well communicated, transitions are smooth
Subject Matter Knowledge	student makes connections to the project to the subject matter of the class, demonstrates a grasp of subject knowledge as it is applied to his/her project, answers questions with explanations and elaborations
Mechanics	presentation has no grammatical or spelling errors, graphics are appropriate reinforce text, writing is original and articulate
Score	

Appendix B

Group Project Peer Assessment

Criteria	
Organizing	Helped to organize the group's members and activities.
Understanding Requirements	Understood what was required of the group and of the individual group members.
Suggested Ideas	Suggested ideas upon which the group could act or continue to build productively.
Producing	Came up with something useful to contribute to the group's efforts.
Performing Tasks	Performed tasks allocated by the group within the specified timeframe.
Score	