

PSYCHOLOGY C58F - Experimental Psychology Microcomputer Laboratory

Fall 1994

Tuesday, 10:00-11:00 AM, Thursday, 9:00-11:00 AM, S-316

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Course Outline

This course has several interrelated purposes. First, it will introduce you to the microcomputer as a powerful tool for research. You will learn the fundamentals of the operation of the machine itself (the hardware), and you will learn a computer language (the software) via which the machine can be made to perform specified tasks. In particular, you will learn QuickBasic 4.5 for use on an IBM-XT compatible computer. This is a practical, "hands on" course. You will be expected to do much of the work at the computer, learning by doing.

More particularly, the purpose of this course is to familiarize you with the uses of the microcomputer in the psychological laboratory. Although many of the examples will be drawn from cognitive psychology, I will try to demonstrate the breadth of the microcomputer's impact throughout research in psychology. There are four major places where this influence is felt:

- 1) preparation of the experiment,
- 2) conducting the experiment and collecting the data,
- 3) carrying out the data analyses, and
- 4) simulation and model construction for data interpretation.

In lectures, these topics will be examined, with the focus on preparing and conducting experiments to obtain data. Data analysis and simulation/modelling will be introduced, but the main goal is to learn to use the microcomputer as a powerful laboratory tool.

The other main use of lecture time -- the most time-consuming one -- will be teaching you to use QuickBasic, a quite powerful version of the simplest and most widely used language in the microcomputer industry. In this context, you will learn how to write BASIC code to perform various portions of experiments and, eventually, how to put the pieces together to construct entire experiments.

In a way, then, this course is really two "mini-courses", one on how psychologists do research using computers, and one on developing the programming skills necessary to do that research. There is a lot to cover so you should anticipate putting in a considerable amount of time on the computer itself. To a very large extent, what you get out of this course will depend upon

what you put into it. This is true from the very beginning -- this is not the kind of course to try to pick up part way through the term. Stay on top of it; you have been warned!

The Computers

The Department of Psychology has the 12 IBM-XT compatible microcomputers you see in this room. They are available for your use throughout the term here in S-316. You can get into this room anytime -- 24 hours a day, seven days a week -- by signing out the necessary key at the front reception desk, leaving your student card for "ransom". If all of the keys are signed out, drop by the room and someone will let you in. Please note, though, that the door is never to be left open, even when there are people working inside.

We will begin by trying to allow people unlimited access. If this turns out not to work, then a scheduling system will be set up. You will let me know if that becomes necessary. Please do not hesitate to talk to me about how things are going *re* access; I will depend on your feedback. One other reminder: Please do not hoard the keys. Return them when you leave, even if you are only going to be gone for a few minutes; it is quite easy to pick them up again later, and you do not want to prevent others from having access.

Please realize that you and others use this space, and treat it with respect. The rule sheet I am giving you should always be kept in mind. Any problems or violations should be reported to me as soon as possible and I promise to deal with them. May I highlight the rule regarding *no* drinking, eating or smoking? These are all potentially very dangerous to the machines. All it takes is one spilled Coke and the machine is destroyed. If you see someone violating these rules, please let them know the rules and then let me know.

Course Evaluation

Because this is primarily a practical course, much of the evaluation will be based on assignments during the course. There will be four mechanisms for evaluating progress in the course:

- 1) In the beginning, there will be weekly assignments to encourage you to use the computers. You will receive each assignment on Thursday in class and hand it in by 5:00 PM on Monday of the 2nd next week (i.e., 11 days later). Please leave your assignments in the box marked 'PSYC58 ASSIGNMENTS' located outside S-316. You will get each assignment back (with comments and a grade) the next Thursday. The first assignment will be handed out next week. These assignments are meant to accustom you to using BASIC and the computer. Experience shows that it is best to do these yourself, not as groups; you will learn much more if you go through each of these exercises yourself. [I might add that it is usually pretty easy to recognize when people "share" programs.] There will be five such assignments, each worth 5% of the final grade, for a total of 25%.
- 2) On Thursday, November 3, there will be a BASIC quiz, worth 15% of the final grade.
- 3) The final exam, in the December exam period, will consist of short answer and essay questions. You will be tested on all of the lecture material and on your knowledge of BASIC.

Although intended to be two hours, you will have three hours to do the exam. This exam will be worth 30% of your final grade.

4) In the second half of the course, you will be expected to carry out your own research project using the computer. You will write a program to implement an experiment in your area of interest, the topic to be chosen and discussed with me prior to beginning. You may replicate (or perhaps extend) an existing experiment, or you may design one of your own, but they must be cleared with me in either case.

