UNIVERSITY SENATE

UNVERSITY AT ALBANY
STATE UNIVERSITY OF NEW YORK

Introduced by: UAC

Date: December 9, 2013

**PROPOSAL
TO CREATE A BACHELOR OF SCIENCE DEGREE IN INFORMATICS, AND
TO SUSPEND ADMISSION TO THE FACULTY-INITIATED INTERDISCIPLINARY MAJOR WITH A
CONCENTRATION IN INFORMATION SCIENCE**

IT IS HEREBY PROPOSED THAT:

1. The University Senate approve the following proposal to create a Bachelor of Science degree in Informatics, and to suspend admission to the Faculty-Initiated Interdisciplinary Major with a concentration in Information Science, as recommended by the Undergraduate Academic Council.

2. That these changes take effect beginning with the Fall 2014 semester.

3. This bill be forwarded to the President for approval.

Proposal to Create a Bachelor of Science Degree in Informatics

The Department of Informatics proposes to create a Bachelor of Science degree in Informatics with a combined major/minor. This program has its roots in but expands upon the BA in Interdisciplinary Studies (Faculty-Initiated Interdisciplinary major in Information Science) currently offered by the Informatics Department. This packet includes the new program, rationale for these changes, and supporting documents.

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Rationale for Curriculum

The BS in Informatics is offered within the context of a liberal arts degree. Students will complete a broad-based academic degree with the in-depth training and educational experiences necessary to prepare them for specific technology-focused careers. Among other things, the liberal arts foundation of this degree will help promote skills such as critical thinking and in general promote lifelong strategies. Given the rapid pace of social and technological change, these skills are particularly important for students in Informatics.

Information and knowledge management is a cornerstone and foundation for many current and new opportunities in today's knowledge economy – in employment, in graduate school, and in society in general. The following features of the BS in Informatics support this goal:

1. Students are introduced very early in the curriculum to computing and information academic paths, via I INF 100 (new title: *Information in the 21st Century*) and I CSI 105 (*Computing & Information*).

2. Students participate in job/technology project shadowing opportunities before they select a specialization, via I INF 301 (new title: *Emerging Trends in Information and Technology*).

3. Students select one from a set of concentrations to specialize in a particular area. Each concentration has defined student-learning outcomes that align with current and emerging intellectual areas in Informatics, as well as potential career opportunities.

4. Students have opportunities for experiential learning, via internships, modified co-ops, independent research, capstones and community service placements where students can put into practice the technology skills they learn in classes.

5. Students will develop a professional portfolio of their technology projects throughout their tenure at the University at Albany that will include highlights specific to their concentration.

This program prepares students for specific workplace opportunities in today's competitive global environment and will also help them more quickly refine their career decisions and life objectives.

Process for Developing this Program

A survey of current and former University at Albany computing and information students indicates strong support for the concentration model.[1] This target population was broader than current or previous Information Science students to give a broader range of feedback, but focused on CCI students and alumni because they (generally) have an interest in computing and information. The concentrations[2] listed on the survey differed slightly from those proposed here: Web development, User Experience, Cyber-security, Software development, Library Science, Information Technology, Networking, Social Media, Data Analytics, Computational Informatics, Social Informatics, and Health Informatics, with an option for None. For the following analysis, we combined results for web development with those for user experience and computational informatics with software development.

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[1] http://www.surveymonkey.com/s/ZYKMK8Q
[2] Note that on the survey the concentrations were called "tracks."

Students were asked

1. *If you could have specialized in a particular area in your Information Science/Informatics degree, what would you have chosen?*

   IT was the first choice with 24% of students picking it followed by Web Development/UX with 21%. Figure 1 shows the popularity of all the concentrations.

Figure 1. What would you have specialized in? Summer 2013 Survey

Top Track Picks
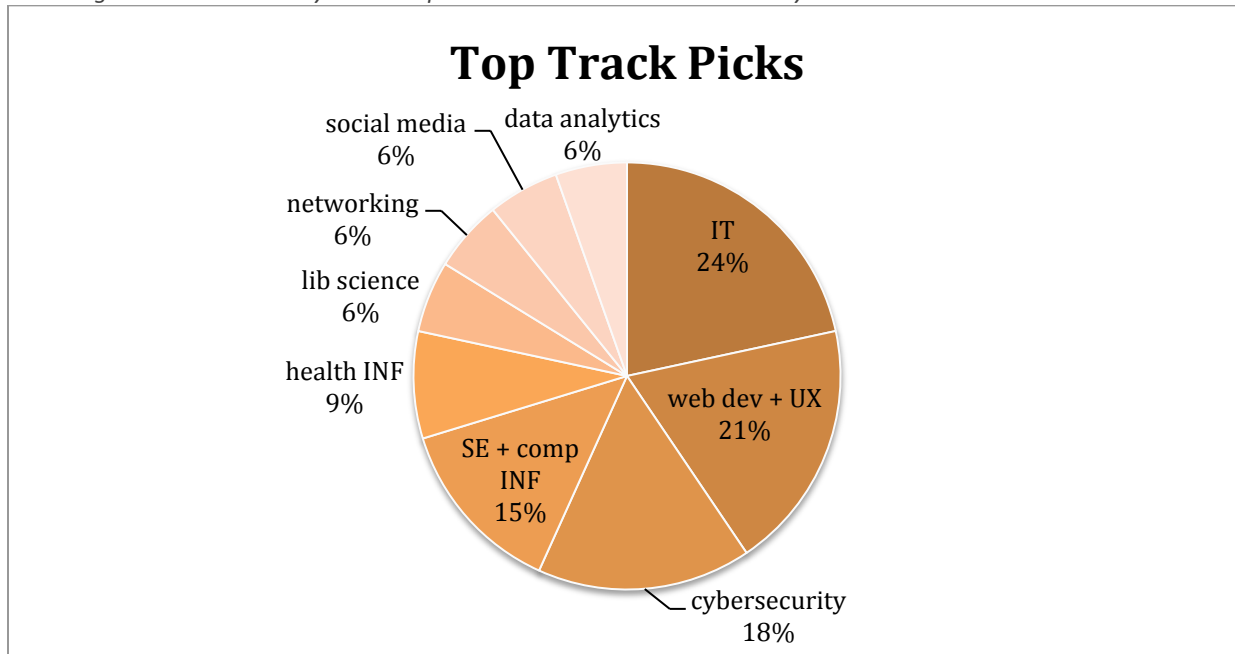
Some students chose more than one option as their top pick causing the percentages to add up to more than 100%

2. *Please rank the following areas with which tracks you think would be the best to add, based on your interests and what you know of the field.*

   This time Web Development was in the lead with 100% of students having it in their top 5 choices followed by Software Engineering (renamed Software Development) and Computational Informatics with 85% of students having it in their top five picks. Figure 2 illustrates what students thought would be the best concentrations to add.

Figure 2. What tracks should we add? Summer 2013 Survey
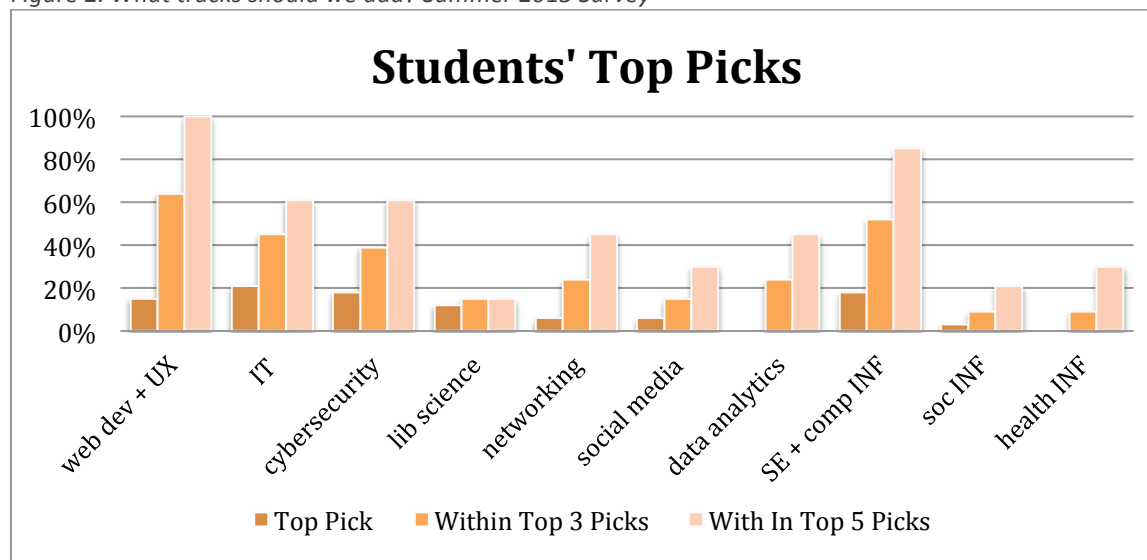
UAlbany Admissions counselors consistently relay that there is strong demand for Interactive User Experience (focused on Web Development) and Cyber-security specializations from high school seniors.

The Informatics Department met with capital region industry leaders[3] in the technology fields represented by these concentrations to discuss student learning outcomes, experiential learning opportunities, and other relevant issues on August 30, 2013. The discussion was very positive regarding the proposed program and specific concentrations. In addition to general advice on what to include/exclude from concentrations and which potential career options aligned with which concentration, specific themes that came up repeatedly include:

1. Communication, teamwork, and project management (specifically software development life cycle techniques) skills are paramount for today's graduates. The specific languages and/or tools used matter far less. This is built into the program through using team-based learning methods and adding a project management course that will mirror actual work environment challenges and situations.

2. It is important to avoid centering the curriculum on specific tools. Rather it is essential that students learn multiple tools and how to teach themselves new tools as they are developed. The proposed program is not locked in to specific tools or technologies in the proposed program, course descriptions or syllabi, giving us the flexibility to remain as techniques and specific tools change.

3. The field changes so dramatically and so quickly, we should take care to avoid being too trendy and need to be agile enough to stay current, semester-by-semester. Recognizing how important it is to market the program to high school students, parents, transfer students and returning students, we will adjust the message according to trends, while at the same time focusing on "current technologies" and "currently used tools" within the official program (this proposal). In addition, it is our expectation that we will add concentrations as new fields emerge and resources allow, such as health informatics.

4. Informatics connects Information Technology skills to other bodies of knowledge, so we should continue developing relationships on campus with other programs. This is the foundation of the

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[3] Including New York State Office of Information Technology Services, New York State Office of Mental Health, CDPHP, and Apprenda. Not able to attend, but providing feedback were also PVA, Kitware and Tyler Technologies.

Informatics minor, not part of this proposal. Currently, this proposal reflects relationships with Public Administration, Sociology, Documentary Studies, and Computer Science Departments. We also met with other departments that were interested in partnerships, but are under resource constraints that preclude a partnership at this time. Once approved, we will continue our conversations with departments on campus.

5. Employers also recommended a capstone experience for students from all concentrations to work together, bringing their skill set to a team to create a business or complete a project, each bringing forth their area of expertise. This can be done as part of the experiential learning opportunity requirement within the program.

6. The representatives at the meeting all were interested in hosting job shadowing students and internships, continuing the conversation about keeping the program current and relevant, and willing to share their expertise with students as guest lecturers or instructors. We will continue to develop these relationships as the program matures.

Many of the suggestions they made have been incorporated into the final version of the proposal.

The CCI Curriculum committee met on September 6, 2013 to discuss the proposal. After face-to-face and online discussions following, the Committee approved this proposal on September 13, 2013 with nine in favor, none opposed, and one abstention.

Outline of Proposed Program

The program proposed:

1. is named *Informatics* (CIP code: 11.0104, HEGIS: 0799). Informatics, or the application of technology, accurately describes the proposed degree and the concentration model.

2. is a Bachelor of Science.

3. is a combined major/minor consisting of 54 credits.

4. has experiential learning opportunities embedded in the requirements.

5. has core requirements. There are seven concentrations to choose from. These concentrations are:

    •   Interactive User Experience (*i.e.*, Web Design Plus)

    •   Cyber-security

    •   Computer Networking

    •   Software Development

    •   Data Analytics

    •   Social Media

    •   Information Technology

6. has an option for students to apply for a self-designed concentration.

7. has a fully online option (IT concentration only).

See attached course action, syllabi, and program forms for detailed course descriptions.

Historical Context

Informatics Department

Currently, the Informatics Department offers a B.A. in Interdisciplinary Studies (faculty-initiated interdisciplinary major in Information Science). Attached to this proposal is a proposal to close admission to the currently offered degree and to have the degree in this proposal replace it. This degree educates students for such careers as information technology specialist, records manager, Web developer, database administrator, and others while focusing on interdisciplinary, liberal arts education of our students. Some students enter graduate programs in library science, information science, business, and others. The department also offers an undergraduate minor in Informatics that may be combined with a major in any discipline except Information Science and has cognate options for students with certain departments[4], that focus on information and technology in that specific field.

The Informatics Department also houses a doctoral program in Information Science. The INF PHD program, like the undergraduate program in this proposal, has a strong required core of courses and then specializations for students to concentrate on a particular area, engaging with departments all over campus. Like the proposed INF BS, there is an opportunity in the INF PHD program for students to propose a self-designed specialization.

Pending final approval of SUNY 2020 Memoranda of Understanding negotiations with the Provost, the Informatics Department will be hiring for Fall 2014 two faculty members to focus on online teaching and learning through the SUNY High Needs and the University at Albany 2020 programs, two faculty members specializing in cyber-security[5] through the UAlbany 2020 program, one INF faculty member specializing in information, government and democratic society[6] through the UAlbany 2020, and one faculty member to focus on undergraduate teaching as a result of the UAlbany 2020 program. In addition, searches have already been approved and begun for a full-time secretary dedicated to the Informatics Department and a full-time undergraduate advisor to support this program. A full-time Director of the Information Science doctoral program has also been approved. It is expected that all of these will be approved by the time of final Senate approval. In addition, the College of Computing and Information has confirmed that they will sustain for the foreseeable future the current level of support for the hiring of adjunct faculty to support this program.

Informatics Values

As a Department, Informatics values wide-spread access to technology education. The Informatics minor is founded on the principle of "study what you love, but also graduate with enough technology skills to be technology-knowledgeable in the 21st century." In addition, we as instructors place a very high value on quality undergraduate education and engaged learning. Specifically, we value:

- Engaged, active learning

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[4] Complete list of current INF minor cognate options: Art, Communication, Computer Science, Criminal Justice, Economics, Geography, Journalism, Physics, and Women's Studies. Additional cognate options will to be developed as a result of successful funding of this proposal. http://www.albany.edu/testarea/undergraduate_bulletin2012-2013/minors.html. Sociology cognate option pending Senate approval.

[5] In partnership with Public Administration and the Computer Science Departments

[6] In partnership with Public Administration Department and the Center for Technology in Government

- Access to technology education

- Cutting-edge topics

- Staying ahead of the curve on technology developments and trends

- Trying something different

Additionally, as instructors, we practice the UAlbany Principles of Effective Teaching. Paraphrasing, "good teaching

1. Communicates high expectations

2. Encourages active learning

3. Includes clear organization and smart preparation

4. Respects diverse talents and ways of learning

5. Ensures prompt, frequent, constructive feedback

6. Involves productive student-faculty interactions

7. Maintains respectful, ethical student-faculty interactions and

8. Invests in continuous improvement."[7]

Informatics as a Growing Field

The name of this degree is *Informatics* (HEGIS code 0799, CIP code 11.0104). Informatics is technology applied to specific fields. Informatics serves as the bridge between computing and information technology and specific application domains, ranging, for example, from the government and public policy to economics to health care. As computing and information technologies become increasingly embedded in the day-to-day operations of commerce Informatics as a field will become increasingly important. We will need more individuals who understand a diverse set of technologies and how to apply them across fields. To illustrate this point we can look to the case of "big data" today. Organizations are producing immense amounts of data and emerging technologies are now making it possible to collect that data and use it to answer questions. This has created the need for individuals who understand how to use those technologies and how to get information out of large data sets.[8]

Recent Changes to Currently-Offered Information Science Program

We began our efforts to revise the undergraduate program in 2009. In August 2010, the Provost approved moving the undergraduate program from the Department of Information Studies to the Informatics Department. A revision of the curriculum was submitted in Fall 2011 and the revised program was implemented in Fall 2012. The revision was intended to be a two-stage process: (1) make updates, as reflected in *Bill No. 1112-17, Revisions to INF major*, approved by the Senate on 4/30/12 and signed by President Philip 6/13/12 and then (2) add specialization tracks and convert the Faculty-Initiated Interdisciplinary degree into a "real degree". We are in this second stage now.

