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Back-end Web Development I (INF653)

Fort Hays State University
Robbins College of Business and Entrepreneurship
Department of Informatics

1. COURSE INFORMATION

Credit hours: 3.0
Semester and year: Spring 2021
Course prerequisites: INF 651 Front-end web development I, INF 652 Database Design and Programming
Location of class: Virtual
Class time: Virtual
Virtual course: Material will be available in Blackboard

2. INSTRUCTOR INFORMATION

Instructor Name: Dave Gray
Office Room Number: Adjunct Instructor - No office on campus.
E-mail: dagray@fhsu.edu

3. TEXTBOOK AND COURSE MATERIAL

Required textbook:
Murach's PHP and MySQL 3rd Edition
ISBN: 978-1-943872-38-1
Authors: Murach & Harris
https://smile.amazon.com/Murachs-PHP-MySQL-Joel-Murach/dp/1943872384/

Supplementary book(s) and article(s): Will be linked to in the course schedule.
Youtube playlist: Links to videos will be provided in the course schedule.
Technology requirement: a computer (PC/Mac/Linux) supporting web browsers, text editors, and the installation of other necessary programs. Bring Your Own Device.

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4. COURSE DESCRIPTION

PHP Hypertext Preprocessor (PHP) is a server-side programming language that is currently utilized in 78.9% of websites (W3Techs.com, 2020) holding steady and nearly identical to 2019 stats). Also, recent statistics show that SQL is leading database usage by far, and MySQL is the most utilized open source variant (EverSQL.com, June 2020). Together, PHP and MySQL are among the most deployed back end web technologies. The Stackoverflow Survey has developer respondents worldwide. Over 57 thousand ranked their favorite technologies in 2020. PHP and SQL ranked at #8 and #3 respectively.

This course focuses on mastering web development with PHP and MySQL: it covers from fundamental concepts (e.g., Object Oriented Programming and database design) to advanced topics, such as, document-based databases and REST Application Programming Interfaces that enable fast interaction with third-party web services.

While the core focus will be PHP and MySQL, other back end web technologies will be presented. Potential candidates include, but will not be limited to, NodeJS, Express, MongoDB, MariaDB, Python, Flask, SQLite, and GraphQL.

5. LEARNING OUTCOMES

Learning Outcomes:

1. Use code versioning and code repositories
2. Illustrate the features and benefits of server-side development
3. Install the PHP environment
4. Develop PHP applications
5. Model database structures
6. Utilize SQL to complete CRUD operations
7. Organize web applications using the MVC design pattern
8. Design and Deploy RESTful Application Programming Interfaces

6. TEACHING, LEARNING METHODS, & COURSE STRUCTURE

Delivery Method: lectures, labs, videos, readings, quizzes, problem sets, and projects
Course Structure:

1. Overview
2. git and GitHub
3. Resources for back end web development
4. PHP Applications
5. MySQL / Relational Databases
6. PHP / MySQL

7. MVC Pattern / Design Patterns
8. Testing and Debugging
9. RESTful Application Programming Interfaces

7. COURSE SCHEDULE

This schedule is tentative and might change during the semester depending on how the course evolves. The content is subject to change depending on students' interest and progress. Students will be notified of the changes through announcements either in the class or at the Blackboard course site

Module / Date	Content
Week 1	**Back End Web Development Overview and Development Resources** **git and GitHub** **Intro to Web Dev with PHP**
Week 2	**How to code a PHP Application**
Week 3	**Intro to relational databases and MySQL**
Week 4	**How to use PHP with a MySQL database**
Week 5	**How to use the MVC Pattern to organize your code**
Week 6	**How to test and debug a PHP application / Deploying a PHP application**
Week 7	**Midterm Project Workshop Week**
Week 8	**Midterm Review, Midterm Project, Midterm Exam**
Week 9	**How to work with cookies and sessions**
Week 10	**How to create secure websites**
Week 11	**How to create and use objects**
Week 12	**How to use regular expressions, handle exceptions, and validate data**
Week 13	**RESTful Application Programming Interface Review:** **1) PHP and MySQL** **2) NPM, NodeJS, Express, and MongoDB** **3) Python, Flask, and SQLite** **4) GraphQL** **5) More as time allows**
Week 14	**Final Project Workshop Week**

