2014-2015 LONG SIGNATURE SHEET

Proposal Number: __SIS 9-10-2014_____

Proposal Title: New Concentration for MSIT -Emerging Technologies

Originating Department: Software and Information Systems

TYPE OF PROPOSAL: UNDERGRADUATE_____   GRADUATE_ X___   UNDERGRADUATE & GRADUATE____
(Separate proposals sent to UCCC and Grad. Council)

DATE RECEIVED	DATE CONSIDERED	DATE FORWARDED	ACTION	SIGNATURES
8/25/2014	9/2/2014	9/12/2014	Approved	**DEPARTMENT CHAIR** [print name here:] Mary Lou Maher
9/12/2014	9/18/2014	9/18/2014	Approved	**COLLEGE CURRICULUM COMMITTEE CHAIR** [print name here:] Yuliang Zheng
9/18/2014	10/8/14	10/8/14	Approved	**COLLEGE FACULTY CHAIR (if applicable)** [print name here:] Srinivas Akella
10/9/14	10/13/14	10/13/14	Approved	**COLLEGE DEAN** [print name here:] Yi Deng
			Approved	**GENERAL EDUCATION** (if applicable; for General Education courses) [print name here:]
			Approved	**HONORS COLLEGE** (if applicable; for Honors courses & programs) [print name here:]
			Approved	**UNDERGRADUATE COURSE & CURRICULUM COMMITTEE CHAIR** (for undergraduate content)
10-13-14	11-4-14	11-19-14	Approved	**GRADUATE COUNCIL CHAIR** (for graduate content) ALAN R. FREITAG
				FACULTY GOVERNANCE ASSISTANT (Faculty Council approval on Consent Calendar)
				FACULTY EXECUTIVE COMMITTEE (if decision is appealed)

Revised 05/06/14
OAA/mjw

UNC CHARLOTTE

LONG FORM
COURSE AND CURRICULUM PROPOSAL

*To: The Graduate Council

From: College of Computing and Informatics

Date: 9/10/2014

Re: New Concentration for MSIT

The Long Form is used for major curriculum changes. Examples of major changes can include:

Undergraduate: Major changes include new undergraduate degrees, minors, concentrations, certificates, and changes to more than 50% of an existing program (Note: changing the name of an academic department does not automatically change the name(s) of the degree(s). The requests must be approved separately by the Board of Governors.)

Graduate: Major changes include new graduate courses, major changes to an existing graduate course or major changes to an existing graduate program

Submission of this Long Form indicates review and assessment of the proposed curriculum changes at the department and collegiate level either separately or as part of ongoing assessment efforts.

*Proposals for undergraduate courses and programs should be sent to the Undergraduate Course and Curriculum Committee Chair. Proposals related to both undergraduate and graduate courses,

(e.g., courses co-listed at both levels) must be sent to both the Undergraduate Course and Curriculum Committee and the Graduate Council.

I. HEADING AND PROPOSAL NUMBER

    A.   <u>HEADING.</u> Place a three line double-spaced heading containing the following information at the top of the first page of the proposal and beginning at the left margin:

University of North Carolina at Charlotte

New Graduate;

Course and Curriculum Proposal from: Department of Software and Information Systems

    B. <u>PROPOSAL NUMBER.</u> Place the proposal number in the upper right corner of page one of the proposal. The proposal number will consist of the abbreviation of the originating unit and the date the proposal was approved by the unit, e.g., BIO 7-24-02. If more than one proposal is passed on a specific date, assign alpha suffixes to distinguish them (e.g., BIO 7-24-02a and BIO 7-24-02b). Submit multiple courses as a single proposal when possible.

SIS 9-10-2014

    C. <u>TITLE.</u> Indicate a brief descriptive title for the proposal, e.g., "*Establishment of a Minor in Communication Studies.*"

New Concentration for MSIT

II. CONTENT OF PROPOSALS

    A. PROPOSAL SUMMARY.

        1. <u>SUMMARY</u>. State clearly and concisely the actions proposed (e.g., "the Biology Department proposes to add four new elective courses to the undergraduate curriculum: BIO 2222, BIO 3456, BIO 2345, and BIO 3210).

        The Department of Software and Information Systems (SIS) proposes to add a new concentration titled "Emerging Technologies" to its Master of Science in Information Technology (MSIT) degree program.

