

Studio Course Syllabus/Course Outline

Course title	Making Data Interactive	Day + time	W 4:30PM - 7:20PM
Course mnemonic	INTD 319	Term start date	January 5, 2017
Section number	S001	Term end date	April 22, 2017
Credits	3	Location	SB 313
Prerequisites			

Instructor Information

Instructor	Haig Armen	Email	harmen@ecuad.ca
Office number	TBA	Office hours	TBA
Office telephone	604-844-3800 local TBA		

Website Catalogue Description | www.ecuad.ca

Course Content

The course offers full introduction to how to design and implement compelling interactive data visualizations. The material is designed for participants to generate meaningful experiences using open source technology to move from an idea through to a finished visualization. The course integrates the design process with highly practical implementation techniques. During this course, participants will learn proven tools, frameworks and concepts useful for creating your own custom data visualization tools rather than relying on off-the-shelf solutions.

Through lectures, in-class workshops & tutorials, and group critiques, students will build their skill sets as data visualization designers while increasing their data and digital literacy. Students will practice the visualization creation process including the following seven steps: Acquire, Parse, Filter, Mine, Represent and Interact. By the end of the course students should have furthered their understanding of essential techniques in making interactive data experiences.

Assignments this term will include:

1. BCIC Open Data Contest Submission
2. Future of Education Contest Submission

The course should help students appreciate that:

- All good data visualizations come out of clear design intentions
- Professionalism and a rigorous UX design process are critical in creating great data visualizations
- Curiosity, thoughtfulness and a willingness to play (experiment) are the basis of creativity and innovation.

Course Learning Outcomes

In this course students will learn the following:

- a strong understanding of how to put into practise a highly adopted method of creating Data Visualizations which includes the following steps:
 - Acquire Data - Obtain the data, whether from a file on a disk or a source over a network.
 - Parse Data - Provide structure for the data's meaning, and order it into categories.
 - Filter Data - Remove all but the data of interest.
 - Mine Data - Apply methods from statistics or data mining as a way to discern patterns or place the data in mathematical context.
 - Represent Data - Choose a basic visual model, such as a bar graph, list, or tree.
 - Refine - Improve the basic representation to make it clearer and more visually engaging.

- Interact - Add methods for manipulating the data or controlling what features are visible.
- Attain an understanding of the key techniques and theory used in visualization, including data models, graphical perception and techniques for visual encoding and interaction.
- Exposure to a number of common data domains and corresponding analysis tasks, including multivariate data, networks, text and cartography.
- Gain practical experience building and evaluating visualization systems.
- Acquire the ability to read and discuss research in visualization literature.

Resource Materials

All supported course material and additional resources for the course will be posted and archived at <http://courses.haigarmen.com/intd319>

The course will be using the following text book:

<https://leanpub.com/D3-Tips-and-Tricks>

Evaluation Criteria

Attendance	10%
Participation	10%
Project 1: BCIC - Housing Data	40%
Project 2: Future of Education	40%
Total	100%

Evaluation Criteria Definitions

Research: Research questions are appropriate, carefully framed and insightful. Sources are varied and reliable; scope and depth of research suits the project and time available. Research findings are selected and evaluated according to relevant criteria. Design shows evidence (through the process books) of being informed and improved through research and testing.

Conceptual Development: Playfulness, experimentation, and intelligent development result in a wide range of possible solutions; the design process is both convergent and divergent, analytical and synthetic, as the project phase requires. Many iterations are considered and evidence of this is documented in the process books. More importantly, reflective notes show how ideas connect and why certain directions were chosen over others. Make connections.

Visualization: Communication: Ensuring that the form of the message resonates with the intended audience.

Eloquence: Achieving an expressive unity between meaning and form.

Originality: Risk-taking; designing solutions that arise from insight, experiment and imagination.

Visual form: Achieving engaging, meaningful solutions. Typography demonstrates a good understanding of normative and expressive principles; images and other visuals illuminate ideas clearly and elegantly. Technical accomplishment: Using technology competently and in a way that is appropriate to concept, audience, objectives and visual form.

Effective interaction: Considering the designed experience in interacting with the piece. Does it invite interaction, is it clear, can the desired information be apprehended easily. Note: Research and Conceptual Development and Visualization are assessed by evaluating your Design Process Book, which must be submitted with each project for grading. See description below.

Presentation: Giving a convincing explanation and defense of work; effective, professional presentation.

Project management: Meeting deadlines; developing projects iteratively rather than at the last moment; organization of tasks using such tools as a Gantt Diagram.

Grade Scale

Letter Grade	Grade Points	Percentage	Equivalent Description	Expanded Description
A+	4.33	95-100	Distinguished Achievement	For coursework of distinction, demonstrating a Distinguished, level of understanding of the subject matter, concepts, and techniques achieved in satisfying the learning objectives of a course.

