

**STS 2500**  
**Engineering Teamwork and Leadership in Context**  
Spring 2017  
Beginning of Course Memo and Syllabus

**Class Sessions:** Monday & Wednesday 2 – 3:15 p.m., MEC 339 and online  
**Course Credit:** 3 hours  
**Course Website:** [collab.itc.virginia.edu](http://collab.itc.virginia.edu) (STS 2500 Spring 2017)  
**Course Instructors:** James Groves and Susan Bagby  
**Office Hours:** See the front page of the course website for up-to-date details

### **COURSE OVERVIEW**

#### **UVA Undergraduate Record Description of Course**

This course invites students to explore the implications of science, technology and society (STS) core concepts within a specific topical or disciplinary area, drawing out the implications of STS 1500 in depth. The course explores the social and global context of engineering, science and technology. Although writing and speaking skills are emphasized, more attention is given to course content and the students' analytical abilities.

#### **Pre- or Co-Requisite Courses or Topics**

STS 1500 or an equivalent STS course

#### **Course Section Introduction to Engineering Teamwork and Leadership in Context**

In December 2015, the political leader of the United States, President Obama, was asked on National Public Radio what question he would pose to the 2016 presidential contenders. After some reflection, he responded that, for him, such enticing attributes of the job as celebrity, having the title of “Mr. President,” and tremendous positional authority lost their importance rather quickly. For President Obama, the foundational questions were along the general lines of: “How can I make a difference to the American people? How can I make America a safer place? What can I do to create greater economic equality and opportunity for all Americans?”

This section of STS 2500 is designed to *give you the capacity to “make a difference” in the world over your lifetime*. Through readings, special presentations, discussions, writing opportunities, and collaborative project work, the course will provide you with insight into who you are and how to make a difference by:

- Applying the *engineering design process* to project management,
- Asking you to identify the human *values* that are most important to you,
- Helping you to understand the techniques of effective *leadership*, and
- Building your *teamwork* skills.

Do you want to be a difference maker? If so, in what area of activity? How can you position yourself for success in your chosen field? Once you pick your field, what steps can you take to maximize the chances that you will make major, positive contributions throughout your lifetime?

Welcome to “Engineering Teamwork and Leadership in Context.”

## LEARNING OBJECTIVES

### Engineering-Specific Course Objectives

Students will enhance their:

1. Ability to function on multidisciplinary teams (ABET outcome “d”)
2. Understanding of professional and ethical responsibility (ABET outcome “f”)
3. Ability to communicate effectively (ABET outcome “g”)
4. Broad education, as necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context (ABET outcome “h”)
5. Knowledge of contemporary issues (ABET outcome “j”)
6. Ability to use the techniques, skills, and modern engineering tools necessary for engineering practice (ABET outcome “k”)

### STS-Specific Learning Outcomes

1. Through direct instruction, students will deepen their knowledge of the **engineering design process**, learn the key steps of the process, understand the essential activities of each step, and apply the process as a tool in project management.
2. Students will be introduced to a framework that organizes the basic **values** that guide human activities. They will be asked to identify and learn those values that are the most important guides in their own lives. Students will gain an understanding of how much one’s values guide the development of an idea or a product. As they form **teams** for project work, students will be encouraged to seek partners who share their values. By reading *Cradle to Cradle* and exploring selected case studies, students will appreciate how attention to human values influences the selection and direction of projects that can “make a difference” in the world.
3. From reading and discussing *Primal Leadership*, students will learn about the varying **styles of leadership**, be able to identify and assess these styles in discussion, and make use of their knowledge as leaders and effective followers within their teams. They will also consider the importance of **EI (emotional intelligence)**, including the highly valuable leadership (and life) skills, self-awareness and self-management.
4. Through presentations on stereotype threat, implicit bias, gender and socioeconomic inequality, and power-based personal violence, students will gain understanding of the importance of **diversity and inclusion**.
5. Students will be asked to form a **team** (of 3 to 5 students) and to **complete a project** within the timeframe of the semester that will have a meaningful impact on their community, within UVA or the city of Charlottesville. (The project’s impact can certainly be ongoing beyond the semester.) Student projects from the past two semesters will be used as models, but students will be asked to think beyond the parameters framed by the past projects. Guidelines for the projects, including the assignment and evaluation of member roles as well as expectations and objectives, will be provided. While completing their project, students will develop a deeper understanding of how to function effectively on **teams** and how to **manage and resolve professional conflicts**.
6. Throughout the semester, **writing skills** will be honed. Students will write a 750 to 1000 word essay every two weeks of the semester. In addition, they will write executive summaries to be submitted with their projects. Students will also learn how to cite