    B. JUSTIFICATION.

        1. Identify the need addressed by the proposal and explain how the proposed action meets the need.

        Currently the MSIT program has 7 concentrations, each requiring a

student to complete 3 concentration courses from a list of approved courses for that particular concentration, plus an elective. Over the past few years an increasing number of MSIT students have been requesting for permission to take courses from a different concentration in substitution of courses for their "home" concentration, with the aim of acquiring a broader range of knowledge and skills beyond those offered by a single concentration. Students are particularly interested in courses that expose them to emerging technologies in the fast changing field of computing and information technology.

Due to a near tripling in enrollments in MSIT in the past year, it is anticipated to have a multifold increase in the volume of requests for cross-concentration courses which renders it no longer practical to handle the matter in an ad hoc manner. The SIS Department is therefore requesting for permission to add "Emerging Technologies" as a new concentration for the MSIT program.

Students who select the new concentration are recommended to take 3 courses from a list of courses shown below. With the permission of the graduate program director, students are allowed to take other courses not listed here. New courses on emerging technologies in computing and information processing will be added to the list as they are established.
- ITIS 5180. Mobile Application Development
- ITIS 6011. Interaction Design Studio
- ITIS 6162. Knowledge Discovery in Databases
- ITIS 6240. Applied Cryptography
- ITIS 6320 Cloud Data Storage
- ITIS 6520. Network Science
- DSBA 6100 Big Data Analytics for Competitive Advantage

2. Discuss prerequisites/corequisites for course(s) including class-standing, admission to the major, GPA, or other factors that would affect a student's ability to register.

All students who have been admitted into MSIT qualify for the concentration. There are no additional requirements.

3. Demonstrate that course numbering is consistent with the level of academic advancement of students for whom it is intended.

N/A

4. In general, how will this proposal improve the scope, quality and/or efficiency of programs and/or instruction?

The introduction of the new concentration in "Emerging Technologies" will enhance the range of options available to MSIT students, making the program more attractive to future students, whereby contributing to the attainment of the University's ambitious growth targets for graduate populations outlined in "Graduate Enrollment Strategic Planning, UNC Charlotte, June 2014", namely 31% by 2020 and 49% by 2025.

5. If course(s) has been offered previously under special topics numbers, give details of experience including number of times taught and enrollment figures.

   N/A

C. **IMPACT.** Changes to courses and curricula often have impacts both within the proposing department as well as campus-wide. What effect will this proposal have on existing courses and curricula, students, and other departments/units? Submit an Impact Statement that fully addresses how you have assessed potential impacts and what the impacts of this proposal might be. Consider the following:

1. What group(s) of students will be served by this proposal? (Undergraduate and/or graduate; majors and/or non-majors, others? Explain). Describe how you determine which students will be served.

   The new concentration has as its target MSIT students who wish to study knowledge and skills in areas of emerging importance in the rapidly advancing field of Information Technology.

2. What effect will this proposal have on existing courses and curricula?
   a. When and how often will added course(s) be taught?

   The concentration will be available to all current students in the MSIT program as soon as it is approved.

   b. How will the content and/or frequency of offering of other courses be affected?

   Courses for the new concentration are already being offered to students in existing concentrations. No new courses are introduced for the establishment of the concentration.

   c. What is the anticipated enrollment in course(s) added (for credit and auditors)?

   We expect to have 30 MSIT students initially who will elect the new

concentration.

d. How will enrollment in other courses be affected? How did you determine this?

Some current MSIT students may switch their concentrations to the new concentration. Such switching, however, has no impact on the total number of enrollments in the MSIT program. It is not anticipated that adding the concentration will cause some courses to be under- or over-subscribed. In the long run, the new concentration will enhance the overall attractiveness of the MSIT program, helping the further growth of the program.

e. Identify other areas of catalog copy that would be affected, including within other departments and colleges (e.g., curriculum outlines, requirements for the degree, prerequisites, articulation agreements, etc.)

The concentration will be added to the CCI graduate catalog .

III. RESOURCES REQUIRED TO SUPPORT PROPOSAL.
When added resources are not required, indicate "none". For items which require "none" explain how this determination was made.

