

TEACHING STATEMENT

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TEACHING PHILOSOPHY

My primary goal in teaching is to empower students with self-confidence through the realization that knowledge has been gained and can now be drawn on to solve practical problems. Since computer science is, in my opinion, inherently applied, the ultimate evidence of successful teaching is the students' mastery of the presented material and their ease in its implementation.

I strive to follow two main teaching strategies: (i) maintain focus throughout the course, and (ii) supplement lectures with ample hands-on assignments. My experience has shown me that overwhelming students with a myriad of new material obscures essential concepts. Key ideas should be brought to the forefront as soon as possible and reinforced through practical exercises. I believe the best way of learning is by doing, i.e., there is no better way to fully understand an algorithm than to design and implement the corresponding program.

RESPONSIBILITIES, STRATEGIES, AND OBJECTIVES

My responsibilities have thus far consisted of autonomous instruction of the following courses:

Course	Level	Course Description	Semesters Taught
CPSC 212	U	a course on data structures and algorithms	F06†
CPSC 215	U	a course on C/C++ programming under Unix	S01†
CPSC 241	U	a course on data structures and algorithms	F98
CPSC 405/605	U/G	a course on computer graphics	S99–S02, S04, S06
CPSC 412/612	U/G	an interdisciplinary course on eye tracking methodology	F99†, F00–F08
CPSC 414/614	U/G	an review course on human-computer interaction	S02†–S07
CPSC 481/681	U/G	a course on 3D game programming	S05†
CPSC 805	G	an advanced course on computer graphics	S98, S99, S03, S08
CPSC 808	G	an advanced course on computer animation	S00†
CPSC 815	G	an advanced course on digital effects production	F99†–F03

†Newly developed.

In general, I have chosen a teaching style where initial concepts are presented through the aid of analogy and example. Once received, these lessons are then generalized to abstractions, where appropriate, hence I sometimes start “bottom-up” instead of “top-down”. Further extension and use of abstract notions are then again derived through examples. I emphasize good programming design and good programming habits, and above all, I attempt to motivate students to think logically. I do not shy away from rigor and difficult concepts in the classroom, although this strategy is not always well received by students. I am comfortable with the collection of courses I have developed, particularly my interdisciplinary course on Eye Tracking Methodology, which I teach to students from Psychology, Industrial Engineering,

Marketing, as well as from Computer Science. I also enjoy teaching Computer Graphics at both undergraduate and graduate levels, as well as Human-Computer Interaction. I have utilized the following teaching aids:

- email for instructor-student communication,
- web pages for class notes and assignment distribution,
- liberal use of abstract visualization techniques (i.e., drawings and sketches for data structure depiction),
- demonstration on my laptop in smart classrooms.

STUDENT EVALUATION

I consider student evaluations to be of prime importance to the improvement of my teaching abilities. I encourage student participation in class, and I pay special attention to student comments during and after each course. I am always ready to adapt my teaching style to student feedback. Evaluation questions from the most recent teaching year (with mean responses) are given in Tables 1–5.

Although mean student responses are based on rather small samples (e.g., 1–4 responses), two aspects that appear to be consistently evaluated at a high level by students is the amount of work and its difficulty. This stems largely from my emphasis on project-based learning. My graphics courses, at both undergraduate and graduate levels, contains a large amount of work. My eye tracking course is similarly taxing although it focuses on just one semester-long project.

Table 1: CPSC 805 Student Evaluations

	CPSC 805 Advanced Computer Graphics (data based on three (3/6) responses)	Spring 2008 (class/dept)
1.	The instructor clearly communicated what I was expected to learn.	4.0/4.0
2.	The instructor made the relevance of the course material clear.	3.7/4.1
3.	The course was well organized.	4.0/4.0
4.	There was a positive interaction between the class and the instructor.	4.0/4.2
5.	The instructor's teaching methods helped me understand the course material.	3.3/4.0
6.	The instructor's verbal communication skills helped me understand the course material.	3.3/3.9
7.	The instructor clearly explained what was expected in assignments and tests.	4.0/4.1
8.	The instructor kept me informed about my progress in the course.	4.0/3.9
9.	The feedback . . . on assignments and tests gave me the opportunity to improve . . .	3.3/3.7
10.	Overall, the instructor is an effective teacher.	3.7/4.2
11.	The instructor's grading . . . gave a fair evaluation of my understanding of the material.	3.0/3.9
12.	How much work did you put into this course relative to your other courses?	5.0/4.3
13.	How difficult was this course for you relative to your other courses?	4.0/4.0
14.	To what extent was this course a requirement for you?	4.3/4.0
15.	Was this course in your major?	Y100% N00%
16.	Was this course team-taught?	Y00% N100%
17.	Please indicate your satisfaction with the availability of the instructor outside the classroom by choosing one response from the scale.	3.3/3.7