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[7] http://itlal.org/sites/default/files/forms/ITLALNewsletterAug2013.pdf
[8] http://hbr.org/2012/10/data-scientist-the-sexiest-job-of-the-21st-century/

Adding the professional development and specialization model is a continuation of the shift in the program described in Bill No. 1112-17:

> Firstly, most of our students are interested in a degree that might be best-described as "applied computing and information" (though rarely in these words by the students themselves). They want to use computers as tools to design, build, count, communicate, and so on. They need enough academic exposure to "technology" to understand how hardware and software tools work, but many of them have no interest in or facility for the algorithmic, mathematical, and programming disciplines of computer science. This is true for students who come to Albany as freshmen and especially true for transfers.
>
> Secondly, to oversimplify, the origin of this major was rooted in an "individual-as-information-seeker" perspective. This is subtly evident in the emphasis of the core and upper-division required courses on psychology, linguistics, and logic. Without in any way challenging the value of that outlook, it is imperative to accommodate the change to an information-ready, networked, highly social, online world. This might be termed the "group-as-information-creators-and-sharers" perspective.[9]

The current proposal takes this one step further both by applying the technology and information to a specific area (*i.e.* Interactive User Experience or Cyber-security) through formal coursework and experiential learning opportunities and putting the focus squarely on technology and information in society and not solely as it relates to individuals.

As the proposed program is implemented in Fall 2014, we request permission to close admission to the FIID/IS. We will continue to graduate students who have currently declared the FIID/IS if they wish to keep that major through DARS exceptions. See Appendix D for a proposed crosswalk of current requirements with proposed updates. We request that students who matriculate prior to F14 also have the opportunity to declare the new major.

Current vs. Proposed Programs

The proposed program retains the strengths of the currently offered FIID/IS, while adding diversity and more rigorous technical skills. Maintained strengths include:

- Strong core set of classes that provide the theoretical foundation of informatics

- Breadth of exposure to various technologies

- Interdisciplinarity (*i.e.*, looking at technology in various areas)

- A focus on user experience with technology (*i.e.*, design)

Improvements include:

- Depth to individual student's program

- Integrated job readiness skills from very early courses through capstone experiences

- Required experiential learning opportunities

- Systematic integration of teamwork skills

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[9] Taken from Senate Bill No. 1112-17

- Scaffolding of communication skills across courses

Enrollment Growth

As shown in Table 1, enrollment in the current Information Science major has grown over 60% in three years and is holding steady. This new program will maintain current enrollment and attract new students who would otherwise not consider this degree at the University at Albany.

Table 1. Enrollment by Information Science major

	F09	S10	F10	S11	F11	S12	F12	S13
ENRL Total Information Science majors	147	189	210	229	217	237	221	239

Table 2 shows the rapidly increasing demand for undergraduate courses offered by the Department of Informatics, having almost doubled its seat count over five years. Because many of the class enrollments are limited by seat capacity in classrooms, the numbers could grow even higher as access to the courses is expanded.

Table 2. Enrollment in Undergraduate INF courses

Course	F08	S09	F09	S10	F10	S11	F11	S12	F12	S13	F13[10]
100X[*]	343	370	191	364	400	350	372	440	429	490	849
201	32	60	70	59	56	54	54	51	71	132	114
202	--	20	46	55	49	49	83	79	79	71	89
301(X)[*],[**]	84	69	84	71	135	112	89	*56*	89	43[**]	89
361/362[***]	26	30	31	30	30	26	21	22	28	50	23
423	21	20	34	42	--	34	57	40	76	40	71
424	30	22	28	--	37	--	48	38	37	69	35
468	--	--	--	--	1	--	2	4	3	5	1
496	--	--	--	--	--	--	--	18	19	31	70
499[***]	25	27	21	34	22	26	21	75	26	53	18
TOTAL	561	618	505	655	730	651	747	823	857	984	1359

*I INF 100X & I INF 301 were approved for Gen Ed, 21st Century Challenges eligibility roster Summer 2013. Enrollments are anticipated to grow dramatically in the 2013-14 year.
** Spring 12 I INF 301 enrollments declined when the course withdrew from the information literacy Gen Ed eligibility roster.
*** Restricted to Information Science majors only.

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[10] As of 09/03/13

Table 3 highlights projected enrollment growth for the INF BS over the next five years.

Table 3. Projected Enrollment Growth for the INF BS

	S15	S16	S17	S18	S19
Total Informatics majors	258	259	280	310	350

Program Features

Core Requirements

The proposed program includes a 42-credit core set of courses that all majors will be required to take. We aim to accomplish a few goals with the core. First, the core courses will focus on the "soft skills", such as teamwork, critical thinking, and problem-solving skills, which are in high demand from employers. Second, students will take a set of introductory technology courses so they have a well-rounded base understanding of multiple technical areas. Third, students will gain real world practical experience through learning opportunities in the field. Below is a list of the core highlights.

The 42-credit core includes:

- Three courses about information/technology and society

- Five introductory skills courses: project management, programming, web design, data, and networking

- One course each in math, research methods, and statistics

- Three courses in experiential learning

Students practice and develop the following skills in the core courses:

- Teamwork and interpersonal skills (*i.e.*, team-based learning (TBL) pedagogy in many courses)

- Verbal communication (in many courses, but specifically TBL courses and I INF 499)

- Written communication (*i.e.*, visual presentation of information is required in almost every class, through papers, blogs, infographics, tweets)

- Problem-solving and critical thinking (specifically I INF 100, 200, 301, 499)

- Analytical abilities (*i.e.*, data analysis, math courses, statistics, I INF 200)

- Technology skills (*i.e.*, programming, web development, networking and databases)

- Research methods and analysis (*i.e.*, I INF 200 and statistics)

- Real-world, practical experience (*i.e.*, experiential learning opportunities)

- Project management skills, specifically for digital projects (I INF 305)

Concentrations

In addition to the 42-credit core, students also select a 4-course concentration. See *Appendix A: Concentrations* for descriptions of each concentration. The concentrations each may have core components plus a selection of electives within the concentration. The underlying components shared by all concentrations will be a job shadowing opportunity at the start of the program and an internship opportunity as a culminating experience that will help students better understand and refine their career goals as soon as possible. By including an internship or similar experience, all students will share a consistent experience that they can also apply to their coursework and study programs.

Each of these concentrations has a specific career focus, as outlined in Table 4. This is not to lock students into a specific career, but to help guide their decisions about which concentration to select. It is quite possible that students in one concentration are qualified for careers from another concentration just by the nature of the core courses and their extra-curricular energies. For instance, someone studying cyber-security may be designing websites on the side and can use the two experiences together to work on social media. Finally, it should also be noted that some of these areas are so new, there are not well-defined job titles yet, especially within the data analytics concentration. Employers told us they know what they are looking for, but there is no specific title for it yet. This is to be expected with such a rapidly-changing field.

In addition, any of these concentrations prepare students for graduate school in areas such as Information Science, Informatics, Business Administration, Human-Computer Interaction (with a design focus), Security Informatics, Information Technology, and others.

Table 4. Potential career options, as related to concentrations

Concentration	Potential career options
(1) Interactive User Experience[11]	Web Designer, User Experience (UX) Manager, Corporate Webmaster, Information Technology Manager (IT Manager), Web Site manager, Webmaster, UX Designer, UX Expert, UX Analyst, UX Architect, IT Specialist, Interaction Designer, Usability Analyst, Information Architect
(2) Cyber-security [12]	Information Security Analyst, Information Technology Specialist, Data Security Administrator, Information Security Officer, Computer Specialist, Information Security Specialist, Information Systems Security Analyst, Computer Security Specialist, Information Security Manager
(3) Computer Networking[13]	System Administrator, Network Administrator, Computer Network Support Specialist, Computer Network Architect, VoIP Specialist
(4) Social Media[14]	Social Media Community Manager, Social Media Strategist, Social Media Specialist, Social Media Manager, Social Media and Electronic Communications Coordinator, Director of Social Media, Public Information Officer, Corporate Community Specialist, Blogger
(5) Data Analytics[15]	Data Analyst, Data Mining Specialist, Data Visualization Specialist, Data Scientist, Decision Support Specialist

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[11] http://www.onetonline.org/link/summary/15-1134.00
[12] http://www.onetonline.org/link/summary/15-1122.00
[13] http://www.onetonline.org/link/summary/15-1152.00
[14] http://www.indeed.com/jobs?q=social+media&l=

(6) Software Development[16]	Applications Programmer, Systems Engineer, Software Architect, Web Developer, Software Design Analyst
(7) Information Technology[17]	Data Analyst, IT Project Manager, Computer Support Specialist, Help Desk Analyst, Technical Support Specialist, Network Support Specialist

As previously mentioned, we anticipate adding concentrations as new fields develop and updating current concentrations to keep them current. By having the concentration model, this allows us to maintain a strong core while keeping the students' experience relevant and employable. Our peer institutions (see below) also using the concentration model do a similar thing, offering new concentrations and eliminating or updating outdated concentrations.

Self-Designed Concentration

It is possible for students to create a self-designed concentration with approval of an Informatics review committee. Students must petition the self-designed concentration committee for approval of such concentrations. It is essential that such petitions demonstrate that:

- The proposed concentration fits within the Informatics field,

- The proposed concentration is an emerging area in Informatics that is not already being offered,

- The student has support from a faculty/mentor, and

- The student has access to courses in their proposed area on campus.

Proposal and Approval Process for Self-Designed Concentration

- Student must write a rationale for their desired self-designed concentration and explain why current program-defined concentrations are not adequate options.

- Student must provide a proposal of courses to take to support the proposed self-designed concentration. Concentrations should consist of a minimum of four (4) courses. At least 9 credits of a self-designed concentration should be taken while enrolled in the INF BS program.

- Student must have at least one University at Albany faculty member approve this rationale and proposal in writing.

- The appointed faculty committee on self-designed concentrations must approve the request in order for the student to pursue that concentration.

General Education Competencies

As of Fall 2014, undergraduate programs are required to include four general education competencies into the major.[18] The INF BS degree has been crafted to integrate these competencies. (See attached forms for each competency.) Specifically,

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[15] http://www.indeed.com/q-Data-Analytics-jobs.html
[16] http://www.onetonline.org/link/summary/15-1133.00
[17] http://www.onetonline.org/link/summary/15-1199.09 http://www.onetonline.org/link/summary/15-1151.00
[18] http://www.albany.edu/generaleducation/implementation-timetable.php

1. Advanced Writing: I INF 301, I INF 499

    Definitions and Learning Objectives

    Educational experiences that satisfy the Advanced Writing competency in the major will provide students with sustained practice in increasingly sophisticated writing, in a variety of formats appropriate to the discipline. Faculty will guide students toward writing effectively in the discipline by providing appropriate evaluation of written documents, including opportunities to incorporate feedback and progress as writers, either through revision or subsequent assignments. Students' coursework will also convey knowledge of and access to the necessary tools and resources for writing in the discipline.

    Students completing educational experiences that satisfy the Advanced Writing competency as part of the requirements for graduation in the major will:

    - *demonstrate increasingly sophisticated writing according to the conventions of their academic discipline;*

    - *be able to communicate clearly in writing, employing fundamental rules of usage, style, and mechanics in the context of their discipline;*

    - *be able to evaluate critically a variety of written texts, including their own;*

    - *demonstrate the ability to incorporate critical feedback on their writing, coming to understand that revision and rewriting are an integral part of the writing process.*

2. Critical Thinking: I INF 200, I INF 202, I INF 301, I INF 499

    Definitions and Learning Objectives

    Critical thinking is the systematic process of analyzing and evaluating data, hypotheses, arguments, or critiques. It is an essential component of any academic major. The research, scholarship, and creative activities of university faculty ensure that our academic disciplines are constantly evolving. The facts and theories in academic disciplines are essential knowledge our students must learn, but it is mastery of critical thinking that will allow for lifelong educational and occupational development, and facilitate students' functioning as engaged citizens. Students' coursework in the major will cultivate in them habits of critical thinking, as they learn to approach questions and problems in critical, logical, and reflective ways.

    Students completing educational experiences that satisfy the Critical Thinking competency as part of the requirements for graduation in the major will:

    - *formulate complex questions, problems, and hypotheses clearly and precisely, and apply familiar and new concepts in developing solutions and conclusions;*

    - *gather and assess relevant information/data;*

    - *test hypotheses against relevant criteria and standards, accounting for the facts;*

    - *develop well-reasoned arguments and communicate them effectively to others;*

    - *demonstrate habits of reflection upon their own and others' thinking—identifying, analyzing, and evaluating their own and others' arguments; and challenging conclusions with alternative explanations or points of view.*

3. Oral Discourse: I INF 499

   Oral discourse provides opportunities for students to develop the oral communication skills they need to participate more effectively in public and academic debates and discussions. Each academic major will offer opportunities for students to participate in a variety of communication contexts appropriate to the discipline, and to reflect on the principles and theories relevant to specific oral communication activities.

   Students completing educational experiences that satisfy the Oral Discourse competency as part of the requirements for graduation in the major will:

   - *communicate ideas effectively appropriate to a specific context and according to a specific set of criteria;*

   - *establish and maintain an appropriate performer/audience relationship in a given oral exercise, and actively engage with listeners/audience;*

   - *respond to, and where appropriate, incorporate listener's comments and questions;*

   - *evaluate, orally or in writing, an oral performance;*

   - *regularly practice communication skills through questions, discussions, debates and/or presentations (both formal and informal).*

4. Information Literacy: I INF 100, I INF 301, I INF 499

   Information literate individuals are able to gather, evaluate, use, manage, synthesize, and create information and data in an ethical manner. They also understand the dynamic environment in which information and data are created, handled, and enhanced. Students demonstrate information literacy through finding information from appropriate sources; evaluating, using and managing information; and appreciating the role of information literacy in learning. Learning is understood here as the constant search for meaning by acquiring information, reflecting on and engaging with it, and actively applying it in multiple contexts. To this end, each academic major will offer increasingly sophisticated research assignments that rely upon diverse information sources. Students will find, process, evaluate, and cite information sources, creating and sharing information presented in multiple formats from multiple sources in a form appropriate to the discipline.

   Students completing educational experiences that satisfy the Information Literacy competency as part of the requirements for graduation in the major will:

   - *understand the information environment and information needs in the discipline in today's society, including the organization of and access to information, and select the most appropriate strategies, search tools, and resources for each unique information need;*

   - *demonstrate the ability to evaluate content, including dynamic, online content if appropriate;*

   - *conduct ethical practices in the use of information, in ways that demonstrate awareness of issues of intellectual property and personal privacy in changing technology environments;*

- *produce, share, and evaluate information in a variety of participatory environments;*

- *integrate learning and research strategies with lifelong learning processes and personal, academic, and professional goals.*

In addition, two of ten general education course requirements[19] are embedded in the major, including:

1. Challenges of the 21st Century (1 course, UAlbany-specific): I INF 100 (and I INF 301)

   The courses in the category of Challenges for the 21st Century *address a variety of issues focusing on challenges and opportunities in such areas as cultural diversity and pluralism, science and technology, social interaction, ethics, global citizenship, and others, and may include interdisciplinary approaches. Courses in this category will be expected to address the historical roots and contemporary manifestations of challenges that lie ahead as students move into the world beyond the University at Albany*

2. Math and Statistics (1 course): A MAT 108 (and another A MAT course)

   Approved courses introduce students to or extend their knowledge of pre-calculus, calculus, discrete mathematics, probability, statistics and/or data analysis. Courses may be offered in the Department of Mathematics and Statistics and in other departments that have expertise in quantitative reasoning and data analysis and that offer appropriate courses, particularly in statistics or discrete structures.

Pedagogy

A keystone of the proposed program is that it uses pedagogical best practices (*e.g.* inverted classroom experiences, informed team-based learning structures) to provide a learning environment that is engaging and promotes active learning.

To support the preparation of tomorrow's workers in the growing Knowledge Economy, several unique aspects are built into this proposal. First, courses will be taught using a team-based learning (TBL) model when appropriate – guided by the subject matter. Workers in the 21st century are normally organized in both physical and virtual teams; their instruction should mirror this environment.

In addition, Internet-based tools of collaboration and project management will be employed to not only enhance the learning environment, but also to prepare students for today's workplace. Many of the technologies employed in support of the proposed learning environment will be obtained from the open source community, which will allow students to create an enduring portfolio to show prospective employers – all from their personal devices. This use of open source software also minimizes facility costs (there is no licensing fee for the software), and immerses students in the latest software being developed by an Internet connected collaborative environment.

Online Program

The Information Technology (IT) concentration will increase access to information technology education for SUNY students statewide through an online undergraduate program in Information Technology, through the Open SUNY initiative and supported by the SUNY High Needs program. One clearly recognized area of High Need in the State of New York is for individuals qualified in the wide range of areas broadly described as Information Technology (IT). This need spans the range of economic growth initiatives, from start-ups to mature commercial firms. These same skills are also in demand to keep government at all levels efficient and responsive to the needs of citizens. Students

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[19] http://www.albany.edu/undergraduate_bulletin/general_education.html

throughout the State who graduate from this program will be well-prepared to fill these increasingly necessary and interesting 21st century careers, and help advance New York State's growth and economic well-being.

Additional online offerings at the University at Albany, Open SUNY, and the "system-ness" initiatives of SUNY, provide additional opportunities for students to access this UAlbany degree without geographic limitations.

General Elective and Elective Courses

As the University at Albany expands its online offerings at the undergraduate level, it is anticipated that students in this program will have an increasing set of classes from which to choose their required General Education courses and electives, along with the current offerings of Summer and Winter Session. In addition, through offerings at other institutions and the emerging collaboration of "Open SUNY," there will be a full range of online options through which they can fulfill their requirements while remaining consistent with the University at Albany's transfer credit policy of a maximum of 90 credits.

See *Appendix E: Advisement MAPs* for students in Online IT concentration, specifically.

