PURDUE
UNIVERSITY

DIVISION OF CONSTRUCTION
ENGINEERING AND MANAGEMENT

To: The Engineering Faculty
From: Division of Construction Engineering and Management
Re: CEM 28000

The Division of Construction Engineering and Management has approved the following revised undergraduate course, now submitted to the Engineering Faculty with a recommendation for approval.

1) Construction Engineering – Professional Development
2) CEM 28000
3) Lecture
4) Change from: 2 credit hours
5) Change to: 1 credit hour
6) Rationale: Some material from this course has been incorporated into the recently approved CEM 18000 – Construction Engineering – Pre-Professional Development course. This course integrates with CEM 18000 and CEM 38000.

Reason: The division faculty recognize the need to integrate required industry internships (3 – 12-weeks each) with the curriculum while maintaining a reasonable credit hour requirement for graduation. Maintaining that coordination and total credit hours required shifting some material forward with corresponding credit hours.

Supplemental Information:

1) Syllabus – see attached

Makarand Hastak, Professor and Head
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Note: This syllabus is not a contract. This syllabus is subject to further change or revision, as needed, to best realize the educational goals of the course. Necessary revisions will be announced in class or on course materials with fair prior notice. Links for updated syllabus/schedule will be provided on Blackboard accordingly. Please check back on your syllabus/schedule as it will be updated throughout the semester.

Construction Engineering Professional Development I

CEM 28000, 1 credit hour studio, Spring 2020
Location TBD, Day & Time TBD

Instructor:

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A. COURSE DESCRIPTION, OVERVIEW AND PURPOSES:

As Presented within myPurdue: This course will prepare the student for professional practice in construction engineering including information on careers and issues in construction industries; History and Culture of the U.S. Construction Industry; Engineering Ethics and Preparation for Leadership. Information and assistance is also provided related to minors and selections associated with the plan of study, student's organizations, opportunities for construction research and community outreach at Purdue. Guest speakers with be utilized to enhance the experience. The guest speakers include industry partners as well as faculty and staff.

Working in teams in a realistic engineering practice environment, students will use an actual construction project to accomplish open-ended project planning and systems design. Comprehensive written submittals and oral presentations require integration of knowledge gained in previous courses and in construction internships. This course will preliminarily cover following topics to prepare the students for solid foundations of practical and academic construction knowledge.

1. Construction project strategy
2. Cost estimating and bidding
3. Constructability analysis
4. Project scheduling
5. Contract conditions
6. Project organization

7. Site analysis and development
8. Safety and quality management
9. Information systems design

The students will experience in this class a set of game-based learning and project-based learning opportunities which will engage the student. The course will be collaborative, and apprentice based as constraints permit. The students should expect that the instructor will maintain a high level of energy and bring his A-game to each session/module. The instructor has shed the historical approach to teaching and learning so the student should change his/her perception of an instructor. **The instructor for this course will be your mentor and coach which you can depend upon year round.** The students should expect timely review and processing of deliverable items and if grading is delivered in a timely fashion, the students should petition the instructor for the material. The student should note that the instructor's style is to be inquisitive, so you will find him answering your question with an additional question to invoke critical thinking and ownership of the work being completed.

B. EXPECTED LEARNING OUTCOMES:

The instructional outcome of this course is that the student (learner) will become proficient in developing a successful project for integration into a comprehensive plan by a stakeholder. The enduring understanding that the student should take away from the course should be a catalyst for the development of the new-aged master builder. The student is expected to seize the opportunity to explore and grow relative to the following components of the construction engineer's responsibilities within project management and field operations:

1. Demonstrate an ability to apply knowledge of mathematics, science and engineering.
2. Demonstrate an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
3. Demonstrate an ability to function on multidisciplinary teams.
4. Demonstrate an ability to identify, formulate, and solve engineering problems.
5. Demonstrate an understanding of professional and ethical responsibility.
6. Demonstrate ability to communicate effectively.
7. Demonstrate the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
8. Demonstrate recognition of the need for, and an ability to engage in life-long learning.
9. Demonstrate knowledge of contemporary issues.
10. Demonstrate an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

The course will provide the student with an opportunity to link the academic theoretical delivery method of subject matter with the experiential learning that occurs on the project jobsite during the internship period - a compilation of the student's experiences while at Purdue.

