

Course Schedule - Fall 2008

Computer Science

100 **Freshman Orientation** credit: 1 hours.

Introduction to Computer Science as a field and career for computer science majors. Overview of the field is presented along with specific examples of problem areas and methods of solution. Recommended for all freshman Computer Science majors.

| CRN | Type | Section | Time | Days | Location | Instructor |
|---|---------|---------|---------------------|------|---------------------------------------|------------|
| 30094 | lecture | U | 04:00 PM - 04:50 PM | T | room 1320 Digital Computer Laboratory | Pitt, L |
| 30094: Meets 07-Oct-08 - 10-Dec-08. | | | | | | |
| 30094: This course is for freshmen students, only. This course first meets on Tuesday, October 7, 2008. | | | | | | |

101 **Intro Computing: Engrg & Sci** credit: 3 hours.

Fundamental principles, concepts, and methods of computing, with emphasis on applications in the physical sciences and engineering. Basic problem solving and programming techniques; fundamental algorithms and data structures; use of computers in solving engineering and scientific problems. Intended for engineering and science majors. Credit is not given for both CS 101 and CS 105. Prerequisite: MATH 220 or MATH 221.

This course satisfies the General Education Criteria for a Quant Reasoning II course.

Students must register for one lab-discussion and one lecture section. Engineering students must obtain a dean's approval to drop this course after the second week of instruction.

| CRN | Type | Section | Time | Days | Location | Instructor |
|-----------------------------------|-----------------------|---------|---------------------|------|---------------------------------------|------------------------|
| 35879 | lecture | AL1 | 01:00 PM - 01:50 PM | MW | room 114 David Kinley Hall | Gambill, T |
| 35879: Quant Reasoning II course. | | | | | | |
| 35883 | lecture | AL2 | 02:00 PM - 02:50 PM | MW | room 114 David Kinley Hall | Gambill, T |
| 35883: Quant Reasoning II course. | | | | | | |
| 35886 | laboratory-discussion | AYA | 09:00 AM - 10:50 AM | M | room L520 Digital Computer Laboratory | Gambill, T; Lopes, V |
| 35886: Quant Reasoning II course. | | | | | | |
| 35889 | laboratory-discussion | AYB | 11:00 AM - 12:50 PM | M | room L520 Digital Computer Laboratory | Gambill, T; Popescu, A |
| 35889: Quant Reasoning II course. | | | | | | |
| 35890 | laboratory- | AYC | 03:00 PM - 04:50 | M | room L520 Digital | Gambill, T; Fister, A |

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| | discussion | | PM | | Computer Laboratory | |
| 35890: Quant Reasoning II course. | | | | | | |
| 35893 | laboratory-discussion | AYD | 09:00 AM - 10:50 AM | T | room L520 Digital Computer Laboratory | Gambill, T; Lopes, V |
| 35893: Quant Reasoning II course. | | | | | | |
| 35896 | laboratory-discussion | AYE | 03:00 PM - 04:50 PM | T | room L520 Digital Computer Laboratory | Gambill, T; Fister, A |
| 35896: Quant Reasoning II course. | | | | | | |
| 35899 | laboratory-discussion | AYF | 09:00 AM - 10:50 AM | W | room L520 Digital Computer Laboratory | Gambill, T; Sodhi, R |
| 35899: Quant Reasoning II course. | | | | | | |
| 35902 | laboratory-discussion | AYG | 11:00 AM - 12:50 PM | W | room L520 Digital Computer Laboratory | Gambill, T; Sodhi, R |
| 35902: Quant Reasoning II course. | | | | | | |
| 35907 | laboratory-discussion | AYH | 03:00 PM - 04:50 PM | W | room L520 Digital Computer Laboratory | Gambill, T; Sodhi, R |
| 35907: Quant Reasoning II course. | | | | | | |
| 35910 | laboratory-discussion | AYI | 01:00 PM - 02:50 PM | R | room L520 Digital Computer Laboratory | Gambill, T; Fister, A |
| 35910: Quant Reasoning II course. | | | | | | |
| 35913 | laboratory-discussion | AYJ | 03:00 PM - 04:50 PM | R | room L520 Digital Computer Laboratory | Gambill, T; Yu, X |
| 35913: Quant Reasoning II course. | | | | | | |
| 35915 | laboratory-discussion | AYK | 10:00 AM - 11:50 AM | F | room L520 Digital Computer Laboratory | Gambill, T; Sodhi, R |
| 35915: Quant Reasoning II course. | | | | | | |
| 35918 | laboratory-discussion | AYL | 12:00 PM - 01:50 PM | F | room L520 Digital Computer Laboratory | Gambill, T; Popescu, A |
| 35918: Quant Reasoning II course. | | | | | | |

105 **Intro Computing: Non-Tech** credit: 3 hours.

Introduction to computing as an essential tool of academic and professional activities. Functions and interrelationships of computer system components: hardware, systems and applications software, and networks. Widely used application packages such as spreadsheets and databases. Concepts and practice of programming for the solution of simple problems in different application areas. Intended for non-science and non-engineering majors. Credit is not given for both CS 105 and CS 101. Prerequisite: MATH 012.

This course satisfies the General Education Criteria for a Quant Reasoning I course.

Students must register for one lab-discussion and one lecture section.

| CRN | Type | Section | Time | Days | Location | Instructor |
|----------------------------------|-----------------------|---------|---------------------|------|------------------------|--|
| 35823 | lecture | AL1 | 09:00 AM - 09:50 AM | MW | room 66 Library - Main | Gambill, T; Woodbury, M |
| 35823: Quant Reasoning I course. | | | | | | |
| 35824 | lecture | AL2 | 10:00 AM - 10:50 AM | MW | room 66 Library - Main | Gambill, T; Woodbury, M |
| 35824: Quant Reasoning I course. | | | | | | |
| 35825 | lecture | AL3 | 11:00 AM - 11:50 AM | MW | room 66 Library - Main | Gambill, T; Woodbury, M |
| 35825: Quant Reasoning I course. | | | | | | |
| 35826 | lecture | AL4 | 12:00 PM - 12:50 PM | MW | room 66 Library - Main | Gambill, T; Woodbury, M |
| 35826: Quant Reasoning I course. | | | | | | |
| 47174 | laboratory-discussion | AYA | 03:00 PM - 03:50 PM | W | room 70B Wohlers Hall | Gambill, T; Woodbury, M; Lin, C |
| 47174: Quant Reasoning I course. | | | | | | |
| 35827 | laboratory-discussion | AYB | 04:00 PM - 04:50 PM | W | room 70B Wohlers Hall | Gambill, T; Woodbury, M; Lin, C |
| 35827: Quant Reasoning I course. | | | | | | |
| 35828 | laboratory-discussion | AYC | 05:00 PM - 05:50 PM | W | room 70B Wohlers Hall | Gambill, T; Woodbury, M; Wang, S |
| 35828: Quant Reasoning I course. | | | | | | |
| 35847 | laboratory-discussion | AYD | 06:00 PM - 06:50 PM | W | room 70B Wohlers Hall | Gambill, T; Woodbury, M; Wang, S |
| 35847: Quant Reasoning I course. | | | | | | |
| 35831 | laboratory-discussion | AYE | 09:00 AM - 09:50 AM | R | room 70B Wohlers Hall | Gambill, T; Woodbury, M; Bongen, K |
| 35831: Quant Reasoning I course. | | | | | | |

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| 35832 | laboratory-discussion | AYF | 10:00 AM - 10:50 AM | R | room 70B Wohlers Hall | Gambill, T; Woodbury, M; Yu, M |
| 35832: Quant Reasoning I course. | | | | | | |
| 35833 | laboratory-discussion | AYG | 11:00 AM - 11:50 AM | R | room 70B Wohlers Hall | Gambill, T; Woodbury, M; Yu, M |
| 35833: Quant Reasoning I course. | | | | | | |
| 35835 | laboratory-discussion | AYH | 12:00 PM - 12:50 PM | R | room 70B Wohlers Hall | Gambill, T; Woodbury, M; Yasmeen, A |
| 35835: Quant Reasoning I course. | | | | | | |
| 35836 | laboratory-discussion | AYI | 01:00 PM - 01:50 PM | R | room 70B Wohlers Hall | Gambill, T; Woodbury, M; Jiang, P |
| 35836: Quant Reasoning I course. | | | | | | |
| 35837 | laboratory-discussion | AYJ | 02:00 PM - 02:50 PM | R | room 70B Wohlers Hall | Gambill, T; Woodbury, M; Bongen, K |
| 35837: Quant Reasoning I course. | | | | | | |
| 35838 | laboratory-discussion | AYK | 03:00 PM - 03:50 PM | R | room 70B Wohlers Hall | Gambill, T; Woodbury, M; Jiang, P |
| 35838: Quant Reasoning I course. | | | | | | |
| 35840 | laboratory-discussion | AYL | 04:00 PM - 04:50 PM | R | room 70B Wohlers Hall | Gambill, T; Woodbury, M; Pham, C |
| 35840: Quant Reasoning I course. | | | | | | |
| 35843 | laboratory-discussion | AYM | 05:00 PM - 05:50 PM | R | room 70B Wohlers Hall | Gambill, T; Woodbury, M; Pham, C |
| 35843: Quant Reasoning I course. | | | | | | |
| 47175 | laboratory-discussion | AYN | 09:00 AM - 09:50 AM | F | room 70B Wohlers Hall | Gambill, T; Woodbury, M; Zhao, B |
| 47175: Quant Reasoning I course. | | | | | | |
| 35851 | laboratory-discussion | AYO | 10:00 AM - 10:50 AM | F | room 70B Wohlers Hall | Gambill, T; Woodbury, M; Zhao, B |
| 35851: Quant Reasoning I course. | | | | | | |
| 35854 | laboratory-discussion | AYP | 11:00 AM - 11:50 AM | F | room 70B Wohlers Hall | Gambill, T; Woodbury, M; Grauman, T |

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| 35854: Quant Reasoning I course. | | | | | | |
| 35856 | laboratory-discussion | AYQ | 12:00 PM - 12:50 PM | F | room 70B Wohlers Hall | Gambill, T; Woodbury, M; Grauman, T |
| 35856: Quant Reasoning I course. | | | | | | |
| 35858 | laboratory-discussion | AYR | 01:00 PM - 01:50 PM | F | room 70B Wohlers Hall | Gambill, T; Woodbury, M; Rahmaniheris, M |
| 35858: Quant Reasoning I course. | | | | | | |
| 35873 | laboratory-discussion | AYS | 02:00 PM - 02:50 PM | F | room 70B Wohlers Hall | Gambill, T; Woodbury, M; Rahmaniheris, M |
| 35873: Quant Reasoning I course. | | | | | | |
| 47176 | laboratory-discussion | AYT | 03:00 PM - 03:50 PM | F | room 70B Wohlers Hall | Gambill, T; Woodbury, M; Lee, Y |
| 47176: Quant Reasoning I course. | | | | | | |
| 47178 | laboratory-discussion | AYU | 04:00 PM - 04:50 PM | F | room 70B Wohlers Hall | Gambill, T; Woodbury, M; Lee, Y |
| 47178: Quant Reasoning I course. | | | | | | |

125 **Intro to Computer Science** credit: 4 hours.

