WINONA STATE UNIVERSITY
NEW AND REVISED COURSE AND PROGRAM APPROVAL FORM

Routing form for new and revised courses and programs. Course or Program MCOM 371

Department Recommendation

Ron Ellcombe — Department Chair
3/19/14 — Date
rellcombe@winona.edu — e-mail address

Dean's Recommendation ✓ Yes ____ No*

[signature] — Dean of College
2-19-14 — Date

*The dean shall forward their recommendation to the chair of the department, the chair of A2C2, and the Vice President for Academic Affairs.

A2C2 Recommendation ____ Approved ____ Disapproved

____ Chair of A2C2 ____ Date

Graduate Council Recommendation (if applicable) ____ Approved ____ Disapproved

____ Chair of Graduate Council ____ Date

____ Director of Graduate Studies ____ Date

Faculty Senate Recommendation ____ Approved ____ Disapproved

____ President of Faculty Senate ____ Date

Academic Vice President Recommendation ____ Approved ____ Disapproved

____ Academic Vice President ____ Date

Decision of President ____ Approved ____ Disapproved

____ President ____ Date

Please forward to Registrar.

Registrar ____ Date entered

Please notify department chair via e-mail that curricular change has been recorded.

[Revised 9-1-10]

5/21/14

WINONA STATE UNIVERSITY
PROPOSAL FOR A NEW COURSE

This form is to be used to submit a proposal for a new undergraduate or graduate course. Every item on this form must be completed prior to submission to A2C2. The department proposing a new course must include a ***Financial and Staffing Data Sheet*** and a ***New and Revised Course and Program Approval Form*** with the department chairperson's and Dean's signatures. Refer to Regulation 3-4, ***Policy for Changing the Curriculum***, for complete information on submitting proposals for curricular changes.

Department **Mass Communication** Date **2/19/2014**

371	**Advanced Interactive Environments**	**3**
Course No.	Course Title	Credits*

This proposal is for a(n): **XXXX** Undergraduate Course _____ Graduate Course

Is this course for USP? Yes** _X___ No Is this course for GEP? ____Yes** _X___ No

List all Major Codes to which this proposal applies as a required course: MCTM (new major code)

List all Major Codes to which this proposal applies as an elective course:

List all Minor Codes to which this proposal applies as a required course:

List all Minor Codes to which this proposal applies as an elective course: MCOM

Prerequisites **Introduction to Interactive Environments**

Grading method __X___ Grade only _____ P/NC only _____ Grade and P/NC Option

Frequency of offering **Every other semester**

What semester do you anticipate that will this course be offered for the first time? **Spring 2015**
Note: The approval process for a new course typically takes at least four to six weeks

* If this course will change the number of credits for any major or minor, the form ***Proposal for a Revised Program*** must also be submitted and approved according to the instructions on that form.

For General Education Program (GEP) or University Studies (USP) course approval, the form ***Proposal for General Education Courses* or ***Proposal for University Studies Courses*** must also be completed and submitted according to the instructions on that form.

Please provide all of the following information:
(Note: a syllabus or other documentation may not substitute for this)

A. Course Description

1. **Advanced Interactive Environments is an introduction to Physical Computing using the Arduino prototyping platform as a learning tool. The course will cover the basics hardware and software notions to programing electronics devices. In addition to that the course will provide a working knowledge of Raspberry Pi as a hardware tool for the Linux operative system. The student will able to capture data from a variety of sensors and based on that, create responsive applications or electronic devices.**

2. Course outline of the major topics, themes, subtopics, etc., to be covered in the course. This outline should be, at a minimum, a two-level outline, i.e., consisting of topics and subtopics. This information will be submitted to MnSCU by the WSU Registrar's office.

1 An introduction the Arduino hardware.

What it is capable of and the various types of Arduino board that are available.

2 Getting Started.

First experiments with your Arduino board, installing the software, powering it up and uploading your first sketch.

3 C Language Basics.

The basics of the C language and for complete programming beginners an introduction to programming in general.

4 Functions.

This chapter explains the key concept of using and writing functions in Arduino sketches. Demonstrated throughout with runnable code examples.

5 Arrays and Strings.

How to make and use more advanced data structures than simple integer variables. A Morse Code example project is slowly developed to illustrate the concepts being explained.

