



November 17, 2014

Dear Great Lakes Regional Student Chapter:

This is your 2015 Great Lakes Student Conference Mailer II, the second packet to be sent to each of the participating schools. Please read carefully through this packet and distribute copies to the appropriate chairpersons in your Chapter. Do not discard this mailer as the information disclosed here may not be repeated in subsequent mailers! Enclosed you will find the following information:

- Deadlines Summary (some changes from Mailer I)
- Registration Information
- Tentative Conference Schedule
- Hotel Information
- Competitions and Rules

All events will be held on Notre Dame's campus and will occur from April 16 to 19, with competitions occurring on April 17 and April 18.

Please note the school registration deadline is December 15, 2014.

If you have any questions, feel free to contact me. Additionally, questions and answers concerning the events, rules, etc. will be posted on our web site:

www.nd.edu/~glsc2015

We will do everything possible to answer your questions in a timely manner, and we look forward to seeing you in the spring.

Sincerely,

Quinn O'Heeney
Chair, 2015 Great Lakes Regional Student Conference



2015 Great Lakes Regional Student Conference

Deadlines Summary

Participants:

October 31	Mailer Receipt Confirmation Received
December 15	School Registration Received
February 1	Attendee Pre-registration Received
March 17	Canoe Report Received
TBA	Hotel Reservations Cut-off
April 17-19	Conference!

Host:

October 15	Mailer I
November 17	Mailer II (competition rules, registration information)
January 15	Mailer III (maps, updates)
March 1	Mailer IV (final schedule, updates)
April 1	Mailer V (final updates if necessary)



2015 Great Lakes Regional Student Conference

School Registration Form

Send to: 156 Fitzpatrick Hall, Notre Dame, IN 46556 **before December 15, 2014**

Registration is \$250 per school and \$65 per student. School registration is due now. Individual attendee registration fees are due February 1, 2015.

Make checks payable to: Notre Dame ASCE

School Name: _____

- We are attending the conference and will send approximately ___ students and faculty. (Your school will not be held to these numbers, but this will greatly assist in planning food events.) Enclosed please find our \$250 school registration fee.
- We are not attending the conference

In which events does your Chapter plan on competing in?

- | | |
|---|---|
| <input type="checkbox"/> Concrete Canoe | <input type="checkbox"/> Mystery Design |
| <input type="checkbox"/> Steel Bridge | <input type="checkbox"/> Quiz Bowl |
| <input type="checkbox"/> Technical Paper/Presentation | <input type="checkbox"/> Environmental |
| <input type="checkbox"/> Surveying | <input type="checkbox"/> Materials |
-



2015 Great Lakes Regional Student Conference

Conference Attendee Pre-registration

Send before February 1, 2015

Each conference attendee (student, faculty, or friends) must pre-register for the event. Please fill out the following page and send with \$65 per person to:

156 Fitzpatrick Hall of Engineering
Notre Dame, IN 46556

The \$65 registration fee covers the following:

- conference banquet
- conference program & badge
- lunch on Friday & Saturday
- conference t-shirt
- parking fees
- event fees

Late Registration

Any registrations postmarked after February 1, 2015 must pay a late registration fee of \$15. Any students, faculty, or friends that arrive at the conference without pre-registering must pay the late registration fee at check-in.



2015 Great Lakes Regional Student Conference

Tentative Schedule

Thursday, April 16

General Welcome Meeting
Concrete Canoe Captain's Meeting
Location TBA

Friday, April 17

Concrete Canoe Competition
St. Mary's Lake, Notre Dame, IN

Saturday, April 18

Steel Bridge Competition
Compton Family Ice Arena, Notre Dame, IN

Sunday, April 19

Banquet Brunch
Joyce Athletic and Convocation Center (JACC), Notre Dame, IN

Items of Note:

Steel Bridge will be held in a hockey arena. The building is heated but will be cooler than a gymnasium would be.

The days that the smaller competitions will be held will be released in a future mailer.



2015 Great Lakes Regional Student Conference

Hotel Information

When registering: say that you are with the Great Lakes Student Conference (GLSC), which is a civil engineering conference hosted at Notre Dame.

1. Waterford Estates Lodge ([574-272-5220](tel:574-272-5220)) (2.2 miles from campus)
35 double rooms for \$89/night
20 single queen rooms for \$89/night
52890 SR 933 North
South Bend, IN 46637
2. Hilton Garden Inn South Bend ([574-232-7700](tel:574-232-7700)) (1.4 miles from campus)
15 double rooms for \$124/night
53995 Indiana 933
South Bend, IN 46637
3. Ivy Court Inn and Suites ([574-277-6500](tel:574-277-6500)) (0.7 miles from campus)
10 double rooms for \$125/night
1404 Ivy Court
South Bend, IN 46637
4. Holiday Inn Express and Nyles ([269-684-0300](tel:269-684-0300)) (6.9 miles from campus)
20 double rooms \$101.99 Friday Night and \$123.99 Saturday Night
1000 Moore Dr.
Niles, MI 49120
5. Holiday Inn Express Mishawaka ([574-277-2520](tel:574-277-2520)) (3.3 miles from campus)
34 double rooms for \$134.99/night
420 W University Dr,
Granger, IN 46530
6. Holiday Inn Express South Bend ([574-968-8080](tel:574-968-8080)) (1.8 miles from campus)
40 double rooms for \$119.99/night
120 N Dixie Way
South Bend, IN 46637
7. Best Western Plus Mishawaka ([574-273-2309](tel:574-273-2309)) (3.1 miles from campus)
25 double rooms for \$79/night
445 W University Dr,
Mishawaka, IN 46545



