Minnesota State University, Mankato

Curriculum Proposal

Please type or select the requested information. Print completed forms, add appropriate paper attachments, and route through MSU’s curricular process for recommendations and decisions.

(Check all that apply):
College: Science, Engineering and Technology  [X] Undergraduate
Department: Computer and Information Sciences  [X] Graduate
Program: Computer Information science  CIP # 11.0701.00

Type of Change: COURSE PROPOSALS
Proposed: New Course

Title Current:
Title Proposed: Web Applications and User Interface Design
24-Char. Abbrev: Web Applic & User Interf

Effective Date of Change: No-07
Proposal #: 129
(For Office Use Only)

Course Designator and Number: IT 483 / IT 583
Number of Credits: 4

Include a course or program description for the Bulletin (30-40 words maximum for courses, 100 for programs):
HTTP Protocol; Web-markup languages; Client-side, Server-side programming; Web services; Web servers; Emerging technologies; Security; Standards & Bodies; Web interface design techniques; User-centered design; Visual development environments and development tools; Interface design effectiveness.
Pre: IT 340 or ISYS 340, T 380 or ISYS 380
Fall, Spring

Rationale or Justification for change:
The CIS major is being redesigned and name changed to Information Technology (IT). This course is critical to ABET accreditation for Information Technology

***For General Education or Cultural Diversity Courses Only***

General Education Course:

<table>
<thead>
<tr>
<th>GE Category #</th>
<th>GE Category Name (Maximum of 3 Categories)</th>
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? For Writing Intensive Courses, attach a description of the kind and quantity of writing.
? For Upper Division Courses, include a description of the respects in which it is broad and general rather than narrow and specific, and so suitable as GE.

Attach paper copies of the following:
a. Syllabus or course outline.
b. Course's student learning outcomes associated with each GE competency or CD designation.
c. List of strategies to be used to assess students' achievement of each GE competency or CD designation.

***For New Courses***

(Check all that apply):
Instructional Type: Lecture
Course is an elective.
Grading Format: [X] Grade  [ ] P/N
Course is required for program Information Technology (IT)
Pre- or Co-requisites: IT 214 or ISYS 215
Other courses are being changed or eliminated. (Explain.) Modified COMS 463. COMS 463 is dropped

Course will be offered:  [X] Fall Semester  [X] Spring Semester  [ ] Summer Session

[ ] Course content or title is similar to courses in other departments. (Attach copy of letter of agreement with other program(s) contacted. Indicate the nature of the discussions and/or resolution of differences or potential conflicts.)

Attach paper copies of the following:
a. Syllabus or course outline.
b. Course's student learning outcomes.
c. A list of resources required to offer and support this course.
d. A description of how teaching this course will affect department staffing.
e. If 400/500 level course, an explanation of added expectations of graduate students.
# Curriculum Proposal

### Signature Page

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<th>Department</th>
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Comments:

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Comments:

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Signature Page:

- **Department Chair**: Date
- **Committee Chair**: Date
- **Dean**: Date
- **General Education Subcommittee Chair**: Date
- **UCAP Faculty Chair**: Date
- **Faculty Association Graduate Chair**: Date
- **Graduate Dean**: Date
- **Assistant Vice President**: Date
- **Sr. Vice President / Vice Pres. Academic Affairs**: Date

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Revised September 2002
IT 483/583 (4) Web Applications and User Interface Design

a. SYLLABUS

Textbook:
Beginning ASP.NET 1.1 with VB.NET 2003, Chris Ullman et. al, Wrox, 2004
Introduction to ASP.NET, 2nd Edition, Kathleen Kalata, Thompson Course Technology

Prerequisites:
IT 340 or ISYS 340, IT380 or ISYS 340

Course Objectives:
- Structure of the World Wide Web and HTTP protocol.
- Presentation technologies, such as, Cascading Style Sheets and DHTML.
- Client-side vs. Server-side programming.
- Emerging Web technologies, such as XML, SOAP, WSDL, UDDI, Java, C#, EJB, .NET, etc.
- Use specialized Web Markup languages, such as SVG, SMIL, RSS, etc.
- Web standards and standard bodies including the World Wide Web Consortium (W3C).
- Web development using Client-side programming with JavaScript, Java Applets, Flash, and other Web GUI technologies.
- Construct Web server programs with Server-side programming using/working with Generic HTTP, CGI techniques, Open Source as well as Proprietary languages and packages such as Flash, Active X, RealMedia, and QuickTime.
- Design, construct, test and evaluate web services using Open Source languages and packages, proprietary languages and packages and enterprise web development technology.
- Design, construct, test and evaluate distributed web applications.
- Web design process: User modeling and user-driven design, Web Design Patterns, Information organization, Usability, N-Tier architectures
- Listservs, discussion boards, wikis, blogs, and chat-rooms – various ethical issues associated with the web, including the digital divide, issues concerning race and gender, freedom of speech, privacy and copy and digital content rights.
- Web Vulnerabilities –cookies, web beacons, phishing, spyware, viruses and protection.
- Web server security, denial-of-service attacks, transaction security - certificates and secure connections
- Relationship between the cognitive principles and their application to interfaces and products.
- Characteristics of human-centered design methods.
- Emerging alternative I/O devices for User Interfacing; mobile and wearable devices.
- Developing user interface on web pages not encountered in developing a GUI for a standalone application.
• Describe several affordances of a web environment that can enhance the usability of a
  web-based application.
• User interfaces for domain specific applications
• Usability of an application by performing a heuristic evaluation.
• Major usability guidelines and standards.
• Users' characteristics (i.e., age, education, cultural differences, etc.) requiring adaptation
  of a user interface to increase effectiveness.
• Options (techniques) for developing prototypes of user interfaces.
• Access via biometrics

