



**Catalog Description:** (3 units) Provide an opportunity to develop an enhanced understanding of construction industry and practices in preparation to contribute to construction firms, project management consultants, and owners upon graduation and to improve project delivery by understanding linkages between design and construction.

**Prerequisite(s):** Advanced Standing.

**Learning outcomes:**

Students should be able to:

1. Describe the design and construction planning process
2. Interpret construction documents
3. Determine resource needs and costs from construction documents
4. Identify key construction contract elements and legal and regulatory issues, and describe strategies for issue resolution
5. Interpret and assemble a project schedule
6. Identify and describe important issues impacting project oversight and management such as safety, quality control, change orders, and requests for information
7. Track and forecast costs and quantities and evaluate their alignment with and impact on the project schedule
8. Evaluate construction sites for impacts on constructability and safety

Learning outcomes support ABET program outcomes:

*Primary*

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics

*Secondary*

3. An ability to communicate effectively with a range of audiences
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies

**Instructor:** Dean Papajohn  
**Class time & place:** TuTh 9:30-10:45 @ CE201; F 1:00-3:50 @ Site visits TBA  
**Office Hours:** TuTh 10:45-11:30 and by appointment  
**Office:** CE 214B  
**e-mail:** dpapajohn@email.arizona.edu

**Textbook:** Construction Management, 4<sup>th</sup> Edition, Daniel W. Halpin and Bolivar A. Senior, Wiley, 2011. (ISBN 978-0-470-44723-9). (The 5<sup>th</sup> Edition is available and can be used, just check the chapter numbers and homework problem numbers, as the numbering has changed from the 4<sup>th</sup> Ed.)

Other materials will be supplied through the course D2L website.

### Evaluation

Homework, quizzes, and participation	17%
Construction Site Observation Reports (5@3%) & Presentation (4%)	19%
Project	16%
Tests (2)	32%
Final Exam	16%
OSHA 10 Training	Required

Homework assignments will be announced in class and must be submitted **at the start of class** on the assigned due date. No late assignments will be accepted, including assignments turned in during or at the end of the class, unless special arrangements have been made.

Semester grades are determined as follows:

90-100% = A; 80-89% = B; 70-79% = C; 60-69% = D; 0-59% = F.

### Attendance and Participation

Participating in the course and attending lectures, site visits and other course events are vital to the learning process and are required. If a late arrival or an early departure is anticipated, check with the instructor to be sure that it is done without disturbing the class. The instructor, at his discretion, may decide to consider late arrivals or early departures as full absences. A two week absence may result in administrative withdrawal. If a student misses a class, he/she is responsible for all announcements and subjects covered in that class. If in doubt, contact the instructor. Absences may affect a student's final course grade. If you anticipate being absent, are unexpectedly absent, or are unable to participate in class online activities, please contact me as soon as possible. *To request a disability-related accommodation to this attendance policy, please contact the Disability Resource Center at (520) 621-3268 or [drc-info@email.arizona.edu](mailto:drc-info@email.arizona.edu).* If you are experiencing unexpected barriers to your success in your courses, the Dean of Students Office is a central support resource for all students and may be helpful. The Dean of Students Office is located in the Robert L. Nugent Building, room 100, or call 520-621-7057.

- The UA's policy concerning Class Attendance, Participation, and Administrative Drops is available at: <http://catalog.arizona.edu/policy/class-attendance-participation-and-administrative-drop>
- The UA policy regarding absences for any sincerely held religious belief, observance or practice will be accommodated where reasonable, <http://policy.arizona.edu/human-resources/religious-accommodation-policy>.
- Absences pre-approved by the UA Dean of Students (or Dean Designee) will be honored. See: <https://deanofstudents.arizona.edu/absences>

### ADA compliance

The University of Arizona strives to make learning experiences as accessible as possible. If you anticipate or experience barriers based on disability or pregnancy, please contact the Disability Resource Center (520-621-3268, <https://drc.arizona.edu/>) to establish reasonable accommodations.

### Academic Integrity

Students are encouraged to share intellectual views and discuss freely the principles and applications of course materials. However, graded work/exercises must be the product of independent effort unless otherwise instructed. Students are expected to adhere to the UA Code of Academic Integrity as described in the UA General Catalog. See: <http://deanofstudents.arizona.edu/academic-integrity/students/academic-integrity>.

