N220
Intro to Media Application Development

Department of Human-Centered Computing
Indiana University School of Informatics and Computing, Indianapolis
Fall 2019

Section: 28299   Credit Hours: 3
Location: Online

Instructor: Kevin Miller, M.S.
Office Hours: Tuesday 1pm-5pm, or by appointment.

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Prerequisites: NEWM N101, INFO I101 or the equivalent.

Course Description

This course introduces concepts and skills related to the design of interactive multimedia applications for the web, desktop, and mobile devices. Within the context of industry-standard application design tools, students will use markup tags and scripts to create applications that emphasize graphics, animation, sounds, and interactivity.

Required Texts:

Getting Started with p5.js: Making Interactive Graphics in JavaScript and Processing (Make: Technology on Your Time) 1st Edition
Lauren McCarthy, Casey Reas, & Ben Fry ISBN: 978-1457186776

Eloquent Javascript, 3rd Edition
Marijn Haverbeke ISBN: 978-1593279509
Also available **free** online at https://eloquentjavascript.net

Learning Outcomes:

Upon completion of this course, the student will	*RBT	IUPUI+	PLO's	Assessment
1. Write pseudocode based off an English description of a programming challenge	4,5	P1.1; P2.2; P3.2;	4,6	*Weekly Assignments*
2. Mentally follow the execution of statements in a JavaScript program	1,2	P2.3; P1.1;	1,4	*Lab Discussions*
3. Use a variety of debugging strategies to fix inoperable code	4,5	P3.1; P2.1; P3.3	4,6	*Weekly Assignments, Debugging Lab*
4. Create a JavaScript and HTML application structure without the use of external references	6,4	P2.3; P3.2;	2,6,7	*Midterm and Final*
5. Analyze programs for intermediate steps in the problem solution	3,4	P1.1; P2.1; P3.4;	5	*Weekly Assignments*
6. Communicate solutions and strategies to peers	5	P1.3; P2.2; P4.2;	3	*Weekly Labs*

Media Arts and Science B.S. Program-level Learning Outcomes (PLOs)	[†]*Profiles of Learning for Undergraduate Success (PLUS, IUPUI+)*
1. Understand digital media and its effective use as a form of communication.	**P1.1 Communicator –** Evaluates Information
2. Communicate ideas effectively in written, oral, and visual form to a range of audiences.	**P1.4 Communicator –** Conveys Ideas Effectively **P1.2 Communicator** – Listen Actively* **P3.2 Innovator –** Creates/Designs**
3. Work effectively as a member of a team to achieve a common goal.	**P2.2 Problem Solver –** Collaborates **P1.3 Communicator –** Builds Relationships*
4. Analyze a problem, identify and evaluate alternatives, and plan an appropriate solution.	**P2.1 Problem Solver –** Thinks Critically **P3.1 Innovator –** Investigates*

5. Evaluate media from multiple perspectives using the theories, concepts, and language of digital media with an appreciation for the history, theory, and traditions of digital media.	**P2.3 Problem Solver –** Analyzes, Synthesizes, and Evaluates
6. Demonstrate mastery of the concepts, techniques, and tools in one or more digital media specialties.	**P2.4 Problem Solver –** Perseveres **P3.2 Innovator –** Creates/Designs*
7. Develop professional quality digital media productions by promptly applying knowledge and skills including best practices and standards.	**P3.2 Innovator –** Creates/Designs **P3.3 Innovator –** Confronts Challenges*
8. Explain the impact of digital media on individuals, organizations, and society.	**P4.4 Community Contributor –** Anticipates Consequences **P4.1 Community Contributor –** Builds Community*
9. Acknowledge diverse opinions regarding professional, ethical, legal, and social issues with a global perspective.	**P4.3 Community Contributor –** Behaves Ethically **P4.2 Community Contributor –** Respectfully Engages Own and Other Cultures*
10. Plan for continuing professional development with an appreciation of the need for lifelong learning.	**P3.4 Innovator –** Makes Decisions

Software used

Visual Studio Code, available at https://code.visualstudio.com/download

Expectations, Guidelines, and Policies

Attendance

A basic requirement of this course is that you will participate in all class meetings, whether online or face-to-face, and conscientiously complete all required course activities and assignments. Class attendance is required for classroom-based courses. It entails being present and attentive for the entire class period. Attendance shall be taken in every class. If you do not sign the attendance sheet while in class, you shall be marked absent. Signing the attendance sheet for another student is prohibited. The instructor is required to submit to the Registrar a record of student attendance, and action shall be taken if the record conveys a trend of absenteeism.