Introduces basic concepts in computing and fundamental techniques for solving computational problems. Intended as a first course for computer science majors and others with a deep interest in computing. Credit is not given for both CS 125 and ECE 190. Prerequisite: Three years of high school mathematics or MATH 012.

This course satisfies the General Education Criteria for a Quant Reasoning I course.

Students must register for one lab-discussion and one lecture section. Engineering students must obtain a dean's approval to drop this course after the second week of instruction.

| CRN | Type | Section | Time | Days | Location | Instructor |
|----------------------------------|-----------------------|---------|---------------------|------|--|-------------------------------|
| 35876 | lecture | AL1 | 02:00 PM - 02:50 PM | MWF | room 100 Materials Science and Eng Bld | Zilles, C; Angrave, L |
| 35876: Quant Reasoning I course. | | | | | | |
| 35881 | laboratory-discussion | AYA | 09:00 AM - 10:50 AM | T | room 1214 Siebel Center for Comp Sci | Zilles, C |
| 35881: Quant Reasoning I course. | | | | | | |
| 35885 | laboratory-discussion | AYB | 11:00 AM - 12:50 PM | T | room 1214 Siebel Center for Comp Sci | Zilles, C; Angrave, L; Lee, Y |

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| 35885: Quant Reasoning I course. | | | | | | |
| 35888 | laboratory-discussion | AYC | 01:00 PM - 02:50 PM | T | room 1214 Siebel Center for Comp Sci | Zilles, C; Rho, E; Angrave, L |
| 35888: Quant Reasoning I course. | | | | | | |
| 35891 | laboratory-discussion | AYD | 03:00 PM - 04:50 PM | T | room 1214 Siebel Center for Comp Sci | Zilles, C; Asghari, H; Angrave, L |
| 35891: Quant Reasoning I course. | | | | | | |
| 35898 | laboratory-discussion | AYE | 09:00 AM - 10:50 AM | W | room 1214 Siebel Center for Comp Sci | Zilles, C; Angrave, L |
| 35898: Quant Reasoning I course. | | | | | | |
| 35901 | laboratory-discussion | AYF | 11:00 AM - 12:50 PM | W | room 1214 Siebel Center for Comp Sci | Zilles, C; Aktemur, T; Angrave, L |
| 35901: Quant Reasoning I course. | | | | | | |
| 35904 | laboratory-discussion | AYG | 03:00 PM - 04:50 PM | W | room 1214 Siebel Center for Comp Sci | Zilles, C; Angrave, L; Akce, A |
| 35904: Quant Reasoning I course. | | | | | | |
| 51468 | laboratory-discussion | BD1 | 11:00 AM - 11:50 AM | WF | room 1131 Siebel Center for Comp Sci | Zilles, C; Angrave, L; Akce, A |
| 51468: Quant Reasoning I course. | | | | | | |
| 51468: This section for students who already have some programming experience and who are interested in a broader introduction to computer science. | | | | | | |
| 35878 | lecture | BL1 | 10:00 AM - 10:50 AM | MWF | room 1131 Siebel Center for Comp Sci | Zilles, C; Angrave, L |
| 35878: Quant Reasoning I course. | | | | | | |
| 35878: This section for students who already have some programming experience and who are interested in a broader introduction to computer science. | | | | | | |

173 **Discrete Structures** credit: 3 hours.

Examines discrete mathematical structures frequently encountered in the study of Computer Science. Topics will include sets, propositions, boolean algebra, induction, recursion, relations, functions, and graphs. Credit is not given for both CS 173 and MATH 213.

Students must register for a lecture and discussion section.

| CRN | Type | Section | Time | Days | Location | Instructor |
|-----|------|---------|------|------|----------|------------|
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|-------|-----------------------|-----|---------------------|-----|--------------------------------------|---|
| 51495 | discussion-recitation | AD1 | 12:00 PM - 12:50 PM | M | room 1111 Siebel Center for Comp Sci | Shaffer, E; Fleck, M |
| 51496 | discussion-recitation | AD2 | 01:00 PM - 01:50 PM | M | room 1111 Siebel Center for Comp Sci | Shaffer, E; Tovar, B; Fleck, M |
| 51497 | discussion-recitation | AD3 | 02:00 PM - 02:50 PM | M | room 1111 Siebel Center for Comp Sci | Shaffer, E; Tovar, B; Fleck, M; Mansky, W |
| 51498 | discussion-recitation | AD4 | 03:00 PM - 03:50 PM | M | room 1111 Siebel Center for Comp Sci | Shaffer, E; Tovar, B; Fleck, M; Mansky, W |
| 51499 | discussion-recitation | AD5 | 09:00 AM - 09:50 AM | T | room 1111 Siebel Center for Comp Sci | Shaffer, E; Pittman, L; Fleck, M |
| 51500 | discussion-recitation | AD6 | 10:00 AM - 10:50 AM | T | room 1111 Siebel Center for Comp Sci | Shaffer, E; Pittman, L; Fleck, M |
| 30102 | lecture | AL1 | 11:00 AM - 11:50 AM | MWF | room 1404 Siebel Center for Comp Sci | Shaffer, E; Fleck, M |

196 **Freshman Honors** credit: 1 hours.

Offered for honors credit in conjunction with other 100-level computer science courses taken concurrently. A special examination may be required for admission to this course. May be repeated. Prerequisite: Concurrent registration in another 100-level computer science course (see Schedule).

| CRN | Type | Section | Time | Days | Location | Instructor |
|--|--------------------|---------|----------|------|-------------------------------------|-----------------------|
| 31507 | lecture-discussion | 1 | ARRANGED | | room ARR Siebel Center for Comp Sci | Gambill, T |
| 31507: SECTION 1 is for students registered in CS 101 | | | | | | |
| 31508 | lecture-discussion | 25 | ARRANGED | | room ARR Siebel Center for Comp Sci | Zilles, C; Angrave, L |
| 31508: SECTION 25 is for students registered in CS 125 | | | | | | |
| 31510 | lecture-discussion | 73 | ARRANGED | | room ARR Siebel Center for Comp Sci | Shaffer, E; Fleck, M |
| 31510: SECTION 73 is for students registered in CS 173 | | | | | | |

210 **Ethical & Professional Issues** credit: 2 hours.

Ethics for the computing profession. Ethical decision-making; licensing; intellectual property, freedom of information,

and privacy. Includes oral presentations. Credit is not given for both CS 210 and ECE 316. Junior standing required. Prerequisite: CS 225.

| CRN | Type | Section | Time | Days | Location | Instructor |
|-------|--------------------|---------|---------------------|------|--------------------------------------|------------------------|
| 31516 | lecture-discussion | 1 | 12:00 PM - 01:50 PM | M | room 1103 Siebel Center for Comp Sci | Woodbury, M; Krauss, D |
| 31517 | lecture-discussion | 2 | 03:00 PM - 04:50 PM | M | room 1103 Siebel Center for Comp Sci | Woodbury, M; Krauss, D |
| 43359 | lecture-discussion | 3 | 02:00 PM - 03:50 PM | W | room 1103 Siebel Center for Comp Sci | Woodbury, M; Krauss, D |
| 43360 | lecture-discussion | 4 | 05:00 PM - 06:50 PM | W | room 1103 Siebel Center for Comp Sci | Woodbury, M; Krauss, D |

225 **Data Structures** credit: 4 hours.

Data abstractions: elementary data structures: lists, stacks, queues, trees; searching and sorting techniques. Introduction to the principles of software engineering including term programming project. Prerequisite: CS 125 or ECE 190; CS 173 or MATH 213.

This course satisfies the General Education Criteria for a Quant Reasoning II course.

Students must register for one lecture-discussion and one lecture section.

| CRN | Type | Section | Time | Days | Location | Instructor |
|-----------------------------------|-----------------------|---------|---------------------|------|---------------------------------------|----------------------|
| 35917 | lecture | AL1 | 12:00 PM - 12:50 PM | MWF | room 1404 Siebel Center for Comp Sci | Heeren, C |
| 35917: Quant Reasoning II course. | | | | | | |
| 35919 | lecture | AL2 | 01:00 PM - 01:50 PM | MWF | room 1404 Siebel Center for Comp Sci | Heeren, C |
| 35919: Quant Reasoning II course. | | | | | | |
| 35923 | laboratory-discussion | AYA | 01:00 PM - 02:50 PM | W | room L440 Digital Computer Laboratory | Heeren, C; Hoodin, D |
| 35923: Quant Reasoning II course. | | | | | | |
| 35944 | laboratory-discussion | AYC | 09:00 AM - 10:50 AM | R | room L440 Digital Computer Laboratory | Heeren, C; Shali, A |
| 35944: Quant Reasoning II course. | | | | | | |

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|-----------------------------------|-----------------------|-----|---------------------|---|---------------------------------------|------------------------------------|
| 35947 | laboratory-discussion | AYD | 11:00 AM - 12:50 PM | R | room L440 Digital Computer Laboratory | Heeren, C; Stocker, C |
| 35947: Quant Reasoning II course. | | | | | | |
| 35950 | laboratory-discussion | AYE | 01:00 PM - 02:50 PM | R | room L440 Digital Computer Laboratory | Heeren, C; Stocker, C |
| 35950: Quant Reasoning II course. | | | | | | |
| 35952 | laboratory-discussion | AYF | 03:00 PM - 04:50 PM | R | room L440 Digital Computer Laboratory | Heeren, C; Stocker, C |
| 35952: Quant Reasoning II course. | | | | | | |
| 35954 | laboratory-discussion | AYG | 09:00 AM - 10:50 AM | F | room L440 Digital Computer Laboratory | Heeren, C; Seith, S |
| 35954: Quant Reasoning II course. | | | | | | |
| 35956 | laboratory-discussion | AYH | 11:00 AM - 12:50 PM | F | room L440 Digital Computer Laboratory | Heeren, C; Seith, S |
| 35956: Quant Reasoning II course. | | | | | | |
| 35959 | laboratory-discussion | AYI | 01:00 PM - 02:50 PM | F | room L440 Digital Computer Laboratory | Heeren, C; Hoodin, D |
| 35959: Quant Reasoning II course. | | | | | | |
| 35960 | laboratory-discussion | AYJ | 03:00 PM - 04:50 PM | F | room L440 Digital Computer Laboratory | Heeren, C; Zilouchian Moghaddam, R |
| 35960: Quant Reasoning II course. | | | | | | |

231 **Computer Architecture I** credit: 3 hours.