Transfer Students

Traditionally, technology undergraduates in CCI have been almost half transfer students. Being mindful of this population in the planning stages of the program, the Informatics Department has been working with Brian E. Gabriel from the Office of the Vice Provost for Undergraduate Education to explore potential 2+2 options and transfer course equivalencies. Mr. Gabriel met with Hudson Valley Community College on August 29, 2013 to begin a conversation about the proposed program being a good fit for HVCC graduates. Additional meetings are scheduled with Fulton Montgomery Community College later this fall. No 2+2 plans or articulation agreements can be finalized until this proposal is approved. See attached letter from Assistant Dean Brian Gabriel outlining the University's plan for engaging with local community colleges regarding the INF BS degrees.

See *Appendix E: Advisement MAPs* for transfer students, specifically.

Scheduling of Classes

We have created a series of rules to help us determine when we will offer classes. The goal here is to ensure that all of the classes that students need to take are available to them, as well as to make certain that we do not over stress our resources. In implementation, these rules may, of course, have to be adapted. These rules are as follows:

1. Courses required in the core are offered every semester, some with multiple sections.
2. Each core course will be offered at least once a year online.
3. Courses required in the concentrations are offered once a year.
4. Courses that are options in a concentration (or more than one concentration) will be offered every third semester.
5. Classes that are **only** required in the IT concentration will only ever be offered online.
6. Classes that are used in the IT concentration and at least one other track will be offered online and face-to-face.
7. Experiential learning opportunities will be offered every semester, except INF 469 will be offered online, over the summer.

Context

National Job Projections

Department of Labor statistics indicate that job growth in computing careers is expected to be 22-31%, faster-to-much-faster than the average growth rate for all occupations (14%) and that the positions will require at least a bachelor's degree. Specifically, between 2010 and 2020, is expected that opportunities for:

- web developers will increase by 22%[20]

- information security analysts will increase by 22%[21]

- computer network architects will increase by 22%[22]

- computer and information research scientists will increase by 19%[23]

- software developers will increase by 30%[24], computer and information systems managers and computer support specialists will each increase by 18%[25],[26] and computer systems analysts will increase by 22%[27]

- mobile application developer, mobile technology expert, mobile web developer, cloud architect[28] will increase, although data has not been published addressing these specific fields because they are so new and are being defined as they emerge.

See Figure 3 for job growth projections. Note the darker bars are concentrations in this proposal.

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[20] http://www.bls.gov/ooh/computer-and-information-technology/information-security-analysts-web-developers-and-computer-network-architects.htm
[21] http://www.bls.gov/ooh/computer-and-information-technology/information-security-analysts-web-developers-and-computer-network-architects.htm
[22] http://www.bls.gov/ooh/computer-and-information-technology/information-security-analysts-web-developers-and-computer-network-architects.htm
[23] http://www.bls.gov/ooh/computer-and-information-technology/computer-and-information-research-scientists.htm
[24] http://www.bls.gov/ooh/computer-and-information-technology/software-developers.htm
[25] http://www.bls.gov/ooh/management/computer-and-information-systems-managers.htm
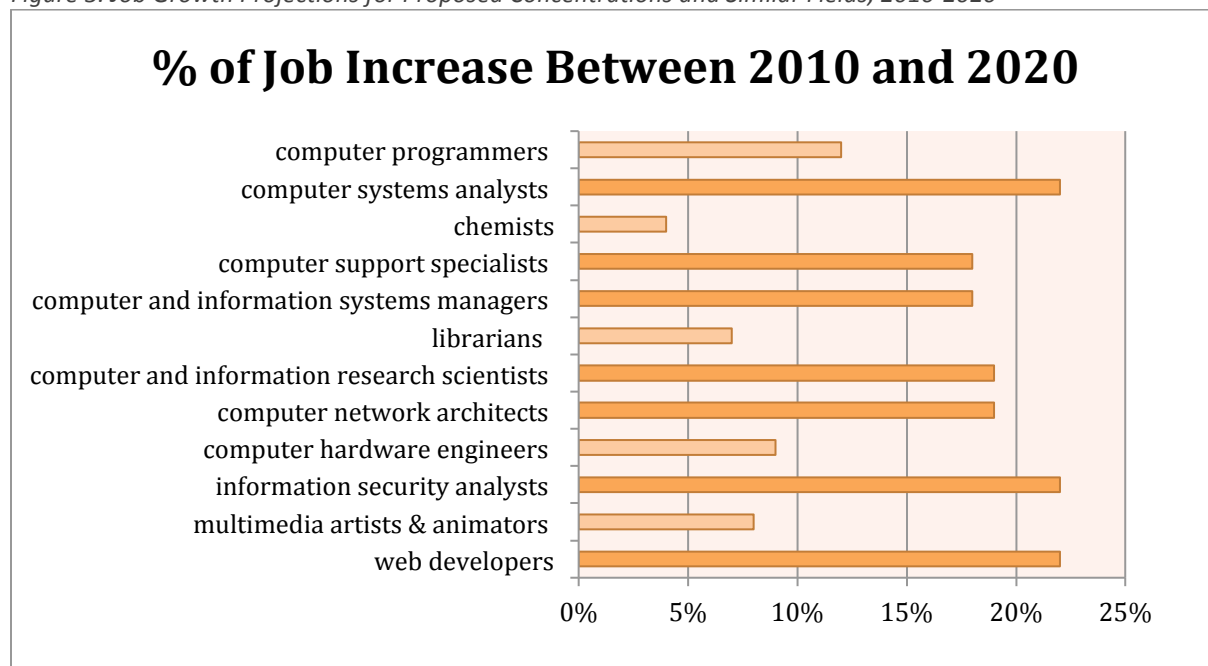[26] http://www.bls.gov/ooh/computer-and-information-technology/computer-support-specialists.htm
[27] http://www.bls.gov/ooh/computer-and-information-technology/computer-systems-analysts.htm
[28] http://www.experience.com/entry-level-jobs/news/top-10-jobs-in-information-technology/

Note that there are no job projections for some of the career paths for which students will be prepared, such as social media expert or data analyst, because the fields are growing so rapidly, there is no clear understanding at this time what the specific needs or historical data include. However, there are strong indications that these fields will continue to grow and there will be a need for students qualified in this area. Some statistics of note, however:

- New York City has the highest volume of social media jobs in the country.[29]

- Indeed.com searches millions of jobs from thousands of job sites and finds that "Social Media" is in the top 10 job trends. The following Indeed.com graph illustrates the number of job postings with the term "social media" in it.[30]
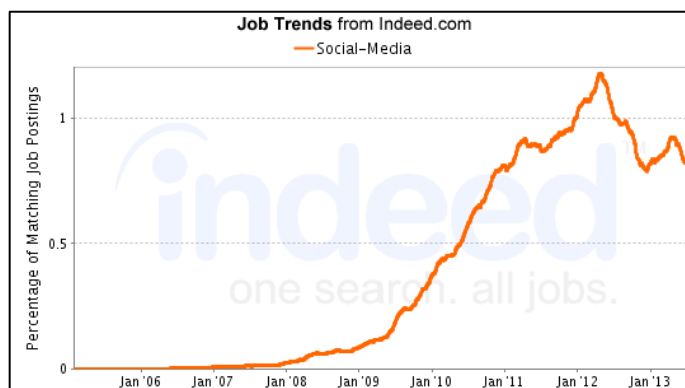
- CNBC dubbed Data Analyst the "Sexiest Job of the 21st Century"[31]

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[29] http://www.onwardsearch.com/Social-Media-Salaries/
[30] http://www.indeed.com/jobtrends

- Wantedanalytics.com reports that "Since July 2012, there was a 19% increase in demand for this technical skill set [user experience design]. Over the past 4 years, the number of job ads for User Experience Design grew more than 350%. Web Developers, the most commonly advertised occupation for this skill set, accounted for 30% of UX job ads. Software Developers (Applications), the second most advertised occupation for this skill set, represented 27% of hiring. Among all job ads, User Experience Design is the 20th most advertised skill."[32] The following graph illustrates these points.
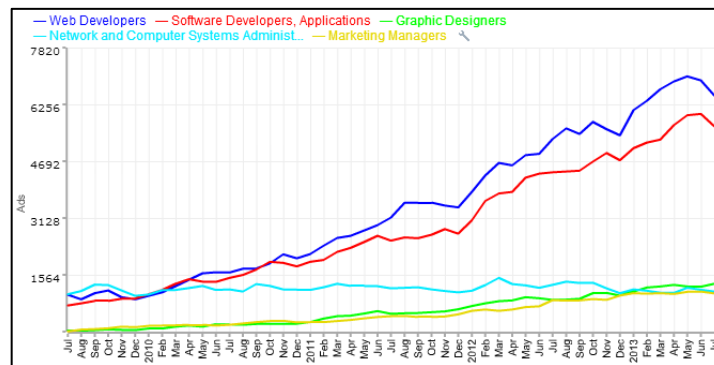
This program prepares students for specific workplace opportunities in today's competitive global environment and will also help them more quickly refine their career decisions and objectives. The concentration and core course approach has already been used within the Informatics doctoral program with outstanding success. This proposal also builds a model whereby it will be seamless to add concentrations as new Informatics areas emerge.

New York State Job Projections

In addition, the New York State Department of Labor[33] projections for these and other professions, all of which can be attained with a bachelor's degree, include:

	Average Annual Openings	
Occupation	Statewide 2010-2020	Capital Region 2008-2018
Information Security Analysts, Web Developers, and Computer Network Architects	730	710[*]
Network Systems and Data Communications Analysts	N/A	100
Network and Computer Systems Administrators	770	30
Computer and Information Systems Managers	720	20
Computer Programmers	890	80
Computer Systems Analysts	1130	60

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[31] http://www.cnbc.com/id/100792215
[32] http://www.wantedanalytics.com/insight/2013/08/30/hows-the-recruiting-experience-for-user-experience-design-skills/
[33] From the SUNY High Needs Request for Proposals, February 2013.

Software Developers/ Engineers	1710	50
Network and Computer Systems Administrators	770	30
Computer and Information Systems Managers	720	20
Database Administrators	280	10

* From the 2011-13 projection. Not included in 2008-2018 projections.

Student Demand

Similarly, University at Albany Admissions counselors report that high school students often inquire about the availability of a degree in web development (a significant piece of the interactive user experience concentration is dedicated to web design) or cyber-security, so we fully expect these two concentrations to be of immediate interest and attraction.

Informatics Peers

Currently, no other SUNY institutions offer an undergraduate degree in Informatics. However, Informatics as a field, as well as the concentration-model, is growing nationally. Institutions offering similar degrees include:

- *University at Washington* has a Bachelors of Science in Informatics. Their program requires similar courses to our core including statistics, research methods, technology courses, and programming. They also value experiential learning and encourage students to participate in an internship and require a capstone project that is similar to our experiential learning (http://ischool.uw.edu/academics/informatics/curriculum). The UW was founded in 1861 and is one of the oldest public universities on the west coast (http://www.washington.edu/discover/).

- *Indiana University Bloomington*: Bachelors of Science in Informatics. This degree includes core courses and a cognate option to experience technology in a particular field (http://www.soic.indiana.edu/undergraduate/degrees/bs-informatics/cognates/index.shtml). The University of Indiana Bloomington was founded in 1820 and is the University of Indiana's flagship campus. Similar to the University of Michigan, it is a large public research institution. They have also been noted for their commitment to freshman programs and residential learning communities (http://www.iub.edu/about/index.shtml).

- *University of California Irvine* takes a similar approach to our concentrations in their undergraduate program. They have specializations in: (1) Software Engineering (which corresponds to Software development), (2) Human Computer Interactions (which corresponds to Interactive User Experience), (3) Organizations and Information Technology (which corresponds to the interdisciplinary core courses in the current degree). Like the UAlbany Informatics program, UCIrvine values multi-course sequencing, creative and active learning opportunities, culminating projects, and multidisciplinarity. (http://www.informatics.uci.edu/ugrad/ugrad_about.php)

- *Cornell* also uses a concentration-based model, offering what they call tracks. They have three tracks in: (1) Human-centered systems (which corresponds to Interactive User Experience), (2) Information Systems (which corresponds to IT online), and (3) Social Systems (which corresponds to Information Science) (http://www.infosci.cornell.edu/ugrad/ArtsMajor.htm).

- *Mercer University*: Bachelors of Science in Informatics (began offering their BS in Informatics in 2011). This degree is offered through the College of Continuing and Professional Studies and

includes similar core courses in topics like programming, web design and data. Similar to Cornell they utilize the concentration model offering tracks in Health Information Technology, Web Development and Human Computer Interaction, and General Informatics (http://ccps.mercer.edu/undergraduate/informatics/). Mercer University is a smaller Liberal Arts college located in Georgia with campuses in Macon, Savannah, and Atlanta. It was founded in 1833 and currently has around 8,300 students enrolled (http://about.mercer.edu/).

- *University of Michigan*: Bachelors of Arts in Informatics. This degree is an interdisciplinary major that has a broader core curriculum than many of the other degrees, with classes in statistics and calculus. They also offer tracks in Computational Informatics, Data Mining & Information Analysis, Life Science Informatics, and Social Computing (http://informatics.umich.edu/informatics/curriculum). The University of Michigan is a large research institution with its flagship campus located in Ann Arbor. It also has two satellite campuses located in Dearborn, and Flint. It was founded in 1817 and currently has approximately 59,000 students enrolled (http://president.umich.edu/mission.php).

- *University of North Carolina Charlotte*: This degree, although not specifically an Informatics degree, has a similar core curriculum and allows students to pursue a concentration in Software and Information Systems, Web Development, Software Engineering, Information Technology, and Financial Services Informatics. In addition they require students in all concentrations to take more liberal arts focused classes such as classes in English and Communications (http://sis.uncc.edu/academics/undergraduate). The University of North Carolina Charlotte is a public research institution like the University of Michigan and Indiana University Bloomington. But, it is smaller with about 26,000 students currently enrolled in the University (http://www.uncc.edu/landing/about).

Connections and Relationships on Campus

Components of the proposed program complement the ongoing efforts in the Computer Science Department (software development and data analytics) and the Information Technology Management Department (cyber-security). Each of these programs has their own breadth, depth and emphasis; these allow students to choose targeted programs in areas of their interests, and together give UAlbany an impressive breadth across technology-related fields.

Appendix A: Proposed Curriculum for a B.S. in Informatics

Informatics is a combined major/minor, consisting of a minimum of 42 core credits and selection of a 12-credit concentration (54 credit total).

Information & Society (9 credits)
I INF 100X Information in the 21st Century (3)

I INF 301 Emerging Trends in Information and Technology (3)

I INF 499 Senior Seminar in Informatics (3)

Practical Applications (15 credits)
I INF 201 Introduction to Web Technologies (3)

I INF 202 Introduction to Data & Databases (3)

I INF 203 Introduction to Networks and Systems (3) *(new course)*

I INF 305 Digital Project Management (3)

I CSI 105 Computing & Information (3) (or substitute I CSI 201 Introduction to Computer Science)

Math (3 credits)
Any A MAT course between 100-299 (except A MAT 108)

Research (6 credits)
I INF 200 Research Methods for Informatics (3) *(new course)* (or substitute A SOC 220)

A MAT 108 Statistics (3) (or substitute A SOC 221)

Experiential Learning (9 credits)
Students will be advised into experiences that complement the chosen concentration. Classes may be repeated twice for a total of 6 credits. Students must do at least two different courses. Online IT students only may complete INF 469 (9 credits) to fulfill this requirement.

I INF 465 Senior Capstone Project (3) *(new course)*

I INF 466 Undergraduate Research (3) *(new course)*

I INF 467 Technology-based Community Support (3) *(new course)*

I INF 468 Undergraduate Internship (3)

I INF 469 Undergraduate Internship for Online IT Students (9) *(new course)*

E APS 487 Peer Mentoring (3)

Students select one concentration.