Only the following are acceptable excuses for absences: death in the immediate family (e.g. mother, father, spouse, child, or sibling), hospitalization or serious illness; jury duty; court ordered summons; religious

holiday; university/school coordinated athletic or scholastic activities; an unanticipated event that would cause attendance to result in substantial hardship to one's self or immediate family. Absences must be explained with the submission of appropriate documentation to the satisfaction of the instructor, who will decide whether missed work may be made up. Absences that do not satisfy the above criteria are considered unexcused. To protect your privacy, doctor's excuses should exclude the nature of the condition and focus instead on how the condition impacts your attendance and academic performance.

Missing class reduces your grade through the following grade reduction policy: You are allowed two excused or unexcused absences. Each additional absence, unless excused, results in a 10% reduction in your final course grade. More than six absences result in an F in the course. Missing class may also reduce your grade by eliminating opportunities for class participation. For all absences, the student is responsible for all covered materials and assignments.

Incomplete

The instructor may assign an Incomplete (I) grade only if at least 75% of the required coursework has been completed at passing quality and holding you to previously established time limits would result in unjust hardship to you. All unfinished coursework must be completed by the date set by the instructor. Left unchanged, an Incomplete automatically becomes an F after one year. Reference: http://registrar.iupui.edu/incomp.html

Deliverables

You are responsible for completing each deliverable (e.g., assignment, quiz) by its deadline and submitting it by the specified method. Deadlines are outlined in the syllabus or in supplementary documents accessible through Canvas. Should you miss a class, you are still responsible for completing the deliverable and for finding out what was covered in class, including any new or modified deliverable.

No work accepted after due date.

Exams and Quizzes

Be ready for a quiz each week. This is in addition to the midterm and final examinations.

Class Assignments

There will be assignments given to you to complete each week. They are designed to get you to apply your new skills with a challenging application. You are expected to work alone on these assignments.

Every week there will be one assignment where you are expected to collaborate with another developer. We will be using Codepen for sharing and submitting these assignments.

Grading Information

Class assignments	60%
Reading responses	5%
Online collaboration	5%
Midterm	15%
Final	15%

Weekly Schedule

Week 1

Lecture   Introduction to the course and Javascript fundamentals
Assignment   Download and install Visual Studio Code on your laptop or home computer
               Learn how to open projects in VSC
               Set pages up, and upload the base N220 site structure
               Write a program to create and place elements on the page
Reading   Haverbeke, chapter 1

Week 2

Lecture   Program flow control
Assignment   Number Guesser
               Triangle Loop
               FizzBuzz
Reading   Haverbeke, chapter 2

Week 3

Lecture   User input and functions
Assignment   Greeter
               Tip Calculator
               Password
               Distance Calculator
Reading   Haverbeke, chapter 3

Week 4

Lecture   DOM manipulation and CSS; Program flow control 2
Assignment   Div Row
               Style Single Element
               Change Div Colors
Reading   Haverbeke, chapters 13 and 14

Week 5

Lecture   Arrays and objects
Assignment   Average Calculator
               Reverse Array
               Divs From Array
Reading   Haverbeke, chapter 4

Week 6

Lecture	Events
Assignment	Color Mixer
	Flash Cards
Reading	Haverbeke, chapter 15

Week 7

Lecture	Review
Assignment	Paper Rock Scissors
	X-th Customer
Reading	Haverbeke, chapter 8

Week 8

Lecture	-
Assignment	Midterm
Reading	-

Week 9

Lecture	Introduction to P5
Assignment	Sketch Your Face
	Maze Array
Reading	McCarthy, Reas, and Fry chapters 1-3

Week 10

Lecture	P5 graphics and animation
Assignment	World Wrap
	Ball Bounce
Reading	McCarthy, Reas, and Fry chapters 4, 5, 8

Week 11

Lecture	P5 graphics and animation: arrays and loops
Assignment	Multiple Ball Bounce
	Random Walk
	Array Animation
Reading	McCarthy, Reas, and Fry chapters 8, 10, 11

Week 12

Lecture	P5 graphics and animation: functions
Assignment	Ball Collision
	Seek Player
Reading	Haverbeke, chapters 9, 6

Week 13

Lecture   Objects and classes
Assignment   Tamagotchi
Reading   McCarthy, Reas, and Fry chapters 6, 12

Week 14

Lecture   Objects and classes
Assignment   Breakout
Reading   -

Week 15

Lecture   Review
Assignment   Breakout
Reading   Review all concepts covered during the semester. Prepare for the final.