DANIEL W. MEAD PRESENTATION COMPETITION

(Technical Paper Competition)

PURPOSE

One student representative from each chapter will be evaluated on their response to the National Daniel W. Mead Student Contest topic (Topic) as selected by the American Society of Civil Engineers (ASCE). Students will prepare one written essay (Paper) and one presentation (Presentation) to be judged by three judges. To support the technological needs of student's Presentation, a computer and projector will be provided. Should the student intend to use the provided equipment, the Presentation must be collected in advance by the Competition Chair in order to facilitate transition between Presentations (see Deadlines). Following the Presentation, a five-minute follow-up session (Follow-up) to allow the student to address any questions or comments from judges.

The Topic and suggested areas of discussion can be found detailed at: <http://www.asce.org/Content.aspx?id=23622332397>.

DEADLINES

1. A copy of the Paper must be electronically submitted for review by the judges by **Friday March 20, 2015**. No late submissions will be accepted.
2. Should a student choose to prepare a Presentation that requires a projector, a copy of the Presentation must be electronically submitted to the Competition Chair by **12:00 AM (midnight) the night before the Competition** at the Great Lakes 2015 Student Conference.

All submissions can be made to glsc2015@nd.edu.

GUIDELINES

1. The Paper must adhere to the following guidelines:
 - Must appropriately address the Topic (see ASCE website).
 - Cannot exceed 2000 words in length.
 - Can only be written by one person and should not have appeared in any publications other than in school or chapter publications.
 - Must be written in Times New Roman 12-point font, single spaced, with 1" margins.



- Should include a footnotes or a bibliography if appropriate; Reference citations should conform to official ASCE Journal Submission Guidelines, which can be found on the ASCE Publications website.
2. The Presentation must adhere to the following guidelines:
- Must be between 7 and 9 minutes in length.
 - Must appropriately address the Topic and should support content in the Paper.
 - May include appropriate demonstrations or visualizations.
 - Must be received electronically by the Competition Chair if intending to use the provided technological equipment.

SCORING

The following scorecard will be used by the judges in the Competition:

Component	Category	Total available points
PAPER	1. Appearance (i.e. format, length, spelling)	5
	2. Adherence to Topic	10
	3. Originality of ideas and research involved	10
	4. Command and actuality of subject matter	10
	5. Overall clarity, organization, and quality of paper and references	15
	<i>SUBTOTAL</i>	<i>50</i>
PRESENTATION	1. Degree to which presentation addressed and supported Paper and Topic	15
	2. Ability to emphasize and evoke importance of key concepts discussed in Paper during Presentation and Follow-up	20
	3. Personal bearing (i.e. appearance, eye contact, poise)	5
	4. Delivery style (i.e. evidenced preparation, enthusiasm, tone, command of technical language)	5
	5. Time (loss of 1 point for every 30 seconds under or below length requirement)	5
	6. Error in logic or facts (penalty)	-(up to 10)
<i>SUBTOTAL</i>	<i>50</i>	
TOTAL		100



ENVIRONMENTAL COMPETITION RULES

1. Problem Statement

Water reuse is a possible solution to the problem of water scarcity facing both the developed and developing world today. According to the EPA, recycled water can satisfy most water demands, as long as the water quality is appropriate for the water's second use. Recycled water can be used for non-potable applications such as power plant cooling, toilets, groundwater recharge, constructed wetlands, or irrigation. Ideally, water reuse would be used for potable water as well. However, total dissolved solids (TDS), turbidity, and low/high pH values contribute negatively to the aesthetic quality of water, and there is still the risk of pathogens and disinfection byproducts, which can be harmful to humans.

For this competition, teams will design and build a water-filtering device for treating secondary effluent water from a wastewater treatment plant for potable water use. Final water should meet the constraints for potable water set by the EPA Safe Drinking Water Act. This treatment device will be limited to “surprise” materials given during the competition, each with a cost based on the sustainability and efficiency of the material. For example, a strong adsorbent like activated carbon, which requires high-energy input to produce, will be a costly, but effective material. The main goal of this competition is to develop a device to create high flow rate treatment while producing a low turbidity and high UV absorbance effluent.

2. Eligibility

Only one team per school will be allowed to compete. Teams can contain up to five undergraduate ASCE student chapter members. A captain for each team must be designated from these five students.



