Instructor: Professor Steve W. Bannes  
Director, Graduate Studies in Construction Management Programs

Office: Urbauer Hall – 226

Office Hours: Office Hours: I am available most days in the afternoon or evening. In addition, I am available via e-mail (preferred) or phone and I will arrange appointments as necessary for any student.

Office Phone: (314) 935-8148  
Cell Phone: (314) 398-3528  
E-address: sbannes@wustl.edu

Course Schedule: Tuesday evenings, August 27 – December 17, 2019  
6:00 – 9:00 p.m.

Location: Lopata Hall 103

Catalog Description: In this course, students will be exposed to the overall construction process from initial concept through startup of the completed facility. The focus is to provide familiarization of the construction and contracting process and potential involvements by construction managers in the planning, design, construction, and post construction phases. Additional topics are introduced to provide a foundation, which will prepare students for future construction management coursework. Case studies and industry examples are used throughout the course to authenticate the lectures and assignments.

Credit: 3 units

Prerequisite(s): Graduate Standing

Textbook: The textbook for this course will be ‘constructed’ over the semester. Each week you will access handouts relative to the lecture or assignments. Additionally, you will receive copies of articles or materials to augment the topic of the week.

Recommended Reference Materials:
The following are recommended references for students:
- Who may lack experience in the construction industry
- For whom English is a second (non-native) language
They should be considered as a resource for the entire CM program – not just this course.
Construction Project Management, 4th Edition
By Frederick Gould, Nancy Joyce
This text addresses all facets of successful construction project management in today’s complex environments. Published by Pearson | ISBN-13: 9780132877244

By Madan I. Mehta, Walter Scarborough, Diane Armpriest
A comprehensive and fully illustrated introduction to construction methods and materials. Published by Pearson | ISBN-13: 9780134454177

The fourth edition of RSMeans' popular construction dictionary features over 20,000 terms, phrases and abbreviations, as well as over 1,400 illustrations. Published by R. S. Means Co., Inc. | ISBN13: 9780876290927

Blueprint Reading for Construction, 2nd Edition
By James A. S. Fatzinger, American Society of Professional Estimators
This text covers the full spectrum of construction blueprint reading. Published by Pearson | ISBN-13: 9780131108110

All four of these books are available in the WU Campus Store or online.

Instructional Strategy for the Course

Graduate Students are responsible for their learning. Consequently, this course uses a 'partially flipped' classroom as its instructional strategy. The flipped classroom is a pedagogical model that reverses the traditional learning environment by delivering instructional content, via Canvas, outside of the classroom. This allows you, the students, to have first-exposure learning prior to class. We then use our class meetings to focus on processing your learning (synthesizing, analyzing, problem-solving, etc.) by:
- Having discussions (focused and unfocused) and Q&A
- Critiquing assignments
- Working on exercises and projects

Attendance and Class Participation

You are part of a professional, graduate program. Consequently, I expect students to conduct themselves in a professional manner. This includes being on time for classes and meetings, being prepared, and participating in class discussions, group activities, projects, etc. Course attendance is expected and is part of your participation grade. However, just showing up for class does not represent ‘A’ work!

Sometimes absence from class is unavoidable. If you know you are going to be absent, contact me in advance. Otherwise, I expect you to be here. Students are responsible for all material covered in class.

The level of professionalism you exhibit throughout the course will affect your final grade – see the grading structure.

Assignments and Projects

In General
The assignments and projects required in this course are governed by Hofstadter's law. The law, conceived by the cognitive scientist Douglas Hofstadter, goes like this: any task you're planning to complete will always take longer than expected - even when Hofstadter's law is taken into account. Therefore, even if you know a project will take
more time to complete, and build that knowledge (additional time) into your schedule, it'll simply exceed the new estimated finish time. Consequently, I allow adequate time for each assignment to be successfully completed – if you use your resources wisely.

Assignments are due at the beginning of class on the day specified. This can be especially important because some assignments will be presented and/or discussed in class and/or used to transition from one lecture/discussion topic to another. Failure to submit the assignment on time will result in being under-prepared for class discussion, which will harm your grade. Students who must miss class must arrange to turn in the assignment ahead of time or have another student turn in the assignment at the scheduled time.

