

2018 IDEAS FSS-Vis Syllabus

Sept. 3 – 13, Tech F491

Instructor : Aaron Geller (AG; CIERA, Lead Instructor), a-geller@northwestern.edu

Materials available on AG's GitHub site : https://github.com/ageller/IDEAS_FSS-Vis

Course Schedule Summary :

First week (Sept. 3 – 6) : Instructor led learning (required attendance)

- 10am – 12pm : lecture / discussion / hands-on tutorials
- 1pm – 4pm : independent work and (short) “show and tell”

Second week (Sept. 9 – 12) : Independent projects

- 10am – 12pm : open lab, required attendance
- 1pm – 4pm : open lab, optional attendance on Sept. 9 – 11 (required on Sept. 12)

Sept. 13, 12pm – 2pm in Mudd Library, Room 2124, **Final Demos** : 10 minutes per student, including questions (+ lunch)

First Week Schedule Detail :

Tuesday Sept. 3 : Introduction, Creating an effective graph, & [matplotlib](#) (+bagels)

- 10:00 – 10:15 : Course introduction
- 10:15 – 11:15 : Introduction to visualization design + How to create an effective graph (Adam Miller)
- 11:15 – 12:00 : Hands-on python+matplotlib
- 1:00 – 2:00 : Hands-on python+matplotlib, continued
- 2:00 – 3:00 : Student projects with python+matplotlib
- 3:00 – 4:00 : Students “show and tell”, and discussion

Wednesday Sept. 4 : 2-D interactive visualizations with [Bokeh](#) and [D3.js](#)

- 10:00 – 11:30 : Introduction and hands-on with to Bokeh
- 11:30 – 12:00 : Introduction to web
- 1:00 – 2:00 : Introduction and hands-on with D3
- 2:00 – 3:00 : Student projects with Bokeh or D3
- 3:00 – 4:00 : Students “show and tell”, and discussion

Thursday Sept. 5 : 3-D Interactive visualizations with ParaView and WebGL (using [three.js](#))

- 10:00 – 11:00 : Intro to ParaView
- 11:00 – 12:00 : Hands-on with ParaView
- 1:00 – 2:00 : Introduction to WebGL and three.js
- 2:00 – 3:00 : Student projects with ParaView or WebGL
- 3:00 – 4:00 : Students “show and tell”, and discussion

Friday Sept. 6 : Survey of other useful visualization software (+bagels)

- 10:00 – 12:00 : 15 minute hands-on demos of many of the following
 - *Volumetric Data* : [VisIt](#)
 - *Web-facing Tools* : [x3dom](#), [Plotly](#), [shiny](#), [datawrapper](#)
 - *General Interactives* : [OpenGL](#), [Processing](#)
 - *Artist Tools* : [Photoshop](#), [Illustrator](#), [Maya](#), [Blender](#), [ffmpeg](#), [Image Magick](#)
 - *Python Tools* : [Seaborn](#), [Glue](#)
 - *Mapping* : [GMT](#), [NASA WorldWind](#), [cartopy](#), [basemap](#)
 - *R* : [ggplot2](#)
 - *Other utilities* : [WebPlotDigitizer](#), [Fiji](#)
- 1:00 – 2:30 : Student exploration of these tools
- 2:30 – 3:30 : Students “show and tell”, and discussion
- 3:30 – 4:00 : Discuss expectations of 2nd week project

Second Week Schedule Detail (required hours in red):

Monday Sept. 9 : Begin visualization projects (+bagels)

- 10:00 – 12:00 : AG meets 1-on-1 with students to discuss projects ; students work independently
- 1:00 – 4:00 : students work independently, AG available for questions

Tuesday Sept. 10 : Continue working on visualization projects

- 10:00 – 12:00 : AG meets 1-on-1 with students to check in; students work independently
- 1:00 – 4:00 : students work independently, AG available for questions

Wednesday Sept. 11 : Half of visualization project must be completed before noon

- 10:00 – 12:00 : AG meets 1-on-1 with students to check in; students work independently
- 1:00 – 4:00 : students work independently, AG available for questions

Thursday Sept. 12 : Final day before presentations (+bagels)

- 10:00 – 12:00 : students work independently, AG available for questions
- 1:00 – 4:00 : AG meets 1-on-1 with students to discuss demos; students work independently

Friday Sept. 13 : Final Demos

- 10:00 : Final Demo due to AG (1-page description + Picture/Video/Website + Visualization Files)
- 12:00 – 2:00 : Final Demos in Mudd Library, Room 2124: 10 minutes per student, +5 minutes for questions (+pizza)