CIS 526 - Web Interface Design
Spring 2015

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Office Hours: Monday 2pm-4pm
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Classroom: Nichols 122
Class Time: TU 2:30 - 3:45 (Final: Monday, May 11, 9:40-11:30)
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Course Description
This course serves as an introduction to the domain of web systems programming, and introduces algorithms, data structures, and design techniques common to the domain.

Course Objectives
At the end of this course, students should be able to:
- Create three-tier web sites using Ruby on Rails
- Be experienced with Agile/Lean development
- Understand and articulate the user interface issues, data structures, algorithms, and design structures common to web development
- Consider the memory and computational implications of their software designs
- Develop an understanding of how techniques used in web programming can be beneficially incorporated within their general software development efforts

Course Outline
1. HTML5, CSS, Javascript review
2. Web app architecture, MVC, Lean UX, Agile, TDD
3. Models - working with databases, scaffolds, migrations, seeding, queries
4. Controllers - REST, flash messages, respond_with
5. Views - html5, templates, partials
6. Server Setup and Deployment
7. Users - Cookies, Authentication, Authorization, Roles
8. Notifications - email templates, scheduling, error notification, etc
9. Full-text search
10. Event feeds - RSS, Facebook & Twitter integration
11. File uploads & downloads
12. Graphing Libraries
13. Excel & PDF generation
14. Messaging Queues - interapp communication
15. Scalability
Course Structure
This course diverges greatly from “traditional” classroom practice, and borrows heavily from best practices learned from educational and psychological research. This structure allows students greater freedom in how they approach their learning and better enables students to learn what is a very involved and technical subject. It also allows an experience that is more close to that you would encounter working within the web development industry. However, also requires a good deal of active participation and discipline on the part of the student.

Online Lectures
This course is presented in a semi-“flipped” format - where some lectures are presented as online videos to be watched by students before the class period. This allows class time to be better utilized for addressing questions and actively developing web applications. Part of the lectures involve exercises programming web systems; your weekly assignment will be to view the entire slideshow and successfully complete all the lectures before the assigned class. Please put your best effort into both completing and understanding the examples - and bring any questions you have with you to class.

Group-Based Web Development
Class time is then freed for actively developing an original web site. This semester, we will be working on a “student portal” to the CIS web site. This game project will be developed as a class effort in conjunction with web developers and administrators in CIS. Each student is expected to make contributions to the overall web development effort. Needless to say, these web sites should represent your best effort. There will be regular assignments attached to developmental milestones for this project.

Code Reviews
Class time will also be used for group code reviews, where teams will meet with one of the instructors to review their current web application code.

Peer Evaluations
Throughout the semester your classmates will be asked to evaluate your performance and contributions to the group projects. Their responses will be taken into account in assigning grades.

Grading Breakdown
Individual Assignments: 25%
Code Reviews: 25%
Team Project: 30%
Peer Evaluations: 10%
Class Attendance: 10%
Lecture Site
Our course lecture material will be posted on KSOL. Additional lectures may be drawn from the Railscasts library as well (see additional resources, below).

Textbooks
Required
“Agile Web Development with Rails 4” Ruby. ISBN 9781937785567
“Lean UX” Gothelf. ISBN 9781449311650

Recommended
“Programming Ruby 1.9 and 2.0” 4th ed. Thomas. ISBN 9781937785499

Alternate Forms
Students may also consider subscribing to Safari Books Online rather than purchasing titles (http://www.safaribooksonline.com/). The Lean UX book is included in this subscription package, and while the Rails and Ruby books are not, viable alternatives are - and many additional titles are available as well.

Other Resources
The Railscasts website (http://railscasts.com/) is an invaluable resource for the Rails developer, with topical screencasts covering much of development a $9 monthly subscription gives full access to these valuable resources.

Course Software
We will be developing using the Ruby on Rails framework, a web application framework built on the Ruby programming language. Ruby can be downloaded here: https://www.ruby-lang.org/en/, and Rails can be downloaded as a gem or downloaded here: http://rubyonrails.org/. A good code editor is also recommended, such as Nodepad++ for windows (http://notepad-plus-plus.org/), Gedit for linux (https://wiki.gnome.org/Apps/Gedit), or textmate (http://macromates.com/) for Mac.

You will also need a web browser with debugging tools. Google Chrome (https://www.google.com/intl/en/chrome/browser/) or Mozilla Firefox (http://www.mozilla.org/en-US/firefox/fx/) are the recommended platforms.

Also, if you are working in a different environment but would like to develop in linux, Oracle’s VirtualBox software is a valuable tool (https://www.virtualbox.org/).

Attendance Policy
Each unexcused absence will reduce the student’s attendance grade by 25%, and each tardy by 10%. Five or more unexcused absences will result in an automatic grade of F for the course.
Late Work
Late work will not be accepted.

Subject to Change
The details in this document are not set in stone - there may need to be adjustments during the semester. If this occurs, the changes will be posted to the class' K-State Online page and emailed to all students.

Academic Honesty
Kansas State University has an Honor System based on personal integrity, which is presumed to be sufficient assurance that, in academic matters, one’s work is performed honestly and without unauthorized assistance. Undergraduate and graduate students, by registration, acknowledge the jurisdiction of the Honor System. The policies and procedures of the Honor System apply to all full and part-time students enrolled in undergraduate and graduate courses on-campus, off-campus, and via distance learning. The honor system website can be reached via the following URL: www.k-state.edu/honor. A component vital to the Honor System is the inclusion of the Honor Pledge which applies to all assignments, examinations, or other course work undertaken by students. The Honor Pledge is implied, whether or not it is stated: "On my honor, as a student, I have neither given nor received unauthorized aid on this academic work." A grade of XF can result from a breach of academic honesty. The F indicates failure in the course; the X indicates the reason is an Honor Pledge violation.

Students with Disabilities
Students with disabilities who need classroom accommodations, access to technology, or information about emergency building/campus evacuation processes should contact the Student Access Center and/or their instructor. Services are available to students with a wide range of disabilities including, but not limited to, physical disabilities, medical conditions, learning disabilities, attention deficit disorder, depression, and anxiety. If you are a student enrolled in campus/online courses through the Manhattan or Olathe campuses, contact the Student Access Center at accesscenter@k-state.edu, 785-532-6441; for Salina campus, contact the Academic and Career Advising Center at acac@k-state.edu, 785-826-2649.

Expectations for Classroom Conduct
All student activities in the University, including this course, are governed by the Student Judicial Conduct Code as outlined in the Student Government Association By Laws, Article VI, Section 3, number 2. Students that engage in behavior that disrupts the learning environment may be asked to leave the class.

Campus Safety
Kansas State University is committed to providing a safe teaching and learning environment for student and faculty members. In order to enhance your safety in the unlikely case of a campus emergency make sure that you know where and how to quickly exit your classroom and how to follow any emergency directives. To view additional campus emergency information go to the University's main page, www.k-state.edu, and click on the Emergency Information button.