Introduction to computer architecture, working up from the logic gate level: combinational and sequential networks; computer arithmetic; arithmetic/logic units; memory organization; control unit design. Credit is not given for both CS 231 and ECE 290. Prerequisite: CS 125.

This course satisfies the General Education Criteria for a Quant Reasoning II course.

| CRN | Type | Section | Time | Days | Location | Instructor |
|--|---------|---------|---------------------|------|--------------------------------------|------------|
| 30105 | lecture | X | 09:00 AM - 09:50 AM | MW | room 1404 Siebel Center for Comp Sci | Kale, L |
| 30105: Quant Reasoning II course. | | | | | | |
| 30105: A review session will be held each week at 9:00 on Friday, 1404 Siebel Center. Students should adjust | | | | | | |

their schedule accordingly.

232 Computer Architecture II credit: 3 hours.

Second-level course in computer architecture. Machine-level programming, instruction sets, data representations; subroutines; input/output hardware and software; linking and loading; relation to high-level languages. Credit is not given for both CS 232 and ECE 390. (Counts for advanced hours in LAS.) Prerequisite: CS 231.

Students must register for one lab and one lecture section.

| CRN | Type | Section | Time | Days | Location | Instructor |
|-------|------------|---------|---------------------|------|--------------------------------------|--|
| 35978 | laboratory | AB2 | 11:00 AM - 11:50 AM | M | room 1214 Siebel Center for Comp Sci | Garzaran, M; Guzman Rivera, A; Cunningham, R |
| 35968 | laboratory | AB3 | 12:00 PM - 12:50 PM | M | room 1214 Siebel Center for Comp Sci | Garzaran, M; Guzman Rivera, A; Cunningham, R |
| 35971 | laboratory | AB4 | 01:00 PM - 01:50 PM | M | room 1214 Siebel Center for Comp Sci | Garzaran, M; Guzman Rivera, A; Cunningham, R |
| 35979 | laboratory | AB5 | 02:00 PM - 02:50 PM | M | room 1214 Siebel Center for Comp Sci | Garzaran, M; Guzman Rivera, A; Cunningham, R |
| 35963 | lecture | AL1 | 02:00 PM - 02:50 PM | WF | room 1404 Siebel Center for Comp Sci | Garzaran, M |

241 System Programming credit: 4 hours.

Covers the basics of system programming, including POSIX processes, process control, inter-process communication, synchronization, signals, simple memory management, file I/O and directories, shell programming, socket network programming, RPC programming in distributed systems, basic security mechanisms, and standard tools for systems programming such as debugging tools. Credit is not given for both CS 241 and ECE 391. Prerequisite: CS 225; credit or concurrent registration in CS 232.

Students must register for one lecture and one discussion section.

| CRN | Type | Section | Time | Days | Location | Instructor |
|-------|-----------------------|---------|---------------------|------|--------------------------------------|--------------------------------|
| 51471 | discussion-recitation | AD1 | 10:00 AM - 10:50 AM | R | room 1111 Siebel Center for Comp Sci | Kravets, R; Chen, L; Gupta, I |
| 51472 | discussion-recitation | AD2 | 11:00 AM - 11:50 AM | R | room 1111 Siebel Center for Comp Sci | Kravets, R; Gupta, I; Fagen, W |
| 51473 | discussion-recitation | AD3 | 12:00 PM - 12:50 PM | R | room 1111 Siebel Center for Comp Sci | Kravets, R; Gupta, I; Fagen, W |

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|-------|-----------------------|-----|---------------------|-----|---------------------------------------|------------------------------------|
| 51474 | discussion-recitation | AD4 | 01:00 PM - 01:50 PM | R | room 1111 Siebel Center for Comp Sci | Kravets, R; Gupta, I |
| 51475 | discussion-recitation | AD5 | 02:00 PM - 02:50 PM | R | room 1111 Siebel Center for Comp Sci | Kravets, R; Chen, L; Gupta, I |
| 51476 | discussion-recitation | AD6 | 03:00 PM - 03:50 PM | R | room 1111 Siebel Center for Comp Sci | Kravets, R; Gupta, I; Gutierrez, A |
| 51477 | discussion-recitation | AD7 | 04:00 PM - 04:50 PM | R | room 1111 Siebel Center for Comp Sci | Kravets, R; Gupta, I; Gutierrez, A |
| 45300 | lecture | AL1 | 10:00 AM - 10:50 AM | MWF | room 1310 Digital Computer Laboratory | Kravets, R; Gupta, I |

242 **Programming Studio** credit: 3 hours.

Intensive programming lab intended to strengthen skills in programming. Prerequisite: CS 241.

| CRN | Type | Section | Time | Days | Location | Instructor |
|-------|------------|---------|---------------------|------|--------------------------------------|--|
| 45328 | laboratory | AB1 | ARRANGED | | room ARR Siebel Center for Comp Sci | Svensson, C; Woodley, M; Ramachandran, C; Kiyak, F |
| 45325 | lecture | AL1 | 03:00 PM - 03:50 PM | M | room 1404 Siebel Center for Comp Sci | Woodley, M |

257 **Numerical Methods** credit: 3 hours.

Floating-point computation, systems of linear equations, approximation of functions and integrals, the single nonlinear equation, and the numerical solution of ordinary differential equations; various applications in science and engineering; includes some programming as well as the use of high quality mathematical library routines. Intended for students in science and engineering. Same as MATH 257. Credit is not given if CS 450 credit has already been earned. (Counts for advanced hours in LAS.) Prerequisite: CS 101 or CS 125; MATH 225 or MATH 415; MATH 241.

This course satisfies the General Education Criteria for a Quant Reasoning II course.

| CRN | Type | Section | Time | Days | Location | Instructor |
|-----------------------------------|--------------------|---------|---------------------|------|--------------------------------------|------------|
| 36131 | lecture-discussion | M | 09:30 AM - 10:45 AM | TR | room 1404 Siebel Center for Comp Sci | Olson, L |
| 36131: Quant Reasoning II course. | | | | | | |

296 **Honors Course** credit: 1 hours.

Group projects for honors credit in computer science. Sections of this course are offered in conjunction with other 200-level computer science courses taken concurrently. A special examination may be required for admission to this course. May be repeated. Prerequisite: Concurrent registration in another 200-level computer science course (see Schedule).

| CRN | Type | Section | Time | Days | Location | Instructor |
|--|--------------------|---------|----------|------|-------------------------------------|-------------|
| 31518 | lecture-discussion | 25 | ARRANGED | | room ARR Siebel Center for Comp Sci | Heeren, C |
| 31518: Section 25 is for students registered in CS 225 | | | | | | |
| 31519 | lecture-discussion | 31 | ARRANGED | | room ARR Siebel Center for Comp Sci | Kale, L |
| 31519: Section 31 is for students registered is CS 231 | | | | | | |
| 31520 | lecture-discussion | 32 | ARRANGED | | room ARR Siebel Center for Comp Sci | Garzaran, M |
| 31520: Section 32 is for students registered in CS 232 | | | | | | |
| 31521 | lecture-discussion | 57 | ARRANGED | | room ARR Siebel Center for Comp Sci | Olson, L |
| 31521: Section 57 is for students registered in CS 257 | | | | | | |

373 **Theory of Computation** credit: 3 hours.

Finite automata and regular languages; pushdown automata and context-free languages; Turing machines and recursively enumerable sets; computability and the halting problem; undecidable problems. Prerequisite: CS 173 or MATH 213; CS 225.

This course satisfies the General Education Criteria for a Quant Reasoning II course.

Students must register for one lecture and one discussion section.

| CRN | Type | Section | Time | Days | Location | Instructor |
|-----------------------------------|-----------------------|---------|---------------------|------|--------------------------------------|--|
| 51760 | discussion-recitation | AD1 | 02:00 PM - 02:50 PM | T | room 1111 Siebel Center for Comp Sci | Viswanathan, M; Prabhakaran, M; Sundar, A; Prabhakar, P |
| 51760: Quant Reasoning II course. | | | | | | |
| 51761 | discussion-recitation | AD2 | 03:00 PM - 03:50 PM | T | room 1111 Siebel Center for Comp Sci | Viswanathan, M; Hodosh, M; Prabhakaran, M; Sundar, A |
| 51761: Quant Reasoning II course. | | | | | | |

| | | | | | | |
|-----------------------------------|-----------------------|-----|---------------------|----|--------------------------------------|--|
| 51762 | discussion-recitation | AD3 | 04:00 PM - 04:50 PM | T | room 1111 Siebel Center for Comp Sci | Viswanathan, M; Hodosh, M; Prabhakaran, M; Sundar, A; Prabhakar, P |
| 51762: Quant Reasoning II course. | | | | | | |
| 51763 | discussion-recitation | AD4 | 04:00 PM - 04:50 PM | W | room 1111 Siebel Center for Comp Sci | Viswanathan, M; Hodosh, M; Prabhakaran, M; Prabhakar, P |
| 51763: Quant Reasoning II course. | | | | | | |
| 51739 | lecture | AL1 | 11:00 AM - 12:15 PM | TR | room 1105 Siebel Center for Comp Sci | Viswanathan, M; Prabhakaran, M |
| 51739: Quant Reasoning II course. | | | | | | |
| 51783 | lecture | AL2 | 12:30 PM - 01:45 PM | TR | room 1105 Siebel Center for Comp Sci | Viswanathan, M; Prabhakaran, M |
| 51783: Quant Reasoning II course. | | | | | | |

