Team Science, Cooperation, and Interdisciplinary Work

ALCE 5224, Spring 2022

Course Description*

Theoretical and conceptual basis for thinking about, guiding, and supporting team science and cooperative processes for interdisciplinary research, programming, and outreach. Current scholarship and concepts of individual and team readiness, effectiveness, protocols, training, and outcomes in team science and cooperative process contexts.

Course Instructor

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Office hours: by appointment

Course Materials†

- Edmondson, A. C., & Harvey, J.-F. (2017). *Extreme Teaming: Lessons in Complex, Cross-Sector Leadership*. Emerald Publishing Limited. https://ebookcentral.proquest.com/lib/vt/detail.action?docID=4717060
    - ISBN: 978-1-78635-450-1 (Print) | ISBN: 978-1-78635-449-5 (Online) | ISBN: 978-1-78714-898-7 (epub)
- Hall, K. L., Vogel, A. L., & Croyle, R. T. (Eds.). (2019). *Strategies for team science success: Handbook of evidence-based principles for cross-disciplinary science and practical lessons learned from health researchers*. Springer Nature. https://doi.org/10.1007/978-3-030-20992-6
    - ISBN: 978-3-030-20990-2 (Print) | ISBN: 978-3-030-20992-6 (Online)
- Select readings to be shared via *Canvas* course site.

Student Learning Outcomes

- Analyze the theoretical, conceptual, and practical underpinnings for building capacity around team science, cooperative processes, and interdisciplinary research, programming, and outreach.
- Evaluate current scholarship on team science and cooperative processes in interdisciplinary contexts.
- Evaluate the readiness of individuals and teams to effectively engage in cooperative processes in interdisciplinary contexts.
- Analyze the effectiveness of team and cooperative group structures, protocols, and processes in interdisciplinary research, programming, and outreach.
- Construct training designed to build team science and cooperative process capacity in interdisciplinary research, programming, and outreach.
- Analyze and evaluate the team science and cooperative process outputs and outcomes of interdisciplinary research, programming, and outreach.

Special Needs Requests

If you are a student with special needs or circumstances, if you have emergency medical information to share with me, or if you need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible.

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* The syllabus is a guide for the course, but it is subject to change at the discretion of the instructor. Any changes in assignments and expectations will be announced during class and on *Canvas*.

† You can use the University Bookstore website to mail-order your books - http://www.bookstore.vt.edu. Also note that the books may be available from other commercial vendors or your local library.

Disability Accommodations

Any student in need of special accommodations due to a disability, as recognized by the Americans with Disabilities Act, should contact the Services for Students with Disabilities (SSD) Office. Students with disabilities are responsible for self-identification. To be eligible for services, documentation of the disability from a qualified professional must be presented to SSD upon request. Academic adjustments may include, but are not limited to: priority registration, auxiliary aids, program and course adjustment, exam modifications, oral or sign language interpreters, note takers/readers, or assistive technology. For more information on disability accommodations, please contact SSD:

Lavery Hall, STE 310, Virginia Tech; 430 Old Turner Street; Blacksburg, VA 24061
Phone: (540) 231-3788 Voice; E-mail: ssd@vt.edu; Website: http://www.ssd.vt.edu

Honor Code

Virginia Tech's Graduate Honor Code will be followed and enforced in this class. Violations of the Honor Code include: copying another's work, cheating on exams or assignments, and plagiarism of another's work, whether another student's or something found online.

Academic and Student Support

You can learn about the wealth of academic and student support services available to our students by visiting the pages on the Virginia Tech Distance Education Support Links site.

Student Prerequisite Skills

For your assignment submissions, I expect you to be articulate and clear in your writing, commensurate with graduate level work. In regards technical competencies, you should be able to:

- Use standard word processing software to write properly-formatted formal papers.
- Navigate web pages using a web browser, such as Firefox, Safari, or Google Chrome.

Tech Support

Student technical support is available through 4Help. If you are experiencing technical difficulty accessing materials that you need for this course or a general technical support question please request assistance by filling out the help form or calling 540-231-HELP. When making a request, please be sure that you provide as much detail (name, problematic URL, operating system, description of problem) as possible to help solve your problem more efficiently. The 4Help service is available 24/7 to reset passwords, monitor system outages, and answer questions on a wide variety of computer related issues. Moreover, you can find answers to many of your questions by reading the 4Help Knowledge Base.

