

LSP 121
Quantitative Reasoning and Technological Literacy II
Spring 2016

Instructor: Dr. Mofak Hassan
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Office hours:

- Monday 1:00 – 2:30 PM and 4:15 – 5:00 PM,
 - Wednesday 1:00 – 2:30 PM and 4:15 – 5:00 PM,
 - Or by appointment
- Room 332 Student Center

Course Description

This course provides more advanced mathematical and computational methods in the analysis and interpretation of quantitative information. Topics include databases, descriptive statistics, measures of association and their interpretation, elementary probability theory, and an introduction to algorithms and computer programming. The course is taught in a hands-on laboratory environment where students are introduced to advanced computer tools for data analysis, including databases and a professional statistical software package. PREREQUISITE(S): LSP 120 or a passing score on the LSP 120 Proficiency Exam. As an alternative to taking LSP 121, this requirement can be met by passing a separate LSP 121 Proficiency Exam (see qrc.depaul.edu). A student whose major requires calculus is exempt from this requirement. Formerly ISP 121.

Learning Outcomes for LSP 121 (QRTL):

- 1. Statistics:** Students will be able to make and interpret frequency distributions; summarize data with measures of center and dispersion; measure and interpret the association between variables; recognize the difference between correlation and causation; solve applied problems involving the normal distribution and z-scores.
- 2. Probability and Chance:** Students will be able to recognize that seemingly improbable coincidences are not uncommon; evaluate risk from available evidence; and calculate basic, common probabilities.

3. **Algorithms and reasoning:** Students will be able to use sequential, logical thinking; develop algorithms to solve problems; use Boolean conditionals and repetition structures to create simple computer programs.
4. **Database tools:** Students will be able to enter data into a pre-existing database; import data from a text file or spreadsheet file into a database; filter records based on a single parameter and on multiple parameters; sort records with multiple sort keys; formulate and conduct queries; generate a report from a database; recognize the difference between a flat file and a relational database; create a relational database using two or more tables; design and implement forms for data entry.
5. **Professional Statistical Package:** Students will be able to import data from a spreadsheet or database into a statistics package; use graphical tools in a statistical package to make specialized statistics plots such as box plots and normal probability plots; calculate descriptive summary statistics using a statistical package.
6. **Programming tools:** Students will be able to construct the concept of algorithm through experimentation and reflection on everyday activities; articulate an accurate definition of an algorithm; recognize algorithms fitting the definition; construct the notion of a control structure and a repetition structure; acquire the ability to trace simple program listings using control and repetition structures; use control and repetition structures to write simple computer programs to effect a task.

How These Learning Outcomes Will Be Met:

1. **Statistics:** There are 4-5 activities in this segment that are devoted entirely to basic descriptive statistics, cross tabulation, correlation and normal distributions. Homework assignments reinforce these concepts.
2. **Probability:** The activity covers an introduction to probability (both single and combined probability) with a short section on risk. Homework assignments reinforce these concepts.
3. **Algorithms and reasoning:** There are 3-4 activities in this segment which helps introduce the concepts of sequential statements, if statements, loop statements, and require the students to use these to solve a variety of problems. Homework assignments reinforce these concepts.
4. **Database tools:** In this segment there are 7-8 activities to introduce the students to Microsoft Access databases, table/query/form/report creation, relational database and normalization. Homework assignments reinforce these concepts.
5. **Professional statistical package:** Both activity and homework assignment introduces the statistical package SPSS and requires the student to use it to solve multiple tasks
6. **Programming tools:** In this segment there are 2-3 activities that will introduce the concepts of sequential statements, if statements, loop statements, and require the students to use these to solve a variety of problems. Activities introduce three common application areas of computer algorithms: data compression, encryption/decryption (security), and data error detection and

correction. Homework assignments reinforce these concepts.

Writing Expectations: (these assignments overlap with those given in LSP 120)

There are computer activities, each of which has a final product in the form of a Word document with five to ten short paragraph responses. Along with the activities student will need to complete homework assignments which has short paragraph responses.

How These Writing Expectations Will Be Met:

The writing expectation will be met via in-class activities and homework assignments. Students are expected to interpret computer outputs in many of the assignments

Required Materials

Please bring a flash disk (thumb drive) to every class. Label with your name and e-mail address in case it becomes misplaced.

Textbook: none

Prerequisites: ISP/LSP 120

If you feel you already know the materials presented in this course, there is a placement exam you may take. You must take this exam within the first week of classes to waive the course this quarter. If you pass this exam, you will be waived from taking this course. Consult the qrc.depaul.edu website for more details.

Grading Scale:

92 - 100	A
90 - 91	A-
88 - 89	B+
82 - 87	B
80 - 81	B-
78 - 79	C+
72 - 77	C
70 - 71	C-
68 - 69	D+
62 - 67	D
60 - 61	D-
0 - 59	F

Objectives of course:

This Quantitative Reasoning and Technological Literacy course is designed to help you to become a more confident, critical, and capable user of quantitative information of all kinds. In particular, it will help you to

- continue to critique quantitative arguments, whether given numerically, graphically, or in written form
- manipulate data via the creation and use of relational databases
- become acquainted with basic descriptive statistics and probability
- understand the basic concepts of algorithm creation
- continue the manipulation of discrete data via compression, error detection, and encryption

Course Breakdown:

In-class activities	20%
Homework assignments	20%
Midterm exam	25%
Final exam	25%
Attendance and Participation	10%

An expanded description of each follows:

Final Exam – An in-class final exam must be taken in order to receive a grade in the course. The final is on **Monday, June 6th 2016, from 02:30 PM to 04:45 PM**. If you cannot take the exam due to illness or family emergency, you must inform me in advance by phone or email. In such situations, you will typically receive an incomplete grade in the course, and we will make arrangements for you take the final exam as soon as possible the next term.

