## PROPOSAL TO THE SENATE COMMITTEE ON EDUCATIONAL POLICY TO ESTABLISH OR MODIFY AN UNDERGRADUATE MINOR

**Title of the proposal:**    Revision of the Informatics Undergraduate Minor

**Sponsoring unit(s):**  Illinois Informatics Institute

Guy Garnett, Director,  Illinois Informatics Institute, garnett@illinois.edu,  333-4390

**Brief description and justification of revision:**

1.  **Replace INFO 103/ CS 103 Introduction to Programming requirement with CS 105 Introduction to Computing- Non Tech.**  The Computer Science Department has restructured and streamlined the various introductory programming courses that it offers. INFO 103/ CS 103 was discontinued in FA 2014.  CS 105 has undergone substantial revision to align the curriculum with current national trends and proven methods in teaching introductory programming courses.  The capacity of CS 105 has been expanded and can easily accommodate the prior enrollment in INFO 103/ CS 103. Since CS 105 is also an elective class for many different majors, substitution of this course for INFO 103 may expose more students to the Informatics Minor.  The previously approved substitutions for INFO 103 are still applicable and remain in place (those are CS 101 Intro to Computer: Engrg & Sci and CS 125 Intro to Computer Science).

2.  **Remove CS 105 as a substitution for INFO 102 Little Bits to Big Ideas.**  Since we are requesting that the revised CS 105 course should replace the terminated INFO 103 course, it cannot also count as a substitute for INFO 102.

3.  **Replace ECE 190 Introduction to Computing Systems with the two-course sequence ECE 120 Introduction to Computing and ECE 220 Computer Systems & Programming.**  ECE 190 had been an acceptable substitution for the introductory programming requirement (originally INFO 103/ CS 103, now CS 105) for the Informatics minor.  The ECE Department has restructured their introductory curriculum, terminating ECE 190 and replacing it with the two-course sequence of ECE 120 and ECE 220.  Much of the material formerly covered in ECE 190 will now be covered in ECE 220, thus requiring both courses to fulfill the programming requirement.

4.  **Formalize the Informatics minor requirements for CS and ECE majors, and CS minors.** Because CS and ECE majors and CS minors take a series of introductory computation courses as part of their required curriculum, they do not need to also take INFO 102 Little Bits to Big Ideas and CS 105.  These students do still need to take INFO 202 Social Aspects of IT, and then they also need to take four upper level electives from the approved list (see Appendix A) instead of the usual three.  Further, these upper level electives cannot be CS courses, and typically should have a non-technical focus.  This ensures that these students are

using the Informatics minor to explore aspects of information technology outside the topics normally covered in these disciplines.

**Budgetary and Staff Implications:**

a. No additional funds or staff needed

b. Internal reallocations (e.g. change in class size, teaching loads, student-faculty ratio, etc.): Resources previously devoted to INFO 103 will be reallocated to CS 105.

c. Effect on course enrollment in other departments and explanations of discussions with representatives of those departments: Enrollment in CS 105 has been expanded and can accommodate prior enrollment of INFO 103.

d. Impact on library, computer use, laboratory use, equipment, etc.: None

**Requirements:**

*Standard Course Requirements for Informatics Minor*

| | |
|---|---|
| INFO 102 Little Bits to Big Ideas | (4) |
| CS 105 Introduction to Computing Non Tech | (3) |
| INFO 202 Social Aspects of IT | (3) |
| 3 Upper level electives from approved list | (9) |
| Total | (19) |

*Requirements for CS Majors, ECE majors, and CS minors:*

CS 101 Intro to Computer: Engrg & Sci (3)

**OR** CS 125 Intro to Computer Science (4)

**OR** ECE 220 Computer Systems & Programming (4)  (3-4)

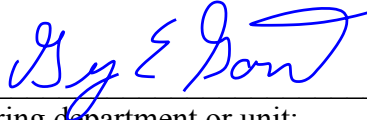| | |
|---|---|
| INFO 202 Social Aspects of IT | (3) |
| 4 Upper level electives (not CS courses) from approved list | (12) |
| Total | (18-19) |

**Prerequisites for the minor:** None

**Expected enrollment in the minor:** Current enrollment is approximately 170 students. Revisions will not substantially affect enrollment.

**Admission to the minor:** Informatics will continue with current process of admission via an advising appointment with the Education Coordinator. The purpose is to make sure the student is aware of the requirements and to answer any questions they may have.

**Minor advisor:** Informatics will continue with the current process of advising. Students schedule appointments as needed with the Informatics Education Coordinator.

