

Instructor: Dr. Ching-yu (Austin) Huang

Website: <http://austinhuang.net/>Email: [chuang@kean.edu](mailto:chuang@kean.edu)Office Hours: <https://huang.youcanbook.me/> Tue, Thur: 10:00–11:00 am; Mon, Tue, Thur: 12:30 – 1:30 pmClass: **Monday, Wednesday (11 - 12:15 pm), Location: GLAB 208**Prerequisites: **CPS 5740. Students without prerequisite(s) must withdraw from the class.**

WK		Date	Topic	Reading	Notes	Set
2	9/7/22	Wed	Overview + Visualization intro, online visualization tool		DB account, tools, env	1
3	9/12/22	Mon	3-tier, Web, HTML, PHP, <b>project design</b>		<b>Start P1</b>	2
	9/14/22	Wed	HTML 5, DOM, CSS, menu, JavaScript	Ch 2, 3	<b>Study 1 assignment</b>	3
4	9/19/22	Mon	HTML form, inputs, CGI, file upload, Unix	Ch 3		4
	9/21/22	Wed	Database, PHP MySQL, error handling, authentication			5
5	9/26/22	Mon	Google Maps, Charts, jQuery, click event	Ch 3		6
	9/28/22	Wed	<b>Google Analytics (add into your project)</b> , Data in visualization, format, visual effects, performance	Ch 1		7
6	10/3/22	Mon	<b>Midterm exam</b>		<b>Midterm exam</b>	8
	10/5/22	Wed	Review midterm answers, JS event, intro to Ajax	Ch 3		9
7	10/10/22	Mon	HTML, Google Chart, JS debugging – <b>present study 1</b>			10
	10/12/22	Wed	jQuery, event, Ajax & callback – <b>present study 1</b>			11
8	10/17/22	Mon	Debug PHP MySQL, Ajax & callback – <b>present study 1</b>			12
	10/19/22	Wed	Canvas, SVG, Integration of frontend and backend		<b>Start P 2</b>	13
9	10/24/22	Mon	Visualization and analysis in MS-Excel and Tableau		<b>P1 due on 10/25</b>	14
	10/26/22	Wed	<b>Project 1 presentation and discussion</b>		<b>Study 2 assignment</b>	15
10	10/31/22	Mon	<b>Project 1 presentation and discussion</b>			16
	11/2/22	Wed	Dynamic, interactive and real-time online visualization, concepts & techniques, concerns, SQL in Tableau			17
11	11/7/22	Mon	Email & PHP, Ajax, automation, preference, APIs			18
	11/9/22	Wed	Intro to D3.js, binding and drawing data	Ch 5		19
	11/11/22	Fri	<b>Last day to withdraw with 'W' grade</b>		<b>0% refund</b>	
12	11/14/22	Mon	Visual analytics & mining			20
	11/16/22	Wed	D3.js interactive design – <b>present study 2</b>	Ch 6 - 13		21
13	11/21/22	Mon	D3.js interactive design – <b>present study 2</b>	Ch 6 - 13		22
	11/23/22	Wed	D3.js interactive design – <b>present study 2</b>	Ch 6 - 13		23
14	11/28/22	Mon	D3.js Geomapping – <b>present study 2</b>	Ch 14		24
	11/30/22	Wed	Python, Pandas, matplotlib and geopandas in Python			25
15	12/5/22	Mon	Data mining & visualization using Python MySQL		<b>P2 due on 12/5</b>	26
	12/7/22	Wed	<b>Project 2 presentation and discussion</b>			27
16	12/12/22	Mon	<b>Project 2 presentation and discussion</b>			28
	12/14/22	Wed	<b>Project 2 presentation and discussion (graduate)</b>			29
17	12/19/22	Mon	Summary of Visual Design, Dev and Analytics			30

**Late revision: 6/30/2022.** For important dates, please consult the Academic Calendar via the following link:<https://www.kean.edu/offices/registrars-office/academic-calendar>

**Content:** This course focuses on the methods to automatically transform data into a visual context in different formats – charts, graphs, dashboards and dynamic web pages. Students will study how to design, develop the effective and interactive visualization tools to analyze the data from files, database, and various data sources as well as learn how to use popular visualization software.