C. STUDENT REQUIREMENTS

1. **Prerequisites**
    1. CEM 19100 and CEM 18000
    2. No required text books

2. Electronic Devices

A laptop or tablet is required for class so that students can interact with industry, investigate material during modules and to interact with the instructor. **It is the assumption of the instructor that the students will refrain from using the device for anything beyond the support of the classroom learning process.** Please silence cell phones and other non-essential electronic devices. If a student is found to be abusing this by utilizing the devices for personal and recreational matters, the student will be dismissed from class and it will be counted as an unexcused absence.

3. Attendance

Attendance is mandatory for class and students are expected to participate: in groups, quiz debriefs and general open discussion. The class is filled with in-class activities that require team collaboration as well as guest speakers. Guest speakers are special guests of Purdue University who come to class contributing their time and involvement, at personal and/or company cost; therefore, they are entitled to our sincere respect. The best way to respect our guests is by following this simple guideline:

1. Be on time. This means that the student must be in their seat and prepared for the assigned task when class starts.
2. Give the speaker your total attention through the class.
3. Take an active part in the speaker's question-and-answer period. Most guest speakers' subjects will be listed in the course schedule, so the student can prepare ahead of time questions for the end of their presentation. Prepared questions will be submitted ahead of class, so the guest speaker can investigate answers when necessary.
4. Display name tents so guests can engage the student on a personal level.
5. Phones and electronic devices must be stored out of sight (unless it is being used for education purposes) during class. If you do not adhere to this policy, you may be asked to leave the classroom and it will be considered an unexcused absence for that day.

Students are expected to have **NO MORE THAN TWO UNEXCUSED ABSENCES**. Excused and Unexcused Absences are described by the instructor as:

1. Excused – Only one is permitted per semester without penalty. No points will be counted against the student for a predetermined absence that is communicated via email with the instructor at least 48hrs in advance if it is for doctor visits, job interviews and similar activities. Any excused absence above and beyond one will require the student to provide the class with a "mini-presentation" as determined by the instructor.
2. Unexcused – Each unexcused absence will result in a letter grade deduction from the grade determined at the end of the semester up to a maximum two unexcused absences at which point the student will receive a grade of "F". Unexcused absences are those that may have been excused prior to the 48hr deadline to notify the instructor as well as not showing up for the class without prior discussion, sleeping in class, reading the newspaper or doing homework for other classes.
3. Exempt - The instructor reserves the right to exempt absence without penalty and/or without applying it to excused or unexcused items.

4. Expected Time Commitment

The student should expect a variety of time commitments based on the portion of the semester in question. Most class meetings will require preparation (reading) prior to attending based on the scheduled content. The in-class modules will result in less preparation effort but more work outside of class once the problem has been defined and explored in the classroom. In general, a student should expect 6-8 hours of work outside of the classroom meeting time per week.

5. Assignments

The student is expected to prepare for each class by review material previous to class posted to Blackboard. Students should not be afraid to work in groups outside of class and in fact this is encouraged to the point that joint ventures would be acceptable upon submittal of the students reasoning for the joint venture in memo format.

Students should understand that this course intended to develop your critical thinking skills and apply your engineering education. Student should thoroughly review and prepare for each session by obtaining material posted on Blackboard prior to course meeting. Students should remain patient and begin to learn how to be a “problem finder”.

6. Late Submission or Missed Work Policy

Refer to Section D for specific information. Missed work is any deliverable either electronic, hard copy, presentation, and/or submission. In general, work that is not turned in on time will receive 0 points. The students is encouraged to turn in the work regardless so the instructor may provide feedback on the students work if time permits. Additionally, the work turned in will be considered, at the discretion of the instructor, for students whose grade at the semester is “marginal”.

7. Academic Dishonesty

Purdue prohibits "dishonesty in connection with any University activity. Cheating, plagiarism, or knowingly furnishing false information to the University are examples of dishonesty." [Part 5, Section III-B-2-a, University Regulations] Furthermore, the University Senate has stipulated that "the commitment of acts of cheating, lying, and deceit in any of their diverse forms (such as the use of substitutes for taking examinations, the use of illegal cribs, plagiarism, and copying during examinations) is dishonest and must not be tolerated. Moreover, knowingly to aid and abet, directly or indirectly, other parties in committing dishonest acts is in itself dishonest." [University Senate Document 72-18, December 15, 1972]

8. Use of Copyrighted Materials

Among the materials that may be protected by copyright law are the lectures, notes, and other material presented in class or as part of the course. Always assume the materials presented by an instructor are protected by copyright unless the instructor has stated otherwise. Students enrolled in, and authorized visitors to, Purdue University courses are permitted to take notes, which they may use for individual/group study or for other non-commercial purposes reasonably arising from enrollment in the course or the University generally.