**Certification of successful completion:** As currently done in each student's home college. As part of each student's graduation review, college staff look at the student's DARS report to determine if all of the minor requirements have been met. Informatics coordinates with LAS to make sure that all of the requirements and electives are correctly reflected in DARS.

CLEARANCES:

_____
Head/chair of the sponsoring department or unit:

_____
Dean of the college of the sponsoring department or unit:

_____
Council of Teacher Education:
        (for minors that affect teacher certification)

_____
Chair, Senate Educational Policy Committee:


**Proposed Effective Date:** September, 2015


**Statement for the Programs of Study Catalog:** See attached pdf file.

**From:** "Kudeki, Erhan" <erhan@illinois.edu>
**Subject: Re: Question regarding ECE 190 equivalencies for INFO minor**
**Date:** January 20, 2014 at 9:56:03 AM CST
**To:** "Readel, Karin" <kereadel@illinois.edu>
**Cc:** "Kudeki, Erhan" <erhan@illinois.edu>, "Sanders, William H" <whs@illinois.edu>

Hi, ECE 190 is being replaced with ECE 220 --- it's experimental version offered this semester is called ECE 198KL.
The pre-requisite for ECE 220 will be ECE 120, its experimental version is ECE 198JL. The sequence of ECE 120 and 220
will cover the former sequence of ECE 190 and 290 but is an almost inverted order. I would say the new sequence, ECE 120+220,
should be of interest to your students desiring to see a rigorous introduction to computing and applications.

Best,
Erhan

Erhan Kudeki          Tel: 217 265 0128     erhan@illinois.edu
Professor and Associate Head for Undergraduate Affairs
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# UNIVERSITY OF ILLINOIS
## AT URBANA-CHAMPAIGN

**Department of Computer Science**
201 North Goodwin Avenue
Urbana, IL 61801-2302 USA

March 19, 2015

To whom it may concern,

The Computer Science department agrees with and is fully supportive of the proposed revisions to the Informatics minor. Indeed, some of these changes were suggested by CS, and/or worked out in meetings between CS and the Informatics Educational Committee.

Respectfully,

Leonard Pitt
Professor and University Distinguished Teacher/Scholar
Director of Undergraduate Programs
Department of Computer Science
University of Illinois. Urbana, IL 61801
Ph: 217-333-7505. Email pitt@illinois.edu

# UNIVERSITY OF ILLINOIS
## AT URBANA-CHAMPAIGN

Office of the Provost and Vice Chancellor
for Academic Affairs

Swanlund Administration Building
601 East John Street
Champaign, IL 61820

April 1, 2015

Gay Miller, Chair
Senate Committee on Educational Policy
Office of the Senate
228 English Building, MC-461

Dear Professor Miller:

Enclosed is a copy of a proposal from the Illinois Informatics Institute to revise the Undergraduate Minor in Informatics.

Sincerely,

Kathryn A. Martensen
Assistant Provost

Enclosures

c:  G. Garnett
    K. Readel

**Statement for the Programs of Study Catalog**

Guy Garnett, Director, Illinois Informatics Institute
3014 NCSA
1205 W. Clark, MC-257
Urbana, IL 61801
PH:217-333-4930
FX:217-333-5878
http://informatics.illinois.edu

Contact info-minor@illinois.edu, or Karin Readel, the Informatics Education Coordinator at 244-1220 if you have any questions.

The Minor in Informatics will teach you to become a better creator and user of computing technology in your major area and to think critically about new technology's roles in society. No other field has, and will have, a greater influence on humanity in our generation.

Informatics studies the design, application, use and impact of information technology.  The ability to handle vast amounts of information cheaply has changed the way we live.  Advances in computer power, the World Wide Web, search engines, social networking, mobile technology, GIS and large-scale collaborative initiatives, to name a few, have revolutionized the way knowledge is created and shared.  Information has become an ubiquitous, indispensable component of our everyday lives, as we strive to manage information, create knowledge, and make decisions.

The Informatics Minor signals that you have concrete expertise in computing and Information Technology (IT) and understand their human implications.

Students from any major interested in applying technology or studying its effect on humanity are encouraged to apply, preferably by the end of sophomore year. Although there are no prerequisites, basic familiarity with computers is expected.