Interactive User Experience
I INF 302 Human-Computer Interactive Design (3) *(new course)*

I INF 362 Intermediate Interactive Design (3) *(new title)*

Select two from:

I INF 308 Programming for Informatics (3) *(new course)*

I INF 363 Digital Design (3) *(new course)*

I INF 401 Case Studies in Digital Citizenship (3) *(new course)*

I INF 462 Current Technologies in Web Design (3) *(new course)*

I INF 496 Special Topics (3) (as appropriate, repeatable)

I CSI 107 Web Programming (3)

I CSI 124X Computer Security Basics (3)

A DOC 324 (= A JRL 324) Introduction to Documentary Photography (3)

A DOC 330 (= A HIS 330) Foundations of Documentary Web/Hypermedia Production (3)

A DOC 406 (= A HIS 406) Practicum in Historical Documentary Filmmaking (4)

A DOC 407 (= A HIS 407) Readings and Practicum in Digital History and Hypermedia (4)

Cyber-security
I CSI 124X Computer Security Basics (3)

I INF 306 Information Security & Assurance (3) *(new course)*

Pick two:

I INF 401 Case Studies in Digital Citizenship (3) *(new course)*

I INF 452 Computer and Network Security (3) *(new course)*

I INF 453 Information Security and Privacy (3) *(new course)*

I INF 454 Human Aspects of Cyber-security (3) *(new course)*

I INF 455 Prevention and Protection Strategies in Cyber-security (3) *(new course)*

I INF 496 Special Topics (3) (as appropriate, repeatable)

I CSI 300Z Social, Security and Privacy Implications of Computing (3)

I CSI 424 Information Security (3)

I CSI 426 Cryptography (3)

Computer Networking
I INF 303 Intermediate Networking (3) (currently I INF 423)

I INF 304 Intermediate Hardware and Operating Systems (3) (currently INF I 424)

Pick two from:

I INF 403 Advanced Networking and Security (3) *(new course)*

I INF 404 Advanced Systems and Security (3) *(new course)*

I INF 452 Computer and Network Security (3) *(new course)*

I INF 470 Physical Computing (3) *(new course converted from previous special topic)*

I INF 496 Special Topics (3) (as appropriate, repeatable)

Social Media
I INF 307 Current Topics in Social Media (3) *(new course)*

I CSI 131 Introduction to Data Analytics: Seeking Information in Data with Computation (3) *(new course converted from previous special topics)*

Pick two from:

I INF 308 Programming for Informatics (3) *(new course)*

I INF 363 Digital Design (3) *(new course)*

I INF 401 Case Studies in Digital Citizenship (3) *(new course)*

I INF 496 Special Topics (3) (as appropriate, repeatable)

I CSI 432 Network Science (3)

A SOC 210 Sociology of Culture (3)

A SOC 255 Mass Media (3)

A SOC 270 Social and Demographic Change (3)

A DOC 224 (= A HIS 224) Nonfiction Media Storytelling (3)

Data Analytics
I INF 300 Probability and Statistics for Data Analytics (3) *(new course)*

I CSI 131 Introduction to Data Analytics: Seeking Information in Data with Computation (3) *(new course converted from previous special topics)*

Pick two from:

I INF 407 Modern Issues in Databases (3) *(new course)*

I INF 408 Analysis, Visualization, and Prediction in Analytics (3) *(new course)*

I INF 451 Bayesian Data Analysis and Signal Processing (3)

I IST 433 Information Storage and Retrieval (3)

I CSI 431 Data Mining (3)

I CSI 432 Network Science (3) *(new course)*

I CSI 436 Machine Learning (3)

Software Development
I CSI 201 Introduction to Computer Science (4)

I CSI 310 Data Structures (3)

I CSI 418Y Software Engineering (3)

Pick one from:

I INF 455 Prevention and Protection Strategies in Cyber-security (3) *(new course)*

I CSI 405 Object Oriented Programming Principles and Practice (3)

Information Technology (online only)
I INF 302 Human-Computer Interactive Design (3) *(new course)*

I INF 303 Intermediate Networking (3) (currently I INF 423) *(new course)*

I INF 306 Information Security & Assurance (3) *(new course)*

I INF 308 Programming for Informatics (3) *(new course)*

Self-Designed (with Departmental Approval only)
Student must provide a proposal of courses to take to support the proposed self-designed concentration that includes at least four (4) courses. At least 9 credits of a self-designed concentration should be taken while enrolled in the INF BS program. Proposal must be approved by INF faculty before the student can declare it.

Appendix B: Concentrations

"What we're seeing with these emerging job positions is a splintering of monolithic tech functions into more granular definitions. Enterprise skills used to be all-encompassing, just like an MD was once enough in the medical world. Today tech roles are being sliced more finely," says Dice.com's Hill. "We see it happening already in even relatively new areas like mobile. For tech professionals, it's clear that in order to be recognized for your skills, a solid base is a good start, but specificity is key."[34]

Interactive User Experience

"In most people's vocabularies, design means veneer. It's interior decorating. It's the fabric of the curtains of the sofa. But to me, nothing could be further from the meaning of design. Design is the fundamental soul of a human-made creation that ends up expressing itself in successive outer layers of the product or service."[35]
— Steve Jobs

A good website or mobile application will appear seamless and intuitive as you navigate through it. It will be dynamic, attractive and suit the organization it represents. This does not happen accidently. It is the product of skilled individuals with knowledge of design, digital media, human computer interaction, web development, and mobile technologies. The proposed concentration in Interactive User Experience will provide students with the opportunity to learn these skills.

Students in this concentration are prepared for a career in web development, which the Board of Labor Statistics estimates will increase by 22% over the next 8 years.[36] But, with the explosion of mobile technologies how users interact with websites and an organizations online presence has changed. This concentration addresses that change and further aims to prepare students for careers in creating interactive user experiences across technologies.

Cyber-security

President Obama has declared that the "cyber threat is one of the most serious economic and national security challenges we face as a nation" and that "America's economic prosperity in the 21st century will depend on Cyber-security."[37]
— White House

Cyber-security is the study of how digital computer systems can be attacked and defended. It has both theoretical aspects and practical implications for our modern, wired world. It is a current topic of strong interest among students, and also an area of ready employment for knowledgeable graduates, as well as an intellectually rewarding area of research, and one that is a national priority. As the

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[34] http://www.infoworld.com/t/information-technology-careers/the-6-hottest-new-jobs-in-it-052?page=0,4
[35] http://www.quotationspage.com/quote/38355.html
[36] http://www.bls.gov/ooh/computer-and-information-technology/information-security-analysts-web-developers-and-computer-network-architects.htm
[37] http://www.whitehouse.gov/administration/eop/nsc/cybersecurity

developed world has moved more of its economic, political and personal activity onto Internet-connected computers, there has been the inevitable increase in criminal exploitation of those same resources. A knowledge of Cyber-security has become a staple in many people's lives. The same holds for businesses, and governments.

Two consequences of this are relevant here. First, wide ranges of institutions are increasing their Cyber-security efforts. This has entailed increasing hiring of technical specialists with Cyber-security training. Even two years ago, a commission making Cyber-security recommendations to the new Obama administration said that there was a shortage of up to 30,000 specialists in cyber security.[38] They elaborated on the needed skills – "an even more desperate shortage of people who can design secure systems, write safe computer code, and create the ever more sophisticated tools needed to prevent, detect, mitigate and reconstitute from damage due to system failures and malicious acts." These are just the skills that we are proposing to help students learn. The U.S. Bureau of labor statistics cites an *overall* growth of 3.9% in technical computing careers[39], and since Cyber-security is widely cited as a growth area within this field[40], the overall growth in this specific area is expected to be even higher.

Computer Networking

> *"The amount of improvement that has occurred in computer technology in the past half century is truly staggering and unprecedented in other industries. ... If cars had improved at this rate in the same time period, a Rolls Royce would now cost 10 dollars and get a billion miles per gallon. (Unfortunately, it would probably also have a 200-page manual telling how to open the door.)"[41]*
> *— Andrew S. Tanenbaum*

The computer networking concentration is appropriate for those students wishing to prepare for a career in network or system administration and have a desire to learn how to architect, design, support, manage, and properly secure information networks in various organizational settings. The student will gain a solid understanding of both the theory of networking along with the specific technologies tied to the theory. Finally, they will gain the knowledge to apply both the theory and technologies to specific application situations appropriate for large and small businesses in wide range of government, education and commercial settings. They will accomplish this by exploring each network layer in detail through a combination of hands-on labs, group projects and presentations, research, and individual studies.

Specifically, students will explore topics such as mobile and wireless networking (WiFi, cellular, Bluetooth, *etc*.) along with wired networking and basic network technologies (switches, routers, servers, cabling, WANs/LANS, etc). Also covered is cloud computing and security concerns for each type of network configuration and technology. Upon completion of the concentration and degree program, the student will be prepared to enter the workforce as a network specialist/administrator and/or pursue advanced degrees in technology and business.

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[38] Commission on Cybersecurity for the 44th Presidency (2010), *A Human Capital Crisis in Cybersecurity: Technical Proficiency Matters*, The Center for Strategic and International Studies, November, *pp.* v-vi.
[39] http://www.bls.gov/news.release/ecopro.t03.htm
[40] http://www.washingtonpost.com/wp-dyn/content/article/2010/08/30/AR2010083001935.html
[41] http://www.goodreads.com/author/quotes/96575.Andrew_S_Tanenbaum

Social Media

> *"Experian reported in April (2013) that 16 minutes out of an hour online is spent on a social network or forum. [Think] about that…your customers and members are much more likely to interact with you on Facebook than your website. Does your marketing prioritize that?"*[42]

As utilizing social media continues to be an important part of how organizations spread their message and engage patrons, employers are increasing their search for qualified personnel to manage their social media outlets. In a recent analysis by indeed.com, one of the top meta job search sites, job postings with the words social media in the description have risen 28% from 2012 to 2013. With specific social media platforms increasing exponentially higher, for example the amount of times Instagram was mentioned in a job description increased 644%.[43]

While there are quite a few institutions that offer certificates in social media, including SUNY Purchase[44]; currently there are not many options for students who wish to pursue a degree in social media. Southern New Hampshire University which has a Bachelor's of Science in Social Media Marketing[45], Newberry College in South Carolina which has a new Bachelors of Arts in Social Media[46] and, Franklin University in Ohio which offers a Bachelors of Science in Social Media Design are a few of the popular choices. All of these schools are smaller private institutions.

> *"At Facebook, we're inspired by technologies that have revolutionized how people spread and consume information. We often talk about inventions like the printing press and the television — by simply making communication more efficient, they led to a complete transformation of many important parts of society. They gave more people a voice. They encouraged progress. They changed the way society was organized. They brought us closer together."*[47]
> *— Mark Zuckerberg*

Our proposed program will offer students a competitive edge. Through our core students will gain skills and knowledge in multiple technical areas as well as develop the soft skills that employers are looking for. Then, through the social media concentration, students will gain a deeper understanding of how to use social media platforms in a variety of settings and for multiple purposes by understanding issues within society as well as the technology.

Data Analytics

> *"The ability to take data – to be able to understand it, to process it, to extract value from it, to visualize it, to communicate it – that's going to be a hugely important skill in the next decades."*
> *— Hal Varian, Chief Economist, Google*

The advent of ubiquitous computers, networks and their ability to interact with the physical world has led to an increasing explosion of data. This presents both opportunities and challenges. Data can lead to new scientific and medical discoveries in areas such as genomics. Increased data availability and analysis capability can improve the quality of social, economic and business modeling. But, data can also be misused as well. Data analytics combines all of these aspects – handling large amounts of data,

[42] http://www.activecommunities.com/blog/top-10-social-media-stats-to-watch-2013/

[43] http://blogs.wsj.com/digits/2013/07/29/social-media-schooling-is-on-the-rise-but-is-it-necessary/?mod=e2fb

[44] https://www.purchase.edu/departments/AcademicPrograms/ce/Certificate/SocialMediaMarketing/Home.aspx

[45] http://www.snhu.edu/online-degrees/undergraduate-degrees/marketing-BS-online/social-media-marketing.asp

[46] http://www.newberry.edu/academics/areasofstudy/artsandcommunications/socialmedia.aspx

[47] http://www.freemake.com/blog/mark-zuckerberg-quotes-8-remarkable-sayings-of-facebook-ceo/

methods of sophisticated data analysis, and awareness, and safeguards for data security and privacy issues.

> *"A significant constraint on realizing value from big data will be a shortage of talent, particularly of people with deep expertise in statistics and machine learning, and the managers and analysts who know how to operate companies by using insights from big data. ... By 2018...the United States alone faces a shortage of 140,000 to 190,000 people with analytical expertise and 1.5 million managers and analysts with the skills to understand and make decisions based on the analysis of big data.[48]*
> *— McKinsey Global Institute*

Students in this concentration will combine skills in database and related technical areas for the gathering, storage and handling of data, especially in large volumes. In additional they will be well-versed in data analysis methods from computer science, mathematics, machine learning, *etc.* in order to analyze the data. And because the security of data, and the privacy of people whose data is being used, students will learn about best practices in handling of sensitive data.

Software Development

> *"Don't comment bad code—rewrite it."[49]*
> *— Brian W. Kernighan,* **The Elements of Programming Style**

As computer systems become increasingly central to our lives in ways large and small, the quality of the software – the computer code that runs on them also becomes increasingly critical. It is not enough to merely have proficiency in one of the modern computer languages. The design of anything but the most trivial of software systems is just as much an engineering project as the creation of something in mechanical or civil engineering. And with the critical role that software takes in aircraft, medical systems, the financial markets, *etc.*, the same standards of quality are necessary.

> *Google's executive chairman Eric Schmidt brings it to a point: "From the dawn of civilization until 2003, humankind generated five exabytes of data. Now we produce five exabytes every two days...and the pace is accelerating."[50]*

Students in this concentration will learn about software design, life cycles and project management. This work prepares them to play critical roles from entry-level software analysts up through team and organizational design and management positions. Among specialties within the computing and information disciplines, software development is anticipated to be one of the highest growing job markets between now and 2020.[51]

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[48] Source: McKinsey Global Institute; Big data: The next frontier for innovation, competition and productivity, May 2011
[49] http://www.goodreads.com/quotes/tag/software-engineering
[50] http://smartdatacollective.com/bernardmarr/141351/what-really-big-data-and-why-it-will-change-world
[51] http://www.bls.gov/ooh/Computer-and-Information-Technology/Software-developers.htm

Information Technology

> *"Cloud computing, smartphones, tablets, and easily accessible software applications makes the information technology a fast-growing area. Information technology occupations are involved in the development, management, and maintenance of computers and software to manage information."[52]*
> *SUNY High Needs RFP*

Because technology is constantly evolving, information technologists need a strong background in the technical fundamentals of computing and creativity and drive to stay updated on the newest advances in the field. That's because there's never one way to solve a problem. Likewise, it is essential that information technologies can communicate and work well with others, because often there is a team of programmers, engineers, or architects.[53]

> *"Information technology and business are becoming inextricably interwoven. I don't think anybody can talk meaningfully about one without the talking about the other."[54]*
> *Bill Gates*

This concentration is for the generalist who wants to be able to understand the technology, understand the user, qualify for competitive IT careers and be the "go-to" person in the office. In addition, because this concentration is being offered fully-online, students from around the world can access technology education and be qualified for competitive IT careers.

More from BLS: Careers in the growing field of information technology services (http://www.bls.gov/opub/btn/volume-2/careers-in-growing-field-of-information-technology-services.htm)

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[52] From the SUNY High Needs Request for Proposals
[53] http://online.wsj.com/article/SB10001424052748704358904575478133397664058.html
[54] http://www.brainyquote.com/quotes/authors/b/bill_gates.html

Appendix C: Student Learning Outcomes[55]

Below we list the expected student learning outcomes (SLOs) within the core and within the concentrations. The emphasis here is that the SLOs are fulfilled within the required courses in the core and the individual concentrations. In many cases, SLOs will also be fulfilled by courses (especially electives) beyond those listed. Also, through electives students will achieve advanced competencies beyond the degree baseline ones established here.

INF BS Core		
SLO: What do we want students to know and what skills do we want them to have?	**Class: What classes do they learn this SLO?**	**Assessment[56]: Exercises and activities, including direct and indirect measures designed to determine students' level of attainment of the SLO**
Capable of working as part of a team	Classes with TBL or other teamwork components.	Successful completion of course team exercises.
Ability to lead a project	I INF 305	Successful completion of course exercises.
Present data, information, arguments, and research verbally	I INF 301, I INF 499	Successful completion of course exercises.
Present data, information, arguments, and research visually	I INF 100, I INF 301, I INF 499	Successful completion of course exercises.
Think critically and solve problems related to current digital, technological, or information challenges	I INF 100, I INF 301, I INF 499, I CSI 105	Successful completion of course exercises.
Collect and analyze data	I INF 200, I INF 202, I INF 465, I INF 466, A MAT 108	Successful completion of course exercises.
Apply skills learned in the classrooms to real-world situations	Experiential learning opportunities: I INF 467, I INF 468, I INF 469, E APS 487	Successful completion of experiential learning opportunity
Create a web site with interactive design	I INF 201, I CSI 105	Successful completion of

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[55] Here is a great website from *Iowa State University* about incorporating verbs that reflect blooms taxonomy when writing SLO's: http://www.celt.iastate.edu/teaching/RevisedBlooms1.html

[56] Assessment, defined as the extent to which intended outcomes have been achieved,(Johnson, 1967; Zachos, 2007; Zachos & Pruzek, 2008) provides the most salient information for the evaluation of, and improvement of teaching. It is strictly the collection and presentation of information about the extent to which learning goals have been achieved (attained).

INF BS Core

elements as appropriate for a specific audience		course exercises.
Understand the basics of computer networking	I INF 201, I INF 203, I CSI 105	Successful completion of course exercises.
Explore computing and information in today's society	I INF 100, I INF 301, I INF 499, I CSI 105	Successful completion of course exercises.
Create computer programs to address a specified problem	I CSI 105	Successful completion of course exercises.
Demonstrate and understanding of concepts and issues in digital privacy and security	I INF 202, I INF 203, I CSI 105	Successful completion of course exercises.
Recognize the importance of data and its organization and manipulation in business, government, and society as a whole	I INF 202, I CSI 105	Successful completion of course exercises.
Implement basic design principles	I INF 201	Successful completion of course exercises.
Distinguish between types and forms of databases, and the types of data problems such databases can address	I INF 202	Successful completion of course exercises.
Distinguish between types and forms of data, and the potential uses of that data	I INF 200, I INF 202	Successful completion of course exercises.
Identify current and future trends in information-based technologies	I INF 301	Successful completion of course exercises.
Demonstrate an ability to critically evaluate the sources, content, and intention of information, along with the ability to communicate, clearly and coherently, any findings to a wider audience	I INF 100, I INF 301	Successful completion of course exercises.