Week 16

Lecture   -
Assignment   Final Examination
Reading   -

Grading scale

A+	100%	Professional level work, showing highest level of achievement
A	93–99%	Extraordinarily high achievement, quality of work; shows command of the subject matter
A–	90–92%	Excellent and thorough knowledge of the subject matter
B+	87–89%	Above average understanding of material and quality of work
B	83–86%	Mastery and fulfillment of all course requirements; good, acceptable work
B–	80–82%	Satisfactory quality of work
C+	77–79%	Modestly acceptable performance and quality of work
C	73–76%	Minimally acceptable performance and quality of work
C–	70–72%	Unacceptable work (Core course must be repeated for credit)
D+	67–69%	Unacceptable work (Course must be repeated for credit)
D	63–66%	Unacceptable work
D–	60–62%	Unacceptable work
F	Below 60	Unacceptable work

No credits toward major, minor, or certificate requirements are granted for a grade below C. No credits toward general education or elective requirements are granted for a grade below C–.

Code of Conduct

All students should aspire to the highest standards of academic integrity. Using another student's work on an assignment, cheating on a test, not quoting or citing references correctly, or any other form of dishonesty or plagiarism shall result in a grade of zero on the item and possibly an F in the course. Incidences of academic misconduct shall be referred to the Department Chair and repeated violations shall result in dismissal from the program.

All students are responsible for reading, understanding, and applying the Code of Student Rights, Responsibilities and Conduct and in particular the section on academic misconduct. Refer to The Code > Responsibilities > Academic Misconduct at http://www.indiana.edu/~code/. All students must also successfully complete the Indiana University Department of Education "How to Recognize Plagiarism" Tutorial and Test. https://www.indiana.edu/~istd You must document the difference between your writing and that of others. Use quotation marks in addition to a citation, page number, and reference whenever writing someone else's words (e.g., following the Publication Manual of the American Psychological Association). To detect plagiarism instructors apply a range of methods, including Turnitin.com. http://www.ulib.iupui.edu/libinfo/turnitin

Academic Misconduct

1. **Cheating.** Cheating is considered to be an attempt to use or provide unauthorized assistance, materials, information, or study aids in any form and in any academic exercise or environment.

> a. A student must not use external assistance on any "in-class" or "take-home" examination, unless the instructor specifically has authorized external assistance. This prohibition includes, but is not limited to, the use of tutors, books, notes, calculators, computers, and wireless communication devices.

> b. A student must not use another person as a substitute in the taking of an examination or quiz, nor allow other persons to conduct research or to prepare work, without advanced authorization from the instructor to whom the work is being submitted.

> c. A student must not use materials from a commercial term paper company, files of papers prepared by other persons, or submit documents found on the Internet.

> d. A student must not collaborate with other persons on a particular project and submit a copy of a written report that is represented explicitly or implicitly as the student's individual work.

> e. A student must not use any unauthorized assistance in a laboratory, at a computer terminal, or on fieldwork.

> f. A student must not steal examinations or other course materials, including but not limited to, physical copies and photographic or electronic images.

> g. A student must not submit substantial portions of the same academic work for credit or honors more than once without permission of the instructor or program to whom the work is being submitted.

> h. A student must not, without authorization, alter a grade or score in any way, nor alter answers on a returned exam or assignment for credit.

2. **Fabrication.** A student must not falsify or invent any information or data in an academic exercise including, but not limited to, records or reports, laboratory results, and citation to the sources of information.

3. **Plagiarism.** Plagiarism is defined as presenting someone else's work, including the work of other students, as one's own. Any ideas or materials taken from another source for either written or oral use must be fully acknowledged, unless the information is common knowledge. What is considered "common knowledge" may differ from course to course.

> a. A student must not adopt or reproduce ideas, opinions, theories, formulas, graphics, or pictures of another person without acknowledgment.

> b. A student must give credit to the originality of others and acknowledge indebtedness whenever:

>> 1. directly quoting another person's actual words, whether oral or written;

>> 2. using another person's ideas, opinions, or theories;

>> 3. paraphrasing the words, ideas, opinions, or theories of others, whether oral or written;

>> 4. borrowing facts, statistics, or illustrative material; or

>> 5. offering materials assembled or collected by others in the form of projects or collections without acknowledgment.

4. **Interference.** A student must not steal, change, destroy, or impede another student's work, nor should the student unjustly attempt, through a bribe, a promise of favors or threats, to affect any student's grade or the evaluation of academic performance. Impeding another student's work includes, but is not limited to, the theft, defacement, or mutilation of resources so as to deprive others of the information they contain.

5. **Violation of Course Rules**. A student must not violate course rules established by a department, the course syllabus, verbal or written instructions, or the course materials that are rationally related to the content of the course or to the enhancement of the learning process in the course.

6. **Facilitating Academic Dishonesty**. A student must not intentionally or knowingly help or attempt to help another student to commit an act of academic misconduct, nor allow another student to use his or her work or resources to commit an act of misconduct.