To receive the Informatics Minor students must complete three core courses plus three upper-level classes with sufficient informatics or computational content from an approved list of courses offered from a wide range of disciplines.  The core courses are INFO 102, INFO 202, and CS 105.  INFO 102 is a broad introduction to computer science and provides an understanding of the nature, capabilities, and limitations of IT. INFO 202 explores the ways in which IT has and is transforming society and how these technologies affect a range of social, political, and economic issues from the individual to societal levels.  CS 105 is an introduction to computer programming for non-science and non-engineering majors. The list of upper-level courses that count toward the minor is here:
http://www.informatics.illinois.edu/informatics-minor/upper-level-related-course/ .  This list is dynamic as new classes are added each year.

**Course requirements for students who are not CS majors or minors, or ECE majors**

| | | |
|---|---|---|
| INFO 102 | Little Bits to Big Ideas | 4 |
| INFO 202 | Social Aspects of Info Tech | 3 |

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|---|---|---|
| Select one of the following: | | 3 |
| CS 105 | Intro Computing: Non-Tech | |
| CS 101 | Intro Computing: Engrg & Sci | |
| CS 125 | Intro to Computer Science | |
| ECE 120 & ECE 220 | Introduction to Computing and Computer Systems & Programming | |

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|---|---|---|
| 3 Upper-level courses from an Informatics-approved list | | 9 |
| | Total = | 19 |

**Course requirements for CS and ECE majors, and CS minors**

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| INFO 202 | Social Aspects of Info Tech | 3 |

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|---|---|---|
| Select one of the following: | | 3-4 |
| CS 101 | Intro Computing: Engrg & Sci | |
| CS 125 | Intro to Computer Science | |
| ECE 220 | Computer Systems & Programming | |

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|---|---|---|
| 4 Upper-level, non-CS courses from an Informatics-approved list | | 12 |
| | Total = | 18-19 |

Visit http://www.informatics.illinois.edu/informatics-minor/633-2 for information about the Informatics Minor.  This minor is offered by the Illinois Informatics Institute, http://www.informatics.illinois.edu, 333-4930.

## Appendix A: Approved list of upper level electives for Informatics Minor

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|---|---|
| ASTR 496 | Seminar in Astronomy (depends on section) <br><br> *Approved topics include Practical Informatics for the Physical Sciences* |
| ACE 360 | Spreadsheet models and applications |
| ADV 400 | Special problems (depends on section) <br><br> *Approved topics include Advertising and New Media; Emerging Media; Public Relations in the Digital Age; Advertising Design Techniques.* |
| ADV 490 | Special topics in advertising (depends on section) <br><br> *Approved topics include Digital public relations; Advertising and digital media; Emerging media; Digital advertising; Media Entrepreneurship* |
| AE 410 | Computational aerodynamics |
| AE 483 | Aerospace decision algorithms |
| AGCM 315 | Emerging Media |
| ANSC 448 | Mathematical modeling in life sciences |
| ANSC 542 | Applied bioinformatics |
| ANTH 407 | GIS for anthropologists |
| ANTH 499 | Topics in Anthropology (depends on section) <br><br> *Approved topics include GIS for anthropologists* |
| ARTD 313 | Digital interaction |
| ARTD 334 | Computer Applications II |
| ARTD 415 | Ninth Letter |
| ARTD 499 | Special topics in art & design (depends on section) <br><br> *Approved topics include Advanced Digital Interaction; Sustainable Life Cycle Design & Research I* |
| ARTS 340 | The art of 3D imaging |
| ARTS 341 | Image practice |
| ARTS 343 | Time arts I |

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| ARTS 344 | Interactivity I |
| ARTS 443 | Time arts II |
| ARTS 444 | Interactivity II |
| ARTS 499 | Makerspace |
| ATMS 305 | Computing and data analysis |
| ATMS 421 | Earth systems modeling |
| BADM 350 | IT for networked organizations |
| BADM 351 | E-Business management |
| BADM 352 | Database design and management |
| BADM 353 | Information systems analysis and design |
| BADM 354 | Management of data communications |
| BADM 374 | Management decision models |
| BADM 453 | Decision support systems |
| BADM 454 | Enterprise computing management |
| BADM 458 | IT governance |
| BIOE 498JM | Special Topics: Computational cancer biology |
| CHBE 571 | Bioinformatics |
| CHEM 470 | Computational chemical biology |
| CHP 395 | Interdisciplinary seminar (depends on section) |
| CHLH 421 | Health data analysis |
| CI 407 | Thry prac in elem schl tchg II (depends on section) |
| CI 435 | Computer-assisted instruction |
| CI 436 | The computer and mathematics education |
| CI 437 | Educational Game Design |
| CI 499 | Issues and Development in Education (depends on section) *Approved topics include Educational Game Design* |
| CMN 396 | Special topics in communications (depends on section) S *Approved topics include Understanding Digital Games and Gaming-Cultures (offered Summer 2011), Interpersonal* |