Notes taken in class are, however, generally considered to be “derivative works” of the instructor’s presentations and materials, and they are thus subject to the instructor’s copyright in

such presentations and materials. No individual is permitted to sell or otherwise barter notes, either to other students or to any commercial concern, for a course without the express written permission of the course instructor. To obtain permission to sell or barter notes, the individual wishing to sell or barter the notes must be registered in the course or must be an approved visitor to the class. Course instructors may choose to grant or not grant such permission at their own discretion, and may require a review of the notes prior to their being sold or bartered. If they do grant such permission, they may revoke it at any time, if they so choose.

9. **Students with Disabilities**

   If you have a disability that requires special academic accommodation, please make an appointment to speak with me within the first three (3) weeks of the semester in order to discuss any adjustments. It is important that we talk about this at the beginning of the semester. It is the student's responsibility to notify the Disability Resource Center (http://www.purdue.edu/drc) of an impairment/condition that may require accommodations and/or classroom modifications

D. COURSE WORK & GRADING

Students are expected to participate and attend class for exposure to a variety of educational opportunities. Each opportunity will be categorized as one of the following: Attendance, Class Participation, Quizzes, Session Assignments, Modules Assignments, Peer Evaluation, and Supplemental Readings. Opportunities will be outlined in the "SCHEDULE" section and it is imperative the students maintain pace with the course so that the relationship with material will be maintained as well as fundamentally supporting their peers with their educational experience. Blackboard will be exclusively utilized for submissions of assignments unless instructed to the contrary. The opportunities are further described as:

1. **Session Assignment**
   Students will have the opportunity to exercise and demonstrate their knowledge gained from outside class material on weekly bases using a variety of session formats. The session exercises will be delivered in a variety of different formats aligned with the overall assessment approach using rubrics and an apprentice approach in developing: work plans, support documentation and class reflections while working in teams. FYI – sometimes the students will just scan their works in class efforts to be turned in during class or they will be given time to compile and reflect on the in class exercise.

2. **Module Assignment & Final Projects**
   Students will have the opportunity to exercise and demonstrate their knowledge gained from the deliberately practiced sessions. The module assignment will be robust and rigorous in an effort to encode the material consistent with the overall assessment approach using rubrics fulfilling the requirements of the multifaceted work plans with support documentation.

3. **Quizzes**
   Students will be expected to take periodic quizzes at the start of class based on sessions they are expected to be prepared for on that given day. No make-up quizzes will be permitted.

4. **Peer Evaluation**
   Throughout the semester the students will be provided the opportunity to evaluate their peers either on a specific session or module. In general, team members will assess the other members for overall participation and quality of work which will be a part of assigned final course grades. It is mandatory that all members evaluate their peers and points will be awarded for this participation. Basic peer evaluation will be in the form of a document provided by the instructor

and/or the in the form of the CATME Smarter Teamwork system (http://info.catme.org/). Instructor will provide additional information at the appropriate time.

5. **Supplemental Readings**
   Postings will be made on Blackboard Learn throughout the semester relative to specific categories of construction.

6. **Grading**
   Students will have multiple opportunities to exercise the knowledge they have gained in a deliberate and distributed approach with activities. The grading structure is summarized below:

- Attendance / Participation ---------- 200 pt.
- Portfolio Presentation Video---------- 100 pt.
- Quizzes based on Video Review ---------- 90 pt.
  - 15 points x 6 quizzes
- Assignment/Quiz ---------- 225 pt.
  - Course Expectation – 15pts
  - RFI response – 20pts
  - Scavenger (Navisworks) – 20pts
  - Heavy Civil Estimating Exercise – 40pts
  - Building Estimating Exercise – 50pts
  - Portfolio Quiz Reflection Paper – 70pts
- Term Project Report/Deliverable ---------- 300 pt.
- Term Project Presentation (individual oral test) ---------- 95 pt.

Total: 1,000 pt.

A rubric will be developed for assignments prior to the actual delivery of the course integrating guest lecturers and final content sequence (when applicable).