**Course Student Learning Outcomes:** Upon completion of this course, the student will be able to:

- A. Explain the key techniques and theory used in visualization, including data models, graphical perception and techniques for visual encoding and interaction.
- B. Present information in an understandable, effective, and aesthetic manner, for the purposes of explaining ideas and analyzing data.
- C. Analyze, evaluate and automate information visualizations and other forms of visual presentation.
- D. Utilize popular visualization API and software.
- E. Design and develop interactive web pages and tools that allows user to visualize and interact with data from the database.

**Instructional Method**

- Slides, assignments, and tool info will be posted on the class google drive that will be sent by the instructor.
- For more information about this course and for course materials, go to <http://blackboard.kean.edu>

**Textbook & Materials**

[Interactive Data Visualization for the Web, 2nd Edition.](#)

Author: Scott Murray

ISBN-10: 9781491921289, ISBN-13: 978-1491921289

Publisher: O'Reilly Press, 2017. ([Online](#)) [Code examples available on GitHub.](#)

**Require hardware and Software**

- **This is a hands-on course. Students are required to bring a personal laptop to every class.**
- Database related free software: MySQL Workbench, XAMPP, MySQL
- Other free software: Putty.exe (Win), terminal (Mac), FileZilla, Sublime
- An account on a Linux server will be provided by the instructor.

**Open Educational Resources**

For more information, please see the Nancy Thompson Library Learning Commons:

<http://libguides.kean.edu/OER>

**Assessment and course grading**

The course includes Exams, Labs, Homework and Project, a **total of 1000 points**.

- 1 Midterm (200 pts),
- 2 studies and presentation (2x100 pts),
- 2 project and presentation (2x300 pts)

**Grading Policy**

**A: >= 940,**

**A-: 939 -890,**

**B+: 889 - 840,**

**B: 839 - 800,**

**B-: 799 – 760,**

**C+: 759 – 720,**

**C: 719 - 680,**

**D: 679 – 640,**

**F: below 640**

**B- or better is needed for CIS Graduate program.**

**Technical Requirements:**

1. In order for your Blackboard course to function correctly, you will need to disable pop-ups on your Internet browser.
2. Make sure you have Microsoft Office installed on your computer. You may be eligible for a free MS Office Software Student Edition. You are required to create an account and provide a valid Kean University ID to obtain access to the software applications. To start the application process, go to the [Office 365 Education website](#).

**Academic Early Alert** information will be provided to students by the instructor via KeanWise. Please see the 2020-2021 Undergraduate or Graduate Catalog for more information.

**Class Policies:**

- **Posting of course materials:** **Public posting of course materials from this class is prohibited.** Materials presented in the class are for the personal use of registered students during the semester only. Homework, programs, and other classwork should not be shared, distributed or publicized in any way, for the protection of other students and in respect of the intellectual property rights of the faculty and copyright owners. Kean University's Academic Integrity Policy can be found here: <https://www.kean.edu/media/academic-integrity-policy>.
- **No late work** will be accepted without permission in advance from the instructor. Late work is penalized.
- **No make-up exams** are provided without documentation of medical or family emergency. Please arrange your schedule for the next 16 weeks to arrive in class on time and prepared.
- **Attendance** and participation are required.
- **All work turned in under your name must be your own.** **No credit will be given for an assignment or homework that is copied – in part or in total – from another person.**
- **Exam policy:** During class examinations, if a student leaves the classroom for any reason during the exam time, **the exam must be turned in before the student departs, concluding the exam for that student.** The student cannot resume the exam on return later. You may not make or take a phone call, text or access the internet during class or a test.
- **Classes may not be audio or digitally captured**, unless permission has been granted by the instructor for that specific class.