397 **Individual Study** credit: 1 to 3 hours.
May be repeated. Prerequisite: Consent of instructor.

| CRN | Type | Section | Time | Days | Location | Instructor |
|---|-------------------|---------|----------|------|----------|------------|
| 10464 | independent study | | ARRANGED | | | |
| 10464: Instructor Approval Required | | | | | | |
| 10464: Students must see the CS Department to receive the appropriate CRN for the instructor. | | | | | | |

411 **Database Systems** credit: 3 or 4 hours.
Examines the logical organization of databases: the entity-relationship model; the hierarchical, network, and relational data models and their languages. Functional dependencies and normal forms. Design, implementation, and optimization of query languages; security and integrity; concurrency control, and distributed database systems. 3 undergraduate hours. 3 or 4 graduate hours. Prerequisite: CS 225 or CS 400.

| CRN | Type | Section | Time | Days | Location | Instructor |
|----------------|--------------------|---------|---------------------|------|---|------------------------|
| 30109 | lecture-discussion | Q3 | 09:30 AM - 10:45 AM | TR | room 151 Everitt Elec and Comp Engr Lab | Winslett, M; Minami, K |
| 30109: 3 hours | | | | | | |

| | | | | | | |
|----------------|--------------------|----|---------------------|----|---|------------------------|
| 40086 | lecture-discussion | Q4 | 09:30 AM - 10:45 AM | TR | room 151 Everitt Elec and Comp Engr Lab | Winslett, M; Minami, K |
| 40086: 4 hours | | | | | | |

412 **Introduction to Data Mining** credit: 3 or 4 hours.

Introduction to the concepts, techniques, and systems of data warehousing and data mining. Design and implementation of data warehouse and on-line analytical processing (OLAP) systems; data mining concepts, methods, systems, implementations, and applications. 3 undergraduate or graduate hours. 4 graduate hours. Prerequisite: CS 225 or CS 400.

| CRN | Type | Section | Time | Days | Location | Instructor |
|----------------|--------------------|---------|---------------------|------|--------------------------------------|------------|
| 43357 | lecture-discussion | P3 | 03:00 PM - 04:15 PM | WF | room 1404 Siebel Center for Comp Sci | Han, J |
| 43357: 3 hours | | | | | | |
| 43358 | lecture-discussion | P4 | 03:00 PM - 04:15 PM | WF | room 1404 Siebel Center for Comp Sci | Han, J |
| 43358: 4 hours | | | | | | |

413 **Intro to Combinatorics** credit: 3 or 4 hours.

Same as MATH 413. See MATH 413.

This course satisfies the General Education Criteria for a Quant Reasoning II course.

| CRN | Type | Section | Time | Days | Location | Instructor |
|---|--------------------|---------|---------------------|------|----------|------------|
| 33540 | lecture-discussion | F13 | 02:00 PM - 02:50 PM | MWF | | |
| 33540: Quant Reasoning II course. | | | | | | |
| 33540: 3 hours | | | | | | |
| 39196 | lecture-discussion | F14 | 02:00 PM - 02:50 PM | MWF | | |
| 39196: Quant Reasoning II course. | | | | | | |
| 39196: 4 hours Departmental Approval Required | | | | | | |

418 **Interactive Computer Graphics** credit: 0 to 4 hours.

Introduction to basic mathematical tools and computational techniques for modeling, rendering, and animating 3-D scenes. Same as CSE 427. 3 undergraduate hours. 3 or 4 graduate hours. Prerequisite: CS 225 or CS 400; MATH 225 or MATH 415; MATH 241.

Students will register for a lecture and a discussion section.

| CRN | Type | Section | Time | Days | Location | Instructor |
|----------------|-----------------------|---------|---------------------|------|--------------------------------------|----------------------------|
| 51480 | discussion-recitation | AD1 | 11:00 AM - 11:50 AM | W | room 1111 Siebel Center for Comp Sci | Hart, J; Jones, B; Chen, A |
| 51481 | discussion-recitation | AD2 | 12:00 PM - 12:50 PM | W | room 1111 Siebel Center for Comp Sci | Hart, J; Jones, B; Chen, A |
| 51482 | discussion-recitation | AD3 | 01:00 PM - 01:50 PM | W | room 1111 Siebel Center for Comp Sci | Hart, J; Jones, B; Chen, A |
| 36119 | lecture | AL1 | 03:30 PM - 04:45 PM | TR | room 1404 Siebel Center for Comp Sci | Hart, J |
| 36119: 3 hours | | | | | | |
| 36121 | lecture | AL2 | 03:30 PM - 04:45 PM | TR | room 1404 Siebel Center for Comp Sci | Hart, J |
| 36121: 4 hours | | | | | | |

419 **Production Computer Graphics** credit: 3 or 4 hours.

Advanced methods for representing, displaying, and rendering two-, three-, and four-dimensional scenes. General algebraic curves and surfaces, splines, Gaussian and bump-function representation, fractals, particle systems, constructive solid geometry methods, lighting models, radiosity, advanced ray-tracing methods, surface texturing animation techniques, data visualization methods. Same as CSE 428. 3 undergraduate hours. 3 or 4 graduate hours. Prerequisite: CS 418.

| CRN | Type | Section | Time | Days | Location | Instructor |
|----------------|--------------------|---------|---------------------|------|--------------------------------------|------------|
| 46823 | lecture-discussion | C3 | 10:00 AM - 10:50 AM | MWF | room 1105 Siebel Center for Comp Sci | Yu, Y |
| 46823: 3 hours | | | | | | |
| 46824 | lecture-discussion | C4 | 10:00 AM - 10:50 AM | MWF | room 1105 Siebel Center for Comp Sci | Yu, Y |
| 46824: 4 hours | | | | | | |

421 **Progrmg Languages & Compilers** credit: 3 or 4 hours.

Introduction to the structure of programming languages and their implementation. Basic language design principles; abstract data types; functional languages; type systems; object-oriented languages. Basics of lexing, parsing, syntax-directed translation, semantic analysis, and code generation. 3 undergraduate hours. 3 or 4 graduate hours. Prerequisite: CS 232 and CS 273.

| CRN | Type | Section | Time | Days | Location | Instructor |
|----------------|--------------------|---------|---------------------|------|--------------------------------------|------------|
| 30128 | lecture-discussion | D3 | 02:00 PM - 03:15 PM | TR | room 1404 Siebel Center for Comp Sci | Gunter, E |
| 30128: 3 hours | | | | | | |
| 40087 | lecture-discussion | D4 | 02:00 PM - 03:15 PM | TR | room 1404 Siebel Center for Comp Sci | Gunter, E |
| 40087: 4 hours | | | | | | |

423 *Operating Systems Design* credit: 3 or 4 hours.

Organization and structure of modern operating systems and concurrent programming concepts. Deadlock, virtual memory, processor scheduling, and disk systems. Performance, security, and protection. Same as CSE 423. 3 undergraduate hours. 3 or 4 graduate hours. Prerequisite: CS 241 or ECE 391.

| CRN | Type | Section | Time | Days | Location | Instructor |
|----------------|--------------------|---------|---------------------|------|--------------------------------------|------------|
| 36113 | lecture-discussion | S3 | 10:00 AM - 10:50 AM | MWF | room 1302 Siebel Center for Comp Sci | King, S |
| 36113: 3 hours | | | | | | |
| 36115 | lecture-discussion | S4 | 10:00 AM - 10:50 AM | MWF | room 1302 Siebel Center for Comp Sci | King, S |
| 36115: 4 hours | | | | | | |

424 *Real-Time Systems* credit: 3 or 4 hours.

Examples of real-time computing systems; real-time scheduling and resource management algorithms; analytical and efficient validation methods. Examples of real-time operating systems; temporal consistency of real-time data; formal methods for specification of and reasoning about timing constraints. 3 undergraduate hours. 3 or 4 graduate hours. Prerequisite: CS 431.

| CRN | Type | Section | Time | Days | Location | Instructor |
|----------------|--------------------|---------|---------------------|------|--------------------------------------|---------------|
| 51775 | lecture-discussion | P3 | 03:30 PM - 04:45 PM | TR | room 1103 Siebel Center for Comp Sci | Abdelzaher, T |
| 51775: 3 hours | | | | | | |
| 51776 | lecture-discussion | P4 | 03:30 PM - 04:45 PM | TR | room 1103 Siebel Center for Comp Sci | Abdelzaher, T |
| 51776: 4 hours | | | | | | |

425 **Distributed Systems** credit: 3 hours.

Protocols, specification techniques, global states and their determination, reliable broadcast, transactions and commitment, security, and real-time systems. Same as CSE 424 and ECE 428. Prerequisite: CS 241 or ECE 391.

| CRN | Type | Section | Time | Days | Location | Instructor |
|-------|--------------------|---------|---------------------|------|--------------------------------------|--------------|
| 36091 | lecture-discussion | P | 02:00 PM - 03:15 PM | TR | room 1105 Siebel Center for Comp Sci | Nahrstedt, K |

426 **Compiler Construction** credit: 3 or 4 hours.

Compiler structure, syntax analysis, syntax-directed translation, automatically constructed recognizers, semantic analysis, code generation, intermediate language, optimization techniques. 3 undergraduate hours. 3 or 4 graduate hours. Prerequisite: CS 421.

| CRN | Type | Section | Time | Days | Location | Instructor |
|----------------|--------------------|---------|---------------------|------|--------------------------------------|------------|
| 43355 | lecture-discussion | N3 | 12:30 PM - 01:45 PM | TR | room 1302 Siebel Center for Comp Sci | Adve, V |
| 43355: 3 hours | | | | | | |
| 43356 | lecture-discussion | N4 | 12:30 PM - 01:45 PM | TR | room 1302 Siebel Center for Comp Sci | Adve, V |
| 43356: 4 hours | | | | | | |

427 **Software Engineering I** credit: 3 or 4 hours.

Software process, analysis and design. Topics include: software development paradigms, system engineering, function-based analysis and design, and object-oriented analysis and design. Course will use team-projects for hands-on exercises. Same as CSE 426. 3 undergraduate hours. 3 or 4 graduate hours. CS 427 combined with CS 429 fulfills the Advanced Composition Requirement. Prerequisite: CS 225 and CS 373.