The approach of the rubrics is summarized as:

	Grading Standards				
Activities	Outstanding (100%)	Excellent (75%)	Acceptable (50%)	Unacceptable (25%)	Late (0%)
Daily Attendance & Daily Participation	Students are expected in class at all times. Students interact with guest lecturers with questions (develop prepared questions before) and participate in session reflections. The quality of the questions and interaction will be reflected in the grading standard evaluation				No credit for missed class or no questions prepared
Quiz	Scores will be calculated as direct percentage of number of right answers divided by the number of total questions. Each question will be worth 5 points (typ.)				Missed quiz
Session Assignments	Students will be expected to provide specific "detail" within their deliverables that are developed in class and then compiled outside of class for submission. Each assignment will have an individual worth that is broken down into the multiple components of the deliverable. Components will be clearly defined in the assignment rubric and individual points specified.				Late Assignment

Module Assignments & Final Assignments	Students will be expected to provide specific "detail" within their deliverables that are developed in/out of class and then compiled for submission. Each assignment will have an individual worth that is broken down into the multiple components of the deliverable. Components will be clearly defined in the assignment rubric and individual points specified.	Late Assignment

General Rubric for Course Activities - It should be noted that each activity will be worth different points and the percentages provided indicate the maximum amount of points that will be awarded.

E. SCHEDULE

The following schedule is subject to change depending upon guest lecture availability and/or content mastery by the student. Links for schedule are also provided on Blackboard. Please check back on your schedule as it will be updated throughout the semester.

https://docs.google.com/spreadsheets/d/1rRKbsNCWXKljtgvu1PgeVrb1B2wBmKXY9iTVvWRA_no/edit?usp=sharing

F. COURSE POLICIES

We will follow all standard campus policies on accommodations for disabilities and religious practices, academic integrity, student conduct, and nondiscrimination:
http://www.purdue.edu/studentsuccess/academic/drc/
http://www.purdue.edu/studentregulations/regulations_procedures/classes.html
https://www.purdue.edu/odos/osrr/academic-integrity-brochure/
http://www.purdue.edu/studentregulations/student_conduct/index.html
http://www.purdue.edu/purdue/ea_eou_statement.html

Email communication – the instructor will communicate with students via email in a professional manner

G. EMERGENCY

EMERGENCY PREPAREDNESS SYLLABUS ATTACHMENT

EMERGENCY NOTIFICATION PROCEDURES are based on a simple concept – if you hear a fire alarm inside, proceed outside. If you hear a siren outside, proceed inside.

- **Indoor Fire Alarms** mean to stop class or research and immediately **evacuate** the building. o Proceed to your Emergency Assembly Area away from building doors. **Remain outside** until police, fire, or other emergency response personnel provide additional guidance or tell you it is safe to leave.

- **All Hazards Outdoor Emergency Warning Sirens** mean to immediately seek shelter (**Shelter in Place**) in a safe location within the closest building.

- "Shelter in place" means seeking immediate shelter inside a building or University residence. This course of action may need to be taken during a tornado, an active threat including a shooting or release of hazardous materials in the outside air. Once safely inside, find out more details about the emergency*. **Remain in place** until police, fire, or other emergency response personnel provide additional guidance or tell you it is safe to leave.

**In both cases, you should seek additional clarifying information by all means possible…Purdue Emergency Status page, text message, Twitter, Desktop Alert, Albertus Beacon, digital signs, email alert, TV, radio, etc.…review the Purdue Emergency Warning Notification System multi-communication layers at http://www.purdue.edu/ehps/emergency_preparedness/warning-system.html*

EMERGENCY RESPONSE PROCEDURES:

- Review the **Emergency Procedures Guidelines** https://www.purdue.edu/emergency_preparedness/flipchart/index.html
- Review the **Building Emergency Plan** (available on the Emergency Preparedness website or from the building deputy) for:

  - evacuation routes, exit points, and emergency assembly area
  - when and how to evacuate the building.
  - shelter in place procedures and locations
  - additional building specific procedures and requirements.

EMERGENCY PREPAREDNESS AWARENESS VIDEOS

• **"Run. Hide. Fight. ®"** is a 6-minute active shooter awareness video that illustrates what to look for and how to prepare and react to this type of incident. See: https://www.youtube.com/watch?v=5mzI_5aj4Vs (Link is also located on the EP website)

MORE INFORMATION

Reference the Emergency Preparedness web site for additional information: https://www.purdue.edu/ehps/emergency_preparedness/