Concentration: Interactive User Experience

SLO: What do we want students to know and what skills do we want them to have?	Class: What classes do they learn this SLO?	Assessment: Exercises and activities, including direct and indirect measures[57] designed to determine students' level of attainment of the SLO
Understand basic visual design principles	I INF 362	Successful completion of course exercises.
Predict trends	I INF 202	Successful completion of course exercises.
Be familiar with a variety of technologies and tools used in web and mobile design	I INF 201	Successful completion of course exercises.
Write computer programs for various purposes	I CSI 105, I CSI 107	Successful completion of course exercises.
Design or create new applications, ideas, or products	Experiential learning opportunities: I INF 465, I INF 466, In INF 467, I INF 468, I INF 469	Develop a product and/or contribute to a project.
Back up or modify applications and related data to provide for disaster recovery	I INF 203, I CSI 124X	Successful completion of course exercises.
Determine sources of web page or server problems, and take action to correct such problems	I INF 203, I CSI 124X	Successful completion of course exercises.
Critique content and design	I INF 201, I INF 302, I INF 462	Successful completion of course exercises.
Implement security measures, such as firewalls or message encryption	I INF 203	Successful completion of course exercises.
Administer Internet/intranet infrastructure, including components such as web, file transfer protocol (FTP), news and mail servers	I INF 201	Successful completion of course exercises.
Collaborate with development teams to discuss, analyze, or resolve usability issues	Classes with TBL or other teamwork components.	Successful completion of course team exercises.
Test backup or recovery plans regularly and resolve any problems	I INF 203	Successful completion of course exercises.
Implement updates, upgrades, and patches in a timely manner to limit loss of service, and using	I INF 362	Successful completion of

[57] Sexton, S. M. (2012). Assessment plans: A tool for sanity. *Assessment Update: Progress, trends, and practices in higher education, 24*(5), 5-6.

appropriate tools		course exercises.
Create various forms of digital media	I INF 302, I INF 363, A DOC 330, A DOC 406, A DOC 407	Successful completion of course exercises.
Use communication, and dissemination techniques and methods. This includes alternative ways to inform and entertain via written, oral, and visual media	I INF 462, I INF 499	Successful completion of course exercises.

Concentration: Cyber-security

SLO: What do we want students to know and what skills do we want them to have?	Class: What classes do they learn this SLO?	Assessment: Exercises and activities, including direct and indirect measures designed to determine students' level of attainment of the SLO
Demonstrate a basic knowledge of computer systems and identify their vulnerabilities.	I INF 203, I CSI I24X	Successful completion of course exercises.
Demonstrate a basic knowledge of computer networks and identify their vulnerabilities.	I INF 203, I CSI 124X	Successful completion of course exercises.
Define and compare the different types of computer attacks	I INF 203, I CSI 124X	Successful completion of course exercises.
Differentiate security vulnerabilities	I INF 306, I INF 452, I CSI124X, I CSI 424	Successful completion of course exercises.
Demonstrate a knowledge of cryptographic principles, systems and implementations	I INF 306, I CSI 426	Successful completion of course exercises.
Apply current principles and practices of digital forensics	I INF 306, I INF 401	Successful completion of course exercises.
Demonstrate a knowledge of security policies and procedures	I INF 203, I INF 306, I INF 452, I INF 453, I INF 455, I CSI 424	Successful completion of course exercises.
Apply principles and practices of software security	I INF 306, I INF 453	Successful completion of course exercises.
Create and implement plans to defend computer and networks systems in live exercises.	I INF 306, I INF 455	Successful completion of course exercises.

Concentration: Cyber-security

Demonstrate an understanding of sources of ongoing updates on security issues, approaches and solutions.	I INF 306, I INF 454, I INF 455, I CSI124X, I CSI 300Z	Successful completion of course exercises.

Concentration: Computer Networking

SLO: What do we want students to know and what skills do we want them to have?	Class: What classes do they learn this SLO?	Assessment: Exercises and activities, including direct and indirect measures designed to determine students' level of attainment of the SLO
Understand basic network design principles	I INF 203, I INF 303	Successful completion of final projects and labs.
Research and communicate networking and related IT issues, prepare proposals, and develop design recommendations.	I INF 200, I INF 303, I INF 403, I INF 496	Successful completion of final projects and labs.
Understand network security issues and how they relate to technologies and services that include cloud computing, mobile, and wireless networking.	I INF 306, I INF 403, I INF 404, I INF 452	Successful completion of in-class presentations, final projects, labs and homework assignments.
Illustrate concepts and technologies of communication and data networks	I INF 203, I INF 303, I INF 403, I INF 470, I INF 496	Successful completion final projects, labs and homework assignments.
Work effectively, both individually and with others, as a network engineer or network administrator in a variety of organizational settings	Experiential learning opportunities: I INF 465, I INF 467, I INF 468	Successful completion of experiential learning opportunity.

Concentration: Social Media

Student Learning Outcomes (SLO): What do we want students to know and what skills do we want them to have?	Class: What classes do they learn this SLO?	Assessment: Exercises and activities, including direct and indirect measures designed to determine students' level of attainment of the SLO
Competency with current social media platforms	I INF 307	Successful completion of course exercises.
Compare and utilize third-party social media management tools	I INF 307	Successful completion of course exercises.
Extrapolating meaning from platform-specific and third-party social media tracking and analytics tools	I INF 202, I CSI 131, I CSI 432	Successful completion of course exercises.
Predict trends in social media	I INF 202, I CSI 107, I CSI 131, I CSI 432	Successful completion of course exercises.
Create various forms of digital media	I INF 201, I INF 363, A DOC 224	Successful completion of course exercises.
Communicate orally and in written form for a variety of purposes (understand when it is important to be less formal and more professional)	I INF 100, I INF 301, I INF 499	Various writing assignments including: blog posts, research projects, research papers.
Develop and implement creative social media programs and campaigns	I INF 465, I INF 467, I INF 468, I INF 469, A SOC 255, A SOC 210	Successful completion of course exercises.
Ability to employ community moderation techniques	I INF 465, I INF 467, I INF 468, I INF 469, A SOC 255, A SOC 270	Successful completion of course exercises.
Perform outreach activities	Experiential learning opportunities: I INF 465, I INF 467, I INF 468, I INF 469	Successful completion of experiential learning opportunity.
Use social media to foster interactivity, engagement, community growth, and loyalty	I INF 401, I INF 465, I INF 467, I INF 468, I INF 469	Successful completion of course exercises.

Concentration: Data Analytics

Student Learning Outcomes (SLO): What do we want students to know and what skills do we want them to have?	Class: What classes do they learn this SLO?	Assessment: Exercises and activities, including direct and indirect measures designed to determine students' level of attainment of the SLO
Competency with current data management and database platforms	I INF 202, I CSI 431, I INF 407	Successful completion of course exercises.
Utilize third-party data management tools	I INF 202	Successful completion of course exercises.
Extrapolating insights from very large data sets	I INF 202, I INF 300, I CSI 131, I CSI 431, I IST 433, I CSI 436	Successful completion of course exercises.
Using visualization tools to represent meaning from data	I CSI 131, I INF 202, I INF 408	Successful completion of course exercises.
Use data modeling techniques to represent meaning from data	I INF 202, I INF 408, I INF 451, I CSI 131, I CSI 432, I CSI 436	Successful completion of course exercises.
Communicate orally and in written form for a variety of purposes (understand when it is important to be less formal and more professional)	I INF 100, I INF 301, I INF 499	Various writing assignments including: blog posts, research projects.
Coding and testing data analysis algorithms	I CSI 131, I INF 451, I CSI 436	Successful completion of course exercises.
Quantifying uncertainty in analysis results	I CSI 131, I INF 451, I INF 300, I CSI 436	Successful completion of course exercises.

Concentration: Software Development

Student Learning Outcomes (SLO): What do we want students to know and what skills do we want them to have?	Class: What classes do they learn this SLO?	Assessment: Exercises and activities, including direct and indirect measures designed to determine students' level of attainment of the SLO
Develop software applications at varying levels of proficiency	I CSI 105, I CSI 201, I CSI 310	Successful completion of course assignments.
Apply principles and practices of object-oriented design to projects	I CSI 201, I CSI 405	Successful completion of course exercises.
Create software using current practices and design principles	I CSI 418Y, I CSI 455	Successful completion of course exercises.
Implement debugging and testing principles and practices	I CSI 201, I CSI 310, I CSI 405, I CSI 418Y	Successful completion of course exercises.
Ability to use multiple software design methodologies (*e.g.* waterfall, agile).	I INF 305, I CSI 418Y	Successful completion of course exercises.
Demonstrate knowledge of life-cycle management.	I INF 305, I CSI 418Y	Successful completion of course exercises.
Demonstrate proficiency in team-based software systems design, implementation and testing.	I CSI 105, I CSI 418Y	Successful completion of course exercises.

Concentration: Information Technology

Student Learning Outcomes (SLO): What do we want students to know? What skills do we want them to have?	Class: What classes do they learn this SLO?	Assessment: Exercises and activities, including direct and indirect measures designed to determine students' level of attainment of the SLO
Develop and implement IT projects	Experiential learning opportunities: I INF 467, I INF 468, I INF 469	Successful completion of experiential learning opportunity.
IT Fundamentals	I INF 201, I INF 202, I INF 203, I	Successful completion of course exercises.

	INF 308, I INF 499	
Apply concepts of human computer interaction to projects	I INF 201, I INF 302, I INF 308	Successful completion of course exercises.
Model current principles of information assurance and security	I INF 306, I INF 308	Successful completion of course exercises.
Analyze information management concepts and fundamentals	I INF 202	Successful completion of course exercises.
Apply integrative programming techniques and technologies	I CSI 105, I INF 308	Successful completion of course exercises.
Understand and explain the foundations of networking	I INF 203, I INF 303	Successful completion of course exercises.
Compare and utilize a variety of platform technologies	I INF 303, I INF 306, I INF 308	Successful completion of course exercises.
Apply system administration and maintenance tools and techniques	I INF 203, I INF 303, I INF 306, I INF 308	Successful completion of course exercises.
Apply a variety of web technologies	I INF 201	Successful completion of course exercises.

Appendix D: Request to Suspend Admission to the Faculty-Initiated Interdisciplinary Major with a Concentration in Information Science

As the proposed program is implemented in Fall 2014, we request permission to close admission to the FIID/IS. We will continue to graduate students who have currently declared the FIID/IS if they wish to keep that major through DARS exceptions. See below for a proposed crosswalk of current requirements with proposed updates. We request that students who matriculate prior to F14 also have the opportunity to declare the new major.

Crosswalk Between Current and New Courses for DARS Exceptions

Current Requirements	*Proposed Updates*
Information and Society: 12 Credits I INF 100 I INF 301 I INF 499 A COM 100 A PSY 101 or 102 or A SOC 115	*Information and Society: 12 credits* I INF 100 I INF 301 I INF 499 I INF 200 I INF 305
Programming: 3 credits I CSI 105 or I CSI 201	*Programming: 3 credits* I CSI 105 or I CSI 201
Statistics: 3 credits A MAT 108 (or substitute)	*Statistics: 3 credits* A MAT 108 (or substitute)
Calculus: 3 credits A MAT 106 (or substitute)	*Calculus: 3 credits* Any A MAT class between 100 and 299 (except A MAT 108)
Technology: 12 credits I INF 201 I INF 202 I INF 423 I INF 424	*Technology: 12 credits* I INF 201 I INF 202 I INF 203 I INF 303 or I INF 304

Electives: 9 credits
Pick three:

I INF 362	I CSI 203	I CSI 310
I INF 399	I CSI 204	
I IST 402	I CSI 205	I INF 468
I IST 433	I CSI 210	E APS 487
I INF 496	I CSI 300Z	
I INF 451		

Electives: 9 credits (must be 300 and up)
Pick three:

I INF 302	I INF 403	I INF 553	I IST 433	I INF 466
I INF 306	I INF 404	I INF 554	I IST 402	I INF 467
I INF 307	I INF 407	I INF 555		I INF 468
I INF 362	I INF 408	I INF 462	I CSI 300Z	
I INF 363	I INF 451	I INF 470	I CSI 310	E APS 487
I INF 401	I INF 452	I INF 496		

Appendix E: Sample Advisement Major Academic Pathways (MAPs)

Students who enter as a first-year student (native students)

	Fall Semester	Spring Semester	Summer
YR1	I CSI 105 (or sub) I INF 100 **IL** Natural Sci. Gen Ed **NS** Arts Gen Ed **AR** Elective	I INF 200 I INF 201 A MAT 108 (or sub) **MS** U UNI 119 **WCI** Elective	
YR2	I INF 202 I INF 301 **CH** Any A MAT 100 to 299 Foreign Language Gen Ed **FL** Elective	I INF 203 Social Science GenEd **SS** US Historical Persp. Gen Ed **US** Elective Elective	
YR3	I INF Concentration Course Humanities Gen Ed **HU** I INF 305 Elective Elective	I INF Concentration Course I INF Experiential Learning Internl Persp. Gen Ed **IP** Elective Elective	
YR4	I INF Concentration Course I INF Experiential Learning Elective Elective Elective	I INF 499W I INF Concentration Course I INF Experiential Learning Elective Elective	

Transfer students

	Fall Semester	Spring Semester	Summer
YR1	I INF 100 A MAT 108 (or sub) I INF 202 or I INF 201 I INF 200	I INF 301 I INF 203 I INF Concentration Course Any A MAT 100 to 299 (not A MAT 108)	
YR2	INF 305 I INF Concentration Course I INF Concentration Course I INF Experiential Learning	I INF 499W I INF Concentration Course I INF Experiential Learning I INF Experiential Learning	

Assumptions
1. *Transfer in with a AA or AS degree*
2. *Transfer in the maximum number of credits and do not need any electives*
3. *Transfer in a class equivalent to I CSI 105 or one of its subs (computer programming)*
4. *Transfer in a class equivalent to either I INF 201 or I INF 202*

Fully-online students (IT Concentration only)

YR1	**Fall Semester** I CSI 105 (or sub) I INF 100 **IL** A MAT 100 to 299	**Winter** Natural Science Gen Ed **NS**	**Spring Semester** I INF 200 A MAT 108 (or sub) **MS** Elective	**Summer 4wk 1** I INF 203	**Summer 4wk 2** I INF 202	**Summer 4wk 3** I INF 201
YR2	**Fall Semester** Social Science Gen Ed **SS** I INF 305 Elective	**Winter** Humanities Gen Ed **HU**	**Spring Semester** I INF 301 **CH** Gen Ed **WCI** Elective	**Summer 4wk 1** I INF 306	**Summer 4wk 2** I INF 303	**Summer 4wk 3** I INF 302
YR3	**Fall Semester** I INF 308 Foreign Lang **FL** Elective	**Winter** Arts Gen Ed **AR**	**Spring Semester** Gen Ed **US** Gen Ed **IP** Elective	**Summer 4wk 1** **Summer 4wk 2** **Summer 4wk 3** ← 9 credits of experiential learning (I INF 469) →		
YR4	**Fall Semester** Elective Elective Elective	**Winter** Elective	**Spring Semester** I INF 499 Elective Elective	**Summer 4wk 1** Elective	**Summer 4wk 2** Elective	**Summer 4wk 3** Elective

Assumptions

1. The following are offered online:

   a. Any A MAT from 100 to 299 in the fall
   b. A MAT 108 is offered in the spring
   c. UAlbany has enough electives and GenEd courses available throughout the year (not just summer and winter)
   d. I INF can offer 6 courses online every summer (and will NOT be canceled due to low enrollment)

Second Bachelor's/Fully-online students (IT Concentration only)

YR1	**Fall Semester** I CSI 105 (or sub) I INF 100 I INF 202	**Winter** A MAT 100 to 299	**Spring Semester** I INF 200 I INF 201	**Summer 4wk 1** I INF 203	**Summer 4wk 2** I INF 303	**Summer 4wk 3** I INF 302
YR2	**Fall Semester** I INF 305 I INF 301 I INF 308	**Winter** A MAT 108 (or sub)	**Spring Semester** I INF 499 I INF 306	**Summer 4wk 1**	**Summer 4wk 2** ← 9 credits of experiential learning (I INF 469)→	**Summer 4wk 3**

Transfer students/Fully-online (IT Concentration only)

YR1	**Fall Semester** I INF 100 I INF 202 A MAT 108	**Winter**	**Spring Semester** I INF 200 I INF 301 I INF 201 or I INF 203	**Summer 4wk1** I INF 306	**Summer 4wk2** I INF 303	**Summer 4wk3** I INF 302
YR2	**Fall Semester** I INF 305 I INF 308 3 credits of experiential learning	**Winter**	**Spring Semester** I INF 499 6 credits of experiential learning			

Assumptions
1. *Transfer in with a AA or AS degree*
2. *Transfer in the maximum number of credits and do not need any electives*
3. *Transfer in a class equivalent to I CSI 105 or one of its subs (computer programming), I INF 203 (networking) OR I INF 201 (web development), and A MAT 100 to 299*

Appendix F: Course Descriptions for INF BS

Department of Informatics

I INF 100X Information in the 21st Century (3)

Introduction to information and technology in the 21st Century. Different resources, including the Internet, libraries, news sources and other sources of information, hardware, and Web 2.0 technologies will be explored. The primary emphasis of the class is on discovering reliable information sources for any and all subjects so that a student's future research and other pursuits are supported by the methods developed in this course. Each student is called upon to fortify their own individual communication and reasoning skills and will demonstrate the use of those skills through course assignments, class presentations and group activities.

