Code # SM20(2015) Rev

**New Course Proposal Form**

[x]  **Undergraduate Curriculum Council** - Print 1 copy for signatures and save 1 electronic copy.

[ ]  **Graduate Council** - Print 1 copy for signatures and send 1 electronic copy to pheath@astate.edu

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| --- |
| [ ] **New Course or** [x]  **Experimental Course (1-time offering) (Check one box)***Please complete the following and attach a copy of the bulletin page(s) showing what changes are necessary.*  |

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| --- | --- |
| Hung-Chi Su 9/28/2015**Department Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**COPE Chair (if applicable)** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**Department Chair:**  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**General Education Committee Chair (If applicable)**   |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**College Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**Undergraduate Curriculum Council Chair** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**College Dean** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**Graduate Curriculum Committee Chair** |
|  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**Vice Chancellor for Academic Affairs** |

1. Contact Person (Name, Email Address, Phone Number)

Hung-Chi Su, suh@astate.edu, 972-3978

2. Proposed Starting Term and Bulletin Year

Spring 2016

3. Proposed Course Prefix and Number (Confirm that number chosen has not been used before. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*. )

CS3923

4. Course Title – if title is more than 30 characters (including spaces), provide short title to be used on transcripts. Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis). Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).

Cloud Application Development

5. Brief course description (40 words or fewer) as it should appear in the bulletin.

Introduction to the fundamentals, design patterns, interfaces, and technologies underlying cloud application development in a multi-tiered enterprise environment.

6. Prerequisites and major restrictions. (Indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

1. Are there any prerequisites? Yes
	1. If yes, which ones?

CS2114

* 1. Why or why not?

 The material covered by the course requires some experience in computer programming, and an understanding of structured programming concepts, with some exposure to abstract data types.

1. Is this course restricted to a specific major? No
	1. If yes, which major? Enter text...

7. Course frequency(e.g. Fall, Spring, Summer). *Not applicable to Graduate courses.*

Spring, Summer

8. Will this course be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please choose one.

Lecture only

9. What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental)?

Standard letter

10. Is this course dual listed (undergraduate/graduate)?

No

11. Is this course cross listed? (If it is, all course entries must be identical including course descriptions. It is important to check the course description of an existing course when adding a new cross listed course.)

No

1. If yes, please list the prefix and course number of cross listed course.

 Enter text...

1. Are these courses offered for equivalent credit? Choose an item.

 Please explain. Enter text...

12. Is this course in support of a new program? No

a. If yes, what program?

 Enter text...

13. Does this course replace a course being deleted? No

a. If yes, what course?

Enter text...

14. Will this course be equivalent to a deleted course? No

a. If yes, which course?

Enter text...

15. Has it been confirmed that this course number is available for use? Choose an item.

 *If no: Contact Registrar’s Office for assistance.*

16. Does this course affect another program? No

If yes, provide contact information from the Dean, Department Head, and/or Program Director whose area this affects.

Enter text...

**Course Details**

17. Outline (The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

1-2 : HTML5, CSS, the Document Object Model, a static web server, and client/server communications

3-4 : The PHP language - syntax, semantics, introduction to procedural and object-oriented features, and libraries

5 : Data persistence (flat-file storage) in PHP

6 : Client-side Javascript - syntax, semantics, object model, and interaction with the DOM

7 : Introduction to the MVC design pattern

8-9 : Database-based persistence, DBMS's, the Relational database model, basic SQL queries, PHP's PDO, SQLite3

10 : Client-side Javascript - Investigation of using Javascript in data validation and secure AJAX transactions with the server.

11-12 : Asynchronous client/server communication, interactive and responsive interfaces

13 : Securing access using TLS; overview of public-key cryptography; secure password management techniques

14 : Survey of cloud deployment options; discussion of product scalability issues

Enter text...

18. Special features (e.g. labs, exhibits, site visitations, etc.)

No

19. Department staffing and classroom/lab resources

No additional faculty or lab resources will be needed.

1. Will this require additional faculty, supplies, etc.?

 The department's elective course rotation will be adjusted to allow for offerings of this course; no additional faculty or supplies will be necessary.

20. Does this course require course fees? No

 *If yes: please attach the New Program Tuition and Fees form, which is available from the UCC website.*

**Assessment**

**University Goals**

21. Please indicate the university-level student learning outcomes for which this new course will contribute. Check all that apply.

