



Department of Computer Science
College of Engineering
University of the Philippines
Diliman, Quezon City



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| COURSE NO. | : CS 242 |
| COURSE TITLE | : Data Visualization |
| COURSE CREDIT | : 3 units |
| SEMESTER | : First Semester, AY 2018-2019 |
| INSTRUCTORS | : Romanlito S. Austria & Jan Michael C. Yap |
| EMAIL ADDRESS | : rsaustria@gmail.com / jcyap@dcs.upd.edu.ph |

COURSE DESCRIPTION

Visualization techniques for data from science, business, social science, demographics, and information management.

CLASS SCHEDULE

(TueZ) Tuesdays, 5:00-8:00 PM

COURSE OUTLINE

- 1 Introduction to the Course
- 2 Visual Communication
 - 1.1 Gestalt and Visual Perception
 - 1.2 Grammar of Visual Language
 - 1.2.1. Semantics: The Elements of Art and Design
 - 1.2.2. Syntax: The Principles of Design
 - 1.2.2. Pragmatics: Information and Data Processing
- 3 Visualization Techniques
 - 3.1 Graphs and Networks
 - 3.2 Trees and Hierarchies
 - 3.3 Interaction and Visual Analytics
 - 3.4 Text Visualization
 - 3.5 Multivariate Analysis
 - 3.6 Time Series

GRADING SYSTEM

Requirements:

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| Problem Sets | 60% |
| Oral Report | 20% |
| Final Paper | 20% |

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| $92 \leq FG \leq 100$ | 1.00 |
| $88 \leq FG < 92$ | 1.25 |
| $84 \leq FG < 88$ | 1.50 |
| $80 \leq FG < 84$ | 1.75 |
| $76 \leq FG < 80$ | 2.00 |
| $72 \leq FG < 76$ | 2.25 |
| $68 \leq FG < 72$ | 2.50 |
| $64 \leq FG < 68$ | 2.75 |
| $59 < FG < 64$ | 3.00 |
| $FG \leq 59$ | 5.00 |

CLASS POLICIES

CONSULTATIONS. Schedule of the instructor's free times for the semester would be **Tuesdays to Fridays, 8:30am-10:30am, then 3:30pm-5:30pm** for Prof. Yap and **Tuesdays 1:00pm-4:00pm** for Prof. Austria. Due to other commitments apart from teaching and to ensure proper queeuing of multiple requests for consultations, students who wish to schedule a consultation must first send an e-mail to the e-mail address mentioned in the first part of the syllabus setting an appointment **at least 24 hours before** the requested date and time of consultation. Note however that a rescheduling of the consultation may be done subject to the availability of instructor.

WEBSITE. The link to the class website is <http://bit.ly/CS242NiJan>. Announcements and certain materials will be posted there. Pertinent announcements will be posted **Mondays, 9:00pm at latest**. If **no announcements are posted by that time OR if there was no e-mail message sent before 1:00pm of Tuesday**, then classes are assumed to proceed as usual.

PROBLEM SETS AND FINAL PAPER. Submission of problem sets and final paper should be done on or before the designated deadlines (to be announced in future sessions). Late submissions would incur a 10% deduction per day late, and can incur a maximum of 50% deduction. Note though that even if a deliverable will no longer merit any points, it is considered a requirement, and non-submission of one or more of such on or before the deadline of submission of grades would mean a grade of INC assuming FG is passing.

ORAL REPORT. Oral reports are to be done during class hours, some time during the latter part of the course, exact dates of which will be determined later. Order of presentations will be raffled off on a later date. Should a student be unavailable on his/her designated schedule of presentation, s/he must inform the instructor to have the report rescheduled.

INTELLECTUAL DISHONESTY. Intellectual dishonesty of any form will be subjected to proper disciplinary action as per Section V.2 of the Code of Student Conduct (a copy is downloadable from our website). If found guilty, results of the requirement/s in question will be nullified, final grade will be recomputed, and a corresponding change of grade will be filed if warranted.

DROPPING THE COURSE. A student is considered dropped upon completion of the dropping procedure (see <https://crs.upd.edu.ph/downloads/OnlineDroppingFlowchart.pdf>). A student may officially drop the course **on or before 31 October 2018**.

REFERENCES

- Visual Communication
 - Arnheim, Rudolf. (1965) *Art and Visual Perception: A Psychology of the Creative Eye*.
 - Edwards, Betty. (1992) *Drawing on the Right Side of the Brain*.
 - Garret, Lillian. (1976) *Visual Design: A Problem-Solving Approach*.
 - Kress, Gunther and Van Leeuwen, Theo. (2006) *Reading Images: The Grammar of Visual Design*. Second Edition. Routledge, New York, USA, Introduction: The Grammar of Visual Design, pp. 1-15. *The Semiotic Landscape: Language and Visual Communication*, pp. 16-44.
 - Lester, P. M., (2011). *Visual Communication: Images with Messages*, Fifth Edition. Wadsworth, Boston, USA.
 - Meirelles, Isabel (2013). *Design For Information: An Introduction to the Histories, Theories, and best practices behind effective information visualizations*. Rockport Publishers, Beverly, MA. USA.
 - Mirzoeff, Nicholas ed. (1988). “The Visual Culture Reader”. Routledge, New York.
 - Myers, Jack Frederick. (1989). *The Language of Visual Art: Perception as a basis for Design*.
 - Pearson, J. C., Nelson, P. E., Titsworth, S., and Hosek, A. M. (2017). *Human Communication*, Sixth Edition. McGraw-Hill, NY, USA.
 - Richardson, Andrew (2016). *Data Driven Graphic Design: Creative Coding for Visual Communication*. Bloomsbury, London.
 - Smith, K., Moriarty, S., Barbatsis, G., and Kenney, K., editors. Lawrence Erlbaum (2005). *Handbook on Visual Communication: Theories, Methods and Media*, Inc. New Jersey.
 - Sullivan, Graeme (2010). *Art Practice as Research: Inquiry in Visual Arts*, 2nd Edition. Sage Publications.
 - Wallschlaeger, C. and Sander C. *Basic Visual Concepts and Principles For Art*
- Visualization Methods
 - Aigner, W., Miksch, S., Müller, W., Schumann, H., and Tominski, C. (2007). *Visualizing Time-Oriented Data - A Systematic View*. *Computers & Graphics*, Vol. 31, No. 3, p. 401-409, Elsevier.

- Card S., Mackinlay J., and Shneiderman B., editors (1999). *Readings in Information Visualization - Using Vision to Think*. Morgan Kaufmann.
- Kucher K. and Kerren A. (2015). *Text Visualization Techniques: Taxonomy, Visual Survey, and Community Insights*. In: *Proceedings of the 8th IEEE Pacific Visualization Symposium (PacificVis '15)*, visualization notes track, pages 117-121, China.
- Mazza R. (2009). *Introduction to Information Visualization*. Springer.
- Sears A. and Jacko J.A., editors. *Stuart Card (2008). "Information Visualization" in The Human-Computer Interaction Handbook: Fundamentals, Evolving Technologies, and Emerging Applications*. Lawrence Erlbaum Assoc Inc.
- Ward, M., Grinstein, G., Keim, D., and Peters A.K. (2010). *Interactive Data Visualization: Foundations, Techniques, and Application*. CRC Press.