Collaboration
Students should assume that collaboration in the completion of assignments is prohibited unless explicitly permitted by the instructor. You are encouraged to discuss ideas and techniques broadly with other class members, but all written work, whether in preliminary or final form, is to be generated by you working alone unless otherwise expressly stated in the assignment.

Late Assignments
My philosophy on late assignments is:
1. Everyone should try their best to complete all assignments by the specified due date.
2. People who work conscientiously to make the deadlines should be rewarded for their promptness and sacrifice of fun, sleep, etc.
3. I cannot possibly care more than you . . .

The 'real world' has little (if any) tolerance for missed deadlines – late is unacceptable. When asked to provide input, data, a recommendation, your opinion, etc., it is to meet the schedule of your boss, the client, or other stakeholder. Your failure to meet the deadline can jeopardize relationships, your professional image, and reputation.

Having said that, I recognize the assignments can be time-consuming and you have many responsibilities to juggle, creating various circumstances that may prevent you from completing an assignment by the due date. Allowing no late assignments would not give you much incentive to continue to work on the assignment, which is a major source of learning in this course. I believe that it is better for you to spend a little extra time and hand in something that works that you thoroughly understand than to rush something in that is unfinished. Consequently, I want to give you a little flexibility in meeting the deadlines without undue penalty.

Self-granted Time Extensions – Late Days
Late days are "self-granted extensions" that allow you to submit work late without penalty. Unexpected things come up – you become swamped at work, you get sick, you accidentally delete a critical file, etc. Usually you then ask the professor to grant you an extension. To save this step, I have given you the privilege to grant yourself 2 days (24-hour periods) of extension without having to check with me for approval.

It is up to you how you want to use your late days. If you are choosing to use one of your self-granted extension days, you do not need to confirm with me, just submit your work (at my office or via e-mail) and it will be marked accordingly. Once you have used your two late days, late work will be graded down one letter grade increment (from a B+ to a B, for example) for each day they are late. Late assignments will be accepted with penalty up to one week after the due date. You must turn in what you have by that time or will earn a zero for that assignment. It is up to you to determine the version of your
assignment to be graded. You must weigh the late penalty against the completeness of your assignment.

Further Instructor-Granted Extensions
Your first recourse for handling a crisis is always to invoke your own power to grant yourself an extension. Instructor-granted extensions are only considered after a student has used all their late days for legitimate needs and is facing another exceptional situation. Such extensions are granted rarely.

Restrictions on Late Assignments
For assignments and projects where you are working and responding as a team, the deadline(s) will be firm – late assignments will not be accepted. Just for your own planning, you will probably not be able to turn in the final assignment more than one day late, since it will be due near the semester’s end, and I need to get all assignments in so I can grade them in time to submit final grades.

Grading
Graduate work in the Sever Institute is graded on a scale of A, B, C, D, P (Pass), and F (Failure), including pluses and minuses. Auxiliary marks are I (incomplete), X (no final examination), and N (no grade turned in). Audit grades are L (audit) and Z (unsuccessful audit). Graduate students must maintain a minimum cumulative grade point average of 2.75 (A = 4.0).

Grades below B are considered unsatisfactory. A grade of ‘I’ in a course other than research must be removed no later than the close of the next semester. If it is not, the ‘I’ turns into an F grade at the end of the next regular semester after the ‘I’ grade was assigned.

Student Academic Integrity Policy
Effective learning, teaching, and research all depend upon the ability of members of the academic community to trust one another and to trust the integrity of work that is submitted in classes for academic credit or conducted in the wider arena of scholarly research. When such an atmosphere of mutual trust exists, the free exchange of ideas is
fostered, and all members of the community are able to work to achieve their highest potential. In all academic work, it is important that the ideas and contributions of others be appropriately acknowledged, and that work that is presented as original is in fact original. Ensuring the honesty and fairness of the intellectual environment at Washington University is a responsibility that is shared by faculty, students, and administrative staff. **By registering for this course, students agree to follow this standard of integrity. It is your responsibility to thoughtfully review and understand the WUSTL SEAS Academic Integrity Policy. Please let me know if you have any concerns with this policy.**