sources correctly; to that end, the instructors will also provide a list of possible resources in the University and Charlottesville community.

7. The art of **discussion as a presentation and defense of ideas** will be developed through regular graded seminars as well as ungraded class discussion of the topics at hand. Students will also learn the art of **formal presentation** as they prepare to present their projects during and at the end of the semester.

### Topics Covered

1. The engineering design process
2. Human values
3. Leadership styles
4. Teamwork
5. Emotional intelligence
6. Personality type identification (Meyers-Briggs assessment)
7. Challenges to inclusive, diverse work environments, including stereotype threats, implicit biases, gender bias, and socioeconomic inequity.
8. Writing skills, including proper referencing of sources
9. Communication skills, including discussion, oral speaking, and poster presentation

## ASSESSMENT & MEASUREMENT

### How Course Outcomes will be Assessed

#### Essays (30%)

Students will complete a total of six individual essays on selected, assigned topics.

#### Seminar discussions (24%)

Students will participate in six graded discussions (i.e., real-time oral discussion plus subsequent online discussion forum) that are intended to assist students with long-term comprehension of course concepts and to demonstrate student mastery of the concepts studied together, from the text and from guest speakers.

#### Team project proposals (9%)

A group-compiled essay (3 – 5 single-spaced pages, including figures and references) will define the challenge space upon which the team will focus for the remainder of the semester.

#### Team project oral presentations (9%)

Teams will deliver in-class oral presentations to their classmates, defining the challenge space upon which the team has decided to focus for the remainder of the semester.

#### Final team project executive summary (9%)

A group-compiled essay (4 – 5 single-spaced pages including figures and references) will report upon the student project and recommend next steps for successful development of the project.

#### Final team project poster presentation (9%)

Each team will present a poster that summarizes their project for others.

#### Contributions (10%)

Students will be graded based upon their demonstrated willingness to serves their classmates by being a scribe / meditation leader, by always attending class, by completing a set of small

individual assignments during the course, by participating productively in all activities, and by completing the official end-of-course evaluation.

Daily attendance of class sessions is expected. If a student is sick, particularly with an illness that can be transmitted, s/he is asked to inform the course instructors prior to class (by email) and attend class online or via recording. Students in residence in Charlottesville may only join class online after speaking with their instructor regarding expectations for class participation and how to ensure effective communication into class via the online systems.

### **Late Policy**

All graded assignments in STS 2500 will have specific due dates and times listed in the weekly handouts provided by your instructors. Assignments may be turned in up to 48 hours after the assigned due date and time. When assignments are turned in late (by any amount of time), a 10% grade penalty will be assessed. After a student misses the 48 hour "late submission" window, there will be no opportunity to turn in assignments late for grading, except when a student is able to document a health, family, or similarly significant emergency.

### **Semester Grade Scale**

<b>A+</b>	> 97%	<b>B+</b>	87 – 90%	<b>C+</b>	77 – 80%	<b>D+</b>	67 – 70%
<b>A</b>	93 – 97%	<b>B</b>	83 – 87%	<b>C</b>	73 – 77%	<b>D</b>	63 – 67%
<b>A-</b>	90 – 93%	<b>B-</b>	80 – 83%	<b>C-</b>	70 – 73%	<b>D-</b>	60 – 63%
<b>F</b>	<60%						

## **INSTRUCTIONAL MATERIALS**

### **Textbooks**

Goleman, D., Boyatzis, R., & McKee, A. (2013). *Primal leadership: Unleashing the power of emotional intelligence*. Harvard Business Press. (Any edition is fine.) Copies were *not* pre-ordered for pick-up in the UVA Bookstore. The book is available online (e.g., Amazon.com) for \$2.50 - \$15.