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| | *Relationships & Technology* |
| CMN 410 | Workplace Comm Technology |
| CMN 496 | Adv topics in communications (depends on section) *Approved topics include Play and Technology; Social Networks; New Media and Identity; Video Games: Content, Industry, and Policy; Virtual Communities; Service Learning in Technology and Policy; Internet Law and Policy; History of US Telecommunications* |
| CPSC 565 | Perl and Unix for bioinformatics |
| CS 410 | Text information systems |
| CS 411 | Database systems |
| CS 412 | Introduction to data mining |
| CS 417 | Computer aided instruction |
| CS 418 | Interactive computer graphics |
| CS 419 | Production computer graphics |
| CS 440 | Intro to artificial intelligence |
| CS 446 | Machine learning |
| CS 461 | Computer security I |
| CS 463 | Computer security II |
| CS 465 | User interface design |
| CS 466 | Introduction to bioinformatics |
| CS 467 | Social visualization |
| CS 498 | Special topics (depends on section) *Approved topics include Social Visualization; Social Computing; Principles of User Interface Design, Implementation, and Evaluation; Computational Photography; Socio-Computer Interaction; Health Informatics* |
| DANC 532 | Digital media for dancers |
| ECE 402 | Electronic music synthesis |
| ECE 498 | Special topics in ECE (depends on section) |

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| | *Approved topics include Extending Mobile Computing Through Cloud Computing* |
| ECON 490 | Topics in Economics (depends on section)<br>*Approved topics include Economic Forecasting* |
| ENGL 380 | Special topics in ENGL (depends on section)<br>*Approved topics include Writing in a digital world* |
| ENGL 396 | Honors Seminar I (depends on section)<br>*Approved topics include: Old and New Media* |
| ENGL 461 | Topics in Literature (depends on section)<br>*Approved topics include: Old and New Media* |
| ENGL 482 | Writing technologies |
| EPS 415 | Technology & Educational Reform |
| EPSY 457 | Teachers and Tech Integration |
| EPSY 474 | Evaluating Learning Technology |
| EPSY 490 | Developments in Educ Psyc (depends on section) |
| FIN 418 | Financial modeling |
| GEOG 379 | Introduction to GIS |
| GEOG 380 | GIS II: Spatial Problem Solving |
| GEOG 390 | Individual Study (depends on section)<br>*Approved topics include GIS and Society* |
| GEOG 412 | Geospatial Technology and Society |
| GEOG 460 | Analysis and interpretation of aerial photography |
| GEOG 468 | Biological modeling |
| GEOG 469 | Spatial ecosystem modeling |
| GEOG 476 | Applied GIS to environmental studies |
| GEOG 479 | Advanced GIS |
| GEOG 480 | Principles of Geographic Information Systems |
| GEOG 489 | Programming for GIS |
| HRD 412 | Instructional Techniques |

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| [HRD 472](#) | Learning technologies |
| [IB 364](#) | Bioinformatics & Human Genome |
| [IB 473](#) | Plant genomics |
| [IB 487](#) | Mathematical modeling in life sciences |
| [IB 493](#) | Statistical Ecology |
| [INFO 303](#) | Writing Across Media  *(Adv Comp Gen Ed)* |
| [INFO 310](#) | Computing in the humanities |
| [INFO 325](#) | Social Media and Global Change (same as EPS 325/ AFST 325/ ASST 325/ EURO 325/ LAST 325/ REES 325/ SAME 325) |
| [INFO 326](#) | New Media, culture, and society (same as MACS 326) |
| [INFO 345](#) | Digital and Gender Cultures (same as GWS 345/ MACS 345/ SOC 345) |
| [INFO 390](#) | Special topics (all sections count towards the minor) |
| | INFO 390CC Computers and culture |
| | INFO 390CWC China and world communications |
| | INFO 390E Writing in a digital world |
| | INFO 390ML Information Technology and social change in East Asia |
| | INFO 390PVT Privacy and Technology |
| | INFO 390RGI Race, Gender and Information Technology |
| [INFO 399](#) | Individual study |
| [INFO 403](#) | Game design: Creating virtual worlds |
| [INFO 490](#) | Special topics (all sections count toward the minor) |
| [JOUR 410](#) | Multimedia reporting |
| [JOUR 425](#) | Graphics and design |
| [JOUR 460](#) | Special topics (depends on section) |
| [JOUR 480](#) | Advanced reporting topics (depends on section) *Approved topics include Digital Newsroom Practicum; Digital Reporting* |