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| * 1. [ ] Global Awareness
 | * 1. [x] Thinking Critically
 | * 1. [x] Using Technology
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**Program Goals**

22. Justification for course being included in program. Must include:

 a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

 Applications based “in the Cloud” (also referred to as “Software as a Service” (Saas)), as a new paradigm of information technology, has been widely embraced by industry. It represents a fundamental shift away from the previous “Software as a Platform” (SaaP) model. It is necessary to prepare students majoring in Computer Science (especially in the BA-track) to be professional application developers on cloud computing platforms. Goals Include: Experience with the multi-tiered development model inherent to cloud-based software. Understanding of client/server architectures. Experience with industry best-practices, design patterns, and modern language idioms. In-depth exploration of the “Model-View-Controller” design pattern. Awareness of security issues, and exploration of modern security best-practices including hashing and encryption schemes. Development of software applications that are “cloud”-based.

b. How does the course fit with the mission established by the department for the curriculum? If course is mandated by an accrediting or certifying agency, include the directive.

 One part of the mission is to maintain the curriculum with updated technologies. The state of the art in the software industry has been shifting toward Software as a Service (Saas) and mobile cloud applications in recent years; our students need to be prepared for this new development paradigm. This course provides students with experience in developing applications in a modern heterogeneous, multi-tiered software stack. This will give students better insights into the current state of industry than native-platform focused programming courses alone.

c. Student population served.

Undergraduate students majoring in the department's Bachelor of Science and Bachelor of Arts programs, especially the industry-focuses Bachelor of Arts majors. Non-CS majors from programs that intersect the “tech” industry could also benefit from this course.

d. Rationale for the level of the course (lower, upper, or graduate).

The upper level of the course corresponds to the requirement that students already be experienced in the fundamentals of programming, and ready to learn about applications of that knowledge in a modern enterprise environment.

**Course Goals**

23. What is the intended program-level learning outcome for students enrolled in this course? Where does this course fit into an already existing program assessment process?

Intended program-level learning outcomes impacted by this course:

(a) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(b) An understanding of professional, ethical, legal, security and social issues and responsibilities

24. Considering the indicated program-level learning outcome (in Box #24), please fill out the following table to develop a continuous improvement assessment process for this course.

*For further assistance, please see the ‘Expanded Instructions’ document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.*

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| **Outcome (a)** | Students will be able to create appropriate data models and application logic to implement a Software-as-a-Service (Saas) application based on the Model-View-Controller paradigm within a client-server model to create scalable, maintainable applications. |
| Assessment Procedure Criterion | Software developed by students will be assessed at three levels, each scored according to a rubric: • Peer review: students will review selected applications from other students in the class. • Self-Assessment: students will assess the success of their software project in their own, based on a rubric. • Instructor Assessment: the instructor will assess the overall quality of the student’s project based on a rubric.  |
| Which learning activities are responsible for this outcome? | Lectures, reading assignments, hands-on programming assignments |
| Assessment Timetable | Will be assessed each Spring/Summer when the course is taught |
| Who is responsible for assessing and reporting on the results? | Mr. Jason Causey |

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| **Outcome (b)** | Students will be able to identify and discuss ethical and security implications of cloud-based applications, and the responsibilities these place on the software developer. |
| Assessment Procedure Criterion | Student projects will be assessed for security risk as part of the Instructor’s Rubric (see Outcome (a) above). Discussion questions will be placed on the final exam to assess awareness of ethical and security concerns. |
| Which learning activities are responsible for this outcome? | Lectures, in-class guided discussions about relevant industry news, reading assignments. The hands-on programming project will require attention to security details. |
| Assessment Timetable | Will be assessed each Spring/Summer when the course is taught |
| Who is responsible for assessing and reporting on the results? | Mr. Jason Causey |

 *(Repeat if needed for additional outcomes)* 25. High-Impact Activities (Check all that apply)

[ ] Collaborative assignments

[ ] Research with a faculty member

[ ] Diversity/Global learning experience

[ ] Service learning or community learning

[ ] Study abroad

[ ] Internship

[ ] Capstone or senior culminating experience

[ ] Other Explain: Enter text...

**Bulletin Changes**

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| **Instructions**  |
| **Please visit** [**http://www.astate.edu/a/registrar/students/bulletins/index.dot**](http://www.astate.edu/a/registrar/students/bulletins/index.dot) **and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Follow the following guidelines for indicating necessary changes.** **\*Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.** - Deleted courses/credit hours should be marked with a red strike-through (~~red strikethrough~~)- New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font). - Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)*You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the ‘format painter’ icon 🡪 , and selecting the text you would like to apply the change to.* *Please visit* [*https://youtu.be/yjdL2n4lZm4*](https://youtu.be/yjdL2n4lZm4) *for more detailed instructions.* |

Paste bulletin pages here...