

## **SSCI 585, Geospatial Technology Project Management**

### *Syllabus*

**Units: 4**

**Term — Day — Time:** Fall, 2016, Online

**Location:** Online

**Instructor:** Robert O. Vos, Ph.D.

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**Regular Office Hours:** Mon. 9-10 a.m. and Wed. 1-2 p.m.

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## Course Description

This course provides a practitioner's perspective of geospatial technology project management and is an elective course for the GIST M.S. and the Geospatial Intelligence, Geospatial Leadership and GIST Graduate Certificate programs. Although many people believe GIS project management is about software design and development, computer hardware, and geospatial data, experienced GIS project managers understand that there is much more to it. This course takes a systematic approach to explore the management issues and methods necessary for developing a successful geospatial technology office and/or project. That said, this course will cover several topics:

*Geospatial Project Management Principles* – We start by focusing on building support for geospatial technology projects by examining critical topics associated with geospatial project management, including the typical project life cycle, program planning and development, popular organizational structures, financial management, human resources, the technical and operational environment, and communications.

*Running a Geospatial Technology Project* – Here we examine the fundamentals involved in completing a successful project on time and on budget, by examining a variety of topics associated with funding, financial management, monitoring and reporting, risk management, multi-organizational agreements (collaborations), and the various approaches needed to manage the technical design (system configuration, data, applications) and the development and maintenance of these technical components.

*Human Resources* – Next, we consider the various roles played by people in geospatial technology projects, covering topics associated with project leadership, team building and capacity building, among others. We will also examine the opportunities for geospatial technology certification and some of the legal and ethical considerations that may influence geospatial technology projects and their outputs (i.e. deliverables).

*Current and Emerging Trends* – Throughout the semester we consider some of the current and emerging trends that may modify the ways in which geospatial technology projects may be conceptualized and implemented in the coming years. Potential topics include the consequences of choosing open source vs. proprietary software solutions and the contributions of geospatial standards, spatial data infrastructures, web-based geoprocessing service architectures, and volunteered geographic information to current and future geospatial project workflows.

This a graduate level course, so you should expect this class to be both academically robust and intellectually challenging. As graduate students you are expected to engage with the information you are learning and to explore the heady cauldron of ideas, opinion, and analysis that describe our collective effort to thoroughly interrogate the subject at hand. Learning arises from active engagement with the knowledge found in our reading materials and with one another. As in any graduate-level class, the instructor's role is that of a guide who keeps you on this path of discovery and you will find that you will also learn much from your fellow classmates. The challenge for us is to replicate such an academic experience within the milieu of "online learning."

All course materials will be organized through Blackboard. The main theoretical concepts will be provided through course notes and assigned readings and the assignments will give students an opportunity to internalize and apply the concepts and theory learned from readings. Some assignments require student interaction, all will benefit from it.

### **Learning Objectives**

When you have completed this course, you will be able to:

- Identify and critically analyze the issues involved in organizing, planning, monitoring, and controlling a geospatial technology project.
- Initiate a small-scale geospatial technology project by developing project plans and financial budgets, estimating project costs and benefits, developing investment appraisal methods, and using authorization, monitoring, and control processes.
- Discuss the role, significance and impact of people in a project management setting, and evaluate and implement strategies for managing people in geospatial technology projects.
- Review current geospatial technology project management methodologies and appraise their effectiveness and efficacy for managing different types of geospatial projects.

**Prerequisite(s):** None

**Co-Requisite (s):** None

**Concurrent Enrollment:** None

**Recommended Preparation:** SSCI 581: Concepts for Spatial Thinking

### **Technological Proficiency and Hardware/Software Required**

We have several technologies that will facilitate our course work and our interactions, despite our dispersed locations. These include:

Blackboard – All course materials and correspondence will be posted on the course Blackboard site. As a registered student, you will find this course will show up in your available classes no later than 12:00 noon, PT on the first day of classes. It is here that the day-to-day flow of the course will be recorded.

Discussion forums – On the Blackboard site, we will post a number of discussion forums and threads related to various course topics. I may or may not participate in these threads but they are vitally important for organizing asynchronous conversations and opportunities for learning from one another.

Live meetings and presentations – At USC, we will use a browser-based service called Adobe Connect (AC) to create synchronous interaction sessions. With voice and webcam capabilities, Adobe Connect can be used to share presentations and even our desktops between two or more people.

Individual meetings – While Adobe Connect is used for one-on-one meetings, we sometimes find it easier to use simple phone calls or the free VOIP and chat technology, Skype (<http://www.skype.com/>) for individual chats.