A. PERSONNEL. Specify requirements for new faculty, part-time teaching, student assistants and/or increased load on present faculty. List by name qualified faculty members interested in teaching the course(s).

No new or part-time faculty is required in order to offer this concentration; nor will this concentration introduce an increased teaching load for present faculty.

All faculty members of the SIS department who teach graduate level courses are qualified to teach courses in their areas of expertise for the new concentration.

B. PHYSICAL FACILITY. Is adequate space available for this course?

Courses for the new concentration are also required by and offered for existing concentrations. It is not expected to add significant pressure to existing demand for space.

C. EQUIPMENT AND SUPPLIES: Has funding been allocated for any special equipment or supplies needed?

Courses for the new concentration are also required by and offered for

existing concentrations. No additional equipment or supplies are needed for the proposed new concentration.

D. COMPUTER. Specify any computer usage (beyond Moodle) required by students and/or faculty, and include an assessment of the adequacy of software/computing resources by available for the course(s).

Courses for the new concentration are also required by and offered for existing concentrations. Existing computer laboratories on campus or students' own personal computers will suffice as a computational platform for this concentration.

E. AUDIO-VISUAL. If there are requirements for audio-visual facilities beyond the standard classroom podiums, please list those here.

Current facilities are adequate to support this course.

F. OTHER RESOURCES. Specify and estimate cost of other new/added resources required, e.g., travel, communication, printing and binding.

None.

G. SOURCE OF FUNDING. Indicate source(s) of funding for new/additional resources required to support this proposal.

None.

IV. CONSULTATION WITH THE LIBRARY AND OTHER DEPARTMENTS OR UNITS

A. LIBRARY CONSULTATION. Indicate written consultation with the Library Reference Staff at the departmental level to ensure that library holdings are adequate to support the proposal prior to its leaving the department. (Attach copy of *Consultation on Library Holdings*).

Consultation was initiated on August 28, 2014 and approved by Library on September 3, 2014.

B. CONSULTATION WITH OTHER DEPARTMENTS OR UNITS. List departments/units consulted in writing regarding all elements outlined in IIC: Impact Statement, including dates consulted. Summarize results of consultation and attach correspondence. Provide information on voting and dissenting opinions (if applicable).

This course is not expected to overlap with other graduate courses on campus. Consultation with the following Departments has been initiated: Department of Bioinformatics and Genomics and Department of Computer Science on

August 28, 2014. Approvals were received on August 28, 2014 and September 3, 2014, respectively.

C. HONORS COUNCIL CONSULTATION. In the case of Honors courses or Honors programs indicate written consultation with the Honors Council (if applicable).

N/A.

V. INITIATION, ATTACHMENTS AND CONSIDERATION OF THE PROPOSAL

A. ORIGINATING UNIT. Briefly summarize action on the proposal in the originating unit including information on voting and dissenting opinions.

Approved by the Department of Software and Information Systems on 09/02/2014. Approved by the College of Computing and Informatics Graduate Committee on 9/18/2014. Approved by faculty of the College of Computing and Informatics on 9/30/2014.

B. CREDIT HOUR. **(Mandatory if new and/or revised course in proposal)**
Review statement and check box once completed:
☒ The appropriate faculty committee has reviewed the course outline/syllabus and has determined that the assignments are sufficient to meet the University definition of a credit hour.

C. ATTACHMENTS.

    1. CONSULTATION: Attach relevant documentation of consultations with other units.

    2. COURSE OUTLINE/SYLLABUS: For undergraduate courses attach course outline(s) including basic topics to be covered and suggested textbooks and reference materials with dates of publication. For Graduate Courses attach a course syllabus. Please see Boiler Plate for Syllabi for New/Revised Graduate Courses.

    3. PROPOSED CATALOG COPY: Copy should be provided for all courses in the proposal. Include current subject prefixes and course numbers, full titles, credit hours, prerequisites and/or corequisites, concise descriptions, and an indication of when the courses are to be offered as to semesters and day/evening/weekend. Copy and paste the current catalog copy and use the Microsoft Word "track changes" feature (or use red text with "~~strikethrough~~" formatting for text to be deleted, and adding blue text with "underline" formatting for text to be added).

a. For a new course or revisions to an existing course, check all the statements that apply:

____ This course will be cross listed with another course.

____ There are prerequisites for this course.

____ There are corequisites for this course.

____ This course is repeatable for credit.

____ This course will increase/decrease the number of credits hours currently offered by its program.

____This proposal results in the deletion of an existing course(s) from the degree program and/or catalog.

For all items checked above, applicable statements and content must be reflected in the proposed catalog copy.

b. If overall proposal is for a new degree program that requires approval from General Administration, please contact the facultygovernance@uncc.edu for consultation on catalog copy.