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|---|---|
| [KIN 494](#) | Technology-Driven Health Behavior Change Interventions |
| [LING 402](#) | Tools and techniques for speech and language processing |
| [LING 406](#) | Introduction to computational linguistics |
| [LING 490](#) | Special Topics in Linguistics (depends on section) *Approved topics include Intro to Corpus Linguistics* |
| [LING 506](#) | Topics in computational linguistics |
| [LIS 310](#) | Computing in the humanities |
| [LIS 351](#) | Design of usable information interfaces |
| [LIS 390](#) | Special topics in info studies (the following sections are offered regularly and count towards the minor) |
| | LIS 390CC Computers and culture |
| | LIS 390CW China and world communications |
| | LIS 390EC Digital Media Ethics |
| | LIS 390HFI Historical foundations of the information society |
| | LIS 390RGI Race, gender and information technology |
| | LIS 390THP Telecommunications: Introduction to History and Policy |
| | LIS 390W1A Web technologies and techniques |
| [LIS 451](#) | Introduction to network systems |
| [LIS 456](#) | Information storage and retrieval |
| [LIS 490](#) | Advanced topics in info studies (the following sections are offered regularly and count towards the minor) |
| | LIS 490BBU The BTOP revolution: building a broadband network to revolutionize the world |
| | LIS 490CW China world communication |
| | LIS 490DB Introduction to databases |
| | LIS 490DD Digital divide |
| | LIS 490EG e-Government |
| | LIS 490GIU/GIL Geographic Information Systems (GIS) |

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|---|---|---|
| | LIS 490JG3 Designing Universally Accessible Web 2.0 Applications | |
| | LIS 490ITU Entrepreneurial IT design | |
| | LIS 490MU Museum informatics | |
| | LIS 490PVU Privacy in the Internet Age | |
| | LIS 490ST Community informatics studio | |
| | LIS 490WP Programming Web mashups | |
| MACS 326 | New Media, culture, and society | |
| MACS 395 | Special media/cinema topics (depends on section) *Approved topics include Digital Games; Planet Google; Contemporary Cinema (taught in SP2013), Media/Info Ethics & Global Culture* | |
| MACS 410 | Media Ethics | |
| MACS 496 | Advanced media/cinema topics (depends on section) *Approved topics include Digital Cinema; Techno-Scientific Networks* | |
| MCB 317 | Genetics and genomics  (*formerly MCB 405)* | |
| MCB 419 | Brain, behavior and information processing | |
| MCB 432 | Computing in molecular biology | |
| MCB 493 | Special topics (depends on section) *Approved topics include Making and using phylogenetic trees, Neural systems modeling* | |
| MCB 519 | Computational brain theory | |
| ME 451 | Computer-aided manufacturing systems | |
| MUS 404 | Contemp composition techniques (depends on section) *Approved topics include MAXMSP: Interactive Music for Performers and Composers; Algorithmic Design of Music.* | |
| MUS 424 | Musical informatics | |
| MUS 448 | Computer music | |
| MUS 499 | Special topics (depends on section) | |

| | |
|---|---|
| | *Approved topics include Project-Oriented Computer Music (SP2014)* |
| MUS 503 | Computer-assisted composition |
| NEUR 591 | Computational brain theory |
| NPRE 498 | Probabilistic Risk Assessment |
| NRES 454 | GIS in Natural Resource Management |
| PATH 439 | Health applications of GIS |
| PHIL 380 | Current controversies (depends on section) <br> *Approved topics include Philosophy and Intelligence: Minds, Brains and Computers* |
| PS 300 | Special Topics (depends on section) <br> *Approved topics include Big Data, Math and Politics* |
| PSYC 358 | Human factors |
| PSYC 429 | Human computer interaction lab |
| SOC 350 | Technology and society |
| SOC 396 | Special topics in sociology (depends on section) <br> *Approved topics include Population Informatics Perspectives on Immigration and Race in Illinois, Cyberspace and Social Relations* |
| SOC 485 | Intermediate Social Statistics |
| SOC 496 | Advanced special topics in sociology (depends on section) <br> *Approved topics include Sex, Drugs, and Data; Globalization and Health* |
| STAT 420 | Methods of applied statistics |
| STAT 428 | Statistical computing |
| STAT 440 | Statistical data management |
| STAT 448 | Advanced data analysis |
| STAT 458 | Mathematical modeling in life sciences |
| TAM 470 | Computational mechanics |
| THEA 437 | Software for lighting design |

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| UP 418 | GIS for planners |
| UP 519 | Advanced applications of GIS |