A	4.00	90-94	Outstanding Achievement	For coursework of distinction, demonstrating an Outstanding level of understanding of the subject matter, concepts, and techniques achieved in satisfying the learning objectives of a course.
A-	3.67	85-89	Excellent Achievement	For coursework of distinction, demonstrating an Excellent level of understanding of the subject matter, concepts, and techniques achieved in satisfying the learning objectives of a course.
B+	3.33	80-84	Commendable Achievement	For coursework demonstrating a Commendable level of understanding of the subject matter, concepts, and techniques achieved in satisfying the learning objectives of a course.
B	3.00	75-79	Very Good Achievement	For coursework demonstrating a Very Good level of understanding of the subject matter, concepts, and techniques achieved in satisfying the learning objectives of a course.
B-	2.67	70-74	Good	For coursework demonstrating a Good level of understanding of the subject matter, concepts, and techniques achieved in satisfying the learning objectives of a course.
C+	2.33	65-69	Competent	Coursework demonstrates a competent level of understanding of the subject matter, concepts, and techniques achieved in satisfying the learning objectives of a course.
C	2.00	60-64	Satisfactory	Coursework demonstrates a satisfactory level of understanding of the subject matter, concepts, and techniques achieved in satisfying the learning objectives of a course.
C-	1.67	55-59	Pass	Coursework demonstrates a passing level of understanding of the subject matter, concepts, and techniques achieved in satisfying the learning objectives of a course.

D	1.00	50-54	Marginal Pass	Coursework demonstrates a marginal or barely adequate level of understanding and ability for satisfying the learning objectives of a course.
F	0.00	0-49	Fail	
Grade Notation				See below for grading definitions.
AEG			Aegrotat Standing	
P/F			Pass/Fail	
CR			Credit granted	
I			Incomplete Grade	
W			Withdrawal from a course	

DEFINITIONS - GRADING

Grade Point Average: A Grade Point Average (GPA) is an average of the grade point values earned for credit courses.

Semester Grade Point Average

The average of the grade point values that you have earned for all courses attempted in a semester.

Cumulative Grade Point Average

The average of the grade point values for all of the credit courses attempted while at ECU, including repeated courses.

Grade Point Average Calculation: Grade point values range from 0.00 (F grade) to 4.33 (A+ grade). Each letter grade has a corresponding value. GPA is calculated by taking the total amount of the grade point values assigned for grades and dividing that total by the number of credits earned.

Aegrotat grade (AEG): Aegrotat (AEG) standing may be used where a student is unable to complete their course work due to significant medical or other extenuating circumstances beyond their control. AEG may be used where a student has successfully completed a minimum of 60 percent of a course. A grade assignment of AEG will carry credit, and satisfy pre-requisite and degree requirements, but will be GPA neutral

Incomplete grade: Incomplete grades may be granted by the instructor, for cases where the student has been unable to complete the course work because of extenuating circumstances beyond their own control. Such circumstances may be medical or of a personal nature and the student may be required to provide documentary evidence.

Pass/Fail/Credit Grades - Grades of 'Pass' (P), 'Fail' (F) or 'Credit' (CR) may be assigned to select courses that identify P/F/CR as the grading method approved at Senate. Grades of P/F/CR are GPA neutral and will not impact grade point average positively or negatively.

Withdrawal from a course - Grades of 'W' will be assigned where a student officially de-registers from a course in advance of the withdrawal deadline each semester. Grades of W bear no academic penalty and will not be calculated as part of a student's GPA, but will appear on a student's academic transcript.

Additional Policies and Information

University Attendance Policy

You are required to attend all classes. Absence and lateness will affect your grade for the course. Therefore, you should be aware of the following criteria:

- You will receive a 5% penalty for each absence and a 2.5% penalty for each time that you are late for class.
- You will be considered late if you arrive after attendance is taken, when the class has formally begun. Furthermore, you are subject to the same penalty if you leave the session before it has properly ended.
- Being more than one hour late is equivalent to being absent.
- More than three unexcused absences in a class will result in failure of the course.
- To formally excuse an absence due to illness or emergency, students must phone or send an email to the instructor by the end of the day. You may be required to give proof of a legitimate excuse, such as a doctor's note.
- It is also your responsibility to determine what you missed and what you must do to complete any assigned work.

University Participation

100% attention is required during critiques and meetings. Thoughtful and serious engagement, critical thinking and sensitivity regarding other students and their work are crucial. You are expected to be present and engaged in every class, and well prepared for every meeting and critique.