6 Input and Output.

How to use the digital and analog inputs and outputs on the Arduino in your programs. A multimeter will be useful to see what is happening on the Arduino's input output connections.

7 The Standard Arduino Library.

Making use of the standard Arduino functions that come in the Arduino's standard library.

8 Data Storage.

Writing sketches that can save data in EEPROM memory and make use of the Arduino's built-in Flash memory.

9 LCD Displays.

Programming with the LCD Shield library to make a simple USB message board example.

10 Arduino Ethernet Programming.

Making the Arduino behave like a web server, including a little background on HTML and the HTTP protocol.

11 C++ and Libraries.

Beyond C, looking at adding object-orientation and writing your own Arduino libraries.

12 Raspberry Pi

Getting Up and Running.

Getting Around Linux on the Raspberry Pi.

Python On The Pi.

Animation and Multimedia in Python.

Scratch on the Pi.

Arduino and the Pi.

Basic Input and Output.

Programming Inputs and Outputs with Python.

Working with Webcams.

Python and The Internet.

3.a Instructional delivery methods utilized: (Please check all that apply).

Auditorium/Classroom : **Lecture**	ITV	Online	Web Enhanced	Web Supplemented
Laboratory:	Service Learning	Travel Study	Internship/Practicum	
Other: (Please indicate)				

3.b. MnSCU Course media codes: (Please check all that apply).

None: **XXX**	3. Internet	6. Independent Study	9. Web Enhanced
1. Satellite	4. ITV Sending	7. Taped	10. Web Supplemented
2. CD Rom	5. Broadcast TV	8. ITV Receiving	

4. Course requirements (papers, lab work, projects, etc.) and means of evaluation.

1. Students will complete a series of exercises associated with the units in the course.
2. Students will complete a series of exercises related to physical computing hardware and software.
3. Students will complete a final project that incorporates all the skills learned from exercises: a summative assessment using a rubric based on student learning outcomes will be made of the final project in both audio and video platforms.

5. Course materials (textbook(s), articles, etc.).

Monk, Simon. 2012 Programming Arduino: getting started with sketches. New York. McGraw-Hill.

Leonardo Arduino board.

Sensors and electronic components kit.

Raspberry Pi 2

6. List the student learning outcomes for this course and how each outcome will be assessed.

Learning outcomes:

1. **Students will understand the basic behaviors of electricity.**
2. **Students will be introduced to electronic schemes.**
3. **Students will be able to solder electronic components.**
4. **Students will be able to program sensors and apply that information to create simple behaviors.**
5. **Students will be able to pseudocoding complex behaviors.**

7. References.

Tom Igoe. 2011. Making Things Talk: Using Sensors, Networks, and Arduino to see, hear, and feel your world O'Reilly. 496 pages. Paperback.

Greg Borenstein. 2012. Making Things See: 3D vision with Kinect, Processing, Arduino, and MakerBot O'Reilly. 440 pages. Paperback.

Daniel Sauter. 2013. Rapid Android Development: Build Rich, Sensor-Based Applications with Processing The Pragmatic Programmers. 300 pages. Paper and eBook.

Richardson, Matt, Wallace, Shawn P 2012. Getting started with Raspberry Pi. O'Reilly Media

Halfacree, Gareth 2012. Raspberry Pi user guide. Chichester, West Sussex, UK

B. Rationale

Provide a rationale for the new course. The rationale should include the following items.

1. A statement of the major focus of the course.
   1. **Statement of the major focus and objectives of the course.**
      The major goal of this course is to merge physical and digital worlds, giving the student to work in the interaction between both fields.

      Some of the objectives of the course include:
      1. **Introducing students to understand sensors.**
      2. **Familiarizing students with electronics**
      3. **Providing students an opportunity to create their own research using customized tools.**

2. A statement of how this course will contribute to the departmental curriculum.
   This course is a core professional skills course that all majors in the Transmedia track are required to complete.

3. A statement of why this course is to be offered at this level (i.e. 100-, 200-, 300-, 400-, or 500-level)

   This course is an advanced course in the new Transmedia option of Mass Comm. The course requires a higher level of abstract thinking and application of concepts appropriate to an upper division course.