I INF 200 Research Methods for Informatics (3)

In this course students will gain an understanding of key methods, and techniques in research; prepare to critically evaluate, and engage in, research. Topics covered will include: identifying and articulating research problems, posing research questions, research design, data collection strategies, quantitative and qualitative analyses, interpreting results of analyses, and concerns in human subject research. Prerequisite(s): I INF 100

I INF 201 Web Technologies (3)

A technique-oriented introduction to client-based Web design and development technologies, including HTML/XHTML, CSS, JavaScript, digital imaging, file formats, etc.; also the elements of UNIX and networks necessary to understand and implement basic information management and transfer. Prerequisite(s): I INF 100X; not open to students who are taking or have completed I IST 361.

I INF 202 Introduction to Data & Databases (3)

This course introduces students to data and databases. It covers both long-standing relational (SQL) databases and newly emerging non-relational (NoSQL) data stores. The nature of data, Big Data, intellectual property, system lifecycle, and development collaboration are also explored. Team-based activities alternate with hands-on exercises.

I INF 203 Introduction to Networks and Systems (3)

This course provides an introduction to computer networking and computer systems. The course covers the fundamentals of networked computing systems with an emphasis placed on the basics of network protocols and how they operate at all layers of the networking models. The course also introduces students to personal computer internal system components, storage systems, peripheral devices, digital circuits, and operating systems from an introductory computer architecture perspective. Prerequisite(s): I CSI 105 or 201.

I INF 300 Probability and Statistics for Data Analytics (3)

Probability and statistical methods applied to the analysis of various kinds of data. Includes underlying theoretical justification and appropriateness for different models and analyses. Conceptual and implemented approaches to data analysis. Prerequisite: A MAT 108

I INF 301 Emerging Trends in Information and Technology (3)

This course is designed to address challenges of the 21st century from the information science framework. We will explore emerging technologies and discuss how they alter and create new information environments. Examples of these technologies include Big Data, 3D Printing, Social Media, Wearable Computing, etc. Attention will be paid to real world uses of these technologies, emphasizing how they are changing business, government, education, and a number of other industries. This course also focuses on career paths for digital citizens in the 21st century. Prerequisite(s): I INF 100

I INF 302 Human-Computer Interactive Design (3)

This course examines human factors, Human-Computer Interaction aspects of application domains, human-centered evaluation, developing effective interfaces, accessibility, emerging technologies, and human-center computing. Students learn several techniques for rapid prototyping and evaluating multiple interface alternatives and principles of visual design. Information visualization, user interface software architecture, and formal methods in HCI will be explored. Prerequisite(s): I INF 301

I INF 303 Intermediate Networking (3)

This course is designed to convey the essentials of data communication networks. It will cover concepts, technologies and architectures. There will be practical lessons built into the semester's topics and assignments whenever possible. This course will build on the networking knowledge gained in I INF 203, covering the major conceptual areas balanced with practical discussions and exercises. It will also discuss important network management topics such as domain management and security. Prerequisite(s): I INF 203. Students who have taken INF/IST 423 may not take I INF 203 for credit.

I INF 304 Intermediate Hardware and Operating Systems (3)

This primary objective of this course is to provide the student with a detailed understanding of computer systems from an architectural perspective. The material covered in this course, which builds on that learned in I INF 203, is intended to form a foundation of technical knowledge for systems analysis, design, configuration, selection, and management. The primary emphasis is expanding students' technical knowledge of hardware and system software, with topics including advanced digital circuits, integrated circuits, application development, operating systems, file systems, and systems security. Prerequisite(s): I INF 203. Students who have take INF/IST 424 may not take I INF 304 for credit.

I INF 305 Digital Project Management (3)

This course provides an introduction to current practices in project management with a focus on the management of digital projects. It is intended to provide a broad overview of the concepts, issues, tools and techniques related to the management of digital projects from concept to completion. Topics covered include project manager role/responsibilities, project team structure, project documentation, project phases/SDLC, project management methodologies, troubled projects, digital analytics and more.

I INF 306 Information Security and Assurance (3)

Technical aspects of Cyber-security in computer and network systems. The nature of attacks and defense in digital systems; models of vulnerabilities, threats and security; cryptography; forensics; security policies and procedures; software and network security. Prerequisite(s): I INF 202.

I INF 307 Current Topics in Social Media (3)

In this course students will explore current topics and trends in social media. An emphasis will be placed on investigating and evaluating multiple social media outlets, writing across social media platforms, and current trends in managing social media programs. Prerequisite(s): I INF 301

I INF 308 Programming for Informatics (3)

Computer Programming in an Informatics environment. The fundamentals of programming, including introduction to algorithms, object-oriented design, and data structures. Additional topics include basic interface design, security, networking, use of data bases, and mobile and other non-traditional computing platforms. Prerequisite(s): I CSI 105 and I INF 100.

I INF 362 Intermediate Interactive Design (3)

A technique-oriented intermediate exploration of client-based Web design and development technologies, using current and emerging technologies. Design, planning, security, administration and management of websites will also be examined. Prerequisite(s): I CSI 101, 105, 110, or 201, I INF 201.

I INF 363 Digital Design (3)

Students apply design theory to the development and delivery of digital media with emphasis on digital imagery, video, and music. Topics may include consumption of digital media on a variety of devices, creation, acquisition, editing and processing of digital content. Students will develop an appreciation for the role that each media element may contribute to the final user experience. Students will cultivate an understanding of how public policy issues apply to technology, in particular copyright, privacy and freedom of expression. Prerequisite(s): I INF 201.

I INF 401 Case Studies in Digital Citizenship (3)

The purpose of this course is for students to explore topics related to digital citizenship through the close examination of case studies. Students will be asked to look to current issues and cases involving digital citizenship and apply themes, such as the ethical use of information, in their examination and discussion of them. Prerequisite(s): I INF 301.

I INF 403 Advanced Networking and Security (3)

Provides an advanced coverage of networking with a specific focus on network security and cryptography. Networking security is examined through a study of digital signatures and certificates, authentication protocols, and firewalls and key establishment and management. Also considered are security issues related to people's use of computer networks, communication channels, mobile devices, and the Internet. Also examined are new access control paradigms such as Java security and .NET security. Prerequisite(s): I INF 303, I CSI 105.

I INF 404 Advanced Systems and Security (3)

This course is designed to provide an advanced coverage of systems with a specific focus on cyber-security. Engineered security is examined through the application and introduction to authentication protocols and intrusion detection for Unix, Windows and databases and general software security. Also considered are security issues related to people's use of systems including policies and practices for password management and protecting privacy rights. Students also study options for maintaining business continuity in the event of a disruption of business operations. Security models such as Bell-LaPadula are introduced and studied. Specific case studies are used to highlight the choices that must be made to balance operational efficiency of business functions with protecting the business from the onslaught of security threats. Prerequisites: I INF304, I CSI 105.

I INF 407 Modern Issues in Databases (3)

This is an advanced undergraduate course to introduce the students the emerging topics in database systems. This course is especially designed for junior/senior students with emphasis on advanced concepts and algorithms in database systems, topics that are state-of-the-art research, or recent seminal contributions in the broad field of database and information systems. Prerequisite: I INF 202.

I INF 408 Analysis, Visualization, and Prediction in Analytics (3)

Principles of data analysis, emphasizing modern statistical and machine-learning based approaches. Also, the important role of simple analyses and visualization to gain an overall understanding of data sets, regardless of size. The role of analytics in creating predictive models of phenomena. The importance of understanding the nature of the data and other methodological considerations. Prerequisite(s): INF 300 and INF 407.

I INF 451 Bayesian Data Analysis and Signal Processing (3)

This course will introduce both the principles and practice of Bayesian and maximum entropy methods for data analysis, signal processing, and machine learning. This is a hands-on course that will introduce the use of the MATLAB computing language for software development. Students will learn to write their own Bayesian computer programs to solve problems relevant to physics, chemistry, biology, earth science, and signal processing, as well as hypothesis testing and error analysis. Optimization techniques to be covered include gradient ascent, fixed-point methods, and Markov chain Monte Carlo sampling techniques. Only one version of I INF 451 may be taken for credit. Prerequisite(s): A MAT 214 (or equivalent) and I CSI 101 or 201.

I INF 452 Computer and Network Security (3)

Theoretical, conceptual and practical aspects of computer and network security. The role of algorithms, systems, humans, software and hardware in computer and network vulnerabilities and defense. The two primary focuses of the course will be on the computer and networks, as centers of vulnerability and defense. The course will emphasize hands on analysis of security issues. Prerequisite: I INF 306.

I INF 453 Information Security and Privacy (3)

Security and Privacy issues in computer and networked systems. The role of systems, design, implementation, etc. on data security in digital systems. Case studies of these roles and how they affect both data security and vulnerability. The legal and ethical aspects of data security and privacy. Prerequisite: I INF 306.

I INF 454 Human Aspects of Cyber-security (3)

The roles of individuals, groups, organizations and governments in computer and network security. How the interactions of these with the technical nature of digital systems in many cases forms the core of vulnerabilities. The trade-offs between security and various measures of utility. Conflicting definitions of security at different levels (e.g. governmental v. individual). Societal measures and values of security. The course will feature case studies to explore many of these issues. Prerequisite: I INF 306.

I INF 455 Prevention and Protection Strategies in Cyber-security (3)

The role of security policies and design strategies to minimize security vulnerabilities in computer and networked systems. The affected areas range from the overall design of systems, networking protocols, operating systems and applications software on individual computers. The role of coding standards. End user education and role in security. Prerequisite: I INF 306.

I INF 462 Current Technologies in Web Design (3)

Provides an advanced coverage of web design and development, with a focus on current technologies and processes. Students will develop skills on the use of software development practices such as agile development and test-driven development. Develop familiarity with current technologies in particular web-based and mobile applications. Prerequisite(s): I INF 362 and I INF 363.

I INF 465 Senior Capstone Project (3, may be repeated for a total of 6)

Students from each concentration will each represent their area of expertise on a class or group project. The projects will either be real-life problems as presented by partnering external organizations or real-life problems as posed and solved by the group itself. A culminating paper, application, or presentation will be produced. The Instructor of INF 465 will act as a mentor to the student teams and help to guide them through their projects. May be repeated for credit up to a total of 6 credits with permission of department. Prerequisites: Informatics seniors only.

I INF 466 Independent Research (3, may be repeated for a total of 6)

Student-initiated research project under faculty guidance. Students will present their research as appropriate. May be repeated for credit up to a total of 6 credits with permission of department. Prerequisites: Informatics juniors and seniors only.

I INF 467 Technology-Based Community Support (3, may be repeated for a total of 6)

Students work on-site with a non-profit to provide technology support. Possible projects could include website creation and development, computer lab support, or networking. At least 100 hours/semester are required. Students will also meet with a faculty supervisor throughout the semester and complete a final presentation of their work. May be repeated for credit up to a total of 6 credits with permission of department. Prerequisites: permission of instructor, and Informatics juniors and seniors only.

I INF 468 Undergraduate Internship (3, may be repeated for a total of 6)

The internship has two components. (1) work experience in position related to student's interests in computing and information. Interns are expected to spend eight (8) hours per week during the semester at their internship location. (2) Academic seminar where students and faculty mentor meet together monthly to discuss their experiences and general career preparation topics. Assignments may include preparing a resume and cover letter, career development, assessing skills for and barriers to career development, and planning for graduate or professional school. Students are expected to research, identify and find their own possible internship opportunities. This activity will help student to identify their own career goals and manner in which they may best be achieved, and it will also help students to learn career preparation skills that will be useful after graduation. All internship opportunities must be reviewed and approved by appropriate faculty prior to course registration. May be repeated for up to 6 credits. Prerequisite(s): permission of instructor, junior or senior standing and a minimum GPA of 2.50.

I INF 469 Internship for Fully Online Students (9)

The internship has two components. (1) Work experience in position related to the Information technology concentration. Interns are expected to spend at least twenty-four (24) hours per week during the semester at their internship location. (2) Online academic seminar where students and faculty mentor discuss their experiences and general career preparation topics. Assignments may include preparing a resume and cover letter, career development, assessing skills for and barriers to career development, and planning for graduate or professional school. Students are expected to research, identify and find their own internship opportunities. This activity will help student to identify their own career goals and manner in which they may best be achieved, and it will also help students

to learn career preparation skills that will be useful after graduation. All internship opportunities must be reviewed and approved by appropriate faculty prior to course registration. Prerequisites: permission of instructor, Informatics juniors and seniors only, IT online concentration only, fully online students.

I INF 470 Physical Computing (3)

This course introduces programmable microcontrollers, digital chips that are used to control electronics and robotics projects. In this course students will simultaneously develop the electronic circuits and associated software for controlling hardware components including sensors and mechanical parts. Topics include electronics fundamentals, analog/digital (A/D) devices, pulse-width modulation (PWM) and embedded programming. Course has hands-on lab setting with a final group project. Prerequisites: Informatics juniors or seniors.

I INF 496 Special Topics (3)

The contents of this course will vary from semester to semester. Each offering will cover an advanced topic in Informatics. May be repeated for credit when content varies. Prerequisite(s): permission of instructor, and junior or senior standing.

I INF 499W Senior Seminar in Informatics (3)

This course helps students develop integral professional skills, including presentation of ideas through written and verbal communication, within an Informatics framework. Students will focus on a particular technology company or issue as a mechanism for developing critical thinking and teamwork skills. Prerequisites: Informatics seniors only.

Department of Computer Science

I CSI 105 Computing and Information (3)

A broad introduction to computer and information sciences and related disciplines. All of these fields study various aspects of information and the modern digital computer. Among the central topics of this course, students will learn basic computer programming because understanding how computers work is a key to understanding their use across all of the disciplines in Computing and Information. The topics include what we can and cannot known through computing, interactions between technology and humans, and a series of contemporary applications of the disciplines. The course includes critical readings, multiple perspectives, formulation and defense of opinions, common themes among diverse topics, and skills and practice of teamwork.

I CSI 107 Web Programming (3)

This course is designed to introduce the student to the ever changing world of Web Programming. The student will develop the ability to write original code in HTML, XML, CSS, Javascript, etc. to create highly customized websites.

I CSI 124X Computer Security Basics (3)

An introduction to security in computers and networks for a general audience. The operation of computers and networks is explained to show how they are the basis for attacks. The course will confer a basic but comprehensive understanding of how computer and network attacks (*e.g.* viruses, worms, denial of service) work. Also, how a general user of computers can defend her or himself from current and future attacks.

I CSI 131 Introduction to Data Analytics: Seeking Information in Data with Computation (3)

This course will offer an introduction to the key terms, concepts and methods in data analysis, with an emphasis on developing critical analytical skills through hands-on exercises of actual data analysis tasks. In addition, you will learn and practice basic programming skills to use software tools in data analysis. Most importantly, this course aims to help you look at the data and their analysis from new points of view, and nurture a habit of finding relevant patterns in large data sets with appropriate analysis steps. This ability becomes particularly important when you are facing with large amounts of data from your future field and career, be it natural or social science, engineering or business.

I CSI 201 Introduction to Computer Science (4)

Computer algorithms and their representation. The principle of information hiding and its relation to program block structure. File structure and access methods. The efficient use of computational resources. Program development and style.

I CSI 300Z Social, Security and Privacy Implications of Computing (3)

The ethical and moral implications of using computers to affect the lives of individual and collective members of human society. Material drawn from a variety of topics, including security and privacy in computers, networks, security measures, and human users, data banks vs. rights to privacy, intellectual property, open vs. closed software, software piracy, unauthorized access, and other computer crimes. Prerequisite(s): I CSI 101, 110, 201 or other hands-on course in programming and permission of the instructor.

I CSI 310 Data Structures (3)

Commonly used abstract data structures and their implementation. The use of pointers and recursive programming. Stacks, queues, lists, and trees, and their application to such problems as sorting and searching. Analysis of algorithms for using these structures. Prerequisite(s): I CSI 201.

I CSI 405 Object Oriented Programming Principles and Practice (3)

Object oriented software design principles (abstraction, polymorphism and inheritance; design patterns) with emphases on how they are embodied in a contemporary programming language, the principles of the structure, features and operation of such languages and systems, and increasingly complex API examples, design and implementation problems and projects to build proficient design, problem solving, programming and technology skills. Class presentation and discussion of some team developed project designs. A brief review of Java basics is given but proficiency in Java is highly desirable for the current course. This is not a course for programming beginners. Prerequisite(s): *C* or better in I CSI 310 or sufficient proficiency demonstrated to the instructor. Normally offered fall semester only.

I CSI 418Y Software Engineering (3)

Software engineering principles, the role of abstraction in programming, abstract data types, modularization and module interfaces, specifications, and teamwork. Project work in contemporary concurrent and object-oriented languages. Prerequisite(s): I CSI 405. Normally offered spring semester only.