The final project will consist of a working program in QuickBasic 4.5, including adequate comments and documentation to explain how the program works. You will also include a short typed summary of the psychological rationale for the experiment and of the data collected on a minimum of 5 subjects. These data should be analyzed -- at least to the level of condition means and standard deviations -- by another program that is also commented and documented.

In the last two meetings of the class (the final week), each of you will demonstrate your program to the class in a 5-10 minute seminar in the computer room. You will explain why the experiment is interesting, how it works, and what you seem to have found out. To make this possible, all projects must be completed and handed in by 5:00 PM Monday, December 5. The project is worth 30% of the final grade.

Textbook and Readings

The text for this course is *Learn Basic Now* by Michael Halvorson and David Rygmyr (published by Microsoft Press). The book includes on floppy diskettes a full-featured QuickBasic system so that, if you have a machine at home, you can do much of your program development there. The recommended sequence of readings is listed on the next page, although lecture order will not be perfectly coordinated with this order. Please stay on top of the readings or you will have problems following the course.

PSYC58F Syllabus

WEEK	TOPIC	READING
Sep. 13, 15	Introduction to BASIC and the Interpreter; Learning the Hardware	Chap 1 & 2
Sep. 20, 22	PRINT & INPUT, String and Numeric Variables, BASIC Math Operations	Chap 3 & 4
Sep. 27, 29	Decision Making: IF & SELECT CASE	Chap 5
Oct. 4, 6	Loops: FOR...NEXT, WHILE, DO...LOOP; Random Numbers	Chap 6
Oct. 11, 13	SUBs and GOSUBs; READ...DATA; Arrays and Dimensioning	Chap 7 & 8
Oct. 18, 20	Strings and String Functions; Creating and Accessing Sequential Data Files	Chap 9 & 10
Oct. 24	Introduction to Graphics and Sound; Debugging in QuickBasic	Chap 11 & 12
Oct. 27, Nov. 1	Sample Programs and the Elements of Experiments	
Nov. 3	BASIC quiz	
Nov. 8, 10	The History of Computers	
Nov. 15, 17	What is Hardware?	
Nov. 22, 24	What is Software?	
Nov. 29, Dec. 1	Computers and Psychology	
Dec. 6, 8	Project Demonstrations	

Rules for the Use of the Computer Lab (S-316)

The following is a list of rules which we expect **all** users of S-316 to follow at **all** times. Individuals who disregard any of these rules will be immediately denied the privilege of using the facility. Note that there will be no "warning"; the first time a rule is broken, suspension of privileges will occur. If everyone cooperates and follows these very reasonable rules, there should be no problems at all.

1. At no time is there to be any drinking, eating or smoking in this room. All of these substances can seriously damage computers and associated hardware. Please help us to enforce this most reasonable rule by asking others not to violate it.
2. Please leave the area where you worked completely clean. This means that you should recycle all paper and dispose of all garbage when you leave.
3. Under no conditions should students not registered in PSYB01, PSYB02, PSYC34, or PSYC58 be admitted to this room. This is not a general study room; it is a laboratory working area for students in these courses only. The security police will check periodically for ID; please cooperate with them.
4. Keys may be picked up at the front desk in exchange for your student card, and must be returned there. The door is **never** to be left open when you leave the room if you were the only person working there. Please do not hoard the keys; return them and you can pick them up again later. When all keys are checked out, students working in S-316 may admit other students who they recognize to be in one of the four designated courses. If you are not sure, please do not admit the person.
5. **Never** try to repair or otherwise tamper with the computer equipment. Leave a note on the machine if you think there is a problem; we will fix it as soon as possible.
6. Do not tamper with the programs stored on the hard disk (C drive) in these computers. Also no information is to be stored on the hard disk for any reason whatsoever. It is against copyright law to copy the system software from the C drive.
7. When you are leaving, please be sure to leave the system in perfect condition for the next user. This means turning off three power switches -- computer, monitor and printer -- unless someone is waiting in the room to take over that computer.
8. Because this is a laboratory and students will be running experiments that require full attention, please keep talking to a minimum. More generally, please be courteous to the other users at all times. If anyone is disruptive of the working environment, please notify one of the people listed below.

Please report any violations of the above to Dr. Biederman (287-7433), Dr. Bors (7468), Dr. MacLeod (7439), or your Teaching Assistant. Such reports will be handled so as to maintain the reporter's anonymity.