

**COURSE INFORMATION**

Semester: Spring 2022 – Session A (#28005)  
Time/Location: Online (01/10 – 03/01)  
Website: Canvas

**INSTRUCTOR INFORMATION**

Instructor: Dr. Samuel T. Ariaratnam, Ph.D., P.E., P.Eng., F.ASCE, F.ISTT, F.CAE, NAC  
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Dr. Ariaratnam received his B.A.Sc. in Civil Engineering from the University of Waterloo (Canada) and his M.S. & Ph.D. from the University of Illinois at Urbana-Champaign. His educational and research interests lie in the area of Urban Infrastructure Systems with an emphasis on Horizontal Directional Drilling and Trenchless Pipe Replacement. He has published over 300 technical papers, holds five patents, and is active in numerous professional organizations. Additionally, he is a co-author of three textbooks related to trenchless technologies. He was the Chair of the International Society for Trenchless Technology from 2010-2013 and served on the ASCE Pipelines Division ExCom where he was Chair from 2017-2018. Currently, Dr. Ariaratnam is the Chair of the Construction Engineering Program at Arizona State University and is the Beavers-Ames Chair in Heavy Construction. He is a member of the Canadian Academy of Engineering (CAE), the U.S National Academy of Construction (NAC), Fellow of the American Society of Civil Engineers (ASCE), and Fellow of the International Society for Trenchless Technology (ISTT).

**OVERALL PROGRAM GOALS**

Construction management professionals combine knowledge of innovative technologies, construction principles and business management to lead a wide variety of construction projects from residential and commercial buildings to infrastructure projects. The DEWSC program goals are to teach students how to become responsible leaders in the construction industry through organization, leadership, and current/innovative management techniques. The American Council for Construction Education (ACCE) states that it is essential that every Constructor be capable of effectively managing personnel, materials, equipment, costs, and time. The Constructor must be able to effectively communicate and understand their role as a member of a multi-disciplinary team, the assessment of project risk, and the alternate methods that can be used to structure the owner-designer-constructor team.

**COURSE DESCRIPTION**

Theory and practice of construction project management. Roles of designer, owner, general contractor, and construction manager. Lecture, class projects.

Prerequisites: Construction or Construction Engineering graduate student

**COURSE OBJECTIVES**

Upon completion of this course, students will be able to:

- a. Understand principles of management used to manage construction projects.
- b. Understand the different roles that Construction/Project Managers perform in the various construction sectors (industrial, commercial, residential, heavy, etc.)
- c. Perform various field productivity measures, analyze the results, and provide recommendations for process improvement.
- d. Differentiate between ethical and unethical behavior in the construction field.
- e. Demonstrate written and oral competency through engaging in a team final term project.
- f. Understand the basic principles of Lean and Six Sigma

## COURSE LEARNING OUTCOMES

Students will be able to:

1. Demonstrate and understand the various Construction/Project Management roles and responsibilities
2. Demonstrate the ability to conduct and analyze various field productivity measures
3. Conduct themselves in a more ethical manner
4. Work effectively in groups and communicate both orally and written

## TEXTBOOKS AND REFERENCE MATERIAL

There is no required textbook for this course.

## GRADE POLICIES

The following criteria, weights, and grading scale will be used to calculate the Final Grade (the Instructor may modify/adjust as necessary):

Assignment	Weight	Grading Scale
Reading Assignments	10%	A+ 95-100%
Homework Assignments	15%	A 90-94%
Quizzes	10%	A- 87-89%
Case Studies	10%	B+ 84-86%
Term Project Presentation	10%	B 81-83%
Term Project Final Report	20%	B- 78-80%
Term Test	25%	C+ 75-77%
<b>Total</b>	<b>100%</b>	C 70-74%
		D <70-60%
		E <60%

## COURSE POLICIES, PROCEDURES, AND REQUIREMENTS

**General Responsibilities** – The responsibility for learning rests with each student. The professor or lecturer will assist by making the classroom environment one conducive to learning but your preparation is essential! The student is responsible for reading all assignments, doing any assigned homework problems, and seeking assistance if needed.