Work Load Expectations

One of the challenges students face in distance education is related to time management. As a three-credit-hour course, university accreditation standards suggest the workload for this course should total at least 135 hours (9 hours per week). With that in mind, please set aside the time necessary to devote to your learning and completion of course assignments.

Course Administration

This course is administered online via Virginia Tech's *Canvas* course management system. The course is entirely Internet-based with no face-to-face contact with the instructor or other students, though there will be opportunities for real-time communication using telephone, chat, or web conferencing software. Unlike some distance learning classes, the pace of this course will be set by the instructor with specified due dates for completion of assignments. Online learning such as this requires basic computer and Internet literacy and a high degree of self-motivation and discipline. As you consider your readiness for distance-delivered aspects of the course, you may benefit from the following article: Is online learning right for you? You may also be interested in the Canvas Accessibility Resources.

Course Communication

I will be available to answer your questions:

- **Through Canvas Discussions**
  If you have questions about the course material or assignments, you should post them in the "Questions" Discussions forum. The title of your post should give an idea of what your question or comment is concerning, and you should check the existing **Discussions** threads before posting to see if your question has already been answered. I plan to check the **Discussions** section of our course site for new posts each weekday and will usually post responses by 9:00 PM the following day.
- **By email**
  You may email me if your questions are of a personal or sensitive nature. However, most questions or comments should be posted to the "Questions" **Discussions** so everyone can benefit.
- **By telephone**
  I am willing to communicate by telephone, but this mode of communication will generally require an appointment.

You will also communicate with your peers during the *Introduce Yourself* **Discussions** assignment and can use the **Conversations** and **Chat** tools to communicate with your fellow students on an ad hoc basis.

General Structure of Learning Modules

This course is divided into 5 modules, each corresponding to a topical unit of study. The general structure of each module is as follows:

- **Introduction:** The purpose of the introduction is to provide pre-study information you can use to recall your prior knowledge as well as to identify critical ideas that will appear in the module.
- **Objectives:** The purpose of presenting objectives is to inform you of what you should be able to do once you have completed the module.
- **Pre-reading questions:** You will have the opportunity to "test" your knowledge of the material in each module before you study the module. You will be presented up to 5 multiple choice questions on ideas, concepts, principles, facts, and theories that are part of the module. Once you have completed the test, you will receive a score which you can use as an indicator of how well you already understand the main points and details in the module. This will help you identify areas you need to pay particular attention to as you progress through the material.
- **Guiding questions:** The purpose of these pre-study questions is to help you recall what you already know and believe about the topics of the module as well as to pose questions that you should consider as you study.
- **Assigned reading:** The purpose of the reading is to present the basic information, the "facts" if you will, for the module. This material, together with the guidance provided by the interactive activities and the feedback from the formative evaluation, should enable you to successfully master the objectives.
- **Post-reading questions:** You will have available up to 5 multiple choice questions to test your own understanding of the material you have studied. These questions are linked to elaborated explanations of the answers. As a result, you will be able to enrich your understanding of these ideas by, first, seeing if you understand well enough to choose the correct alternative, and second, by studying the explanation of the answer to ensure your explanation matches the text-based explanation.
- **Interactive activity:** The purpose is to provide an opportunity to interact with one or more of the concepts included in the module. The interactive activity may focus on a single important concept or help you develop an understanding of relationships between concepts.
- **Activities for Assessment:** This section will refer you to the next steps – assignments that will be scored as an assessment of your learning and involvement in the course.

Activities for Assessment

1. Discussion Forum Posts (10% of your final grade)
   As part of each learning module, you must contribute at least two posts to the module's discussion forum: one original example (OE) and one value-added comment (VAC). Each OE and VAC must contain at least five clearly and carefully composed sentences. An OE must be truly original; it must not duplicate a classmate's OE or any in the assigned readings. Each VAC must live up to its name by truly adding value to the OE or another VAC. Additional details and expectations will be shared on the course page in *Canvas*.