Academic Accommodations

Accessibility Services (formerly Disability Services) provides accommodations to the learning environment for students with speech, hearing, visual, physical, mental health and neurological disabilities (learning, attention deficit hyperactivity disorder, autism spectrum disorders), as well as chronic health conditions and acquired brain injury. To receive an accommodation, students need to establish their eligibility through supporting documentation and become registered with the Accessibility Services Coordinator. An Accommodation Notice will be prepared for the student to submit to their Faculty. Faculty can then facilitate the accommodation. If you have a disability and have not yet registered with Accessibility Services, please visit <https://www.ecuad.ca/student-services/accessibility>

University General Policies

- Students must maintain an appropriate standard of conduct. They must demonstrate respect for all persons on the campus, and display mature conduct. All students must abide by the university's Student Conduct Policies and the university's Harassment Policies (see Emily's A to Z). Failure by students to maintain appropriate standards of conduct may result in the initiation of disciplinary action by the university. Instructors are responsible for managing the classroom. Students whose behaviour is disruptive, challenging or intimidating will be addressed and may be excused from class. If the behaviour continues, disciplinary measures (see Emily's A to Z) will be employed.
- The instructor may modify the material or schedule specified in this outline. Any changes will be announced in class.
- Late assignments or projects may be penalized as specified in the course outline.
- It is plagiarism to present someone else's work or ideas as one's own. Plagiarism may result in failure of an assignment, of the course, and, if repeated, expulsion from the university. Assistance with the ethical practices of attribution and documentation is available from the Writing Centre or online at www.ecuad.ca/wc
- A student may be required to provide proof of a legitimate excuse, such as a doctor's note, for illness or absence which causes any missed assignments, tests, projects, exams, etcetera, or for absences of more than two classes. At the discretion of the instructor, the student may complete the work for a prorated grade.
- Students must demonstrate that they understand and practice the safe use of tools and other equipment, materials, and processes used in their course projects. They must conduct themselves in a responsible manner that does not endanger themselves or others, and must adhere to area procedures regarding authorized operation of equipment, handling of materials, and use of space.
- Professional counselling and therapy is available at no charge to students who have concerns of a personal nature. Information shared is held in strict confidence. To make an appointment, call 604-630-4555 or email counselling@ecuad.ca or come in to the Counselling Centre.
- The Writing Centre is a service that Emily Carr provides to all students, staff, and faculty from every program area who would like to improve their reading, writing, critical thinking, and research skills. This is a free, voluntary, and confidential service. Writing Centre instructors can help you at every stage of your writing, from developing ideas to final revision. This applies to any kind of writing, from a three line artist's statement to a twenty page academic paper. Please check out the Writing Centre blog site for more information and to sign up for an appointment <http://blogs.eciad.ca/wc/> Telephone: 604-629-4511; Coordinator: Heather Fitzgerald
- Email is an official means of communication with Emily Carr students by faculty, administration and other service providers on campus. Email routing will be confined to the university's internal communication network, and delivered to an officially assigned and verifiable University Email Address. All users are bound by the provisions of Emily Carr Policy 415: Code of Conduct for Appropriate Use of Information Technology Facilities and Services (outlined on the Emily Carr website and in Emily's A to Z). Instructors will outline and detail the expected extent and parameters of email use in the course in the first class, and clarify the timeframe for checking and responding to emails.
- Emails will be answered in a timely manner, usually within 48 hours after receiving the email. Emails will not, however, be answered on weekends or the day before an assignment is due if the email relates to the assignment.

Important Dates

Important Dates:

January 3, Tuesday: University Reopens

January 5, Thursday: Spring semester classes begin

February 12-18, Sunday - Saturday - Study Week: No Classes

February 13, Monday - Family Day: University Closed

April 5, Wednesday - Last day of regularly scheduled classes

April 7 -13, Friday - Thursday - Critique, exam + assessment week

April 7 - 13, Friday - Thursday - Design Reviews - Final Critiques

April 7 - 13, Friday - Thursday - Review Panels for Visual Art, ILUS, PHOT, FVIM, ANIM, ISMA, CRCP + CGIA

April 14, Friday - Good Friday: University Closed

April 17, Monday - Easter Monday: University Closed

April 18-21, Tuesday - Friday - Assessment + grading week

April 18-21, Tuesday - Friday - Design review + assessment week (follow up, individual meetings with students, project documentation, and program events)

April 21, Friday - Spring Semester Ends

May 5, Friday- Graduation ceremony and exhibition opening

Course Schedule

Week 01 - Course Introduction, Visualizations Vs InfoGraphics

Week 02 - Visual Perception

Week 03 - History of Information Visualisation

Week 04 - Visualising Linear Structures

Week 05 - Visualising Hierarchies

Week 06 - Visualising Networks and Graphs

Week 07 - Visualising Multidimensional Metadata

Week 08 - Object Collections

Week 09 - Other Kinds of Visualisation

Week 10 - Visual Analytics

Week 11 - Open Data Vis, Data Journalism

Week 12 - Tools and Toolkits