4. ACADEMIC PLAN OF STUDY (**UNDERGRADUATE ONLY**): Does the proposed change impact an existing Academic Plan of Study?

☐ Yes. If yes, please provide updated Academic Plan of Study in template format.

☒ No.

5. STUDENT LEARNING OUTCOMES (UNDERGRADUATE & GRADUATE): Does this course or curricular change require a change in Student Learning Outcomes (SLOs) or assessment for the degree program?

☐ Yes. If yes, please provide updated SLOs in template format.

☒ No.

6. TEXTBOOK COSTS: It is the policy of the Board of Governors to reduce textbook costs for students whenever possible. Have electronic textbooks, textbook rentals, or the buyback program been considered and adopted?

☒ Yes. Briefly explain below.

☐ No. Briefly explain below.

Courses for the new concentration are also required by and offered for existing concentrations. As an adopted practice of the department, textbooks for the courses are reviewed periodically and appropriate electronic texts are adopted as soon as they are identified.

IMPORTANT NOTE: A Microsoft Word version of the final course and curriculum proposal should be sent to facultygovernance@uncc.edu upon approval by the Undergraduate Course and Curriculum Committee and/or Graduate Council chair.

Appendix I: Inter-Departmental Consultation

From Bioinformatics Department:

Subject: Re: Inter-Dept consultation: new concentration for MSIT
From: "Mays, Larry" <lemays@uncc.edu>
Date: 08/28/2014 01:14 PM
To: "Zheng, Yuliang" <yzheng@uncc.edu>
CC: "Maher, Mary" <M.Maher@uncc.edu>

Thanks for the consultation. You have our full support.
Larry Mays

On 8/28/14, 12:50 PM, "Yuliang Zheng" <yzheng@uncc.edu> wrote:

Larry and Bojan,

First off welcome aboard Bojan!

I am emailing you both a long form for our dept's
proposal to
add a new concentration to our masters program (MSIT).
Please email me your feedback asap. We would like to
have this option available to our current students
as soon as the form completes its journey of going
through the approval chain.

Thanks,

--

Yuliang
- -
Professor Yuliang Zheng
Dept of Software & Information Systems, UNC Charlotte

From Computer Science Department:

Dear Yuliang,

I looked through the proposal to establish new Emerging Areas concentration in MSIT program. I believe this will be a strong addition to our College's graduate program offerings. I support the proposal.

Please let me know if I or other members of the CS department can be of any help in this process.

Best regards,

Bojan

‹
Bojan Cukic
Professor and Chair
Department of Computer Science
College of Computing and Informatics
University of North Carolina at Charlotte

On 8/28/14, 12:50 PM, "Yuliang Zheng" <u>yzheng@uncc.edu</u> wrote:

Larry and Bojan,

Appendix II: Course Outline/Syllabus

N/A.

Appendix III: Catalog Copy

MASTER OF SCIENCE IN INFORMATION TECHNOLOGY

The Master of Science in Information Technology (MSIT) at UNC Charlotte, is designed to equip students with advanced skills and knowledge in the planning, design, implementation, testing and evaluation, deployment, maintenance, and management of applications and systems, that embody information and communication technologies for their proper functioning. These skills form necessary foundations for solving practical problems that arise in business, industrial, governmental, and other organizations, as well as for pursuing doctoral studies in information technologies.

The current areas of concentration include: Advanced Data and Knowledge Discovery, Design, Emerging Technologies, Human-Computer Interaction, Information Security and Privacy, Information Technology Management, Software Systems Design and Engineering, and Web Development.

Students entering the MSIT program are required to have completed a baccalaureate degree from an accredited institution of higher learning and have acquired substantial experience in studying, applying, or developing information and computing technology. Such experience may be developed by completing an undergraduate major in a discipline related to information technology, including but not limited to, business information systems, computer engineering, computer science, data communication, information management, information technology, mathematical and physical sciences, and software engineering. For applicants who have an undergraduate major not directly related to computing, the experience may be acquired through work, professional training, or further education such as post baccalaureate studies.