2. Applied Learning Reflections (30% of your final grade)
   For each unit of study, you will complete an applied learning reflection in the form of an article review or blog entry. Articles for review must be different from assigned readings. Article reviews will include components that connect the article to the topical unit being studied at the time it is due. Blog entries should also be connected to the unit of study but will focus more on personal experiences and observations. Blog entries should follow a "what?", "so what?", "now what?" format. Additional details and expectations will be shared in class and on the course page in *Canvas*.

3. Reel Teamwork Paper (20% of your final grade)
   During the final weeks of the course, you will watch an assigned movie that highlights many of the concepts addressed in this course. In response to the movie, you will write a paper (of about 1500 words) that discusses the points of the movie that are relevant to this class. This paper will serve as your final exam. Accordingly, you should highlight concepts from all course modules. A detailed rubric will be provided on the course page in *Canvas*.

4. Action-Learning Project (20% of your final grade)
   You will work with others in the class to develop a facilitation guide for professional learning to be delivered for one of Virginia Tech's Interdisciplinary Graduate Education Programs (IGEPs). You should approach this project from the perspective of a consultant group, considering insights from concepts learned through this class. Final evaluation of the project will be based on a fully-articulated professional learning plan for at least 2.5 contact hours. More information about this assignment will be provided in *Canvas*.

5. Peer Evaluation (20% of your final grade)
   At the end of the semester, your will anonymously rate the quality of the contributions of the other members of the class. Your Peer Evaluation score will be the average of the points you receive from the members of the class. The criteria for rating will include the following:
   - *Team Player (Cooperation):* Knows when to be a leader and a follower; keeps an open mind; compromises when appropriate; can take criticism; respects others.
   - *Helps Group Excel:* Expresses great interest in group success by evaluating ideas and suggestions; initiates problem solving; influences and encourages other to set high standards; doesn't accept just any idea but looks for the best ideas; stays motivated from beginning to end.
   - *Participation & Communication:* Articulates ideas effectively when speaking or writing; submits papers without grammatical errors; listens to others; encourages others to talk; persuasive when appropriate.
   - *Preparation:* Prepared for class/team meetings; has read course material and understands the issues and subject matter; completes team assignments on time; attends and is on time for class/team meetings.

All assignments are due by 11:59 PM on the respective date identified in Canvas.

Determination of Final Grades

The final grades will be determined for each student as follows: 1) a percentage score total will be computed in each performance, 2) the student's total score will be computed by multiplying the percentage score in each area by the grade "weight" identified in the syllabus, 3) the resulting percentages in each major performance area will be added and reported as a letter grade, based on the following scale:

A	90% - 100%		
B+	87% - 90%	B	80% - 87%
C+	77% - 80%	C	70% - 77%
D+	67% - 70%	D	60% - 67%
F	Below 60%		

Course Outline

Note: Reading materials and resources for each topical unit will be outlined in the Modules function in *Canvas*.

Module #1 – Trends Advancing Team Science

- Objectives
  - Articulate the growing need for extreme teaming and team science.
  - Analyze the theoretical, conceptual, and practical underpinnings for building capacity around team science, cooperative processes, and interdisciplinary research.

Module #2 – Leadership for Extreme Teaming

- Objectives
  - Assess leadership factors in case studies that highlight extreme teaming.
  - Analyze and evaluate the team science and cooperative process outputs and outcomes of interdisciplinary research, programming, and outreach.

Module #3 – Managing Cognitive Diversity

- Objectives
  - Analyze the effectiveness of team and cooperative group structures, protocols, and processes in interdisciplinary research, programming, and outreach.
  - Highlight key factors and strategies for managing the challenges of cognitive diversity.

Module #4 – Organizational Perspectives

- Objectives
  - Evaluate the readiness of individuals and teams to effectively engage in cooperative processes in interdisciplinary contexts.
  - Integrate conflicting disciplinary insights by creating common ground and negotiating shared leadership in organizational settings.

Module #5 – A Path Forward

- Objectives
  - Evaluate current scholarship on team science and cooperative processes in interdisciplinary contexts.
  - Construct training designed to build team science and cooperative process capacity in interdisciplinary research, programming, and outreach.