Week 15	**Final Project Presentations**
Week 16	**Final Exam**

8. ASSESSMENT METHODS AND GRADING SCALE

There are 100 points for this course. The grade you earn for this course depends on the total number of points you earn throughout the semester.

The assessment methods and grading scale **for undergraduate students** are as follows:

Assignments: 40 points
Weekly coding assignments and open note quizzes to review, practice and apply new skills will combine for this total score.

Midterm Project: 10 points
A project allowing students to utilize and apply the skills covered to this point in the semester while creating a basic coding project.

Midterm Exam: 10 points
An exam reviewing skills and topics covered to this point in the semester.

Final project: 30 points
A project allowing students to utilize their creativity and apply all skills covered during the semester while creating a complex web application.

Final Exam: 10 points
An exam reviewing all skills and topics covered during the semester.

Grading Scale:

- 90% - 100%: A (High Honors) outstanding and distinguished meeting of course objectives. Excellent understanding and appreciation for the depth and breadth of the subject matter. Requirements completed with distinction in regard to quality uniqueness and clarity of presentation. Independently conceived projects or activities related to the field which enhance student's preparation for his professional objectives are developed and carried out in addition to assigned work.
- 80% - 89%: B (Honors) highly satisfactory and successful meeting of course objectives. Superior interest and understanding of the subject matter. Basic requirements usually completed in a superior manner in regard to the quality of work done, creativity of approach to the task, and general comprehension and knowledge of topic.

- 70% - 79%: C (Satisfactory) successful and respectable meeting of course objectives. Work is usually completed to meet minimum requirements of assignments; it is free of spelling and English grammar errors, ready at the appropriate time with sources of information clearly indicated, and is presented in the neat, business-like format expected of an employed individual.
- 60%-69%: D (Low Level Passing) work sometimes fails to meet minimum requirements of assignments and often is below the quality generally considered acceptable by an employer.
- <59%: U (Failing) failure to meet minimum course requirements. Work is often late, below acceptable standards for written or oral communication, and frequently indicates lack of understanding and/or interest in the subject matter.

9. STUDENT HELP RESOURCES

Students have access to academic services, technical support and student services at Fort Hays State University. You can find the resources online at: https://fhsu.edu/student-affairs/students

10. COURSE POLICIES

Disclaimer: the Instructor reserves the right to make course changes if necessary, and will notify students of these changes through Blackboard announcements and e-mail.
Course material: all course content is available on Blackboard.
Class attendance: on-campus students are expected to attend classes.
Assignment due date: makeup (late) work is not accepted unless PRIOR approval has been granted by the instructor.
Procedures for assignment submission: assignments must be submitted via Blackboard (if available), unless differently notified.

11. UNIVERSITY POLICIES

Tiger pact
I am a tiger. I belong to a strong unique family who strives for greatness and success. I instill integrity and confidence within others as well as myself. I incorporate honesty and responsibility in all that I do. I am the future.

11.1 Academic Honesty Policy
Membership in the FHSU learning community imposes upon the student a variety of commitments, obligations and responsibilities. It is the policy of FHSU to impose sanctions on students who misrepresent their academic work. These sanctions will be selected by appropriate classroom instructors or other designated persons consistent with the seriousness of the violation and related considerations... Students participating in any violation of this policy must accept the consequences of their actions. Classroom instructors and/or university review/appeals committees and administrators

will assess the sanctions for violation of this policy. The seriousness of the violation will dictate the severity of the sanction imposed. More information can be found at http://www.fhsu.edu/academic/provost/handbook/ch_2_academic_honesty/