Other Policies

1. **Right to revise**. The instructor reserves the right to make changes to this syllabus as necessary and, in such an event, will notify students of the changes immediately.

2. **Grade freeze**. One week after a grade has been assigned it will not be changed.

3. **24 hours no-questions**. One day before a project is due, no questions will be answered on the material.

4. **IUPUI course policies**. A number of campus policies governing IUPUI courses may be found at the following link: http://registrar.iupui.edu/course_policies.html

5. **Classroom civility**. To maintain an effective and inclusive learning environment, it is important to be an attentive and respectful participant in lectures, discussions, group work, and other classroom exercises. Thus, unnecessary disruptions should be avoided, such as ringing cell phones engagement in private conversations and other unrelated activities. Cell phones, media players, or any noisy devices should be turned off during a class. Texting, surfing the Internet, and posting to Facebook or Twitter during class are generally not permitted. Laptop use may be permitted if it is used for taking notes or conducting class activities. Students should check with the instructor about permissible devices in class. IUPUI nurtures and promotes "a campus climate that seeks, values, and cultivates diversity in all of its forms and that provides conditions necessary for all campus community members to feel welcomed, supported, included, and valued" (IUPUI Strategic Initiative 9). IUPUI prohibits "discrimination against anyone for reasons of race, color, religion, national origin, sex, sexual orientation, marital status, age, disability, or [veteran] status" (Office of Equal Opportunity). Profanity or derogatory comments about the instructor, fellow students, invited speakers or other classroom visitors, or any members of the campus community shall not be tolerated. A violation of this rule shall result in a warning and, if the offense continues, possible disciplinary action.

6. **Bringing children to class**. To ensure an effective learning environment, children are not permitted to attend class with their parents, guardians, or childcare providers.

7. **Communication**. The instructor should respond to emails within 48 hours, excluding weekends and holidays, and announce periods of extended absence in advance. The instructor should provide weekly office hours or accept appointments for face-to-face, telephone, or teleconferenced meetings.

8. **Email**. Indiana University uses your IU email account as an official means of communication, and students should check it daily for pertinent information. Although you may have your IU email forwarded to an outside email account, please email faculty and staff from your IU email account.

9. **Disabilities Policy**. In compliance with the Americans with Disabilities Act (ADA), all qualified students enrolled in this course are entitled to reasonable accommodations. Please notify the instructor during the first week of class of accommodations needed for the course. Students requiring accommodations because of a disability must register with Adaptive Educational Services (AES) and complete the appropriate AES-issued before receiving accommodations. The AES office is located at UC 100, Taylor Hall (Email: aes@iupui.edu, Tel. 317 274-3241). Visit http://aes.iupui.edu for more information.

10. **Administrative Withdrawal**. A basic requirement of this course is that students participate in all class discussions and conscientiously complete all required course activities and/or assignments. If a student is unable to attend, participate in, or complete an assignment on time, it is the student's responsibility to inform the instructor. If a student misses more than half of the required activities within the first 25% of the course without contacting the instructor, the student may be administratively withdrawn from this course. Administrative withdrawal may have academic, financial, and financial aid implications. Administrative withdrawal will take place after the full refund period, and a student who has been administratively withdrawn from a course is ineligible for a tuition refund. Contact the instructor with questions concerning administrative withdrawal.

11. **Emergency Preparedness**. Safety on campus is everyone's responsibility. Know what to do in an emergency so that you can protect yourself and others. For specific information, visit the emergency management website. http://protect.iu.edu/emergency

Mission Statement

The Mission of IUPUI is to provide for its constituents excellence in

- Teaching and Learning;

- Research, Scholarship, and Creative Activity; and

- Civic Engagement.

With each of these core activities characterized by

- Collaboration within and across disciplines and with the community;

- A commitment to ensuring diversity; and

- Pursuit of best practices.

IUPUI's mission is derived from and aligned with the principal components—Communities of Learning, Responsibilities of Excellence, Accountability and Best Practices—of Indiana University's Strategic Directions Charter.

Statement of Values

IUPUI values the commitment of students to learning; of faculty to the highest standards of teaching, scholarship, and service; and of staff to the highest standards of service. IUPUI recognizes students as partners in learning. IUPUI values the opportunities afforded by its location in Indiana's capital city and is committed to serving the needs of its community. Thus, IUPUI students, faculty, and staff are involved in the community, both to provide educational programs and patient care and to apply learning to community needs through service. As a leader in fostering collaborative relationships, IUPUI values collegiality, cooperation, creativity, innovation, and entrepreneurship as well as honesty, integrity, and support for open inquiry and dissemination of findings. IUPUI is committed to the personal and professional development of its students, faculty, and staff and to continuous improvement of its programs and services.