**Attendance and Participation** – Class attendance, participation and preparation are explicit reflections of your interest in the course. Accommodations will be made for religious observances provided that students notify the instructor at the beginning of the semester concerning those dates. The preceding policies are based on [ACD 304-04](#), "Accommodation for Religious Practices" and [ACD 304-02](#), "Missed Classes Due to University-Sanctioned Activities."

**Exams/Quizzes** – Missed exams/quizzes cannot be made up.

**Assignments** – Assignments and Deliverables are due by **11:59pm Arizona Time** on the designed deadline date. Late homework will be penalized 20% for each day or part thereof. Assignments more than 48 hours late will result in no points awarded. No excuses. All writing requirements must be completed using a word processor, spell and grammar checked and well written with a logical flow of thought.

Topic	Due Date
HW #1: Coaching and Mentoring	January 16, 2021
Case Study #1: Turner Construction Co.	January 23, 2021
Case Study #2: Rittenhouse Homes	January 30, 2021
HW #2: Decision Analysis	February 6, 2021
HW #3: Productivity in Construction	February 13, 2021
Term Project PPT Presentation	February 27, 2021
Final Term Project Report	February 27, 2021

**Professional Work** – To receive credit for your work, it is imperative the work be organized, readable, and professional (part of your grade will be based on presentation of your work). Plagiarism of any type will not be tolerated. At the first occurrence, your work will be returned to you to re-do. Following occurrences will result in the instructor reporting this lack of academic integrity to university administrators. If you are unclear about how to cite the work of others, **please ask!**

**Course Requirements** – When assigned a reading, please complete it before the lecture so that the class discussion will be more meaningful. The importance of keeping current in reading assignments cannot be overemphasized. You are responsible for all assigned reading materials, whether or not the exact topics are discussed directly in the lecture. A course of this nature depends highly upon faculty - student discussion and student participation. Open discussion is authorized and encouraged on all graded work, but each student must formulate his or her own answers because grades are based on the original work of each student. Use of published references is authorized but must be properly cited.

**Official E-mail** – An official ASU e-mail is established for each student, faculty member, and staff member. All university communications sent via e-mail will be sent to this ASU e-mail address. You are required to check your e-mail daily.

## UNIVERSITY POLICIES

**Academic Integrity** - Students in this class must adhere to ASU's academic integrity policy, which can be found at <https://provost.asu.edu/academic-integrity/policy>). Students are responsible for reviewing this policy and understanding each of the areas in which academic dishonesty can occur. In addition, all engineering students are expected to adhere to both the ASU Academic Integrity Honor Code (<https://provost.asu.edu/academic-integrity/honor-code>) and the Fulton Schools of Engineering Honor Code (<https://engineering.asu.edu/ira-a-fulton-schools-of-engineering-honor-code/>). All academic integrity violations will be reported to the Fulton Schools of Engineering Academic Integrity Office (AIO). The AIO maintains record of all violations and has access to academic integrity violations committed in all other ASU college/schools.

**Student Code of Conduct** - The Student Code of Conduct sets forth the standards of conduct expected of students who choose to join the university community. Students who violate these standards will be subject to disciplinary sanctions (<http://students.asu.edu/srr/code>).

**Absence & Make-Up** - Accommodations will be made for religious observances provided that students notify the instructor at the beginning of the semester concerning those dates. Students who expect to miss class due to officially university-sanctioned activities should inform the instructor early in the semester. Alternative arrangements will generally be made for any examinations and other graded in-class work affected by such absences. The preceding policies are based on ACD 304-04, "Accommodation for Religious Practices" and ACD 304-02, "Missed Classes Due to University-Sanctioned Activities." Excused absences related to missed class due to military line-of-duty activities that are in accord with ACD 304-11, "Missed Class Due to Military Line-of-Duty Activities," and SSM 201-18, "Accommodating Active Duty Military".