I CSI 424 Information Security (3)

This course covers the broad spectrum of technical issues surrounding computer security and intrusion detection. Topics considered include: viruses, worms, host- and network-based vulnerabilities and countermeasures, database security, intrusion detection, and privacy and legal issues. Facilities for

securing hosts and limiting vulnerability are also discussed. Unlike in a systems administration class, detailed operational issues are not discussed. Prerequisite(s): I CSI 400 or 402.

I CSI 426 Cryptography (3)

Course Description: The making of ciphers to encode information is the subject of cryptography. This course covers the field from its origins in early historic times through its most up-to-date implementations and uses in digital computers. Various ciphers will be shown and their security assessed. This latter is known as cryptanalysis – the attempt to break a cipher in order to read the underlying message. The course will emphasize how cryptography and cryptanalysis are intimately related, and how the arms race between the two has motivated progress throughout their history. Prerequisite(s): I CSI 333. Corequisite(s): I CSI 403.

I CSI 431 Data Mining (3)

A course on data mining (finding patterns in data) algorithms and their application to interesting data types and situations. We cover algorithms that address the five core data mining tasks: prediction, classification, estimation, clustering, and associations. Course projects will involve advanced topics such as algorithm developments for handling large data sets, sequential, spatial, and streaming data. Prerequisite(s): I CSI 310.

I CSI 432 Network Science (3)

 Social networks have become an important part of the society. This course will consider networks arising in many different contexts (e.g., worldwide web, viral marketing, sociology, epidemiology) and present techniques for analyzing such networks. The goal is to understand how the structure of a network influences its behavior. The course will cover the necessary background material in graph theory. Prerequisite: Background in Algorithms (from a course such as I CSI 403 or I CSI 503) or permission of the instructor.

I CSI 436 Machine Learning (3)

The various elements of machine learning. Supervised and unsupervised learning. Numeric and categorical approaches. Discriminative and generative models. The importance of understanding the nature of data. Methodological considerations. Prerequisite: ICSI 310

Department of Information Studies

I IST 433 Information Storage and Retrieval (3)

Methods of analyzing, storing, retrieving information and their relationship to perceived costs and benefits in information service.

College of Arts & Science Courses

A DOC 224 (= A HIS 224) Nonfiction Media Storytelling (3)

This course explores the use of narrative in books, films, and other works intended to present factual content to the general public. Students will watch, read about, write about, and discuss a range of work, developing tools for analyzing and evaluating nonfiction media in terms of both content and craft. Only one version may be taken for credit. Prerequisite(s): restricted to Documentary Studies Program and History Department majors and minors. Others may be admitted space permitting, and with permission from the instructor. This class is recommended for students planning to take A DOC 412.

A DOC 324 (= A JRL 324) Introduction to Documentary Photography (3)

From Mathew Brady's Civil War photographs, to the work of photographers of the U.S. Farm Security Administration in the 1930s, and through the stunning and emotive images of contemporary social, ethnographic, scientific, and war photographers, documentary photography has experienced a long and vigorous development. In this basic introductory hands-on workshop, students will examine the long heritage of documentary photography as well as the practical lessons to be learned from renowned practitioners. The course explores the use of still photographs to record various aspects of social, political, and cultural life and events. Students will develop their visual storytelling skills through a series of research and fieldwork hands-on projects involving the documentation of various aspects of contemporary life. Students should be familiar with the basics of digital camera operation. Only one version of A DOC 324 may be taken for credit. Prerequisite(s): restricted to Documentary Studies Program and Journalism majors and minors. Others may be admitted space permitting, and with permission from the instructor.

A DOC 330 (= A HIS 330) Foundations of Documentary Web/Hypermedia Production (3)

Web-based or digital multimedia documentaries utilize a variety of hypermedia digital elements to construct compelling, interactive, linear and nonlinear "stories" on nonfiction topics. This course will cover the fundamentals of web site and digital multimedia composition through assigned short projects. When A DOC 330 is taught cross-listed with A HIS 330, the content focus will be history. Prerequisite(s) restricted to Documentary Studies and History majors and minors; all others with permission of instructor. Recommended for students planning to take A DOC/A HIS 407.

A DOC 406 (= A HIS 406) Practicum in Historical Documentary Filmmaking (4)

This course is a hands-on workshop in historical documentary filmmaking. It will introduce students to the all aspects of historical documentary production—from pre-production planning, research, and writing, to production (filming/videotaping interviews, recording voiceover narration, lighting, filming reenactments), and finally, post-production (editing and mixing actualities, music, narration, interviews, still photographs). The course, in short, is designed to teach students practical, technical skills and is a perfect follow-up to A DOC 335, which examines the history and theory of documentary filmmaking. Only one version of A DOC 406 may be taken for credit. Prerequisite(s): permission of instructor.

A DOC 407 (= A HIS 407) Readings and Practicum in Digital History and Hypermedia (4)

This course introduces students to the practice of history in the digital age. The emergence of the World Wide Web has opened up new avenues for researching, analyzing, and presenting the past–but has also raised new questions about producing quality historical scholarship in this open environment. This course will work on two fronts, looking first at the current state of the field of "digital history," from issues of narrative and hypertext theory to some of the best (and worst) practices of current historical websites. At the same time, as a central component of the course, students will work in collaboration to build their own well-researched and historically sound web projects. Previous experience with building websites is welcomed but not required. Only one version of A DOC 407 may be taken for credit. Prerequisite(s): permission of instructor.

A MAT 108 Elementary Statistics (3)

Frequency distributions, measures of central tendency and dispersion, probability and sampling, estimation, testing of hypotheses, linear regression, and correlation. Only one of A MAT 108 and B ITM 220 may be taken for credit. Not open for credit by students who have taken A MAT 308. Prerequisite(s): three years of high school mathematics.

A SOC 210 Sociology of Culture (3)

The social settings within which culture—literature, painting, theatre, fashion, popular magazines, graffiti, television—are produced and consumed. Special attention is paid to the development of artistic careers, the forces shaping markets for artistic objects and performances, the effects of censorship, and class differences in the consumption of culture. Prerequisite(s): A SOC 115.

A SOC 220 Introduction to Social Research (3)

Examination of the assumptions and techniques of social research: problems of design, data collection, quantitative and qualitative analysis; review of current research in professional journals; the uses of survey research; application of concepts through individual and class projects. For Sociology majors and intended majors, A SOC 220 is restricted to A-E grading after matriculation at Albany. Prerequisite(s): A SOC 115.

A SOC 221 Statistics for Sociologists (3)

Introduction to quantitative analysis of sociological data: methods of summarizing and describing univariate distributions including the use of tables and graphs; methods of examining relationships between two or more measures; statistical inference and hypothesis testing. For Sociology majors and intended majors, A SOC 221 is restricted to A-E grading after matriculation at Albany. Prerequisite(s): A SOC 115.

A SOC 255 Mass Media (3)

The role of newspapers, radio, television, and motion pictures in American society. Changes in these media and their functional relationship to education, the economy, the political process, and public opinion. Prerequisite(s): A SOC 115.

A SOC 270 Social and Demographic Change (3)

This is an intensive course in the use and understanding of Census and other state and federal data sources for community analysis. While the concentration is on the use of the Decennial Census and annual American Community Survey, other state and federal agency sources will also be explored. The objective of the course is to examine sources of economic and demographic data and understand how they can be used to tell the story of our communities. Through understanding their uses and limitations, you will prepare a comprehensive community profile and analysis of population change. The class will also introduce basic techniques of demographic analysis as they relate to community analysis. Experience with MS Excel recommended. Prerequisite(s): A SOC 115 or 115Z.

School of Education

E APS 487 Institute in Education (1-9)

Special course, not part of the pattern of regular offerings, designed to meet particular nonrecurring needs. May be repeated for credit when content varies.

Program Action Form

Proposal No. _____

Please mark all that apply:

☐	New Course	Revision of:	☐ Number	☐	Description
☐	Cross-Listing		☐ Title	☐	Prerequisites
☐	Shared-Resources Course		☐ Credits		
☐	Deactivate / **Activate** Course (boldface & underline as appropriate)		☐ Other (specify):		_____

Department: Informatics _____ To be effective (semester/year): Fall 2014

Course Number   Current: _____   New: _____   Credits: _____

Program Title: **Bachelors of Science in Informatics**

Program Description to appear in Bulletin:

See attached

Prerequisites statement to be appended to description in Bulletin:

If S/U is to be designated as the only grading system in the course, check here: ☐

This course is (will be) cross listed with (i.e., INF ###): _____

This course is (will be) a shared-resources course with (i.e., INF ###): _____

Explanation of proposal:

The Department of Informatics proposes to create a Bachelor of Science degree in Informatics with a combined major/minor and specialization tracks. This program helps students focus on and develop technical skills that will lead to specific careers. Information and knowledge management is the cornerstone and foundation for many current and new employment opportunities, and for society in general, in today's knowledge economy. Informatics is technology applied to specific fields. Informatics serves as the bridge between computing and information technology and specific application domains, ranging, for example, from the government and public policy to economics to health care. As computing and information technologies become increasingly embedded in the day-to-day operations of commerce Informatics as a field will become increasingly important. We will need more individuals who understand a diverse set of technologies and how to apply them across fields. To illustrate this point we can look to the case of "big data" today. Organizations are producing immense amounts of data and emerging technologies are now making it possible to collect that data and use it to answer questions. This has created the need for individuals who understand how to use those technologies and how to get information out of large data sets.

Other departments or schools which offer similar or related courses and which have certified that this proposal does not overlap their offering:

None.

Chair of Proposing Department **(TYPE NAME/SIGN)**		Date

Approved by Chair(s) of Departments having cross-listed course(s) **(PRINT NAME/SIGN)**	Date	Dean of College **(PRINT NAME/SIGN)**	Date
Chair of Academic Programs **(PRINT NAME/SIGN)**	Date	Dean of Graduate (Undergraduate) Studies **(PRINT NAME/SIGN)**	Date

1

Undergraduate Bulletin copy should read as follows under the heading "Undergraduate Study"

The B.S in Informatics is a unique opportunity for students to study the application of technology across disciplines. The degree is a combined major and minor, requiring a total of 54 credits. This includes 42 credits of required core courses that focus on the relationship between technology and society, the use of various technologies across platforms, and programming fundamentals. Emphasis is also placed on providing students with various opportunities to gain real-world experience. In addition, students are required to complete 12 credits in a specialization called a track. This gives students the opportunity to deepen their experience and knowledge in a particular area of Informatics. The tracks are Interactive User Experience, Cyber-security, Computer Networking, Social Media, Data Analytics, Software Development, and Information Technology. The Information Technology track will be offered fully online.

The B.S in Informatics prepares students for a wide array of careers. Some potential career options for each track are:

- Interactive User Experience: Web Designer, User Experience Analyst, and Information Architect
- Cyber-security: Information Security Analyst, Data Security Administrator, Data Security Administrator, and Computer Security Specialist
- Social Media: Social Media Community Manager, Social Media Strategist, and Public Information Officer
- Computer Networking: System Administrator, Network Administrator, and Computer Network Architect
- Data Analytics: Data Analyst, Data Mining Specialist, and Data Visualization Specialist
- Software Development: Application Developer, Software Architect, Software Design Analyst, Systems Programmer
- Information Technology: IT Project Manager, Computer Support Specialist, and Technical Support Specialist.

Undergraduate Bulletin copy should read as follows under the heading "Degree Requirements for the BS in Informatics":

Students completing a combined major/minor in Informatics must complete at least 54 credits. Courses may NOT be double-counted towards multiple requirements of the major/minor.

Informatics is a combined major/minor, consisting of a minimum of 42 core credits and selection of a 12-credit concentration (54 credit total).

Information & Society (9 credits)
I INF 100X Information in the 21st Century (3)

I INF 301 Emerging Trends in Information and Technology (3)

I INF 499 Senior Seminar in Informatics (3)

Practical Applications (15 credits)

I INF 201 Introduction to Web Technologies (3)

I INF 202 Introduction to Data & Databases (3)

I INF 203 Introduction to Networks and Systems (3) *(new course)*

I INF 305 Digital Project Management (3)

I CSI 105 Computing & Information (3) (or substitute I CSI 201 Introduction to Computer Science)

Math (3 credits)
Any A MAT course between 100-299 (except A MAT 108)

Research (6 credits)
I INF 200 Research Methods for Informatics (3) *(new course)* (or substitute A SOC 220)

A MAT 108 Statistics (3) (or substitute A SOC 221)

Experiential Learning (9 credits)
Students will be advised into experiences that complement the chosen concentration. Classes may be repeated twice for a total of 6 credits. Students must do at least two different courses. Online IT students only may complete INF 469 (9 credits) to fulfill this requirement.

I INF 465 Senior Capstone Project (3) *(new course)*

I INF 466 Undergraduate Research (3) *(new course)*

I INF 467 Technology-based Community Support (3) *(new course)*

I INF 468 Undergraduate Internship (3)

I INF 469 Undergraduate Internship for Online IT Students (9) *(new course)*

E APS 487 Peer Mentoring (3)

Concentrations (at least 12 credits)
Students select one concentration.

Interactive User Experience
I INF 302 Human-Computer Interactive Design (3) *(new course)*

I INF 362 Intermediate Interactive Design (3) *(new title)*

Select two from:

I INF 308 Programming for Informatics (3) *(new course)*

I INF 363 Digital Design (3) *(new course)*

I INF 401 Case Studies in Digital Citizenship (3) *(new course)*

I INF 462 Current Technologies in Web Design (3) *(new course)*

I INF 496 Special Topics (3) (as appropriate, repeatable)

I CSI 107 Web Programming (3)

I CSI 124X Computer Security Basics (3)

A DOC 324 (= A JRL 324) Introduction to Documentary Photography (3)

A DOC 330 (= A HIS 330) Foundations of Documentary Web/Hypermedia Production (3)

A DOC 406 (= A HIS 406) Practicum in Historical Documentary Filmmaking (4)

A DOC 407 (= A HIS 407) Readings and Practicum in Digital History and Hypermedia (4)

Cyber-security
I CSI 124X Computer Security Basics (3)

I INF 306 Information Security & Assurance (3) *(new course)*

Pick two:

I INF 401 Case Studies in Digital Citizenship (3) *(new course)*

I INF 452 Computer and Network Security (3) *(new course)*

I INF 453 Information Security and Privacy (3) *(new course)*

I INF 454 Human Aspects of Cyber-security (3) *(new course)*

I INF 455 Prevention and Protection Strategies in Cyber-security (3) *(new course)*

I INF 496 Special Topics (3) (as appropriate, repeatable)

I CSI 300Z Social, Security and Privacy Implications of Computing (3)

I CSI 424 Information Security (3)

I CSI 426 Cryptography (3)

Computer Networking
I INF 303 Intermediate Networking (3) (currently I INF 423)

I INF 304 Intermediate Hardware and Operating Systems (3) (currently INF I 424)

Pick two from:

I INF 403 Advanced Networking and Security (3) *(new course)*

I INF 404 Advanced Systems and Security (3) *(new course)*

I INF 452 Computer and Network Security (3) *(new course)*

I INF 470 Physical Computing (3) *(new course converted from previous special topic)*

I INF 496 Special Topics (3) (as appropriate, repeatable)

Social Media

I INF 307 Current Topics in Social Media (3) *(new course)*

I CSI 131 Introduction to Data Analytics: Seeking Information in Data with Computation (3) *(new course converted from previous special topics)*

Pick two from:

I INF 308 Programming for Informatics (3) *(new course)*

I INF 363 Digital Design (3) *(new course)*

I INF 401 Case Studies in Digital Citizenship (3) *(new course)*

I INF 496 Special Topics (3) (as appropriate, repeatable)

I CSI 432 Network Science (3)

A SOC 210 Sociology of Culture (3)

A SOC 255 Mass Media (3)

A SOC 270 Social and Demographic Change (3)

A DOC 224 (= A HIS 224) Nonfiction Media Storytelling (3)

Data Analytics

I INF 300 Probability and Statistics for Data Analytics (3) *(new course)*

I CSI 131 Introduction to Data Analytics: Seeking Information in Data with Computation (3) *(new course converted from previous special topics)*

Pick two from:

I INF 407 Modern Issues in Databases (3) *(new course)*

I INF 408 Analysis, Visualization, and Prediction in Analytics (3) *(new course)*

I INF 451 Bayesian Data Analysis and Signal Processing (3)

I IST 433 Information Storage and Retrieval (3)

I CSI 431 Data Mining (3)

I CSI 432 Network Science (3) *(new course)*

I CSI 436 Machine Learning (3)

Software Development

I CSI 201 Introduction to Computer Science (4)

I CSI 310 Data Structures (3)

I CSI 418Y Software Engineering (3)

Pick one from:

I INF 455 Prevention and Protection Strategies in Cyber-security (3) *(new course)*

I CSI 405 Object Oriented Programming Principles and Practice (3)

Information Technology (online only)
I INF 302 Human-Computer Interactive Design (3) *(new course)*

I INF 303 Intermediate Networking (3) (currently I INF 423) *(new course)*

I INF 306 Information Security & Assurance (3) *(new course)*

I INF 308 Programming for Informatics (3) *(new course)*

Self-Designed (with Departmental Approval only)
Student must provide a proposal of courses to take to support the proposed self-designed concentration that includes at least four (4) courses. At least 9 credits of a self-designed concentration should be taken while enrolled in the INF BS program. Proposal must be approved by INF faculty before the student can declare it.