McDonough, W., & Braungart, M. (2010). *Cradle to cradle: Remaking the way we make things*. MacMillan (Any edition is actually fine) Copies were *not* pre-ordered for pick-up in the UVA Bookstore. The book is available online (e.g., Amazon.com) for \$0.01 - \$18.

### **Weekly Assignments**

Except for the first and last days of class (i.e., Wednesday January 18<sup>th</sup> and Monday May 1<sup>st</sup>), STS 2500 will meet twice each week, on Monday and Wednesday at 2 p.m., in MEC 339 and online. Following class on Wednesday each week throughout the entire semester, a weekly assignment will be posted no later than 9 a.m. on Thursday, in UVA Collab under the Assignments tab.

The weekly assignments will contain significant materials that your instructors consider central to your learning in STS 2500, such as readings, multimedia education modules, links to personal assessment surveys, and graded assignment guidelines.

Students are expected to open the weekly assignment on the Thursday or Friday when assigned and make an initial review of the included content, paying particular attention to the

due dates listed at the end of the handout. In STS 2500 it is the student's responsibility to know the deadlines for all assignments. Deadlines will always be listed in the weekly assignments.

## **LEARNING COMMUNITY INTERACTION & ENGAGEMENT**

### **Individual Student Engagement**

To learn about oneself, students will need to be active participants and learners in this course. As students seek to learn and commit concepts to long-term memory, they will need to initiative questions to and request assistance from their instructors and classmates. Personal growth requires some risk. So, do not be hesitant to speak up, ask questions, and offer new or different types of insight. If you do not feel safe in class or in your team, bring your concerns to the attention of your instructors as soon as possible. You are also encouraged to come to instructors' open office hours to discuss concerns, to seek assistance, or to deepen your understanding of a topic.

Your success in this course will depend on *your* individual efforts and on *our* ability to work together to build a cooperative learning environment. Questions and sharing of beliefs, opinions, and feelings are strongly encouraged. In order to maximize our learning, we will need to create a safe community in which we will feel comfortable sharing ideas and providing constructive feedback. Achieving a safe learning environment requires practice and effort. It will require each of us to behave professionally and respectfully at all times, and to adhere to our classroom norms. Throughout the semester, we want you to examine your perspectives and values as individuals, engineers, students, and as people situated in a broader society and the environment. As you learn about you and your classmates, we encourage you to respect and appreciate differences. Some material covered in class will be sensitive and perhaps disturbing to some individuals. Feel free to inform instructors if you need to take a break.

### **Learning Community Values**

Meaningful and constructive teamwork and courteous dialogue are expected in this course. Both require a degree of respectful understanding and a willingness to listen to all class participants. You may not agree with another person's point-of-view, or you may already understand a concept and feel frustrated with the pace of class. Give others a chance to contribute and learn. Encourage one another politely. Seek to understand and appreciate the ideas of others. Learn from one another. Give others a chance to learn. Be patient and encouraging as we *all* seek to advance our knowledge of important professional engineering concepts. Since every student is entitled to full participation in class without interruption, all students are expected to come to class and team meetings prepared and on time. You are always expected to refrain from undertaking any activities that might be considered disruptive.

### **Respect and Safety**

We are committed to supporting and encouraging students, staff, and faculty to take responsibility for safety on our campus. If you or someone you know experience stalking, partner violence, or sexual assault, please remember that you (or he or she) is not alone. If for any reason you do not feel safe in class, on grounds, or in your personal life, then please do not hesitate to contact us or the Student Health Center. Counseling and Psychological Services (CAPS) is available for all students. Call 434-243-5150 (or 434-972-7004 after hours and weekend) to get started and to schedule an appointment. Call Madison House's HELP Line at 434-295-8255, if you prefer to speak anonymously and confidentially. If you or someone you

know is struggling with gender, sexual, or domestic violence, there are many community and University of Virginia resources available to help you. The Office of the Dean of Students, Sexual Assault Resource Agency (SARA), Shelter for Help in Emergency (SHE), and the UVA Women's Center are excellent resources for both men and women. Contact the Director of Sexual and Domestic Violence Services at 434-982-2774.