### Course Outline and Schedule

<table>
<thead>
<tr>
<th>Class</th>
<th>Date</th>
<th>Class Discussion/Dialog</th>
<th>Assignments</th>
<th>Distributed</th>
<th>Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>August 27, 2019</td>
<td>Introductions Background, Participants, and Overview of Project Delivery Systems</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2</td>
<td>September 3, 2019</td>
<td>Project Delivery Systems</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>September 10, 2019</td>
<td>Preconstruction Services - Acquiring Work Proposals v. Bidding and Business Development</td>
<td></td>
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</tr>
<tr>
<td>4</td>
<td>September 17, 2019</td>
<td>Preconstruction by Phase</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>September 24, 2019</td>
<td>Preconstruction - Estimating</td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>October 1, 2019</td>
<td>Construction Law</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>October 8, 2019</td>
<td>Communications</td>
<td>P-Teaming</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td><strong>October 15, 2019</strong></td>
<td><strong>Fall Break - No Classes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>October 22, 2019</td>
<td>Time Management</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>9</td>
<td>October 29, 2019</td>
<td>Quality/Safety Management</td>
<td>P</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>November 5, 2019</td>
<td>Cost Management</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>11</td>
<td>November 12, 2019</td>
<td>Post-construction Services</td>
<td>P1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>November 19, 2019</td>
<td>Ethics</td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>13</td>
<td>November 26, 2019</td>
<td>Dispute Resolution &amp; Avoidance</td>
<td>P2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>December 3, 2019</td>
<td>Class Project Preparation</td>
<td></td>
<td></td>
<td>4 &amp; P3</td>
</tr>
<tr>
<td></td>
<td><strong>December 9, 10, 11, 2019</strong></td>
<td>SEAS Reading Days - No Classes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Final</td>
<td>December 17, 2019</td>
<td>FIRM PRESENTATIONS and Celebration (Blueberry Hill)</td>
<td></td>
<td></td>
<td>P4</td>
</tr>
</tbody>
</table>
# Class Project Schedule

<table>
<thead>
<tr>
<th>Class</th>
<th>Date</th>
<th>Project Milestones</th>
<th>Distributed</th>
<th>Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>October 8, 2019</td>
<td>Introduce Class Project “Companies”</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Friday, October 11, 2019</strong> Identify “Companies” via email by 5:00 pm</td>
<td>P-Teaming</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>October 29, 2019</td>
<td>Present Class Project.</td>
<td></td>
<td>P-Firms</td>
</tr>
<tr>
<td></td>
<td>Prior to October 29, 2019</td>
<td>Firm 'Defining Characteristic' Assigned</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>November 12, 2019</td>
<td>Supplemental material(s) provided – e.g. schedule data. Cost Opinion Due *</td>
<td>P1</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>November 26, 2019</td>
<td>Scheduling Opinion Due *</td>
<td>P2</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>December 3, 2019</td>
<td>Class Project Preparation “Leave Behind” Outline/Draft Due</td>
<td>P3</td>
<td></td>
</tr>
<tr>
<td>Final</td>
<td>December 17, 2019</td>
<td><strong>FIRM PRESENTATIONS and Celebration (Blueberry Hill)</strong></td>
<td>P4</td>
<td></td>
</tr>
</tbody>
</table>

* Each student will develop and submit an individual cost and scheduling opinion.