This course satisfies the General Education Criteria for a Advanced Composition course.

| CRN | Type | Section | Time | Days | Location | Instructor |
|-------------------------------------|--------------------|---------|---------------------|------|---------------------------------------|------------|
| 36104 | lecture-discussion | S3 | 12:30 PM - 01:45 PM | TR | room 1310 Digital Computer Laboratory | Johnson, R |
| 36104: Advanced Composition course. | | | | | | |
| 36104: 3 hours | | | | | | |
| 36107 | lecture-discussion | S4 | 12:30 PM - 01:45 PM | TR | room 1310 Digital Computer | Johnson, R |

| | | | | | | |
|-------------------------------------|--|--|--|--|------------|--|
| | | | | | Laboratory | |
| 36107: Advanced Composition course. | | | | | | |
| 36107: 4 hours | | | | | | |

431 **Embedded Sys Arch and Software** credit: 0 to 4 hours.

A survey of sampled data systems and embedded architecture; key concepts in common embedded system applications; signal processing and control; embedded microprocessor and device interface; time-critical I/O handling; data communications; real-time operating systems and techniques for the development and analysis of embedded real-time software; hands-on laboratory projects. 3 undergraduate hours. 3 or 4 graduate hours. Prerequisite: CS 241 or ECE 391.

Students must register for one lab and one lecture section.

| CRN | Type | Section | Time | Days | Location | Instructor |
|----------------|--------------------|---------|---------------------|------|--------------------------------------|----------------------|
| 40100 | laboratory | AB1 | 03:00 PM - 04:50 PM | W | room ARR Digital Computer Laboratory | Sha, L; Young, J |
| 40101 | laboratory | AB2 | 05:00 PM - 06:50 PM | W | room ARR Digital Computer Laboratory | Sha, L; AlMalkawi, M |
| 31526 | laboratory | AB3 | 05:00 PM - 06:50 PM | R | room ARR Digital Computer Laboratory | Sha, L; AlMalkawi, M |
| 40102 | laboratory | AB4 | 02:00 PM - 03:50 PM | F | room ARR Digital Computer Laboratory | Sha, L; Young, J |
| 40667 | lecture-discussion | AE3 | 11:00 AM - 12:15 PM | TR | room 112 Transportation Bldg | Sha, L |
| 40667: 3 hours | | | | | | |
| 40668 | lecture-discussion | AE4 | 11:00 AM - 12:15 PM | TR | room 112 Transportation Bldg | Sha, L |
| 40668: 4 hours | | | | | | |

433 **Computer System Organization** credit: 3 or 4 hours.

Computer system analysis and design. Organizational dependence on computations to be performed. Speed and cost of parts and overall machines. Instruction set design. Pipeline and vector machines. Memory hierarchy design. Same as CSE 422. 3 undergraduate hours. 3 or 4 graduate hours. Prerequisite: CS 232.

| CRN | Type | Section | Time | Days | Location | Instructor |
|-------|----------|---------|------------------|------|------------------|--------------|
| 36069 | lecture- | T3 | 09:30 AM - 10:45 | TR | room 1109 Siebel | Torrellas, J |

| | | | | | | |
|----------------|--------------------|----|---------------------|----|--------------------------------------|--------------|
| | discussion | | AM | | Center for Comp Sci | |
| 36069: 3 hours | | | | | | |
| 43363 | lecture-discussion | T4 | 09:30 AM - 10:45 AM | TR | room 1109 Siebel Center for Comp Sci | Torrellas, J |
| 43363: 4 hours | | | | | | |

435 **Intro to VLSI System Design** credit: 3 hours.
Same as CSE 433 and ECE 425. See ECE 425.

| CRN | Type | Section | Time | Days | Location | Instructor |
|-------|------------|---------|---------------------|------|---|------------|
| 48122 | laboratory | AB1 | ARRANGED | | | |
| 36903 | lecture | AL1 | 01:00 PM - 02:20 PM | TR | room 260 Everitt Elec and Comp Engr Lab | Wong, M |

438 **Communication Networks** credit: 3 hours.

Layered architectures and the OSI Reference Model; design issues and protocols in the transport, network, and data link layers; architectures and control algorithms of local-area, point-to-point, and satellite networks; standards in networks access protocols; models of network interconnection; overview of networking and communication software. Same as CSE 425 and ECE 438. Prerequisite: CS 241 or ECE 391; one of MATH 461, MATH 463, ECE 313.

| CRN | Type | Section | Time | Days | Location | Instructor |
|----------------|--------------------|---------|---------------------|------|-----------------------------|------------|
| 36061 | lecture-discussion | X | 02:00 PM - 02:50 PM | MWF | room 106B1 Engineering Hall | Vaidya, N |
| 36061: 3 hours | | | | | | |

440 **Artificial Intelligence** credit: 3 or 4 hours.

Major topics in and directions of research in artificial intelligence: AI languages (LISP and PROLOG), basic problem solving techniques, knowledge representation and computer inference, machine learning, natural language understanding, computer vision, robotics, and societal impacts. Same as ECE 448. 3 undergraduate hours. 3 or 4 graduate hours. Prerequisite: CS 225 or ECE 391.

| CRN | Type | Section | Time | Days | Location | Instructor |
|-------|--------------------|---------|---------------------|------|--------------------------------------|------------|
| 36047 | lecture-discussion | Q3 | 12:30 PM - 01:45 PM | TR | room 1404 Siebel Center for Comp Sci | Dejong, G |

| | | | | | | |
|----------------|--------------------|----|---------------------|----|--------------------------------------|-----------|
| 36047: 3 hours | | | | | | |
| 36053 | lecture-discussion | Q4 | 12:30 PM - 01:45 PM | TR | room 1404 Siebel Center for Comp Sci | Dejong, G |
| 36053: 4 hours | | | | | | |

443 **Introduction to Robotics** credit: 4 hours.
Same as ECE 470, GE 421, and ME 445. See ECE 470.

| CRN | Type | Section | Time | Days | Location | Instructor |
|-------|------------|---------|---------------------|------|---|---------------|
| 36936 | laboratory | AB1 | 01:00 PM - 02:50 PM | T | room 267 Everitt Elec and Comp Engr Lab | Hutchinson, S |
| 36948 | laboratory | AB2 | 01:00 PM - 02:50 PM | R | room 267 Everitt Elec and Comp Engr Lab | Hutchinson, S |
| 41574 | laboratory | AB3 | 03:00 PM - 04:50 PM | T | room 267 Everitt Elec and Comp Engr Lab | Hutchinson, S |
| 36967 | lecture | AL1 | 11:30 AM - 12:50 PM | TR | room 106B1 Engineering Hall | Hutchinson, S |

446 **Machine Learning** credit: 3 or 4 hours.
Theory and basic techniques in machine learning. Presents the main theoretical paradigms and key ideas developed in machine learning in the context of applications such as natural language and text processing, computer vision, data mining, adaptive computer systems and others. Reviews several supervised and unsupervised learning approaches: methods for learning linear representations; on-line learning, Bayesian methods; decision-trees; features and kernels; clustering and dimensionality reduction. 3 undergraduate hours. 3 or 4 graduate hours. Prerequisite: CS 373 and CS 440.

| CRN | Type | Section | Time | Days | Location | Instructor |
|----------------|---------|---------|---------------------|------|--------------------------------------|------------|
| 46792 | lecture | D3 | 09:30 AM - 10:45 AM | TR | room 1105 Siebel Center for Comp Sci | Roth, D |
| 46792: 3 hours | | | | | | |
| 46793 | lecture | D4 | 09:30 AM - 10:45 AM | TR | room 1105 Siebel Center for Comp Sci | Roth, D |
| 46793: 4 hours | | | | | | |

450 **Numerical Analysis** credit: 3 or 4 hours.

Introduction to numerical analysis, including linear system solvers, optimization techniques, interpolation and approximation of functions, solving systems of nonlinear equations, eigenvalue problems, least squares, and quadrature; numerical handling of ordinary and partial differential equations. Same as CSE 401, ECE 491, and MATH 450. 3 undergraduate hours. 3 or 4 graduate hours. Credit is not given for both CS 450 and CS 457. Prerequisite: CS 101 or CS 125; CS 357 or MATH 415; MATH 285.

| CRN | Type | Section | Time | Days | Location | Instructor |
|----------------|--------------------|---------|---------------------|------|---------------------------------------|------------|
| 36016 | lecture-discussion | B3 | 09:00 AM - 09:50 AM | MWF | room 1310 Digital Computer Laboratory | Bond, S |
| 36016: 3 hours | | | | | | |
| 36020 | lecture-discussion | B4 | 09:00 AM - 09:50 AM | MWF | room 1310 Digital Computer Laboratory | Bond, S |
| 36020: 4 hours | | | | | | |

461 **Computer Security I** credit: 3 or 4 hours.

Fundamental principles of computer and communications security and information assurance: ethics, privacy, notions of threat, vulnerabilities, and risk in systems, information warfare, malicious software, data secrecy and integrity issues, network security, trusted computing, mandatory and discretionary access controls, certification and accreditation of systems against security standards. Security mechanisms: authentication, auditing, intrusion detection, access control, cryptography, security protocols, key distribution. Same as ECE 422. 3 undergraduate hours. 3 or 4 graduate hours. Prerequisite: CS 241 or ECE 391.

| CRN | Type | Section | Time | Days | Location | Instructor |
|----------------|---------|---------|---------------------|------|---------------------------------------|-------------|
| 49546 | lecture | A3 | 11:00 AM - 11:50 AM | MWF | room 1310 Digital Computer Laboratory | Hinrichs, S |
| 49546: 3 hours | | | | | | |
| 49547 | lecture | A4 | 11:00 AM - 11:50 AM | MWF | room 1310 Digital Computer Laboratory | Hinrichs, S |
| 49547: 4 hours | | | | | | |

463 **Computer Security II** credit: 3 or 4 hours.