**For remote learning only - Class Recordings (Live Sessions/Collaborate)**

In this class software may be used to record live class discussions. As a student in this class, your participation in live class discussions will be recorded. These recordings will be made available only to students enrolled in the class, to assist those who cannot attend the live session or to serve as a resource for those who would like to review content that was presented. All recordings will become unavailable to students in the class when the course is closed.

Students are not permitted to record (or download) the course experience. If a recording of the course is required for accommodation purposes students must make those arrangements with the Office of Accessibility Services. Students found to have recorded (or downloaded) course experiences without authorization are subject to review by the Office of Student Conduct and Community Standards.

**Privacy Statement**

Assuring privacy among faculty and students engaged in online instructional activities helps promote open and robust conversations and mitigates concerns that comments made within the context of the class will be shared beyond the classroom. As such, recordings of instructional activities occurring in online classes may be used solely for internal class purposes by the faculty member and students registered for the course, and only during the period in which the course is offered.

**Important University Policies and Information**

- All students and faculty should familiarize themselves with the **Cougar Restart Guide** which includes important virtual resources for students by Kean University via the following link:  
<https://www.kean.edu/coronavirus-information/resources-current-prospective-students>
- Students are responsible to review and understand the *University Academic Integrity Policy* available via the following link: <https://www.kean.edu/academic-integrity>
- *Instructors must indicate on the syllabus and/or individual assignment if the use of Kean University academic support services ([Tutoring and/or Writing Center](#)) is permitted for take home assignments/exams.*
- Students should review the *Student Code of Conduct*, as it discusses expectations of appropriate conduct in the classroom:  
<https://www.kean.edu/offices/community-standards-and-student-conduct/student-code-conduct>
- Students are strongly encouraged to register for the University's emergency notification system (<http://www.kean.edu/campusalert>) in order to be informed of campus emergencies, weather notices, and other announcements. Kean Ocean students would sign up via the following link:  
<https://ocean.sendwordnow.com/LicensePage.aspx>
- All students must have a valid Kean email account. For those who do not already have one, forms are available on-line at <https://www.kean.edu/offices/computer-and-information-services/ocis-forms> click on E-mail Account Request Form.

**Diversity & Non-Discrimination Statement**

Kean University is committed to establishing and maintaining a diverse campus community through inclusive excellence and equal opportunity. Kean's commitment to access and equity is designed to prepare each graduate to not only thrive, but climb higher in a diverse world. As an affirmative action, equal opportunity institution we work to support a campus-wide agenda to foster a community that both values and promotes the diversity and equity of all students, faculty, staff, administrators, and beyond. Kean adheres to the [New Jersey State Policy Prohibiting Discrimination in the Workplace](#); for more information on Kean's non-discrimination policy and procedures, and protected categories under the policy, please visit:

<https://www.kean.edu/offices/affirmative-action>.

**Americans with Disabilities Statement**

Students with documented disabilities who may need instructional accommodations or special arrangements in the event of an evacuation should notify the instructor as soon as possible and no later than the second week of the term. Students may also contact The Office of Accessibility Services by phone at (908) 291-3137 or email [accessibilityservices@kean.edu](mailto:accessibilityservices@kean.edu) to discuss special needs, accommodations and arrangements.

**Title IX**

Title IX of the Education Amendments of 1972 (Title IX) prohibits discrimination on the basis of sex in education programs or activities. Sexual harassment in any form will not be tolerated at Kean University. Sexual harassment by students should be reported to the Office of Affirmative Action Programs, Office of the Vice President for Student Affairs or the Office of Community Standards and Student Conduct immediately. Information about the University's Sexual Misconduct Policy may be found at the following: <https://www.kean.edu/offices/policies/sexual-misconduct-policy>.

**Syllabus Updates:**

**Instructor reserve the right to change the syllabus at any time throughout the semester.** All changes will be announced in class and a new syllabus will be electronically available to all students. If you are enrolled in this class past the add/drop date you are subjected to all rules in this syllabus.