GIST server and tech support – This course will utilize the GIST Servers at <https://gistonline.usc.edu> to provide you with your own virtual desktop. If you are unable to connect to the server or experience any type of technical issues, send an email to GIST Tech Support at [gistsupport@dornsife.usc.edu](mailto:gistsupport@dornsife.usc.edu) and make sure to copy (cc) me on the email. A variety of geospatial software platforms (ArcGIS, e-Cognition, TerrSet, etc.) is provided online via the GIST Servers; hence, you do not need to install them on your own computer. Instead, every student must satisfy the following technology requirements: (1) a computer with a fast Internet connection; (2) a functional webcam and a microphone for use whenever a presentation or meeting is scheduled; and (3) a modern web browser, Firefox is recommended, to access the GIST Servers.

### **Required Readings and Supplementary Materials**

Textbooks – There are three books required for this course. The most important of the three books by Croswell needs to be purchased from either the USC Bookstore or an online outlet such as Amazon. The other two books are optional since we will only use selected chapters and we will provide these chapters online. You will need the Croswell book from the first day of class.

- Croswell, P.L. 2011. *The GIS Management Handbook*. Des Plaines, IL, Kessey Dewitt Publications in association with URISA.
- Obermeyer, N.J. and Pinto, J.K. 2008. *Managing Geographic Information Systems* (Second Edition). New York, The Guilford Press
- Tomlinson, R. 2013. *Thinking about GIS: Geographic Information System Planning for Managers* (Fifth Edition). Redlands, CA, Esri Press

These books will be supplemented with Course Notes and a mixture of readings from academic journals, professional reports, and authoritative websites.

Readings – The following book chapters and journal articles will be posted to Blackboard under Course Documents:

- Ramasubramanian, L. 1999. GIS Implementation in Developing Countries: Learning from Organizational Theory and Reflective practice. *Transactions in GIS* 3: 359-369.
- Tulloch, D.L. and Epstein, E. 2002. Benefits of Community MPLIS: Effectiveness and Equity. *Transactions in GIS* 6: 195-212.
- Hodza, P. 2014. Appreciative GIS and Strength-based Community Change. *Transactions in GIS* 18: 270-285.
- Goodspeed, R. 2011. From Public Records to Open Government: Access to Massachusetts Municipal Geographic Data. *URISA Journal* 23: 21-32.
- Joffe, B. 2015. A Personal Account of Guidelines for Estimating GIS Return on Investment. *URISA Journal* 27(1): 29-45.
- Zerbe, R., Fumia, D., Reynolds, T., Singh, P., Scott, T., and Babinski, G. 2015. An Analysis of Benefits from Use of Geographic Information Systems by King County, Washington. *URISA Journal* 27(1): 13-27.

- Trapp, N., Schneider, U.A., McCallum, I., Fritz, S., Schill, C., Borzacchiello, M.T., Heumesser, C., and Craglia, M. 2015. A Meta-analysis on the Return on Investment of Geospatial Data and Systems: A Multi-Country Perspective. *Transactions in GIS* 19: 169-187.
- Sieber, R.E. 2006. Public Participation Geographic Information Systems: A Literature Review and Framework. *Annals of the Association of American Geographers* 96: 491-507.
- Wang, S. 2013. CyberGIS: Blueprint for Integrated and Scalable Geospatial Software Ecosystems. *International Journal of Geographical Information Science* 27: 2119-2121.
- Miller, H.J. and Goodchild, M.F. 2015. Data-driven Geography. *GeoJournal* 80: 449-461.
- Sui, D. 2014. Opportunities and Impediments for Open GIS. *Transactions in GIS* 18: 1-24.
- Poore, B.S. and Chrisman, N.R. 2006. Order from Noise: Toward a Social Theory of Geographic Information. *Annals of the Association of American Geographers* 96: 508-523.
- Wright, D.J. 2012. Theory and Application in a Post-GISystems World. *International Journal of Geographical Information Science* 26: 2197-2209.

### **Description and Assessment of Assignments**

Your grade in this course will be determined on the basis of several different assessment tools:

Resume Assignment (2%) – We require all current students to post and maintain a public resume, short biography and recent photo on our shared GIST Student Community Blackboard site. With your permission, your photo and short biographical sketch may be posted to the Spatial Sciences Institute website and your resume will be included in the Spatial Sciences Institute Resume Book. The latter is compiled annually and along with our Web presence used to promote our programs and more importantly, your skills, experience, and professional aspirations.

Reading Assignments (18%) – These will focus on the theory portion of the course as presented in the weekly readings. Their objective is to help you evaluate and integrate the information you have acquired from the course readings. Some of these will involve discussions and collaborative work, and some will be individual efforts. The first reading assignment is required and from there, you are free to choose any five of the 12 subsequent assignments. However, you must complete and submit them for grading in the weeks specified in the Course Schedule at the end of this syllabus.