Program security, trusted base, privacy, anonymity, non-interference, information flow, confinement, advanced auditing, forensics, intrusion detection, key management and distribution, policy composition and analysis, formal approaches to specification and verification of secure systems and protocols, and topics in applied cryptography. Same as ECE 424. 3 undergraduate hours. 3 or 4 graduate hours. Prerequisite: CS 461. Recommended: CS 475.

| CRN | Type | Section | Time | Days | Location | Instructor |
|-----|------|---------|------|------|----------|------------|
|-----|------|---------|------|------|----------|------------|

| | | | | | | |
|----------------|---------|----|---------------------|----|--------------------------------------|-------|
| 49550 | lecture | B3 | 02:00 PM - 03:15 PM | TR | room 1103 Siebel Center for Comp Sci | Hu, Y |
| 49550: 3 hours | | | | | | |
| 49551 | lecture | B4 | 02:00 PM - 03:15 PM | TR | room 1103 Siebel Center for Comp Sci | Hu, Y |
| 49551: 4 hours | | | | | | |

465 **User Interface Design** credit: 3 or 4 hours.

A project-focused course that covers fundamental principles of user interface design, implementation, and evaluation. Small teams work on a semester-long project that includes: analysis of the problem domain, user skills, and tasks; iterative prototyping of interfaces to address user needs; conducting several forms of evaluation such as cognitive walkthroughs and usability tests; implementation of the final prototype. Non-technical majors may enroll in the course as non-programmers who participate in all aspects of the projects with the possible exception of implementation. Same as LIS 465. 3 undergraduate hours. 3 or 4 graduate hours. Prerequisite: CS 225 or CS 400.

| CRN | Type | Section | Time | Days | Location | Instructor |
|----------------|--------------------|---------|---------------------|------|--------------------------------------|---------------|
| 43388 | lecture-discussion | M3 | 12:30 PM - 01:45 PM | WF | room 1105 Siebel Center for Comp Sci | Karahalios, K |
| 43388: 3 hours | | | | | | |
| 43389 | lecture-discussion | M4 | 12:30 PM - 01:45 PM | WF | room 1105 Siebel Center for Comp Sci | Karahalios, K |
| 43389: 4 hours | | | | | | |

466 **Introduction to Bioinformatics** credit: 3 or 4 hours.

Algorithmic approaches in bioinformatics: (i) biological problems that can be solved computationally (e.g., discovering genes, and interactions among different genes and proteins); (ii) algorithmic techniques with wide applicability in solving these problems (e.g., dynamic programming and probabilistic methods); (iii) practical issues in translating the basic algorithmic ideas into accurate and efficient tools that biologists may use. 3 undergraduate hours. 3 or 4 graduate hours. Prerequisite: CS 225.

| CRN | Type | Section | Time | Days | Location | Instructor |
|----------------|--------------------|---------|---------------------|------|--------------------------------------|------------|
| 51764 | lecture-discussion | B3 | 03:30 PM - 04:45 PM | TR | room 1131 Siebel Center for Comp Sci | Sinha, S |
| 51764: 3 hours | | | | | | |
| 51765 | lecture-discussion | B4 | 03:30 PM - 04:45 PM | TR | room 1131 Siebel Center for Comp Sci | Sinha, S |

51765: 4 hours

473 Algorithms credit: 0 to 4 hours.

Advanced data structures, graph algorithms, arithmetic algorithms, geometric algorithms, string problems, parallel algorithms, NP-completeness. Same as CSE 414 and MATH 473. 3 undergraduate hours. 3 or 4 graduate hours. Prerequisite: CS 225 and CS 373.

Students must register for a lecture and a discussion section.

| CRN | Type | Section | Time | Days | Location | Instructor |
|---|-----------------------|---------|---------------------|------|--------------------------------------|--|
| 51491 | discussion-recitation | AD1 | 05:00 PM - 05:50 PM | T | room 1111 Siebel Center for Comp Sci | Blatti, C; Maji, H; Nayyeri, A; Chekuri, C |
| 51492 | discussion-recitation | AD2 | 06:00 PM - 06:50 PM | T | room 1111 Siebel Center for Comp Sci | Blatti, C; Maji, H; Nayyeri, A; Chekuri, C |
| 51493 | discussion-recitation | AD3 | 02:00 PM - 02:50 PM | W | room 1111 Siebel Center for Comp Sci | Blatti, C; Maji, H; Nayyeri, A; Chekuri, C |
| 51494 | discussion-recitation | AD4 | 03:00 PM - 03:50 PM | W | room 1111 Siebel Center for Comp Sci | Blatti, C; Maji, H; Nayyeri, A; Chekuri, C |
| 43365 | lecture-discussion | AL1 | 11:00 AM - 12:15 PM | TR | room 1404 Siebel Center for Comp Sci | Chekuri, C |
| 43365: 3 hours This course is for UNDERGRADUATE students, only. | | | | | | |

476 Program Verification credit: 3 or 4 hours.

Examines formal methods for demonstrating correctness and other properties of programs. Invariant assertions; Hoare axiomatics; well-founded orderings for proving termination; structural induction; computational induction; data structures; parallel programs; an overview of predicate calculus. 3 undergraduate hours. 3 or 4 graduate hours. Prerequisite: CS 225; CS 373 or MATH 414.

| CRN | Type | Section | Time | Days | Location | Instructor |
|----------------|--------------------|---------|---------------------|------|--------------------------------------|-------------|
| 35855 | lecture-discussion | D3 | 03:30 PM - 04:45 PM | TR | room 1304 Siebel Center for Comp Sci | Meseguer, J |
| 35855: 3 hours | | | | | | |
| 35852 | lecture-discussion | D4 | 03:30 PM - 04:45 PM | TR | room 1304 Siebel Center for Comp Sci | Meseguer, J |
| 35852: 4 hours | | | | | | |

481 **Stochastic Processes & Applic** credit: 3 or 4 hours.
 Same as IE 410. See IE 410.

| CRN | Type | Section | Time | Days | Location | Instructor |
|-------|--------------------|---------|---------------------|------|--------------------------------------|-------------|
| 52040 | lecture-discussion | E | 03:00 PM - 04:15 PM | MW | room 1109 Siebel Center for Comp Sci | Jacobson, S |

491 **Seminar in Computer Science** credit: 0 to 4 hours.
 Seminar course for advanced undergraduate and graduate students. Topics will vary. Approved for S/U grading only. May be repeated to a maximum of 4 hours. May be repeated if topics vary. Prerequisite: As specified for each topic offering, see Schedule or departmental course description.

| CRN | Type | Section | Time | Days | Location | Instructor |
|--|--------------------|---------|---------------------|------|--------------------------------------|------------|
| 52639 | lecture-discussion | CZ | 03:30 PM - 04:50 PM | W | room 1131 Siebel Center for Comp Sci | Zilles, C |
| 52639: 1 hoursTopic: Web Programming Seminar | | | | | | |

492 **Senior Project I** credit: 3 hours.
 First part of a project course in computer science. Students work in teams to solve typical commercial or industrial problems. Work involves planning, design, and implementation. Extensive oral and written work is required both on-campus and possibly off-campus at sponsors' locations. CS 492 must be taken as a sequence with either CS 493 or CS 494. CS 492 combined with CS 493 fulfills the Advanced Composition Requirement. 3 undergraduate hours. Credit is not given for both CS 492 and a project course in another engineering department for the same project. For Computer Science majors with senior standing.

This course satisfies the General Education Criteria for a Advanced Composition course.

CS 492 and CS 493 are approved for General Education credit only as a sequence. Both courses must be completed to receive Advanced Composition credit.

| CRN | Type | Section | Time | Days | Location | Instructor |
|-------------------------------------|--------------------|---------|---------------------|------|--------------------------------------|------------------------|
| 30139 | lecture-discussion | CS | 03:00 PM - 04:50 PM | W | room 1105 Siebel Center for Comp Sci | Johnson, R; Woodley, M |
| 30139: Advanced Composition course. | | | | | | |

498 **Special Topics** credit: 0 to 4 hours.
 Lectures in topics of current interest. See Schedule for current topics. May be repeated. Prerequisite: As specified for each topic offering, see Schedule or departmental course description.

| CRN | Type | Section | Time | Days | Location | Instructor |
|---|---------|---------|---------------------|------|--------------------------------------|----------------|
| 43500 | lecture | DP3 | 11:00 AM - 12:15 PM | TR | room 1304 Siebel Center for Comp Sci | Padua, D |
| 43500: 3 hoursTopic: Multicore and Cluster Parallel Programming. An in depth discussion of the main concepts and techniques of parallel programming. Topics include: main classes of parallel machines and programming paradigms, parallel programming languages and APIs, models of parallel computation, techniques and tools for program optimization and debugging in the context of multicores and clusters, and parallel algorithms. This section is for undergraduate or graduate students. | | | | | | |
| 40097 | lecture | DP4 | 11:00 AM - 12:15 PM | TR | room 1304 Siebel Center for Comp Sci | Padua, D |
| 40097: 4 hoursTopic: Multicore and Cluster Parallel Programming. An in depth discussion of the main concepts and techniques of parallel programming. Topics include: main classes of parallel machines and programming paradigms, parallel programming languages and APIs, models of parallel computation, techniques and tools for program optimization and debugging in the context of multicores and clusters, and parallel algorithms. This section is for graduate students only. | | | | | | |
| 40109 | lecture | EA3 | 09:30 AM - 10:45 AM | TR | room 1131 Siebel Center for Comp Sci | Amir, E |
| 40109: 3 hoursTopic: Reasoning in Artificial Intelligence. Prerequisites: CS440 or equivalent. CS473 or equivalent. This class concerns reasoning techniques used and developed in Artificial Intelligence. It will include topics from reasoning in First-Order Logic, graphical probabilistic representations and inference, approximate inference (sampling and variational techniques), combinations of logical and probabilistic inference techniques, and applications. The class is suitable for graduate students and advanced undergraduate students interested in AI and the applications of AI techniques. This section is for undergraduate or graduate students. | | | | | | |
| 52640 | lecture | EA4 | 09:30 AM - 10:45 AM | TR | room 1131 Siebel Center for Comp Sci | Amir, E |
| 52640: 4 hoursTopic: Reasoning in Artificial Intelligence. Prerequisites: CS440 or equivalent. CS473 or equivalent. This class concerns reasoning techniques used and developed in Artificial Intelligence. It will include topics from reasoning in First-Order Logic, graphical probabilistic representations and inference, approximate inference (sampling and variational techniques), combinations of logical and probabilistic inference techniques, and applications. The class is suitable for graduate students and advanced undergraduate students interested in AI and the applications of AI techniques. This section is for GRADUATE students only. | | | | | | |
| 42391 | lecture | JH3 | 12:30 PM - 01:45 PM | TR | room 1103 Siebel Center for Comp Sci | Hockenmaier, J |
| 42391: 3 hoursTopic: Introduction to Natural Language Processing This course will provide an introduction to computational linguistics, from morphology (word formation) and syntax (sentence structure) to semantics (meaning) and natural language processing applications such as parsing, machine translation, generation and dialog systems. Prerequisites: Formal language and automata theory (CS273 or equivalent). Programming experience is necessary for the assignments. Prior exposure to linguistics is not required. This section is for either undergraduate or graduate students. | | | | | | |
| 50658 | lecture | JH4 | 12:30 PM - 01:45 PM | TR | room 1103 Siebel Center for Comp Sci | Hockenmaier, J |
| 50658: 4 hoursTopic: Introduction to Natural Language Processing This course will provide an introduction to computational linguistics, from morphology (word formation) and syntax (sentence structure) to semantics | | | | | | |

(meaning) and natural language processing applications such as parsing, machine translation, generation and dialog systems. Prerequisites: Formal language and automata theory (CS273 or equivalent). Programming experience is necessary for the assignments. Prior exposure to linguistics is not required. This section is for graduate students only.

