ISTA 100: Great Ideas of the Information Age

Syllabus

Course Description:
This course introduces the great ideas of the Information Age. These ideas are essential to many disciplines in the sciences, engineering, the humanities and the arts. They should be taught in a way that emphasizes their generality, but rarely are. Consider networks. You probably are familiar with networks of computers and social networks, but how about signaling networks in biological cells, or food webs in ecology? These manifestations of networks matter in their respective fields, so if you learn what they have in common, then you can bridge fields, and become prepared for the interdisciplinary education that is the mission of SISTA – the School of Information: Science, Technology and Arts.

Many of these ideas have mathematical formulations or foundations, yet this is not a mathematics course, and it does not assume a mathematics background beyond high school algebra.

Prerequisite(s):
College algebra recommended.

Units: 3

(1) Instructor information

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(2) Office hours
Office hours with any of the instructors are by appointment and arranged through email. Teaching assistant office hours will be announced in class.

(3) Course Goals and Learning Objectives
The course emphasizes literacy, familiarity and understanding. Mastering the great ideas of the Information Age – implementing them and experimenting with them – is a life’s work, and clearly is not possible in one semester, especially in a course with no programming component. Instead, the lectures, readings and exercises are designed to introduce you to the concepts that most practitioners would consider essential. These concepts will be illustrated in case studies, and you will get to explore them in exercises. Roughly speaking, familiarity get you a passing grade, understanding is required for higher grades.

Course Outline:

The course is divided into five modules. Case studies will be used throughout to illustrate the concepts.


Module 2: Fundamental concepts. Probability (marginal, joint and conditional). Data types/structures. States and similarity.


(4) **Course Information Resources**

All the readings for the course will be made available through the course website:  
[http://www.sista.arizona.edu/classes/ista100/spring12/](http://www.sista.arizona.edu/classes/ista100/spring12/)  
as well as the course Desire2Learn (D2L) webpage (linked from the main course page).

The principle readings for the class are a book currently being written by Dr. Paul Cohen,  
Director of SISTA, entitled: Great Ideas of the Information Age (GIIA). Other readings  
will also be assigned and will be available through the course website.

(5) **Grades and Grading Policies**

One hundred points are available from assignments and exams and other required  
elements of the class. Additional points are possible through extra credit. The main  
categories of work are as follows:

- Eight assignments, each worth 5 points (total of 40 points). Some assignment grades  
  may be replaced with quiz grades (see below).
- Two midterms, each worth 15 points.
- One comprehensive final, worth 25 points.
- Attendance at two SISTA Colloquia, minimum, worth 5 points.

**Quizzes:**  
Occasionally, quizzes will be given *in class*, and will cover the same content as an  
associated assignment. At the end of the course, students may elect to replace up to  
half of their assignment grades with their grade for the associated quiz.

**Colloquium:**  
The SISTA Colloquium Series features researchers from all over campus talking about  
computational aspects of their various disciplines. Last year we heard from biologists,  
psychologists, anthropologists, geographers, and many others. To get credit for  
attending the colloquium, you will out a card provided at the talk. The colloquia are  
held each Monday (starting late September and running through early December) from  
noon to 1pm. If your schedule does not permit attending two colloquia, you will need to  
complete an additional assignment to earn 5 points. The 2 colloquia attendance cards  
or additional assignment must be submitted by the last day of class: May 2. No credit  
will be applied after this date, no exceptions.

**Extra Credit:**  
Students can earn 5 points of extra credit by either participating in a SISTA human  
subjects experiment, or an alternative assignment involving reading and writing.  
Students can do one or the other, and only one time for credit. Certification of  
participating in an experiment or the extra credit write-up must be submitted by the last  
day of class: May 2. No credit will be applied after this date, no exceptions.
**Late work policy:**
Late assignments lose one point each day they are late; after five days the lose all value.

**Exams:**
Exam formats will be reasonably consistent throughout the semester. Exams will be open-book and open-notes, and will consist primarily of short answer and problem-solving questions. The use of calculators or other electronic devices is not permitted and will not be necessary.

Students are expected to take the exams at the announced exam times. We give make-up exams only in *extreme* circumstances. We decide if a circumstance is extreme.

**Final grade assignment:**
After all points are accumulated, 90 points or more guarantees an A, 80 – 89 points guarantees at least a B, 68 – 79 points guarantees at least a C, and 56 – 67 points guarantees at least a D. 55 points or lower may result in a grade of E.

(6) **Absence Policy**
Students are expected to attend class. If important circumstances prevent this, it is the student’s responsibility to find out what was covered in class, what was assigned for reading or homework, and what special announcements (if any) were made. If you are unable to make an exam time due to extenuating circumstances, the instructor must be contacted in advance to verify that alternative arrangements are justified.