Discussion Forums (8%) – These will focus on varying combinations of theory and practice and anticipate that you will post a minimum of four new messages and at least two replies to messages posted by your classmates at designated times throughout the semester.

Exercises (25%) – In order to demonstrate that you understand the basic concepts and skills learned in the class, you will complete five exercises that will integrate key concepts and ideas and take some independent thought. The first exercise is required and from there, you are free to choose any four of the five subsequent exercises. However, you must complete and submit them for grading in the weeks specified in the Course Schedule at the end of this syllabus.

Presentations (12%) – This assignment will require some independent thought and synthesis and allow you to explore a case study of your choice. The results will be presented over the Web in Week 10 with the help of a PowerPoint slideshow.

Research Reports (35%) – The first report (10%) will provide you with an opportunity to explore one of a suite of management challenges in more depth and the final report (25%) will afford you the opportunity to integrate all that you have learned in the semester for a specific application that I will designate when the guidelines for the final reports are distributed.

### **Grading Breakdown**

Careful planning and a serious, consistent commitment will be required for you to successfully navigate the various deliverables in this and other GIST courses. The table below summarizes the SSCI 585 course assignments and their point distribution:

<b>Assignment</b>	<b>Number</b>	<b>Points Per Assignment</b>	<b>% of Grade</b>
Discussion forums	4	2	8
Exercises	5	5	25
Presentation	1	12	12
Reading assignments	6	3	18
Research reports:			
First report	1	10	10
Second report	1	25	25
Resume assignment	1	2	2
<b>TOTAL</b>	<b>19</b>	<b>--</b>	<b>100</b>

And finally, it is important to note from the outset that: (1) you are expected to attend and participate in every class session and to complete and upload all assignments before the deadlines detailed in the Course Schedule; (2) late postings and assignments will be docked one letter grade and no grade will be given for postings or assignments turned in more than one week late; and (3) no written work will be accepted for grading after 5:00 p.m. PT on the last day of classes (i.e., 2<sup>nd</sup> December, 2016).

### **Assignment Submission Policy**

Assignments will be submitted for grading via Blackboard using the due dates specified in the Tentative Course Schedule below.

### Additional Policies

Communications – This is a distance learning course, so most of our interactions will be asynchronous (not at the same time). All materials to be handed in will be submitted via the Blackboard Assessment link. I will also create one Blackboard discussion forum at the start of the semester and I may create and/or monitor additional Blackboard discussion forums through which we can discuss challenges, ideas, and issues connected with the course assignments, exercises, and projects as the need arises.

In addition, I will send via e-mail through Blackboard any notices that are time sensitive. Please be sure that you read as soon as possible all e-mail sent from Blackboard or from me. Check now to make sure that mail sent from both USC Blackboard and my individual domain (vos@usc.edu) does not go into your junk mail!

While I am usually online and will probably respond to emails from students relatively quickly, I will endeavor to respond to all email within 24 hours of receipt, aiming for no more than a 72-hour delay. In the rare case when I expect to be offline for more than 72 hours, I will post an announcement on the Blackboard site.

That said, it is each student's responsibility to stay informed about what is going on in our course. In addition to email about time-sensitive topics, any important announcements will be posted on the Announcement page in Blackboard. Be sure to check these each time you log onto Blackboard.

Workload – This is a four credit, one semester course. Students should expect to spend 12-15 hours per week completing the work in this course.

### Course Schedule: A Weekly Breakdown

	Topics/Daily Activities	Readings and Homework	Deliverables/ Due Dates
<b>Week 1</b> 8/22	<b>Introduction:</b> Introduction to the course and the ways in which the various topics and tasks will be woven together.	Croswell, Ch. 1 Ramasubramanian (1999)	Resume Assignment Reading Assignment #1
<b>Week 2</b> 8/29	<b>Geospatial Program Development:</b> Role of planning and management in developing a successful geospatial technology business and/or program.	Croswell, Ch. 2 Tulloch and Epstein (2002)	Exercise #1 Reading Assignment #2
<b>Week 3</b> 9/6 *Monday, 9/5 is a university holiday	<b>Geospatial Program Development (Cont.):</b> A second take on the same topics – this time through the eyes of Roger Tomlinson who is often afforded the title of "founding father" of GIS.	Tomlinson, Ch. 1-9 Hodza (2014)	Exercise #2 Reading Assignment #3