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|-------|--------------------|----|----------|--|---|------------|
| 42700 | lecture-discussion | LA | ARRANGED | | room ARR Siebel Center for Comp Sci | Angrave, L |
|-------|--------------------|----|----------|--|---|------------|

42700: 3 hours Instructor Approval Required Topic: Undergraduate Research Laboratory In this apprenticeship-style, hands-on laboratory, students discover what it means to be a CS researcher. Students will learn to i) Pose testable research questions; ii) Write competitive grant proposals; iii) Create novel solutions using software and/or hardware; iv) Draw valid scientific conclusions; and v) Present and publish results, conclusions and other materials. This team-based undergraduate-only course requires the consent of the instructor. See the course website (<http://www.cs.uiuc.edu/class/cs498la>) for more details, enrollment restrictions and requirements. Prerequisites: Credit or concurrent registration in CS241.

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|-------|---------|-----|------------------------|----|--|------------------|
| 49190 | lecture | MP3 | 03:30 PM - 04:45 PM | TR | room 1302 Siebel Center for Comp Sci | Parthasarathy, M |
|-------|---------|-----|------------------------|----|--|------------------|

49190: 3 hours Topic: Logic in Computer Science. This course will provide an introduction to mathematical logic from the perspective of computer science, emphasizing decidable fragments of logic and decision algorithms and will include working with modern theorem provers that decide simple logics. The topics covered will be motivated by applications in artificial intelligence, databases, formal methods and theoretical computer science. The goal of the course is to prepare students for using logic as a formal tool in computer science. Prerequisite: Mathematical maturity and some knowledge of automata theory and propositional logic required. This section is for undergraduate or graduate students.

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|-------|---------|-----|------------------------|----|--|------------------|
| 49191 | lecture | MP4 | 03:30 PM - 04:45 PM | TR | room 1302 Siebel Center for Comp Sci | Parthasarathy, M |
|-------|---------|-----|------------------------|----|--|------------------|

49191: 4 hours Topic: Logic in Computer Science. This course will provide an introduction to mathematical logic from the perspective of computer science, emphasizing decidable fragments of logic and decision algorithms and will include working with modern theorem provers that decide simple logics. The topics covered will be motivated by applications in artificial intelligence, databases, formal methods and theoretical computer science. The goal of the course is to prepare students for using logic as a formal tool in computer science. Prerequisite: Mathematical maturity and some knowledge of automata theory and propositional logic required. This section is for graduate students only.

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|-------|---------|-----|------------------------|----|--|----------|
| 52151 | lecture | SNK | 03:30 PM - 04:45 PM | TR | room 1129 Siebel Center for Comp Sci | Kamin, S |
|-------|---------|-----|------------------------|----|--|----------|

52151: 3 hours Topic - Tablet PCs in Education. Pen-enabled computers, such as Tablet PCs, have the potential to significantly affect teaching and learning, by increasing class interactions and improving the transparency of the class. We will look at what has been accomplished in this area, and will design and test next classroom applications.

499 **Senior Thesis** credit: 3 hours.

Research and thesis development experience in computer science. A student works with a faculty member on a mutually agreed upon thesis topic and completes a written thesis. Work involves literature search, oral presentation, analysis and/or implementation, paper preparation, and a written thesis. 3 undergraduate hours. May be repeated to a maximum of 6 hours. Prerequisite: Senior standing in CS and consent of instructor.

This course satisfies the General Education Criteria for a Advanced Composition course.

| CRN | Type | Section | Time | Days | Location | Instructor |
|---|-------------------|---------|----------|------|----------|------------|
| 10465 | independent study | | ARRANGED | | | |
| 10465: Advanced Composition course. Instructor Approval Required | | | | | | |
| 10465: Students must see the CS Department to receive the appropriate CRN for the instructor. | | | | | | |

505 **Numerical Fluid Dynamics** credit: 4 hours.
Same as ATMS 502 and CSE 566. See ATMS 502.

| CRN | Type | Section | Time | Days | Location | Instructor |
|-------|--------------------|---------|---------------------|------|---------------------------------------|------------|
| 37125 | lecture-discussion | A | 09:00 AM - 10:15 AM | TR | room 109 Atmospheric Sciences Bldg | Jewett, B |

511 **Advanced Database Systems** credit: 4 hours.
Advanced concepts in database management system design and implementation, and an introduction to the major recent developments in the field. Relational roots, distributed and parallel databases, object databases and extensibility, semistructured data and XML, web research, benchmarks, and current directions in the field.
Prerequisite: CS 411.

| CRN | Type | Section | Time | Days | Location | Instructor |
|----------------|--------------------|---------|---------------------|------|--------------------------------------|------------|
| 43351 | lecture-discussion | P | 02:00 PM - 03:15 PM | WF | room 1304 Siebel Center for Comp Sci | Chang, K |
| 43351: 4 hours | | | | | | |

527 **Topics in Software Engineering** credit: 4 hours.
Fault-tolerant software, software architecture, software patterns, multi-media software, and knowledge-based approaches to software engineering. Includes a number of case studies. Same as CSE 529. Prerequisite: CS 428 or CS 429.

| CRN | Type | Section | Time | Days | Location | Instructor |
|-------|--------------------|---------|---------------------|------|--------------------------------------|------------|
| 35912 | lecture-discussion | S | 02:00 PM - 03:15 PM | TR | room 1302 Siebel Center for Comp Sci | Marinov, D |

541 **Computer Systems Analysis** credit: 4 hours.
Same as CSE 524 and ECE 541. See ECE 541.

| CRN | Type | Section | Time | Days | Location | Instructor |
|-------|--------------------|---------|---------------------|------|--------------------------------------|------------|
| 35921 | lecture-discussion | B | 09:30 AM - 10:45 AM | TR | room 1304 Siebel Center for Comp Sci | Nicol, D |

545 **Systems Modeling & Simulation** credit: 4 hours.
Same as BADM 575. See BADM 575.

| CRN | Type | Section | Time | Days | Location | Instructor |
|-------|--------------------|---------|---------------------|------|----------------|------------------------|
| 37926 | lecture-discussion | A | 10:30 AM - 11:50 AM | TR | room 3009 1BIF | Engelbrecht-Wiggans, R |

558 **Topics in Numerical Analysis** credit: 4 hours.
Advanced topics in numerical analysis selected from areas of current research. Same as CSE 513. May be repeated. Prerequisite: As specified for each topic offering, see Schedule or departmental course description.

| CRN | Type | Section | Time | Days | Location | Instructor |
|-------|--------------------|---------|---------------------|------|--------------------------------------|------------|
| 35929 | lecture-discussion | P | 11:00 AM - 12:15 PM | TR | room 1103 Siebel Center for Comp Sci | Hirani, A |

571 **Combinatorial Mathematics** credit: 4 hours.
Same as MATH 580. See MATH 580.

| CRN | Type | Section | Time | Days | Location | Instructor |
|-------|--------------------|---------|---------------------|------|-----------------------|------------|
| 33563 | lecture-discussion | F1 | 02:00 PM - 02:50 PM | MWF | room 343 Altgeld Hall | West, D |

573 **Topics in Algorithms** credit: 4 hours.
Theoretical analysis of various algorithms: sorting, searching, selection, polynomial evaluation, matrix multiplication, and multiplication of real numbers. Same as CSE 515. May be repeated. Prerequisite: CS 473.

| CRN | Type | Section | Time | Days | Location | Instructor |
|-------|--------------------|---------|---------------------|------|-----------------------------|-------------|
| 35933 | lecture-discussion | S | 12:30 PM - 01:45 PM | WF | room 106B1 Engineering Hall | Erickson, J |

575 **Methods of Combinatorics** credit: 4 hours.

Same as MATH 584. See MATH 584.

| CRN | Type | Section | Time | Days | Location | Instructor |
|-------|--------------------|---------|---------------------|------|-----------------------|------------|
| 33556 | lecture-discussion | X1 | 12:00 PM - 12:50 PM | MWF | room 445 Altgeld Hall | West, D |

578 **Information Theory** credit: 4 hours.
Same as ECE 563 and STAT 563. See ECE 563.

| CRN | Type | Section | Time | Days | Location | Instructor |
|-----------|-----------------------|---------|---------------------|------|---|------------|
| 37142 | discussion-recitation | A | 08:00 AM - 09:50 AM | M | room 163 Everitt Elec and Comp Engr Lab | Coleman, T |
| | discussion-recitation | A | 09:00 AM - 09:50 AM | W | room 163 Everitt Elec and Comp Engr Lab | Coleman, T |
| : 4 hours | | | | | | |

591 **Advanced Seminar** credit: 0 to 4 hours.
Seminar on topics of current interest. Subjects will be announced in the Schedule. Approved for S/U grading only. May be repeated in the same or subsequent terms if topics vary. Prerequisite: As specified for each topic offering, see Schedule or departmental course description.