COURSE EVOLUTION

The three course evaluations presented in this teaching portfolio are, in my opinion, a fairly good reflection of my teaching abilities and preferences, as the course material corresponds with my research interests: eye tracking (CPSC 412/612) and introduction to computer graphics (CPSC 405/605) and advanced computer graphics (CPSC 805). I have omitted evaluation from CPSC 414/614, human-computer interaction, as I have not taught this course recently.

As a result of my Clemson University Innovation and NSF CAREER research awards, I introduced the eye tracking course (CPSC 412/612) in the fall of 1999. I have recently refined both the subject matter for the course as well as

Table 2: CPSC 412 Student Evaluations

	CPSC 412 Eye Tracking Methodology (data based on three (3/4) responses)	Fall 2007 (class/dept)
1.	The instructor clearly communicated what I was expected to learn.	4.0/4.3
2.	The instructor made the relevance of the course material clear.	3.3/4.3
3.	The course was well organized.	3.7/4.1
4.	There was a positive interaction between the class and the instructor.	4.3/4.2
5.	The instructor's teaching methods helped me understand the course material.	3.0/3.7
6.	The instructor's verbal communication skills helped me understand the course material.	3.3/3.9
7.	The instructor clearly explained what was expected in assignments and tests.	3.7/3.8
8.	The instructor kept me informed about my progress in the course.	3.0/3.9
9.	The feedback . . . on assignments and tests gave me the opportunity to improve . . .	3.0/3.7
10.	Overall, the instructor is an effective teacher.	3.7/4.1
11.	The instructor's grading . . . gave a fair evaluation of my understanding of the material.	3.3/3.9
12.	How much work did you put into this course relative to your other courses?	4.7/3.9
13.	How difficult was this course for you relative to your other courses?	4.0/3.6
14.	To what extent was this course a requirement for you?	3.3/4.2
15.	Was this course in your major?	Y67% N33%
16.	Was this course team-taught?	Y33% N67%
17.	Please indicate your satisfaction with the availability of the instructor outside the classroom by choosing one response from the scale.	3.3/3.5

Table 3: CPSC 612 Student Evaluations

	CPSC 612 Eye Tracking Methodology (data based on four (4/7) responses)	Fall 2007 (class/dept)
1.	The instructor clearly communicated what I was expected to learn.	4.8/4.7
2.	The instructor made the relevance of the course material clear.	4.8/4.6
3.	The course was well organized.	4.3/4.6
4.	There was a positive interaction between the class and the instructor.	4.5/4.4
5.	The instructor's teaching methods helped me understand the course material.	4.3/4.2
6.	The instructor's verbal communication skills helped me understand the course material.	4.3/4.3
7.	The instructor clearly explained what was expected in assignments and tests.	4.0/4.6
8.	The instructor kept me informed about my progress in the course.	4.5/3.7
9.	The feedback . . . on assignments and tests gave me the opportunity to improve . . .	4.8/3.8
10.	Overall, the instructor is an effective teacher.	4.3/4.3
11.	The instructor's grading . . . gave a fair evaluation of my understanding of the material.	4.5/4.0
12.	How much work did you put into this course relative to your other courses?	5.0/4.0
13.	How difficult was this course for you relative to your other courses?	4.5/3.8
14.	To what extent was this course a requirement for you?	4.5/4.0
15.	Was this course in your major?	Y25% N75%
16.	Was this course team-taught?	Y00% N100%
17.	Please indicate your satisfaction with the availability of the instructor outside the classroom by choosing one response from the scale.	4.0/3.4