## ASSIGNMENT SCHEDULE & GRADING STRUCTURE

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Description</th>
<th>Assigned</th>
<th>Due</th>
<th>Grade Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Delivery System Recommendation</td>
<td>9/3/2019</td>
<td>9/17/2019</td>
<td>10%</td>
</tr>
<tr>
<td>2</td>
<td>Conceptual Cost Estimate</td>
<td>9/24/2019</td>
<td>10/8/2019</td>
<td>20%</td>
</tr>
<tr>
<td>3</td>
<td>Critical Path Schedule</td>
<td>10/22/2019</td>
<td>11/5/2019</td>
<td>20%</td>
</tr>
<tr>
<td>4</td>
<td>Ethical Choices and Decisions</td>
<td>11/19/2019</td>
<td>12/3/2019</td>
<td>15%</td>
</tr>
<tr>
<td>P1</td>
<td>Project - Cost Opinion</td>
<td>10/29/2019</td>
<td>11/12/2019</td>
<td>5%</td>
</tr>
<tr>
<td>P2</td>
<td>Project - Schedule</td>
<td>10/29/2019</td>
<td>11/26/2019</td>
<td>5%</td>
</tr>
<tr>
<td>P3</td>
<td>Project - Presentation &quot;Leave Behind&quot;</td>
<td>10/29/2019</td>
<td>12/2/2019</td>
<td>5%</td>
</tr>
<tr>
<td>P4</td>
<td>Project Presentation</td>
<td>10/29/2019</td>
<td>12/17/2019</td>
<td>15%</td>
</tr>
</tbody>
</table>

Class Attendance and “Professionalism” Adjustments
Applied at the discretion of the instructor

Adjustment Range -5 to +5%
TOTAL 100%
KEY COURSE TOPICS

Class 1: Introduction: Background, Participants, and Overview of Project Delivery Systems

- Fundamental Relationships
- The Role of the Owners, Designers, and Builders
- Checks and Balances
- Definition of Project Delivery Systems
- Project Delivery Systems – The Big Picture
- Delivery Systems Matrix

Class 2: Project Delivery Systems

- General Contracting – The Design-Bid-Build Approach
- At-Risk Construction Management
- Agency Construction Management
- Design-Build
- Turnkey
- Program Management
- Team Building/Partnering
Class 3: Preconstruction Services – Acquiring Work
- Marketing/Business Development
- R.F.Q/R.F.P
- Negotiated Contracts
  - Cost of the Work
  - G.M.P.

Class 4: Preconstruction Services by Phase
- Conceptual/Program Phase
- Schematic Design Phase
  - Constructability
- Design Development
  - Value Engineering/Life Cycle Costing
- Bidding and Contracting
  - Bidding Strategies

Class 5: Preconstruction Services – Estimating
- Programmatic to Contract Documents

Class 6: Construction Law
- Standard and Non-standard Forms of Agreement
- Changes
- Lien Rights
- Liquidated Damages
- Bonding
  - Bid
  - Performance and Payment
- Insurance
  - Builder's Risk
  - Liability
  - Worker's Compensation

Class 7: Communications/Documentation/Reports
- Communicating Your Message in Effective Ways
- Conducting Successful Meetings
- Crisis/Emergency Communications and Management

Construction Services
- Class 8: Time Management – Scheduling
  - Overview Schedules and Updates
  - Component/Increment Schedules
  - Time Extensions . . . Process and Implementation

- Class 9: Quality/Safety Management
  - On Site Planning and Mobilization
  - Construction Process Administration
  - Management and Leadership
  - Safety Management
    - Safety Programs
    - Liability for Violations
    - Impact on EMR
    - OSHA
• **Class 10: Cost Management**  
  o Schedule Of Values and Pay Requests  
  o Change Orders and Field Orders  
  o Progress Payments, Lien Waivers, Etc.

• **Class 11: Post Construction Services**  
  o Substantial Completion and “Punch Lists”  
  o Beneficial Occupancy  
  o As-Built Documents  
  o Maintenance and Operation Manuals  
  o Warranty  
  o Added Value Potential  
  o Securing the Next Project

**Class 12: Ethical/Value Based Decision Making**  
• Values: Sources and Dimensions  
• Ethics and Professionalism  
• Inter-relationships With Other Professionals  
• Codes of Conduct . . . Registered Professionals . . . Laws  
• Choices and Decisions: What Would You Do?

**Class 13: Dispute Avoidance/Resolution**  
• Dispute Avoidance  
• Alternative Dispute Resolution  
  o Mediation/Arbitration Damages

**Class 14: Class Project Preparation**  
• Proposal preparation  
• Presentation Techniques  
• Evaluation

**Final Exam – Class Project Presentations/Interview**