**Disability Accommodations** - Suitable accommodations will be made for students having disabilities. Students needing accommodations must register with the ASU disabilities resource Center and provide documentation of that registration to the instructor. Students should communicate the need for an accommodation in sufficient time for it to be properly arranged.

**Harassment and Sexual Discrimination** - Arizona State University is committed to providing an environment free of discrimination, harassment, or retaliation for the entire university community, including all students, faculty members, staff employees, and guests. ASU expressly prohibits discrimination, harassment, and retaliation by employees, students, contractors, or agents of the university based on any protected status: race, color, religion, sex, national origin, age, disability, veteran status, sexual orientation, gender identity, and genetic information. Title IX is a federal law that provides that no person be excluded on the basis of sex from participation in, be denied benefits of, or be subjected to discrimination under any education program or activity. Both Title IX and university policy make clear that sexual violence and harassment based on sex is prohibited. An individual who believes they have been subjected to sexual violence or harassed on the basis of sex can seek support, including counseling and

academic support, from the university. If you or someone you know has been harassed on the basis of sex or sexually assaulted, you can find information and resources at <https://sexualviolenceprevention.asu.edu/faqs>.

As a mandated reporter, I am obligated to report any information I become aware of regarding alleged acts of sexual discrimination, including sexual violence and dating violence. ASU Counseling Services, <https://eooss.asu.edu/counseling>, is available if you wish to discuss any concerns confidentially and privately.

**Academic Calendar** - The academic calendar (<https://students.asu.edu/academic-calendar>) contains important dates that students should be aware of, including: the first and last day of class, drop/add deadlines, withdrawal deadlines, and observed holidays.

**Copyright Protection** - Course content, including lectures (Zoom recorded lectures included), are copyrighted materials and students may not share outside the class, upload to online websites not approved by the instructor, sell, or distribute course content or notes taken during the conduct of the course (see ACD 304–06, “Commercial Note Taking Services” and ABOR Policy 5-308 F.14 for more information). You must refrain from uploading to any course shell, discussion board, or website used by the course instructor or other course forum, material that is not the student's original work, unless the students first comply with all applicable copyright laws; faculty members reserve the right to delete materials on the grounds of suspected copyright infringement.

**Threatening Behavior** - Students, faculty, staff, and other individuals do not have an unqualified right of access to university grounds, property, or services. Interfering with the peaceful conduct of university-related business or activities or remaining on campus grounds after a request to leave may be considered a crime. All incidents and allegations of violent or threatening conduct by an ASU student (whether on- or off-campus) must be reported to the ASU Police Department (ASU PD) and the Office of the Dean of Students.

**Syllabus Changes** - Any information in this syllabus may be subject to change with reasonable advance notice.

**Reading Assignments** -- You are required to find and review an article related to topics covered in class. It is recommended that you search in magazines, newspapers, technical journals, internet, etc. You must write a 1-2 page typed synopsis of a selected article on the desired topic. You must include the article or website URL with your reading assignment in order to receive credit. Reading assignments will be graded on clarity, grammar, and content. These are important in that they contribute to 10% of your overall grade in the course. The topic and submission schedule are listed in the following table:

Topic	Due Date
Reading #1: Project Delivery Methods	January 23, 2021
Reading #2: Lean/Six-Sigma Construction	February 6, 2021
Reading #3: Trenchless Construction Methods	February 20, 2021
Reading #4: International Construction	February 20, 2021
Reading #5: Health and Safety in Construction	February 27, 2021

## DETAILED CLASS SCHEDULE

Class sessions will be in accordance with the attached schedule. The instructor reserves the right to modify and/or adjust the schedule.