### **Honor Code**

The School of Engineering and Applied Science relies upon and cherishes its community of trust. We firmly endorse, uphold, and embrace the University of Virginia's Honor principle that students will not lie, cheat, or steal, and we expect all students to take responsibility for the System and the privileges that it provides. We recognize that even one Honor infraction can destroy an exemplary reputation that has taken years to build. Acting in a manner consistent with the principles of Honor will benefit every member of the community both while enrolled in the Engineering School and in the future.

If you have questions about the Honor System or would like to report suspicions of an Honor offense, please contact your instructors Professor Groves or Ms. Bagby. For more information on the UVA Honor System, please visit the following web resource:

<http://www.virginia.edu/honor/>

### **Class Schedule and Time Commitment**

Class meets in a live, interactive face-to-face and online, distributed learning environment two times/week for 75 min/session. Class sessions will include short commentaries on course concepts, interactive, participatory full-class discussions, and guest speaker presentations. Prior to arrival in class, students are expected to complete assigned readings and review any prepared materials that are provided. Preparation before class sessions is essential and expected. Students should devote 6.5 or more hours per week outside of the classroom; involving ~2-3 hours reading and 4-5 hours on the review of prepared materials, writing assignments, team meetings, and library research.

STS 2500 is a 3 credit hour course at UVA. Students should understand that the U.S. federal government mandates a certain *minimum* student workload for each credit hour earned while in college. By the federal definition, a credit hour is an amount of work that reasonably approximates *not less than* one hour of classroom or direct faculty instruction and a minimum of two hours of out of class student work each week for approximately fifteen weeks for one semester hour of credit, or the equivalent amount of work over a different amount of time.

In STS 2500, students are expected to spend a *minimum* of nine hours per week (both in and outside of class) for all fifteen weeks of the semester on assignments and activities associated with this course. Students who spend less than the minimum should have no expectation of passing the course.

### **Use of Email**

Your instructors will seek to minimize the number of course related messages sent to you by email. Still, email messages to the class, to teams, or to individual students will be necessary from time-to-time. Your instructors expect that you will check your university email account at least one time each day, Monday – Friday during the semester. If an email from us includes a

specific request for a response, it is our expectation that you will respond in no more than two business days from the time that the email was *sent* to you (not from the time that you read the email). Failure to read and respond to emails from your instructor in a timely manner (as defined above) will have a negative impact upon your “contributions” grade.

## **COURSE TECHNOLOGY**

### **Device Usage**

Students should be prepared to make active use of instructional technologies as part of their participatory learning in this class. Instructional technology elements employed in this class will likely include UVA Collab, Learning Catalytics, CATME, Qualtrics, creation and viewing of multimedia content, and online submission of writing assignments and end-of-course evaluations. This course will be delivered in a blended learning format, with some instruction being delivered asynchronously (i.e., outside of class) and some instruction occurring interactively during class sessions. Prior to every class session, students are expected to complete pre-class assigned learning activities. During every class period, students should make an effort to engage with the instructor and with fellow students for live, interactive learning. Right answers in class are not required, but active, respectful questions, comments and participation are.

Digital devices (e.g., computers, smartphones) must be used to connect to posted course content in UVA Collab. They will also be used in many class sessions for LearningCatalytics based exercises and surveys. Students should plan to bring a digital device with them to every class session and use those devices during class, but only for course-related activities. Student computers will be used to work on and submit individual and team writing assignments. Devices may also be used to access office hours (via *Skype*) and for informal, on-line student meetings (via *Skype*). Students in residence in Charlottesville may only join class online after speaking with their instructor regarding expectations for class participation and how to ensure effective communication into class via the online systems.

## **ACCESSIBILITY**

### **Student Disability Access Center (SDAC)**

The instructors of this course seek to foster an equitable and safe learning environment for all students who are enrolled. Participating students with special needs that require accommodations should present the appropriate paperwork from the SDAC ([web site](#)). It is the student’s responsibility to present this paperwork in a timely fashion and to follow up with course instructors about the accommodations being offered.