Program Action Form

Proposal No. _____

Please mark all that apply:

☐ New Course	Revision of: ☐ Number	☐ Description
☐ Cross-Listing	☐ Title	☐ Prerequisites
☐ Shared-Resources Course	☐ Credits	
☒ Deactivate Program (boldface & underline as appropriate)	☐ Other (specify):	

Department: Informatics   To be effective (semester/year): Fall 2014

Course Number   Current: _____   New: _____   Credits: _____

Program Title: **Faculty-Initiated Interdisciplinary Degree with a Concentration in Information Science**

Course Description to appear in Bulletin:

Prerequisites statement to be appended to description in Bulletin:

If S/U is to be designated as the only grading system in the course, check here: ☐

This course is (will be) cross listed with (i.e., INF ###):

This course is (will be) a shared-resources course with (i.e., INF ###):

Explanation of proposal:

As the proposed BS in Informatics is implemented in Fall 2014, we request permission to close admission to the FIID/IS. We will continue to graduate students who have currently declared the FIID/IS if they wish to keep that major through DARS exceptions. See attached for a proposed crosswalk of current requirements with proposed updates. We request that students who matriculate prior to F14 also have the opportunity to declare the new major.

Other departments or schools which offer similar or related courses and which have certified that this proposal does not overlap their offering:
None.

Chair of Proposing Department **(TYPE NAME/SIGN)**   Date

Approved by Chair(s) of Departments having cross-listed course(s)
(PRINT NAME/SIGN)   Date   Dean of College **(PRINT NAME/SIGN)**   Date

Chair of Academic Programs **(PRINT NAME/SIGN)**   Date   Dean of Graduate (Undergraduate) Studies **(PRINT NAME/SIGN)**   Date

September 19, 2013

To Whom It May Concern:

The University at Albany Computer Science Department strongly supports the creation of the proposed BS in Informatics. We welcome the new program. It provides a great complement to our own undergraduate programs. In particular, the cyber-security, software development, and data analytics tracks in this new program will help build broad strength in these areas at UAlbany. Our own efforts in these areas, with our more specific technical focus, will give students a greater breadth of options to choose from in their undergraduate careers. Also, the courses that we share across new program will allow all of our students to benefit from a broader shared experience. It also is a welcome benefit from the collaborations we are increasingly seeing across the College of Computing and Information.

There are proposed changes in the Informatics BS program require that INF students be able to take the following courses from the CSI department:

- CSI 105 Computing and Information (3)
- CSI 107 Web Programming (3)
- CSI 124X Computer Security Basics (3)
- CSI 131 Introduction to Data Analytics: Seeking Information in Data with Computation (3)
- CSI 201 Introduction to Computer Science (4)
- CSI 300Z Social, Security and Privacy Implications of Computing (3)
- CSI 310 Data Structures (3)
- CSI 405 Object Oriented Programming Principles and Practice (3)
- CSI 431 Data Mining (3)
- CSI 418Y Software Engineering (3)
- CSI 424 Information Security (3)
- CSI 426 Cryptography (3)
- CSI 432 Social Network Analysis (3)
- CSI 436 Machine Learning (3)

In addition to our support of the new program, this letter confirms that INF students will in fact be allowed to register for the above listed courses.

Very truly yours,

Professor Neil V. Murray
Chair, Dept. of Computer Science

Subject: RE: Tech Community Service

Date: Monday, September 30, 2013 8:15:38 PM Eastern Daylight Time

From: Stevens, Sheri

To: Goodall, Jennifer J

Hi Jen.
No worries. Actually, I think this sounds more like a nonprofit internship because it is situated within a specific dept or school and has faculty supervision. Please let me know best how we can support you in identifying opportunities for your students when you are ready.
Have a great night!
Sheri

Sheri Stevens
Interim Director
Community and Public Service Program
Social Sciences 112
SUNY Albany
1400 Washington Ave
Albany, NY 12222

518.442.5683 phone
518.442.5684 fax

www.albany.edu/cpsp

"Education is the most powerful weapon which you can use to change the world"

~Nelson Mandela~

From: Goodall, Jennifer J
Sent: Monday, September 30, 2013 14:05
To: Stevens, Sheri
Subject: Tech Community Service

Hi Sherri,
When we met this summer, we talked about having a version of CPSP 300 (Is that the number) that was just for INF/Tech-focused students. We created our own number (INF 467). Because it sounds so much like your course, could you send me a note that this is ok with you since it is so much more focused just so when UAC looks at it, they know we talked about it and I'm not making a play for your program? ;-)
Thanks, Jen

INF 467 **Technology-Based Community Support**

Students work on-site with a non-profit to provide technology support. Possible projects could include website creation and development, computer lab support, or networking. At least 100 hours/semester are required. Students will also meet with a faculty supervisor throughout the semester and complete a final presentation of their work. May be repeated for credit up to a total of 6 credits with permission of department.

ALSO: Women in STEM Careers Group. Info meeting September 26, 11:50 am in Career Services!

--
Jennifer Goodall, PhD
Service Assistant Professor, Department of Informatics
Director, Student Center, College of Computing and Information
Director, Informatics/Information Science Undergraduate Program
Assistant Dean, Department of Informatics
Director, College of Computing and Information Women in Technology (CCIWIT) Program
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Fall 2013 office hours: W 2-4 pm, LI-84

_____

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CCI Women in Technology on Facebook: http://www.facebook.com/groups/cciwit/

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Subject: Re: Permission to list DOC classes in the INF BS proposal

Date: Tuesday, September 3, 2013 10:55:32 PM Eastern Daylight Time

From: Zahavi, Gerald

To: Goodall, Jennifer J

Jennifer --
As per our conversation, we offer our support for incorporating some of our courses within an optional track of your proposed Bachelor of Science Degree in Informatics. We will generally be able to support anywhere between 3-5 of your students in the below courses — and more if there are vacant seats:

A DOC 324 (= A JRL 324) Introduction to Documentary Photography (3)
A DOC 330 (= A HIS 330) Foundations of Documentary Web/Hypermedia Production (3)
A DOC 406 (= A HIS 406) Practicum in Historical Documentary Filmmaking (4)
A DOC 407 (= A HIS 407) Readings and Practicum in Digital History and Hypermedia (
A DOC 224 (= A HIS 224) Nonfiction Media Storytelling (3)

Please keep us informed of the progress of your proposal and let us know if there is anything more we can do to insure the success of your new initiative.

Best,

Gerry Zahavi

PS — You should also contact the Journalism Program as they have several courses cross-listed with Doc. Studies as well (for example, the above ADOC 324).

From: "Goodall, Jennifer J" <jgoodall@albany.edu>
Date: Tue, 3 Sep 2013 21:02:25 -0400
To: Gerald Zahavi <gzahavi@albany.edu>
Cc: "Berg, George" <gberg@albany.edu>, "Goodall, Jennifer J" <jgoodall@albany.edu>
Subject: Permission to list DOC classes in the INF BS proposal

HI Gerry,
As we discussed last week, can you please send me a note that it is ok for INF BS students to take the following DOC classes, as options within an optional track? This is part of the proposal we discusses last week.

Thanks!

Jennifer

DOC classes we'd like to include:
A DOC 224 (= A HIS 224) Nonfiction Media Storytelling (3)

A DOC 324 (= A JRL 324) Introduction to Documentary Photography (3)

A DOC 330 (= A HIS 330) Foundations of Documentary Web/Hypermedia Production (3)

A DOC 406 (= A HIS 406) Practicum in Historical Documentary Filmmaking (4)

A DOC 407 (= A HIS 407) Readings and Practicum in Digital History and Hypermedia (4)

Subject: RE: EAPS as part of INF BS proposal

Date: Thursday, September 5, 2013 2:04:56 PM Eastern Daylight Time

From: Kinser, Kevin

To: Goodall, Jennifer J

CC: Berg, George, Smith, Christy, Meissner, Sheila M

Hi Jennifer,

I just wanted to follow up on this. The funding for EAPS 487 comes from a special initiative of the provost's office, and if that funding goes away, we are unable to continue offering the course. As of right now, we seem to be secure in funding for it, but the future is unpredictable, as I'm sure you can appreciate.

With that, though, we are supportive of you including the course as part of your program requirements, and are glad you find it useful. If funding from the provost dries up, we will of course have to revisit this, but for now it seems fine.

Let me know if we should discuss further.

Best,
-kevin

From: Siracusa, Jessica C
Sent: Wednesday, September 04, 2013 9:06 AM
To: Goodall, Jennifer J; Smith, Christy
Cc: Berg, George; Kinser, Kevin
Subject: RE: EAPS as part of INF BS proposal

Hi Jennifer,

Thanks for your email. This is not a regularly scheduled course, so EAPS will need to discuss this further. I am sure they will be in touch shortly regarding this.

I will be only here through Friday so if further email discussion is necessary, please write to Christy and/or Kevin Kinser (who I've CCed to this message).

Best,
Jessica

Jessica C. Siracusa
Department Coordinator
Educational Administration and Policy Studies, ED 344
University at Albany
1400 Washington Avenue
Albany, NY 12222
Ph: 518-442-5080
Fx: 518-442-5084
jsiracusa@albany.edu
www.albany.edu/eaps

From: Goodall, Jennifer J
Sent: Tuesday, September 03, 2013 9:24 PM
To: Siracusa, Jessica C; Smith, Christy
Cc: Berg, George; Goodall, Jennifer J
Subject: EAPS as part of INF BS proposal

Hi,

We are proposing a new BS program in Informatics to replace our current faculty initiated degree in Info Science. We have a core requirement for experiential learning and EAPS 487/Undergraduate Peer Education is one of the options we'd like to list. If that is ok with you, can you please send me a note that this is fine. Note that it is an option within an option and students will still have to meet the requirements to be a peer educator, so I don't expect it to be an overwhelming demand. We are very happy with the peer educators though and would like to build it in more with their program.

I'd be happy to meet and discuss this if you'd like, as well.

FYI—the draft proposal is attached.

Thanks, Jennifer

Save the date: *September 19, 5-9 pm, Techapalooza, Revolution Hall, Troy.*

--
Jennifer Goodall, PhD
Service Assistant Professor, Department of Informatics
Director, Student Center, College of Computing and Information
Director, Informatics/Information Science Undergraduate Program
Assistant Dean, Department of Informatics
Director, College of Computing and Information Women in Technology (CCIWIT) Program
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Subject: RE: IST 433 in the INF BS

Date: Tuesday, September 17, 2013 1:15:39 AM Eastern Daylight Time

From: Eppard, Philip B

To: Goodall, Jennifer J

Hi Jen,

This would be in line with what has happened in the past. As I understand it, it would not be required. So, yes, we agree to 433 being listed as an option in the data analytics track and we would allow INF BS students to take the course.

Best,
Phil

From: Goodall, Jennifer J
Sent: Friday, September 13, 2013 6:11 PM
To: Eppard, Philip B
Cc: Berg, George; Jorgensen, Daphne
Subject: IST 433 in the INF BS

Hi Phil,
At the CCI Curriculum Committee today, it was recommended that we add IST 433 to the Data Analytics as an optional course. If this is ok with you, can you please let me know that IST commits to allowing INF BS students to take that course? It can be an email or a formal letter. I would need this on Monday.

Thanks!
Jennifer

Save the date: *December 7, 1 pm, Junior FIRST Lego League Expo, CC Ballroom.*
https://www.facebook.com/events/474833245918041/

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Subject: RE: requiring Math courses

Date: Tuesday, September 3, 2013 10:24:19 PM Eastern Daylight Time

From: Zhu, Kehe

To: Goodall, Jennifer J

CC: Mainwaring, Joan B, Plotnick, Steven

Hi Jennifer,

The Department of Mathematics and Statistics is OK with your listing AMAT 108 as a required course for the major and will be able to accommodate the enrollment of your students.

Kehe Zhu
Professor and Chair
Department of Mathematics and Statistics

From: Goodall, Jennifer J
Sent: Tuesday, September 03, 2013 9:29 PM
To: Zhu, Kehe
Cc: Mainwaring, Joan B
Subject: Re: requiring Math courses

HI Kehe,
We are also continuing to require INF BS students take a statistics class and would like to list MAT 108. This is not different than we have in the past, but could you please send me another note approving that class in particular?
Thanks, jennifer

Save the date: *December 7, 1 pm, Junior FIRST Lego League Expo, CC Ballroom.*
https://www.facebook.com/events/474833245918041/

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From: <Zhu>, Kehe <kzhu@albany.edu>
Date: Friday, June 7, 2013 11:46 AM
To: Jennifer Goodall <jgoodall@albany.edu>
Cc: "Mainwaring, Joan B" <jmainwaring@albany.edu>
Subject: RE: requiring Math courses

Hi Jennifer,

The Department of Mathematics and Statistics is OK with your proposal to allow INF majors to take any

math course between 100 and 299 instead of requiring them to take 106.

Best regards,
Kehe Zhu
Professor and Chair

From: Mainwaring, Joan B
Sent: Friday, June 07, 2013 11:38 AM
To: Zhu, Kehe
Subject: FW: requiring Math courses

Hi Kehe,
Can you help Jen with this? Let me know if there's something you need from me –
Joan

From: Goodall, Jennifer J
Sent: Thursday, June 06, 2013 10:41 AM
To: Mainwaring, Joan B
Subject: requiring Math courses

Hi Joan,
Currently, the INF major requires students to take MAT 108 (or a stats substitute in another department) and MAT 106 (or another MAT calc class). We'd like to broaden the later requirement to require students to take any MAT class between 100-299 and not define that it must be calc. Would that be ok? If so, can you send me an email or have your chair send me a note that MAT will make these seats available to INF majors (even though you already do in MAT 106, I'm sure they're going to want that letter from Math).

Does that make sense, am I missing anything? Should I come talk to your chair?

Jen

Upcoming CCI Women in Tech Meetings: **Find us online this summer at http://www.facebook.com/groups/cciwit**
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--
Jennifer Goodall, PhD
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Director, Student Center, College of Computing and Information
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CCI Women in Technology: http://cciwit.posterous.com/

Subject: RE: requiring Math courses

Date: Friday, June 7, 2013 11:46:50 AM Eastern Daylight Time

From: Zhu, Kehe

To: Goodall, Jennifer J

CC: Mainwaring, Joan B

Hi Jennifer,

The Department of Mathematics and Statistics is OK with your proposal to allow INF majors to take any math course between 100 and 299 instead of requiring them to take 106.

Best regards,
Kehe Zhu
Professor and Chair

From: Mainwaring, Joan B
Sent: Friday, June 07, 2013 11:38 AM
To: Zhu, Kehe
Subject: FW: requiring Math courses

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Joan

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To: Mainwaring, Joan B
Subject: requiring Math courses

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Does that make sense, am I missing anything? Should I come talk to your chair?

Jen

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Subject: Sociology Courses for Informatics Tracks

Date: Thursday, July 18, 2013 11:16:10 AM Eastern Daylight Time

From: Denton, Nancy A

To: Goodall, Jennifer J

CC: Zyskowski, Stacey J, Lawyer, Melanie, Rose, Kathleen F, Brandon, Peter

Dear Jennifer,

As we discussed this morning, the Sociology department is fine with you listing the following courses as options in some of the new tracks you are developing for your major:

SOC 115
SOC 220
SOC 221
SOC 210
SOC 242
SOC 255
SOC 270

We anticipate the there will be a small number of student who opt for these options so it will not put pressure on the department.

Let me know if there is anything else I can do to facilitate this process.

Sincerely,

Nancy Denton
Professor and Chair
Department of Sociology

To: Jennifer Goodall - Assistant Dean, Service Professor, and Director of

              Undergraduate Student Services for the College of Computing & Information

Date: September 15, 2013

From: Brian E. Gabriel - Assistant Dean for Undergraduate Education

Subject: Proposed Informatics Degree and Transfer Agreement Outreach

The Transfer Agreement Coordinator (Brian E. Gabriel) in the Office for Undergraduate Education contacted eight of UAlbany's primary community college partners; community colleges with established computing, information technology and cyber-security degree programs - to explore the possibility of developing 2 + 2 transfer program agreements for UAlbany's proposed Informatics B.S. degree program.

Six community colleges expressed a strong desire to immediately begin work on the development of 2 + 2 transfer program agreements -- Broome, Columbia-Greene, Fulton-Montgomery, Herkimer, Hudson Valley and Schenectady Community Colleges. As a result, Informatics program information and 2 + 2 transfer agreement development meetings with Columbia-Greene, Herkimer and Hudson Valley Community Colleges took place during the week of August 19 - 23, 2013. Work on a 2 + 2 Informatics program transfer equivalency table for Hudson Valley Community College has already begun.

Informatics program information and development meetings with Broome, Fulton-Montgomery and Schenectady Community Colleges are scheduled for the week of September 30 - October 4, 2013.

Follow-up and continuing outreach to Monroe, Sullivan and Westchester Community Colleges will begin next week, September 22 -29, 2013.

Additional outreach and transfer agreement development with community colleges and other two- and four-year institutions will continue throughout the fall 2013 semester.

It seems very clear that there is a need and demand for transfer pathways that will allow students to enter field of Informatics and the areas of Information Technology, User Interface-Web Design, Computer Networking, Cybersecurity, Software Development, Data Analytics, and Social Media at UAlbany.

If you have any questions, please let me know.