Week 1 (Jan. 10-16)	Modules 0-3
Week 2 (Jan. 17-23)	Modules 4-6
Week 3 (Jan. 24-30)	Modules 7-8
Week 4 (Jan. 31-Feb 6)	Modules 9-10
Week 5 (Feb. 7-13)	Modules 11-12
Week 6 (Feb. 14-20)	Modules 13-14
Week 7 (Feb. 21-27)	Modules 15-16
Week 8 (Feb. 28-Mar. 1)	Term Test

Module	Topic	Deadlines
0	<b>Welcome/Orientation</b> 0.1 Syllabus Overview 0.2 Term Project 0.3 Engineering Report Writing 0.4 Case Study #1 – Turner Construction Company 0.5 Case Study #2 – Rittenhouse Homes	
1	<b>Introduction to Construction Project Management</b> 1.1 Construction Industry Background 1.2 Construction Industry Sectors 1.3 Construction and the Economy	
2	<b>Project Participants and Human Factors</b> 2.1 Project Participants 2.2 Organizational Issues 2.3 Human Factors in Construction	
3	<b>Coaching and Mentoring</b> 3.1 Coaching and Mentoring Background 3.2 Understanding Generations 3.3 Coaching Styles: The Legend of Bagger Vance 3.4 Coaching Styles: What About Bob? 3.5 Coaching Styles: Mr. Holland's Opus 3.6 Coaching Styles: Hoosiers 3.7 Coaching Styles: The Mighty Ducks	HW#1 (1/16)
4	<b>Marketing and Public Relations</b> 4.1 Marketing in Construction 4.2 The Sales Process 4.3 Public Relations	Case Study #1 (1/23)
5	<b>Project Delivery Methods</b> 5.1 Project Risks 5.2 Delivery Methods 5.3 Contracts	Reading #1 (1/23)
6	<b>Organizing and Leading the Construction Process</b> 6.1 Background 6.2 Legal Structure 6.3 Total Quality Management 6.4 Meetings and Negotiations	
7	<b>Partnering in Construction</b> 7.1 Partnering 7.2 Partnering Exercise	
8	<b>Decision Analysis</b> 8.1 Decision Analysis 8.2 Decision Analysis: Example Problem	Case Study #2 (1/30)
9	<b>Ethics in Construction/Engineering</b> 9.1 Ethics and Construction 9.2 Ethics Case Studies	HW#2 (2/6)
10	<b>Lean/Six Sigma in Construction</b> 10.1 Lean-Six Sigma Background 10.2 Process Improvement	Reading #2 (2/6)

11	<b>Productivity in Construction</b> 11.1 Productivity Basics 11.2 Productivity Measures 11.3 MPDM Example Problem	
12	<b>PM for Public Projects</b> 12.1 Public Works Processes 12.2 City of Phoenix Process 12.3 Role of Project Manager and Financing 12.4 Overview of CIP Process	HW#3 (2/13)
13	<b>Emerging Technologies in Construction</b> 13.1 Infrastructure Background 13.2 The Underground World 13.3 Failing Utility Infrastructure 13.4 Horizontal Directional Drilling 13.5 Trenchless Pipe Replacement 13.6 Microtunneling and Pipe Jacking 13.7 Pipe Ramming and Auger Boring 13.8 Pipe Inspection and Rehabilitation	Reading #3 (2/20)
14	<b>International Construction</b> 14.1 Cultural Awareness 14.2 Major Global Projects – Part One 14.3 Major Global Projects – Part Two 14.4 Major Global Projects – Part Three 14.5 Major Global Projects – Part Four	Reading #4 (2/20)
15	<b>Health and Safety in Construction</b> 15.1 Construction Safety Background 15.2 Human Element and Safety 15.3 Safety Planning and Fall Protection	Reading #5 (2/27)
16	<b>Inspection and Project Closeout</b> 16.1 Inspection and Project Closeout	Term Project Report and Presentation (2/27)