11.2 Statement of Accessibility and Services for Students with Disabilities

If you have a disability that may have an impact on your ability to carry out assigned course work and if you wish to seek any accommodations for this course, you must contact Services for Students with Disabilities (SSD). SSD is located in the Kelly Center, Picken Hall, Room 111, 785-628-4401. SSD will review your documentation and determine, with you, what academic accommodations are necessary and appropriate for you that can be accommodated in this course. All information and documentation of your disability is confidential and will not be released by SSD without your written permission. Students can find more information at http://www.fhsu.edu/disability/get-access/ Instructors who need help to create instructional materials for students with special needs can seek help from Learning Technologies (LT), 785-628-4194.

11.3 Title IX

FHSU is committed to fostering a safe, productive learning environment. Title IX makes it clear that violence and harassment based on sex, gender and gender identity are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, etc. This includes all types of gender and relationship violence: sexual violence or harassment, domestic and dating violence, and stalking.

If you wish to speak **confidentially** about an incident of gender and relationship violence, talk to someone at The Kelly Center, the Student Health Center, or the Options Sexual and Domestic Violence Campus Advocate who is housed in the Student Health Center.

If you wish to report an incident or have questions about school policies and procedures regarding Title IX issues, please contact Dr. Keegan Nichols, Associate Vice President for Student Affairs and the FHSU Title IX Coordinator knnichols@fhsu.edu. Or, you can report to Residential Life Staff or University Police, which are **non-confidential reporters.**

If you are unsure about the reporting status of an individual, ask them directly before disclosing sensitive information. If they are non-confidential, they can direct you to someone you can talk to in complete confidentiality, which does not have to be officially reported.

11.4 Concealed Carry Policy

Under the Concealed Carry Policy, individuals who carry a concealed handgun must have the handgun on or about their person at all times. Backpacks are appropriate for carrying a handgun as long as the backpack remains within the exclusive and uninterrupted control of the individual. A backpack or other bag used to carry a handgun must be within the immediate reach of the individual. In this course, the instructor may require students to place backpacks or other bags out of reach. The instructor will notify students in advance of this requirement so a student who carries a concealed handgun in a backpack or a bag may take steps to conceal the handgun on his or her person before arriving or otherwise plan accordingly. Alternatively, this course involves a lab where metal and/or explosive devices (ammunition) are prohibited by Federal Regulations due to the nature of the lab and for safety concerns. Concealed carry handguns will need to be properly stored prior to such labs. More information related to

Concealed Carry can be found at http://www.fhsu.edu/news/Fort-Hays-State-posts-policy-on-compliance-with-law-allowing-concealed-carry-of-handguns/

11.5 Use of Computing Resources

Fort Hays State University (FHSU) provides computing resources and worldwide network access to its faculty, staff, and students for legitimate administrative, educational, and research efforts. As a member of the FHSU electronic community it is your responsibility to use computing resources ethically and responsibly. Members of the FHSU electronic community are expected to use computing resources ethically, and to exercise reasonable care in utilization of FHSU information systems or their components.

11.6 Withdrawal Policy

Students may withdraw full-semester courses through 11:59:59PM CT on the 35th day of the semester (Learning Technologies (LT) will work with the Registrar's Office and Technologies Services (TS) to make the specific date for each semester available at the syllabus site). Students withdrawing during this time period will not receive any notation on their transcript. Students who withdraw after this period and thru 11:59:59PM CT on the 70th day of the semester will receive a notation on the transcript of withdrawal (W). No withdrawals after the 70th (LT will work with the Registrar's Office and TS to make the specific date for each semester available at the syllabus site) day of the semester. Students who withdraw completely will receive a notation on their transcript of the date withdrawn. Students receiving financial aid have additional responsibility and should contact the Office of Student Financial Assistance, 785-628-4408. (http://www.fhsu.edu/registrar/academic-policies-and-information/)