| CRN | Type | Section | Time | Days | Location | Instructor |
|--|--------------------|---------|---------------------|------|--------------------------------------|--|
| 35941 | lecture-discussion | ACT | ARRANGED | | room ARR Siebel Center for Comp Sci | Garzaran, M; Padua, D; Adve, V |
| 35941: 1 hoursTopic: Advanced Compiler Technology. Prerequisite: CS 426. | | | | | | |
| 43832 | lecture-discussion | BIO | ARRANGED | | room ARR Siebel Center for Comp Sci | Liu, L; Han, J; Schatz, B; Zhai, C; Sinha, S; Zhong, S |
| 43832: 1 hoursTopic: Advanced Seminar on Biomedical Informatics. | | | | | | |
| 35937 | lecture-discussion | DCS | 04:00 PM - 04:50 PM | M | room 1404 Siebel Center for Comp Sci | Chekuri, C |
| 35937: 1 hoursTopic: Department of CS Research Seminar. | | | | | | |
| 46417 | lecture-discussion | FM | ARRANGED | | room ARR Siebel Center for Comp Sci | Parthasarathy, M |

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|--|--------------------|-----|----------|--|-------------------------------------|----------------------------|
| 46417: 1 hoursTopic: Formal Methods. | | | | | | |
| 36448 | lecture-discussion | GFX | ARRANGED | | room ARR Siebel Center for Comp Sci | Hart, J; Yu, Y |
| 36448: 1 hoursTopic: Research Topics in Computer Graphics. | | | | | | |
| 35953 | lecture-discussion | HAN | ARRANGED | | room ARR Siebel Center for Comp Sci | Han, J |
| 35953: 1 hoursTopic: Data Mining for Advanced Applications. Prerequisite: Credit or concurrent registration in CS 412 or equivalent. | | | | | | |
| 35974 | lecture-discussion | HCI | ARRANGED | | room ARR Siebel Center for Comp Sci | Karahalios, K |
| 35974: 1 hoursTopic: Seminar in Human-Computer Interaction. | | | | | | |
| 43828 | lecture-discussion | IG | ARRANGED | | room ARR Siebel Center for Comp Sci | Gupta, I |
| 43828: 1 hoursTopic: Advanced Seminar in Distributed Systems. Prerequisite: CS 598IG or CS 425 or any basic course on distributed systems. | | | | | | |
| 35949 | lecture-discussion | JE | ARRANGED | | room ARR Siebel Center for Comp Sci | Erickson, J |
| 35949: 1 hoursTopic: Topics in Algorithms. Prerequisite: CS 473G or 573. | | | | | | |
| 35964 | lecture-discussion | JM | ARRANGED | | room ARR Siebel Center for Comp Sci | Meseguer, J |
| 35964: 1 hoursTopic: Maude: Theory and Applications. Prerequisite: Credit or concurrent registration in CS 476. | | | | | | |
| 43831 | lecture-discussion | KGK | ARRANGED | | room ARR Siebel Center for Comp Sci | Karahalios, K |
| 43831: 1 hoursTopic: Social Computing. | | | | | | |
| 35957 | lecture-discussion | MH | ARRANGED | | room ARR Siebel Center for Comp Sci | Heath, M |
| 35957: 1 hoursTopic: Scientific and Parallel Computing. | | | | | | |
| 41193 | lecture-discussion | MSW | ARRANGED | | room ARR Siebel Center for Comp Sci | Winslett, M |
| 41193: 1 hoursTopic: Yahoo!-DAIS seminar. | | | | | | |
| 35967 | lecture-discussion | NLP | ARRANGED | | room ARR Siebel Center for Comp Sci | Roth, D; Hockenmaier, J |

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|--|--------------------|-----|---------------------|---|--------------------------------------|---|
| 35967: 1 hoursTopic: Natural Language Processing | | | | | | |
| 41977 | lecture | PHD | 05:00 PM - 05:50 PM | W | room 1404 Siebel Center for Comp Sci | Belford, G |
| 41977: 1 hoursTopic: Orientation for new PhD students. | | | | | | |
| 41614 | lecture-discussion | RHC | ARRANGED | | room ARR Siebel Center for Comp Sci | Campbell, R |
| 41614: 1 hoursTopic: Security Reading Seminar. Prerequisite: A prior course in security or CS423 or consent of instructor. | | | | | | |
| 41195 | lecture-discussion | SDS | 04:00 PM - 04:50 PM | F | | Hart, J |
| 41195: 1 hoursTopic: Spatial Data Structures | | | | | | |
| 49716 | lecture-discussion | SE | ARRANGED | | room ARR Siebel Center for Comp Sci | Johnson, R; Marinov, D |
| 49716: 1 hoursTopic: Software Engineering Seminar. | | | | | | |
| 46060 | lecture-discussion | SN | 01:00 PM - 01:50 PM | F | room 1109 Siebel Center for Comp Sci | Vaidya, N; Kravets, R; Nahrstedt, K; Gupta, I |
| 46060: 1 hoursTopic: New Systems and Networking Seminar. | | | | | | |

597 **Individual Study** credit: 2 to 16 hours.

Individual study or reading in a subject not covered in normal course offerings. May be repeated. Prerequisite: Consent of instructor.

| CRN | Type | Section | Time | Days | Location | Instructor |
|---|-------------------|---------|----------|------|----------|------------|
| 10467 | independent study | | ARRANGED | | | |
| 10467: Instructor Approval Required | | | | | | |
| 10467: Students must see the CS Department to receive the appropriate CRN for the instructor. | | | | | | |

598 **Special Topics** credit: 2 to 4 hours.

Lecture course in topics of current interest. See Schedule for current topics. May be repeated. Prerequisite: As specified for each topic offering, see Schedule or departmental course description.

| CRN | Type | Section | Time | Days | Location | Instructor |
|-------|--------------------|---------|---------------------|------|----------------------------------|------------|
| 42377 | lecture-discussion | CAG | 11:00 AM - 12:15 PM | TR | room 1131 Siebel Center for Comp | Gunter, C |

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|---|--------------------|-----|---------------------|----|--------------------------------------|--------------|
| | | | | | Sci | |
| 42377: 4 hoursTopic: Advanced Computer Security. Prerequisite: a 400 level course in security or consent of instructor. Research projects in security in the areas of monitoring and surveillance, critical infrastructure protection, unwanted traffic on the Internet, secure web services, tamper-resistant security architectures. | | | | | | |
| 46983 | lecture-discussion | DAF | 12:30 PM - 01:45 PM | WF | room 1131 Siebel Center for Comp Sci | Forsyth, D |
| 46983: 4 hoursTopic: Optimization in computer vision and machine learning. We will discuss applications of current optimization methods to problems in computer vision and machine learning. | | | | | | |
| 49222 | lecture-discussion | GA | 02:00 PM - 03:15 PM | WF | room ARR Siebel Center for Comp Sci | Agha, G |
| 49222: 4 hoursTopic: Actor Programming Languages and Systems The growth of multicore computers, P2P systems, sensor networks and other large-scale parallel systems has renewed popular interest in actor programming. Actor oriented programming languages and frameworks currently in use include Charm++, Erlang, E, Scala, SALSA, Revactor, Ptolemy, and Newspeak. The course will cover actor language design; actor implementations on multicore computers, distributed systems, and networked embedded systems; and applications to multi-agent, pervasive and ubiquitous computing. | | | | | | |
| 42393 | lecture-discussion | MCC | 09:30 AM - 10:45 AM | TR | room 1302 Siebel Center for Comp Sci | Caesar, M |
| 42393: 4 hoursTopic: Advanced Internetworking. The Internet is an astounding engineering triumph, comprising tens of thousands of competing ISPs, hundreds of millions of end hosts, and a complex intertwining of systems and protocols to form the largest distributed system ever created. In this course you will gain an understanding of how the Internet works, how to use tools commonly used for network measurement and research, and learn the state-of-the-art in computer networking research at the IP layer and above. Students will perform a research project, with the goal to submit their results for publication in a conference. While completion of an undergraduate networking class is helpful, it is not required, and students from all systems-related areas are encouraged to participate. | | | | | | |
| 49196 | lecture-discussion | RHC | 02:00 PM - 03:15 PM | TR | room 1131 Siebel Center for Comp Sci | Campbell, R |
| 49196: 4 hoursTopic: Ubiquitous Systems. Ubiquitous and pervasive computing is a new and exciting platform and paradigm for anywhere, anyhow services and information systems. This new research area is a natural outcome of the tremendous advances in wireless networks, mobile computing, sensor networks, distributed computing, and agent technologies. This advanced graduate course is project and reading based and explores issues of applications, privacy, infrastructure, mobile, wireless, and distributed computing in an Internet environment with advanced human-computer interfaces, high-definition multimedia, and powerful, efficient computing. As prerequisites, the students should have basic knowledge of systems and networking, security, and system design. | | | | | | |
| 40105 | lecture-discussion | SHP | 11:00 AM - 12:15 PM | TR | room ARR Siebel Center for Comp Sci | Har-Peled, S |
| 40105: 4 hoursTopic: Randomized Algorithms. The last two decades have witnessed a tremendous growth in the area of randomized algorithms. During this period, randomized algorithms went from being a tool in computational number theory to finding widespread application in many types of algorithms. Two benefits of randomization have spearheaded this growth: simplicity and speed. This course presents the basic concepts in the design and analysis of randomized algorithms at a level accessible to advanced undergraduates and to graduate students. The aim is to touch upon various branches of the study of randomized algorithms. In the end of this course, one should be able to design and/or analyze a randomized algorithm for your favorite problem. For | | | | | | |

topics covered, see class notes from previous semester:
http://valis.cs.uiuc.edu/~sariel/teach/notes/rand_alg/notes.pdf

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|-------|--------------------|----|---------------------|----|--------------------------------------|----------|
| 36004 | lecture-discussion | WG | 02:00 PM - 03:15 PM | WF | room 1131 Siebel Center for Comp Sci | Gropp, W |
|-------|--------------------|----|---------------------|----|--------------------------------------|----------|

36004: 4 hours Topics in High Performance Computing: Architecture, Algorithms, and Programming Models An exploration of the relationships between algorithms, programming models, and computer architecture for high performance computing. Topics include the impact of modern architectural features on the complexity models used to inspire and evaluate algorithms, the impact of memory hierarchy and other features on both node performance and scalability, and the support for scalable and efficient code in programming models.

599 **Thesis Research** credit: 0 to 16 hours.
 Approved for S/U grading only. May be repeated.

| CRN | Type | Section | Time | Days | Location | Instructor |
|-------|-------------------|---------|----------|------|----------|------------|
| 10469 | independent study | | ARRANGED | | | |

10469: Instructor Approval Required

10469: Students must see the CS Department to receive the appropriate CRN for the instructor.