4. Identification of any courses which may be dropped, if any, if this course is implemented.
   This course is part of the merging of Electronic Media and Photo/Digital Imaging options in the Mass Comm major. It will replace 220 Broadcast Writing, 310 Photo and Digital Imaging, 312 Visual Perception and Imaging and 328 Advanced Audio Production.

C. Impact of This Course on Other Departments, Programs, Majors, and Minors

Provide a statement of the impact of this course on other departments, programs, majors, and minors.

1. Clearly state the impact of this course on courses taught in other departments. Does this course duplicate the content of any other course? Is there any effect on prerequisites for this or any other courses?

This course does not increase nor decrease the total credits required by a major or minor in any other department nor does this course duplicate content of any other course offered at WSU. The course is part of the Mass Communication's revised program and is offered only to students with a Mass Communication major or minor.

2. Would approval of this course change the total number of credits required by any major or minor of any department? If so, explain the effects which this course would have.
   No
3. If this course has an impact on the major or minor of any other department or program, it is the responsibility of the department submitting the course proposal to send written notification to the department(s) or program(s) affected. State clearly which other programs are affected by this proposal and whether the other departments have been notified and/or consulted. Attach letter(s) of understanding from impacted department(s).

This course does not impact any other department or program.

D. Attach to This Proposal a Completed

1. ***Financial and Staffing Data Sheet***
2. ***New and Revised Course and Program Approval Form***

E. Department Contact Person for this Proposal:

Ron Elcombe	X5238	relcombe@winona.edu
Name (please print)	Phone	e-mail address

F. Review by Department A2C2 Representative

I have reviewed this proposal and certify that it is complete _____

Signature of A2C2 representative

Definitions for codes in 3a and 3b:

01-Satellite:

02- CD ROM:

03- Internet: Predominately = where all, or nearly all, course activity occurs in an online environment. One to two activities may occur face-to-face in a classroom, with the maximum being two activities.

04 – ITV Sending: a course in which students are in the classroom with the instructor, other students join via interactive television technology from other geographically separate locations

05 – Broadcast TV:

06 – Independent Study: a course in which the teacher develops specialized curriculum for the student(s) based on department guidelines in the University course catalog

07 – Taped: a course in which the teacher records the lessons for playback at a later date

08 – ITV Receiving: a course in which students are not in the classroom with the teacher, other students join via interactive television technology from other geographically separate locations

09 – Web Enhanced- Limited Seat Time: For a course in which students are geographically separate from the teacher and other students for a majority of required activities. However, some on-site attendance is required. The course includes synchronous and/or asynchronous instruction.

10 – Web Supplemented- No Reduced Seat Time: For a course utilizing the web for instructional activities. Use of this code may assist your college/university in tracking courses for “smart classrooms” and/or facility usage.

WINONA STATE UNIVERSITY
FINANCIAL AND STAFFING DATA SHEET

Course or Program_____ MCOM 371 Advanced Interactive Environments _____

Include a Financial and Staffing Data Sheet with any proposal for a new course, new program, or revised program.

Please answer the following questions completely. Provide supporting data.

1. Would this course or program be taught with existing staff or with new or additional staff? If this course would be taught by adjunct faculty, include a rationale.

This course will be taught by existing probationary faculty. It is part of a reorganization of the Mass Comm curriculum explained in greater detail in the Program Revision document. The department was informed this year that the fixed-term position that we have had for several years will not be renewed for the 14-15 academic year. This course is part of the reorganization.

2. What impact would approval of this course/program have on current course offerings? Please discuss number of sections of current offerings, dropping of courses, etc.

This course is part of the merging of Electronic Media and Photo/Digital Imaging options in the Mass Comm major. It will replace 220 Broadcast Writing, 310 Photo and Digital Imaging, 312 Visual Perception and Imaging and 328 Advanced Audio Production.

These courses will be offered as "teach-out" of current majors, and then banked.

3. What effect would approval of this course/program have on the department supplies? Include data to support expenditures for staffing, equipment, supplies, instructional resources, etc.

The department's equipment allocation is sufficient to absorb the cost for this course. The equipment needs of the two options being discontinued (Electronic Media and Photo/Digital Imaging will be redirected to the new Transmedia option.