Course Coverage:
User Interface Design 40%
Web Applications Design 60%

Course Contents:

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<th>Topics</th>
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| 1    | Introduction, Structure of WWW and http protocol  
| 2    | Emerging Web Technologies: XML, SOAP, WSDL, UDDI, Java, C#, EJB, .NET, SVG, SMIL, RSS |
| 3    | Serve: Side Scripting with ASP, .NET |
| 4    | Serve: Side Scripting with back end database |
| 5    | Presentation Techniques - Cascading Style Sheets and DHTML |
| 6    | Client side programming, JavaScript |
| 7    | Emerging Proprietary languages and packages |
| 8    | Java Applets, Flash, and other Web GUI technologies. |
| 9    | CGI techniques, Active X, RealMedia, and QuickTime. |
| 10   | Web Vulnerabilities –cookies, web beacons, phishing, spyware, viruses and protection. Web server security, denial-of-service attacks, transaction security - certificates and secure connections |
| 11   | Cognitive principles and their application to interfaces and products. |
| 12   | Characteristics of human-centered design methods. user's characteristics to increase effectiveness. |
| 13   | Application Design and stages of a software development lifecycle. |
| 14   | Emerging alternative I/O devices for User Interfacing; mobile and wearable devices |
| 15   | Usability guidelines and standards. |

Catalog Description:
HTTP Protocol; Presentation abstractions; Web-markup languages; Client-side programming;  
Server-side programming; Web services; Web servers; Emerging technologies; Security; Standards & Standard Bodies; Techniques for web interface design; User-centered design; Visual  
development environments and development tools; Measure the effectiveness of interface design.
Grading:
- Quizzes 15%
- Project 35%
- Presentations 10%
- Midterm 20%
- Final 20%

b. LEARNING OUTCOMES
- Create and validate HTML/XHTML and XML documents.
- Contrast data entry and validation techniques in Client-side vs. Server-side programming.
- Discuss and contrast Client-side with Server-side security issues.
- Describe the use of server-side backend databases in web sites and web applications.
- List and discuss the function of existing and emerging Web technologies, such as XML, SOAP, WSDL, UDDI, Java, C#, EJB, .NET, etc.
- Apply and integrate XML syntax to transform documents between formats.
- Understand Web Standards in terms of specifications, guidelines, software, and tools.
- Apply presentation technologies to author websites, such as Cascading Style Sheets, XSLT-FO, DHTML, etc.
- Use specialized Web Markup languages, such as SVG, SMIL, RSS, etc.
- Implement Web solutions that comply with Web standards and standard bodies including specifications, guidelines, software, and tools.
- Use cascading style sheets to create style standards for a web site.
- Use data persistence via cookies in maintaining states.
- Understand issues and implementation of server-side security.
- Discuss issues in maintaining backend databases.
- Describe characteristics of users of a web site that affect design. And enhance usability of a web site.
- Describe the relationship between the cognitive principles and their application to interfaces and products.
- Understand characteristics of human-centered design methods.
- Emerging alternative I/O devices for User Interfacing: mobile and wearable devices.
- Describe several constraints on developing a user interface on a web page not encountered in developing a GUI for a standalone application.
- Describe several affordances of a web environment that can enhance the usability of a web-based application.
- Develop user interfaces for domain specific applications
- Measure the usability of an application by performing a heuristic evaluation.
- Describe the major usability guidelines and standards.
- Describe ways in which users’ characteristics (i.e., age, education, cultural differences, etc.) require adaptation of a user interface to increase effectiveness.
- Enumerate the options (techniques) for developing prototypes of user interfaces.
- Measure the effectiveness of a design of an application or product during different stages of a software development lifecycle.
c. RESOURCES REQUIRED TO OFFER AND SUPPORT THIS COURSE
Resources currently in place within the department and the University Library will support this new course. No new resources are required.

d. IMPACT ON STAFFING IN THE DEPARTMENT
There is no impact on department staffing.

e. DIFFERENT ASPECT IN 500 LEVEL
Graduate students must do independent research in a topic of current interest. Students are required to write a research paper about their topic and present their findings to the class.