Table 4: CPSC 405 Student Evaluations

	CPSC 405 Introduction to Computer Graphics (data based on two (2/14) responses)	Fall 2007 (class/dept)
1.	The instructor clearly communicated what I was expected to learn.	4.5/4.0
2.	The instructor made the relevance of the course material clear.	4.5/4.3
3.	The course was well organized.	3.5/4.0
4.	There was a positive interaction between the class and the instructor.	4.5/4.2
5.	The instructor's teaching methods helped me understand the course material.	3.0/3.7
6.	The instructor's verbal communication skills helped me understand the course material.	3.0/3.9
7.	The instructor clearly explained what was expected in assignments and tests.	5.0/3.8
8.	The instructor kept me informed about my progress in the course.	4.0/3.9
9.	The feedback . . . on assignments and tests gave me the opportunity to improve . . .	4.5/3.7
10.	Overall, the instructor is an effective teacher.	4.0/4.1
11.	The instructor's grading . . . gave a fair evaluation of my understanding of the material.	4.5/3.9
12.	How much work did you put into this course relative to your other courses?	4.0/3.9
13.	How difficult was this course for you relative to your other courses?	5.0/3.6
14.	To what extent was this course a requirement for you?	2.5/4.2
15.	Was this course in your major?	Y100% N00%
16.	Was this course team-taught?	Y00% N100%
17.	Please indicate your satisfaction with the availability of the instructor outside the classroom by choosing one response from the scale.	3.5/3.5

Table 5: CPSC 605 Student Evaluations

	CPSC 605 Introduction to Computer Graphics (data based on one (1/6) responses)	Fall 2007 (class/dept)
1.	The instructor clearly communicated what I was expected to learn.	5.0/4.7
2.	The instructor made the relevance of the course material clear.	5.0/4.6
3.	The course was well organized.	5.0/4.6
4.	There was a positive interaction between the class and the instructor.	4.0/4.4
5.	The instructor's teaching methods helped me understand the course material.	4.0/4.2
6.	The instructor's verbal communication skills helped me understand the course material.	5.0/4.3
7.	The instructor clearly explained what was expected in assignments and tests.	5.0/4.6
8.	The instructor kept me informed about my progress in the course.	5.0/3.7
9.	The feedback . . . on assignments and tests gave me the opportunity to improve . . .	5.0/3.8
10.	Overall, the instructor is an effective teacher.	4.0/4.3
11.	The instructor's grading . . . gave a fair evaluation of my understanding of the material.	5.0/4.0
12.	How much work did you put into this course relative to your other courses?	5.0/4.0
13.	How difficult was this course for you relative to your other courses?	5.0/3.8
14.	To what extent was this course a requirement for you?	5.0/3.8
15.	Was this course in your major?	Y00% N100%
16.	Was this course team-taught?	Y00% N100%
17.	Please indicate your satisfaction with the availability of the instructor outside the classroom by choosing one response from the scale.	3.0/3.4

my teaching style to reflect the somewhat unusual interdisciplinary makeup of the class. Students from Industrial Engineering, Marketing, and Psychology must form teams such that each team has at least one member from Computer Science. This team assembly reflects my own approach to research, one that to a large extent relies on collaboration. The course is research-oriented, centering on a semester-long experiment culminating in a term paper written by the team and made to resemble a conference publication. Thus the course is run as a small conference, where instead of the final exam, student teams present their papers (in effect, all papers have been “accepted” to the conference following peer review). This approach has been particularly well received by graduate students in the class as some have gone on to publish their results in actual conferences following the conclusion of the class. In fact, the number of publications based on course work appears to be increasing from year to year. One of the best examples of such work was produced by something of an exception to the team-based rule: a sole undergraduate developed the program, designed and conducted the experiment, and created the statistical analysis scripts needed to tabulate the results. He presented the resultant paper at Graphics Interface 2005.

Beyond eye tracking, I also thoroughly enjoy teaching an introduction to computer graphics, CPSC 405/605. One reason some of my evaluation scores are slightly below the Departmental average, I believe, is due to the high difficulty level that I maintain throughout the course. The course may carry a “tough” reputation among students although it appears to attract relatively large audiences. Perhaps my greatest success story thus far is of a student who, at the end of the course, professed that he had finally found “his calling” and that computer graphics was the career direction he was looking for. On my suggestion, he went to SIGGRAPH where he conducted interviews and eventually landed a job at Industrial Light & Magic (ILM) in California. A position at ILM is particularly difficult to obtain, and I am therefore gratified that this student was able to achieve this success. He and his ILM team received an Oscar award for lighting on *Pirates of the Caribbean: Dead Man’s Chest*.

CLOSING STATEMENT

I strongly believe in the dual functions of a university as a research facility as well as an educational institution. I take the responsibility of teaching very seriously and I put forth the best teaching effort that I am capable of at each stage of my professional career. I enjoy teaching and I look forward to improving my effectiveness as an educator.