Course Information

<table>
<thead>
<tr>
<th>Time</th>
<th>T/Th 1:30pm - 2:45pm</th>
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<tbody>
<tr>
<td>Location</td>
<td>Forney Hall of Chemical Engr B124</td>
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<tr>
<td>Instructor</td>
<td>Prof. Xavier Tricoche</td>
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<tr>
<td>Office</td>
<td>LWSN 3154P</td>
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<tr>
<td>Office Hours</td>
<td>TBA</td>
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<tr>
<td>Email</td>
<td>xmt (at) purdue.edu</td>
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Course Description

Scientific visualization creates interactive visual representations to facilitate the analysis of numerical datasets obtained through measurements or computations. The course provides an introduction to the principles of this discipline and explains the main techniques used in practice. The lectures cover the visualization of 2D, 3D, and time-dependent datasets corresponding to scalar, vector, and tensor attributes, as well as the depiction of non-spatial data. The presentation focuses on the practical role of visualization in science and engineering and is mostly self-contained. The evaluation is based on 5 programming assignments, a midterm, and a final exam.

Textbook

No textbook is required. The relevant material will be provided by the instructor. Following books are purely optional.

- **The Visualization Toolkit - An Object-Oriented Approach to 3D Graphic** (3rd ed.), W. Schroeder, K. Martin, B. Lorensen, ISBN 1-930934-07-6 — VTK-centric introduction to the basic concepts of visualization
- **Data Visualization: Principles and Practice**, A. Telea, AK Peters, 2007 — General textbook on scientific and information visualization

Prerequisites

CS 251 or consent of the instructor. Basic math literacy is assumed.

Evaluation

- Projects: 65% (5 x 13%)
- Exams: 35% (15% midterm and 20% final)
Projects
Each project involves a programming task to be implemented with the help of the Visualization Toolkit (VTK). VTK is an open source software library that provides a versatile infrastructure for visualization. While the library itself is written in C++, it can be used in scripting languages. Both C++ and Python are available options to complete the programming tasks in this course. The evaluation considers both implementation and application of the techniques to visualize a particular dataset. All projects must be completed individually!

Submission
Your project submission should include a report and the code that you wrote to complete the tasks.

Report
• PDF or HTML document. If you submit your report in HTML format, note that the entire document must be included in the submission. Links to online web pages will not be accepted.
• For each task, provide a brief description of your solution.
• Include good quality pictures of your results and describe them.
• Answer the questions asked in the project description

Code
• Submit your source code (in C++, Python, or Java)
• Include a README file containing detailed directions on how to run it

Grading Criteria
• Task completion
• Readability and clarity of the report
• Quality of the images (avoid aliasing and heavy compression)

Late Policy
Projects are to be electronically submitted by the due date listed using turnin. Each student is allowed five (5) extension days, which can be applied, without penalty, to any combination of projects during the semester. After that a late penalty of 20% per day is assigned. Use of a partial day is counted as a full day. Use of extension days must be stated explicitly in the subject line of an email to the instructor, otherwise late penalties apply. Extensions cannot be used after the final day of classes (Friday, December 12, 2015). Extension days cannot be rearranged after they are applied to a submission. Use them wisely! Projects will NOT be accepted if they are more than five days late (regardless of whether extension days are applied to that particular assignment or not). Additional extensions will only be granted in exceptional cases (e.g., serious and documented medical or family emergencies).

Exams

Format
• Closed book - No calculators, phones, etc…
• One page (US letter) of notes (double sided). These notes must be submitted with the answers.

Material
• Comprehensive (each test from beginning of course)
• Facts regarding specific topics - Problem solving
• Communicate (understand question and explain answer)
• Some (but little) math

Course Schedule
TBA
Course Policies
Refer to Gene Spafford’s web page. The principles and rules described therein apply to CS53000.

Course Resources
• web page: http://www.cs.purdue.edu/homes/cs530
• Piazza: http://piazza.com/purdue/spring2018/cs530. Piazza will be the primary means of communication outside of class. It will be used for Q&A concerning the projects, to provide any necessary clarification about the material presented in class, and to make various announcements about the course.
• class slides: available before each class on the course’s web page

Counseling
If you are experiencing personal problems or stress, Purdue provides counseling services through the Purdue CAPS Center. See https://www.purdue.edu/CAPS/ for more details.

Campus Emergencies
EMERGENCY NOTIFICATION PROCEDURES are based on a simple concept – if you hear a fire alarm inside, proceed outside. If you hear a siren outside, proceed inside.

• Indoor Fire Alarms mean to stop class or research and immediately evacuate the building.
  ◦ Proceed to your Emergency Assembly Area away from building doors. Remain outside until police, fire, or other emergency response personnel provide additional guidance or tell you it is safe to leave.

• All Hazards Outdoor Emergency Warning Sirens mean to immediately seek shelter (Shelter in Place) in a safe location within the closest building.
  ◦ “Shelter in place” means seeking immediate shelter inside a building or University residence. This course of action may need to be taken during a tornado, a civil disturbance including a shooting or release of hazardous materials in the outside air. Once safely inside, find out more details about the emergency*. Remain in place until police, fire, or other emergency response personnel provide additional guidance or tell you it is safe to leave.

*In both cases, you should seek additional clarifying information by all means possible... Purdue Home page, email alert, TV, radio, etc...review the Purdue Emergency Warning Notification System multi-communication layers at http://www.purdue.edu/ehps/emergency_preparedness/warning-system.html

EMERGENCY RESPONSE PROCEDURES:
• Review the Building Emergency Plan (available from the building deputy) for:
  ◦ evacuation routes, exit points, and emergency assembly area
  ◦ when and how to evacuate the building.
  ◦ shelter in place procedures and locations
  ◦ additional building specific procedures and requirements.

EMERGENCY PREPAREDNESS AWARENESS VIDEOS
"Shots Fired on Campus: When Lightning Strikes," is a 20-minute active shooter awareness video that illustrates what to look for and how to prepare and react to this type of incident. See: http://www.purdue.edu/securePurdue/news/2010/emergency-preparedness-shots-fired-on-campus-video.cfm (Link is also located on the EP website)
MORE INFORMATION
Additional information is available at http://www.purdue.edu/emergency_preparedness

Last modified November 21, 2017