Admission Requirements
Admission requirements specific to the MSIT program include:

1) Applicants must have completed undergraduate or equivalent coursework in (a) data structures and (b) object-oriented programming in C++, C#, or java, both with a minimum GPAs of 3.0 on a 4.0 scale. Applicants who have substantial work experience in applying or developing computing and information technology may be able to substitute their work experience for the specific requirements for object-oriented programming and/or data structures, subject to review by the MSIT Program Coordinator.
2) All applicants must have an undergraduate GPA or equivalent of at least 3.0 on a scale of 1.0 to 4.0, and a Junior/Senior GPA of at least 3.0.
3) Applicants are required to demonstrate a satisfactory score on the aptitude portion of the Graduate Record Examination (GRE) or the Graduate Management Admission Test (GMAT).

Degree Requirements

The Master of Science in Information Technology degree requires a total of 30 graduate credit hours with a minimum GPA of 3.0. Additionally, the following requirements must be met:

- No more than 12 credit hours of coursework may be taken from outside of the courses offered by the Department of Software and Information Systems
- At least 15 credit hours must be taken from 6000 level or above courses
- No more than 3 credit hours may be taken for Individual Study
- A maximum of 6 graduate credit hours may be transferred from other institutions

The requirement of 30 credit hours comprises the following 3 parts:

Core Component (18 credit hours)
ITIS 6120 Applied Databases (3)
ITIS 5166 Network-Based Application Development (3)
ITIS 6112 Software System Design and Implementation (3)
ITIS 6200 Principles of Information Security and Privacy (3)
ITIS 6342 Information Technology Project Management (3)
ITIS 6400 Principles of Human-Computer Interaction (3)

ITIS 6120 may be substituted with ITCS 6160.

Concentration Component (9 credit hours)
The MSIT program offers the following concentrations:

1) Advanced Data and Knowledge Discovery
2) Design
3) Emerging Technologies
4) Human-Computer Interaction
5) Information Security and Privacy
6) Information Technology Management
7) Software Systems Design and Engineering
8) Web Development

Each student is required to select one concentration and complete 3 courses selected from the list of approved courses for the specific concentration.

Among the 9 credit hours for a concentration, 6 may be substituted with a master's research thesis. The topic for the research thesis must fall within the area of concentration.

Subject to the approval of the MSIT Program Coordinator, a course from outside of the approved list for a concentration may be taken as a substitute for a course for the concentration.

Elective Component (3 credit hours)
Students fulfill the remaining requirements for a MSIT degree by completing an approved elective course in the area of information technology.

The elective requirements may also be met by taking up an internship worth 3 credit hours as defined in ITIS 6198 (IT Internship Project).

Appendix IV: Library Consultation

J. Murrey Atkins Library

Consultation on Library Holdings

To: Dr. Yuliang Zheng

From: Dr. Melanie Sorrell

Date: 9/3/2014

Subject: Emerging Technologies – New Concentration for MSIT

Summary of Librarian's Evaluation of Holdings:

Evaluator: Dr. Melanie Sorrell   Date: 9/3/2014

Check One:
1. Holdings are superior   _____
2. Holdings are adequate   __x__
3. Holdings are adequate only if Dept. purchases additional items.   _____
4. Holdings are inadequate   _____

Comments:
This is a proposal for a new concentration for the MSIT degree program. Library holdings should be adequate to support student research (see list of items held by subject heading below). Students will have access to relevant databases including INSPEC, Science Direct, Compendex, ACM Digital Library, IEEE Xplore Digital Library, and the Wiley Online Library.

LC Subject Heading	Total items held
Information technology - Management	73 monographs
Technological innovations - Management	680 monographs
Creative ability in business	242 monographs
Communications Engineering -Networks	270 monographs
ACM transactions on computer-human interaction	Journal title
IEEE Transactions on Emerging Topics in Computing	Journal title
IEEE Journal on Emerging and Selected Topics in Circuits and Systems	Journal title

Melanie Sorrell

_____
Evaluator's Signature

9/3/2014

_____
Date