Midterm Exam – An in-class midterm examination will be given during class. There are no makeup exams in this course. The Midterm exam is on **Monday, May 2nd 2016**. There are no makeup exams in this course. If you cannot take an exam due to illness or family emergency, you must inform me in advance by phone or email.

Homework Assignments - Many weeks there will be an assignment to be done outside of class. Their purpose is to give you individual out of class practice on the skills we are learning and to explore some ideas more thoughtfully and deeply. The assignments are posted on the course web page and will be handed out in class. Homework assignments must be done individually and are due by the due date posted on the assignment. **They will not be accepted after the instructor goes over the answers in class.**

In-class Activities - Class attendance and participation are important. Most of the class time will be spent working on exploratory activities that embody a "learn by doing" approach. If you don't complete an activity for a given day (and a new activity is scheduled to be introduced next class period), you have until the end of the next class period from which the activity was handed out to submit the activity for credit. **No activities will be accepted two weeks after they are assigned.**

Incomplete and FX Grades

Grades of Incomplete are given only in cases of medical emergency or other highly unusual emergency situations. Please note that University guidelines require that you must be earning a passing grade at the time you request an incomplete grade. You should have completed most of the course, with at most one or two major forms of evaluation missing. Incompletes revert to an F if they are not resolved within one quarter. If such a situation should occur, please inform the instructor as soon as possible. A grade of FX is assigned if the student quits coming to class but never officially drops the course.

Class Attendance – Attendance will be a percentage of your final grade; your attendance will be monitored every class period.

Drop Dates

Last day to drop a class with refund: April 11, 2016

Last day to drop a class with no refund: May 15, 2016

Academic Integrity

Violations of academic integrity, particularly plagiarism, are not tolerated. Plagiarism is defined by the university as:

“..a major form of academic dishonesty involving the presentation of the work of another as one's own. Plagiarism includes but is not limited to the following:

- a. The direct copying of any source, such as written and verbal material, computer files, audio disks, video programs or musical scores, whether published or unpublished, in whole or part, without proper acknowledgement that it is someone else's.*
- b. Copying of any source in whole or part with only minor changes in wording or syntax, even with acknowledgement.*
- c. Submitting as one's own work a report, examination paper, computer file, lab report or other assignment that has been prepared by someone else. This includes research papers purchased from any other person or agency.*
- d. The paraphrasing of another's work or ideas without proper acknowledgement.*

Plagiarism, like other forms of academic dishonesty, is always a serious matter. If an instructor finds that a student has plagiarized, the appropriate penalty is at the instructor's discretion. Actions taken by the instructor do not preclude the college or the university from taking further punitive action including dismissal from the university” (DePaul Student Handbook).

University policies on academic integrity will be strictly adhered to. Consult the DePaul University Student for further details.

Tentative Weekly Schedule

Week 1: Intro to course; introduction to databases; importing a spreadsheet into a database

Week 2: Relational databases and normalization; database queries

Week 3: Database forms; database reports

Week 4: Introduction to descriptive statistics using SPSS

Week 5: Cross tabulations and Correlations

Week 6: **Midterm exam**; Normal distributions

Week 7: probability and risk

Week 8: Number systems

Week 9: Introduction to algorithms; Alice

Week 10: Error detection and correction

Week 11: **Final exam**: on **Monday, June 6th 2016, from 02:30 PM to 04:45 PM.**

As a courtesy to the other students and the instructor: If you must keep your cell phone on, *please* turn the ringer off and set the phone in front of you, or place cell phone on vibrate mode. *Please* limit your entering and leaving while a lecture is in progress.

College Policies

Online Course Evaluations

Evaluations are a way for students to provide valuable feedback regarding their instructor and the course. Detailed feedback will enable the instructor to continuously tailor teaching methods and course content to meet the learning goals of the course and the academic needs of the students. They are a requirement of the course and are key to continue to provide you with the highest quality of teaching. The evaluations are anonymous; the instructor and administration do not track who entered what responses. A program is used to check if the student completed the evaluations, but the evaluation is completely separate from the student's identity. Since 100% participation is our goal, students are sent periodic reminders over three weeks. Students do not receive reminders once they complete the evaluation. Students complete the evaluation online in [CampusConnect](#).

Academic Integrity and Plagiarism

This course will be subject to the university's academic integrity policy. More information can be found at <http://academicintegrity.depaul.edu/>. If you have any questions be sure to consult with your professor.

Academic Policies

All students are required to manage their class schedules each term in accordance with the deadlines for enrolling and withdrawing as indicated in the [University Academic Calendar](#). Information on enrollment, withdrawal, grading and incompletes can be found at: cdm.depaul.edu/enrollment.

Students with Disabilities

Students who feel they may need an accommodation based on the impact of a disability should contact the instructor privately to discuss their specific needs. All discussions will remain confidential. To ensure that you receive the most appropriate accommodation based on your needs, contact the instructor as early as possible in the quarter (preferably within the first week of class), and make sure that you have contacted the Center for Students with Disabilities (CSD) at: csd@depaul.edu.

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