All holidays or special events observed by organized religions will be honored for those students who show affiliation with that particular religion. See Accommodation of Religious Observance and Practice:

http://deanofstudents.arizona.edu/religiousobservanceandpractice

Absences pre-approved by the UA Dean of Students (or Dean’s designee) will be honored.

(7) **Policies on expected classroom behavior**

**Classroom Behavior:**
*Please be considerate:* Please disable your cellphone/pager ringer. If you get an urgent call, please leave the lecture hall to conduct it. Please do not play computer games, check your email, surf the web, text your friends, read the paper, chatter at length with fellow students, etc. If you don’t want to listen to the lecture and participate in classroom discussions, please leave the lecture hall.

*Asking Questions:* During class, feel free to interrupt with questions whenever they occur to you. We may ask you to hold off on your question for a few moments if
we’re in the middle of an explanation, but we’ll come back to you. If we forget, interrupt again.

*Answering Questions*: We frequently ask questions of the class during lectures to judge the level of understanding (and to break up the monotony). Some students really like answering questions, sometimes to the point of discouraging anyone else from answering. If you are an eager answerer, pace yourself; let someone else answer an easy one once in a while, and save the hard ones for yourself.

The regulations in the Student Code of Conduct and Code of Academic Integrity prohibit all forms of student academic dishonesty, including but not limited to cheating, fabrication, and plagiarism. Violations can result in serious penalties, including expulsion from the University.

(8) **Policies against plagiarism**
Students are bound by the Code of Academic Integrity:  
[http://catalog.arizona.edu/policies/974/acacode.htm](http://catalog.arizona.edu/policies/974/acacode.htm)  
This codes prohibits all forms of student academic dishonesty, including but not limited to cheating, fabrication, and plagiarism. Violations can result in serious penalties, including expulsion from the University.

Exams and written assignment must be the sole work of the student (or student team). Students may help each other with the problem analysis and general strategies relevant to the programming assignments, but detailed help or code sharing is not permitted. All code in programming assignments will be assumed to have been written by the student (or student team) unless attribution is given. An obvious exception to this rule is sample code which has been provided by the instructor for this course through the course web page tree. Such code does not require attribution (we know where it came from). It is also permissible to include *with attribution* code from external sources provided that the code is published and open source, has not been solicited, and was not written for course requirement for this or a similar course given elsewhere.

(9) **Policies against threatening behavior.**
The Student Code of Conduct (5-308.F.11) dictates that no person or organization may interfere with or threaten University-sponsored classroom activities. The following link provides details about the policy:  
[http://web.arizona.edu/~policy/threaten.shtml](http://web.arizona.edu/~policy/threaten.shtml)

(10) **Required or Special Materials**
None.

(11) **Notice of Potentially Offensive Material**
None.
(12) Notice to students with disabilities

Students with disabilities, who may require academic adjustments or reasonable accommodations in order to participate fully in course activities or to meet course requirements, must first register with the Disability Resource Center, 1540 E 2nd St, 621-3268, email drc@w3.arizona.edu, URL http://drc.arizona.edu.

DRC staff will qualify students for services, and provide a letter to the instructor listing accommodations to be made. This letter should be submitted by the student directly to the instructor as soon as possible during the first week of classes.

The student should meet as soon as possible with the instructor by appointment or during office hours to discuss accommodations and how course requirements and activities may impact your ability to fully participate.

(13) Miscellaneous University of Arizona Policies:

On Dropping a Class:

Fall 2011 Dates and Deadlines:

http://www.em.arizona.edu/datesDeadlines/DatesDeadlines.aspx

If you find yourself thinking of dropping this (or any other) class, first make sure that is what you want to do. Talk with the instructor or your academic advisor. If you drop within the first four weeks of the semester, there is not notation on your transcript; it will be as though you’d never enrolled (although see the link above re. fees). During the fifth through eighth weeks, a drop will be recorded on your transcript. You will receive a “WP” (withdrawn passing) only if you were passing the class at the time of your drop. After the eighth week, dropping becomes a challenge, because you need to explain to the instructor and to the Dean why you were unable to drop the class during the first half of the semester.

Grades of ‘Incomplete’:  

Office of Curriculum and Registration Grading Policy Manual:

http://www.registrar.arizona.edu/gradepolicy/incomplete.htm

UA General Catalog’s Grades and the Grading System:

http://catalog.arizona.edu/2011-12/policies/grade.htm

The university’s course catalog contains all of the details about incompletes, but here’s the key sentence:

“The grade of I may be awarded only at the end of the term, when all but a minor portion of the course work has been satisfactorily completed.”

To qualify for an incomplete, a student must have maintained a passing grade for the class until the term is nearly complete, and then, due to an unusual and substantiated cause beyond the student’s control, the student is unable to complete the class work. In short, you can’t get an ‘I’ just because you aren’t happy with your grade.
(14) "Subject to Change" Statement

The instructor reserves the right to change with advance notice where appropriate the content of the course. This right does not apply to posted grading, absence policies or items 5 through 13 above.