The University Libraries have some excellent tips for avoiding plagiarism, available at <http://new.library.arizona.edu/research/citing/plagiarism>.

Principle Integrity and ethical behavior are expected of every student in all academic work. This Academic Integrity principle stands for honesty in all course-related work. This principle is furthered by the student Code of Conduct and disciplinary procedures established by ABOR Policies 5-308 through 5-404, all provisions of which apply to all University of Arizona students.

This Code of Academic Integrity (hereinafter "this Code") is intended to fulfill the requirement imposed by ABOR Policy 5-403.A.4 and otherwise to supplement the Student Code of Conduct as permitted by ABOR Policy 5-308.C.1.

Failure to follow this code of academic integrity will result in failing the course and be reported to the Dean of Students' office.

### **Classroom Behavior**

To foster a positive learning environment, students and instructors have a shared responsibility. We want a safe, welcoming, and inclusive environment where all of us feel comfortable with each other and where we can challenge ourselves to succeed.

Conduct prohibited by this Code consists of all forms of academic dishonesty, including, but not limited to:

1. Cheating, fabrication, facilitating academic dishonesty, and plagiarism as set out and defined in the Student Code of Conduct, ABOR Policy 5-308-E.6, E.10, and F.1
2. Submitting an item of academic work that has previously been submitted without fair citation of the original work or authorization by the faculty member supervising the work.
3. Violating required professional ethics rules contained or referenced in the student handbooks (hardcopy or online) of undergraduate or graduate programs, or professional colleges.
4. Violating health, safety or ethical requirements to gain any unfair advantage in lab(s) or clinical assignments.
5. Failing to observe rules of academic integrity established by a faculty member for a particular course.
6. Attempting to commit an act prohibited by this Code. Any attempt to commit an act prohibited by these rules shall be subject to sanctions to the same extent as completed acts.

### **Student Responsibility**

Students engaging in academic dishonesty diminish their education and bring discredit to the academic community. Students shall not violate the Code of Academic Integrity and shall avoid situations likely to compromise academic integrity. Students shall observe the generally applicable provisions of this Code whether or not faculty members establish special rules of academic integrity for particular classes. Students are not excused from complying with this Code because of faculty members' failure to prevent cheating.

### **Prohibited Behavior**

#### **Nondiscrimination and Anti-harassment policy**

"The University of Arizona is committed to creating and maintaining an environment free of discrimination. In support of this commitment, the University prohibits discrimination, including harassment and retaliation, based on a protected classification, including race, color, religion, sex, national origin, age, disability, veteran status, sexual orientation, gender identity, or genetic information. The University encourages anyone who believes he or she has been the subject of discrimination to report the matter immediately as described in the section below, "Reporting

Discrimination, Harassment, or Retaliation.” All members of the University community are responsible for participating in creating a campus environment free from all forms of prohibited discrimination and for cooperating with University officials who investigate allegations of policy violations.” <http://policy.arizona.edu/human-resources/nondiscrimination-and-anti-harassment-policy>

### **Threatening Behavior is Prohibited.**

“Threatening behavior” means any statement communication, conduct or gesture, including those in written form, directed toward any member of the University community that causes a reasonable apprehension of physical harm to a person or property. A student can be guilty of threatening behavior even if the person who is the object of the threat does not observe or receive it, so long as a reasonable person would interpret the maker’s statement, communication, conduct or gesture as a serious expression of intent to physically harm.

The UA Threatening Behavior by Students Policy prohibits threats of physical harm to any member of the University community, including to oneself. See <http://policy.arizona.edu/education-and-student-affairs/threatening-behavior-students>.

### **Procedures for Mandatory Reporting of Threatening Behavior**

If threatened by any student’s conduct to the point of reasonable fear of immediate physical harm to self, others or property:

1. Leave the area immediately.
2. Call the Police by dialing 9-1-1 to request that an officer come to the location.  
Inform the Police if it is a repeat occurrence.
3. Anyone who observes what appears to be threatening behavior must report it to The Dean of Students Office and in the appropriate case file a Student Code of Conduct Complaint (see ABOR 5-403).