<b>Week 4</b> 9/12	<b>Geospatial Program Organizational Structure, Governance and Coordination:</b> Role of planning and development, organizational structures, leadership and governance, and communications in successful geospatial programs.	Croswell, Ch. 3 Goodspeed (2011)	Reading Assignment #4
<b>Week 5</b> 9/19	<b>Geospatial Program Organizational Structure, Governance and Coordination (Cont.):</b> A second take on the same topics – this time through the eyes of two accomplished GIS scholars, Nancy Obermeyer and Jeffrey Pinto.	Obermeyer and Pinto, Ch. 3-4 Tomlinson, Ch. 11 Joffe (2015)	Exercise #3 Reading Assignment #5
<b>Week 6</b> 9/26	<b>Human Resources:</b> Role of project leadership, team building, capacity building (including opportunities for geospatial certification) and multi-organizational agreements (i.e. collaborations) in contributing to successful geospatial programs.	Croswell (2011) Ch. 4 Zerbe et al. (2015)	Report #1 Reading Assignment #6
<b>Week 7</b> 10/3	<b>Funding, Financial Management, and Collaboration:</b> The financial aspects, such as funding, financial management, monitoring, and reporting, and risk management that contribute to successful geospatial programs and the completion of projects on time and on budget.	Croswell, Ch. 5 Trapp et al. (2015)	Exercise #4 Reading Assignment #7
<b>Week 8</b> 10/10	<b>Funding, Financial Management, and Collaboration (Cont.):</b> A second take on finance – this time through the eyes of Roger Tomlinson.	Tomlinson, Ch. 10 Sieber (2006)	Reading Assignment #8
<b>Week 9</b> 10/17	<b>Geospatial Program Legal Issues:</b> The ways in which legal and ethical issues influence the geospatial sector both in the U.S. and further afield.	Crowell, Ch. 6 Wang (2013)	Exercise #5 Reading Assignment #9



<b>Week 10</b> 10/24	<b>Management of Geospatial Program Technical Elements:</b> Role of technical design (system configuration, data, applications) and the development and maintenance of these technical components in contributing to successful geospatial programs.	Croswell, Ch. 7 Miller and Goodchild (2015)	Presentation Reading Assignment #10
<b>Week 11</b> 10/31	<b>Geospatial Office Operations, Service Delivery, and User Support:</b> Role of the operational environment in helping to shape and sustain successful geospatial programs.	Croswell, Ch. 8 Sui (2014)	Reading Assignment #11
<b>Week 12</b> 11/7	<b>Geospatial Projects and Project Management:</b> The ways in which all of the aforementioned components can be combined to successfully manage geospatial projects.	Croswell, Ch. 9 Poore and Chrisman (2006)	Exercise #6 Reading Assignment #12
<b>Week 13</b> 11/14	<b>Geospatial Projects and Project Management (Cont.):</b> A chance to review the important and lengthy chapter from Croswell on linking up all the elements of project management to make coherent plans and time to work on the final report.	Croswell, Ch. 9 (review)	
<b>Week 14</b> 11/21 *Wed. Nov. 23- Fri. Nov. 25 is a university holiday (Thanksgiving)	<b>Wrap-up:</b> Current and emerging trends, including the consequences of choosing proprietary vs. open source software solutions, geospatial standards, spatial data infrastructures, web-based geoprocessing service architectures, and volunteered geographic information, and how they are likely to influence future geospatial projects.	Croswell, Ch. 10 Wright (2012)	Reading Assignment #13
<b>Week 15</b> 11/28	<b>Final Report (Due 12/2/16)</b>		Report #2

## Statement on Academic Conduct and Support Systems

### Academic Conduct

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Section 11, *Behavior Violating University Standards* <https://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions>. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct>.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the *Office of Equity and Diversity* <http://equity.usc.edu> or to the *Department of Public Safety* <http://adminopsnet.usc.edu/department/department-public-safety>. This is important for the safety of the whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. *The Center for Women and Men* <http://www.usc.edu/student-affairs/cwm/> provides 24/7 confidential support, and the sexual assault resource center webpage <http://sarc.usc.edu> describes reporting options and other resources.

### Support Systems

A number of USC’s schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the *American Language Institute* <http://dornsife.usc.edu/ali>, which sponsors courses and workshops specifically for international graduate students. *The Office of Disability Services and Programs* [http://sait.usc.edu/academicsupport/centerprograms/dsp/home\\_index.html](http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html) provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially-declared emergency makes travel to campus infeasible, *USC Emergency Information* <http://emergency.usc.edu> will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.

### Resources for Online Students

The Course Blackboard page and the GIST Community Blackboard page have many resources available for distance students enrolled in our graduate programs. In addition, all registered students can access electronic library resources through the link <https://libraries.usc.edu/>. Also, the USC Libraries have many important resources available for distance students through the link <http://libguides.usc.edu/distancelearning>. This includes instructional videos, remote access to university resources, and other key contact information for distance students.