

2021 IDEAS FSS-Vis Syllabus

Jan. 19 – Feb. 1, Zoom and Slack

Instructor : Aaron Geller : a-geller@northwestern.edu

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

Course Schedule Summary :

Part 1 (Jan. 19 – 25) : Instructor led learning (required attendance)

- 10am – 12pm : lecture / discussion / hands-on tutorials
- 1pm – 4:30pm : independent work and (short) “show and tell”

Part 2 (Jan. 25 – 29) : Independent projects

- 10am – 12pm : Zoom check-ins, required attendance
- 1pm – 4:30pm : open Zoom, only partial days required

Feb. 1, 3pm – 5pm : **Final Demos** = 10 minutes per student, including questions

Part 1 Schedule Detail :

Tuesday Jan. 19 : Introduction, Creating an effective graph, & [matplotlib](#)

- 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
- 12:00 – 1:00 : Break
- 1:00 – 2:00 : Hands-on python+matplotlib, continued
- 2:00 – 3:00 : Student projects with python+matplotlib
- 3:00 – 4:30 : Students “show and tell”, and discussion

Wednesday Jan. 20 : 2-D interactive visualizations with [Bokeh](#) and [Plotly](#)

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

Thursday Jan. 21 : 2-D interactive visualizations with [D3.js](#)

- 10:00 – 12:00 : Introduction to web and D3
- 12:00 – 1:00 : Break
- 1:00 – 3:00 : Student projects with D3
- 3:00 – 4:30 : Students “show and tell”, and discussion

Friday Jan. 22 : 3-D Interactive visualizations with ParaView and WebGL (using [three.js](#))

- 10:00 – 11:00 : Introduction to ParaView
- 11:00 – 12:00 : Introduction to WebGL and three.js
- 12:00 – 1:00 : Break
- 1:00 – 3:00 : Student projects with ParaView or WebGL
- 3:00 – 4:00 : Students “show and tell”, and discussion
- 4:00 – 4:30 : Discuss expectations of final project

Optional weekend activity for independent exploration : Survey of other useful visualization software

- There are walkthroughs and/or notebooks on our GitHub repo for many of these. Check them out!
 - *Volumetric Data* : [Visit](#)
 - *Web-facing Tools* : [x3dom](#), [shiny](#), [datawrapper](#)
 - *General Interactives* : [OpenGL](#), [Processing](#), [Unity](#)
 - *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](#)

Part 2 Schedule Detail (required hours in red):

Monday Jan. 25 : Student project proposals

- 10:00 – 12:00 : Propose projects to Aaron / work on project
- 12:00 – 1:00 : Break
- 1:00 – 3:00 : Students “show and tell”, and discussion
- 3:00 – 4:30 : students work independently, AG available for questions

Tuesday Jan. 26 : Continue working on visualization projects

- 10:00 – 12:00 : AG meets 1-on-1 with students to check in; students work independently
- 1:00 – 4:30 : students work independently, AG available for questions

Wednesday Jan. 27 : Half of visualization project must be completed before end of day

- 10:00 – 12:00 : AG meets 1-on-1 with students to check in; students work independently
- 1:00 – 4:30 : students work independently, AG available for questions

Thursday Jan. 28 : Continue working on visualization projects

- 10:00 – 12:00 : AG meets 1-on-1 with students to check in; students work independently
- 1:00 – 4:30 : students work independently, AG available for questions

Friday Jan. 29 : Final day before demos

- 10:00 – 4:30 : AG meets 1-on-1 with students to discuss demos; students work independently

Monday Feb. 1 : Final Demos

- 2:00 : Final Products due to AG (1-page description + picture/video/website + all files)
- 3:00 – 5:00 : Final Demos on Zoom: 5 to 7 minutes + 3 minutes for questions, per student