## TENTATIVE SCHEDULE

(The instructor may change this schedule to accommodate class needs.)

Date	Topics	Presenter	Readings due (from Halpin & Senior unless otherwise noted)	Homework due
1/10/19	Introduction to construction management		Ch.1	Obtain textbook. Look up top contractors in <a href="#">ENR</a> .
1/11/19				
1/15/19	Reading construction drawings & specifications		Ch. 2, App. B, C, D, F Look at CIG.	Ch. 1 Quiz (D2L) Log into D2L; HW 1.2 (choose 1, not 3 projects), 1.3; Select a project site to observe during the semester
1/17/19	Alternative delivery methods		Ch. 4	
1/20/19				
1/22/19	Safety	Javier De Echavarri Michael Martin, ADOSH		Ch. 4 Quiz (D2L)
1/24/19	RFIs and Submittals		Ch. 3	S.O.#1 HW 2.1, 2.10 (estimate in \$), 2.16 (you may need to sign in to the Dodge Data web site)
1/25/18	TBD			
1/29/19	Cash Flow		Ch. 11	
1/31/19	Project Funding		Ch. 12	HW 11.1, 11.3, 11.4
2/1/19	TBD			
2/5/19	Quantity Take Off Bid preparation	Jim Merrigan (Granite)	Ch. 16	HW 12.2, 12.4, 12.5 Ch. 16 Quiz (D2L)
2/7/19	Cost Estimating (ASC Competition in Reno)	Jim Merrigan (Granite)		HW Qty takeoff
2/8/19				
2/12/19	Cost Estimating	Jim Merrigan (Granite)		Cost Est S.O.#2
2/14/19	Bid preparation	Jim Merrigan (Granite)		

2/15/19	Mock Bid at Granite Construction 2:30-4:30	Jim Merrigan (Granite)		Granite Construction Office, 2:30-4:30 4115 E. Illinois St., Tucson, AZ 85714
2/19/19	Review for Exam 1			
2/21/19	Exam 1			S.O.#3
2/22/19	Casino Del Sol 2:00-3:30	Hunter Brown (McCarthy)		
2/26/19	Equipment Ownership		Ch. 13	
2/28/19	Equipment Productivity		Ch. 14	HW 13.3, 13.4, 13.5
3/1/19				
3/4-8/19	Spring break			
3/12/19	Construction equipment			HW 14.1-14.5
3/14/19	Geotech in construction projects	Naresh Samtani (NCS Georesources)		S.O.#4
3/15/19	TBD			
3/19/19	Construction planning		Ch. 7	Site presentation video due on D2L
3/21/19	Construction scheduling		Ch. 8	HW 7.1, 7.3, 7.4
3/22/19	TBD			
3/26/19	Construction scheduling			HW 8.1, 8.2, 8.3
3/28/19	TBD- Roads & Streets Conference			SO#5 HW 8.5, 8.6, 8.7
3/29/19	no site visit (AIC meeting)			
4/2/19	TBD			
4/4/19	PSWC No class			
4/5/19	TBD			
4/9/19	Construction claims and dispute resolution	Matt Meaker, Senior Corporate Counsel (Sundt)		S.O.#6
4/11/19	Virtual Design & Construction	Eric Cylwik (Sundt)		
4/12/19	TBD			
4/16/19	Review for Exam 2			
4/18/19	Exam 2			
4/19/19				
4/23/19	TBD		Ch. 19	Ch. 19 Quiz (D2L)
4/25/19	TBD			
4/26/19				
4/30/19	Review for Exam 3			
5/2/19	Reading Day			

5/7/19 8:00- 10:00 AM	Final: Exam 3 CE201			
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S.O. = Site Observation

HW = Homework problems from Halpin and Senior

CIG = Construction Institute Glossary;

<https://www.construction-institute.org/resources/knowledgebase/about-the-knowledge-base/glossary>

Site visits require appropriate attire, including a hard hat and safety vest which can be checked out the day of the site visit from ASCE or CAEM. Also required are boots and pants (preferably jeans). It is recommended to use sunscreen, bring water, and use safety glasses.