3. Competition

Materials

1. Each team will be creating a water filter from the materials provided. Each team will be creating a water filter from an empty, 2-liter bottle. These will be cut before the competition on site.
2. Multiple materials will be provided under the categories of adsorbents, filter media, cloth, coagulants, and organic materials. The specific materials will remain unnamed until competition time. Teams should familiarize themselves with the different water filtration media and the advantages/disadvantages of each. Materials will have a cost associated with them that is associated with their sustainability and efficiency. As such, scores will be weighted to a cost factor that is related to the particular materials and the amounts chosen.

Water

The water to be filtered will be secondary effluent from a local wastewater treatment plant. The parameters are unknown until competition time, but they will be similar to the average secondary effluent, with perhaps one or two purposely altered for competition (e.g., increased natural organic matter content).

Construction/Treatment

- Each team may consist of a max of five students with one student designated as the team captain.
- Each team will be provided a standard 6-foot long table.
- All participating team members must bring and wear appropriate clothing (long pants, lab coat if possible, closed-toed shoes) and latex or comparable gloves.
- The requirements of the filtering system are:
 - All materials must fit inside the team's 2-liter bottle. The size of the bottle will be less than a standard 2-liter as the bottom will be cut off in order to add the media. The 2-liter filtration device will be operated upside down (i.e., water flowing from the bottom out the top opening).
 - The filter should treat as much water as possible in the given time, with a minimum of 10 liters of treated water being produced.



- Team members will be given a maximum of 20 minutes to construct their filtering system. After 20 minutes, the team must exit the designated area. Two team members must stay with the system. The remaining team members will be given the secondary effluent sample and the filtering period will begin. Each team will have no more than 10 minutes to complete the treatment. At the end of 10 minutes, whatever volume is produced will be collected.
- After judging is finalized, each team is responsible for disassembling and disposing of their treatment system or keeping it.

4. Scoring

Team scores will be determined using the following point determinations (Table 1). The maximum score will be 100 points. The team with the most points will be deemed the overall winner and second and third place overall awards will also be given.

Table 1. Filtering device score categories.

Component	Maximum Points
Volume Filtered	30
Turbidity Test	15
Natural Organic Matter	15
Total Dissolved Solids	15
Total Cost of Device	25

If a tiebreaker is required between two or multiple teams, the winner will be determined first based upon the cost and then volume of treated water.

Device design and construction (broken down)

- a. Volume Filtered (30 points maximum) – Points will be awarded in order of final volume of water treated for the different teams, with the team having the largest volume of water treated receiving the maximum 30 points. 1 point will be subtracted in order of finish. For example, the team with the 4th largest volume of water treated receiving a total score of 27.



- b. Turbidity test (15 points maximum) – Points for turbidity will be awarded based on the following:
 - i. Less than 1 NTU – 15 points
 - ii. 1-5 NTU – 14 points
 - iii. 5-10 NTU – 13 points
 - iv. 10-15 NTU – 12 points
 - v. 15-20 NTU – 10 points
 - vi. 20-25 NTU – 7 points
 - vii. Greater than 25 NTU – 5 points
- c. Natural Organic Matter (15 points maximum) – Points will be awarded in order of final UV absorbance of treated water for the different teams, with the team having the lowest absorbance receiving the maximum 15 points. 1 point will be subtracted in order of finish. For example, the team with the 4th highest UV absorbance will receive a total score of 12.
- d. Total Dissolved Solids (15 points maximum) – Points will be awarded in order based on the following:
 - i. Less than 500 mg/L – 15 points
 - ii. 500-550 mg/L – 12 points
 - iii. 550-600 mg/L – 9 points
 - iv. 600-650 mg/L – 6 points
 - v. 650-700 mg/L – 3 points
 - vi. Greater than 700 mg/L – 0 points
- e. Total cost of device (25 points) – The points awarded to each team will be based on the cost of each material that can be “bought” for your filter. The fewer materials you buy, fewer points will be subtracted from this score. For example, if your team only “purchases” one cup of material X, which has a cost of 5 points, your team will receive 20 points for this category. Please note, the cost here was estimated for the example. Each material will have a cost based upon the sustainability and efficiency of the material. The materials will be in the following categories: filter media (ie: gravel), absorbent (ie: GAC), and filters (ie: fabric).



Surveying Competition Rules

Purpose

Teams will compete in two (2) events that will test their proficiency in various skills used in the field of surveying.

Teams

The schools participating in the Great Lakes Conference may each have one (1) team consisting of three (3) members participate in this competition.

Events

1. Pacing (17 possible points)
2. Differential Leveling (23 possible points)

Scoring

The scoring for this competition will be based on the two unequally weighted surveying events. The individual scoring schematics are provided below for each event. For each event, the first place team will receive 17 points, the second place team will receive 16 points, and so on. The differential leveling event has an additional component in which 5 additional points per team can be received. The final overall score for each team will be the sum of the scores received on each of the events. A tie breaker for the final score will be determined from the timed pacing event- the team with the quickest time will win the tie breaker.

Scoring will be done by the judges and all of the judge's decisions will be final.

Event 1: Pacing

Competition

Teams will be judged on how accurately and quickly they can pace out a given distance.

Rules

1. All three (3) students from each team must participate in this event.
2. The start of the distance and end of the distance will be marked with flagged stakes.
3. Only one student from each team may pace the distance at a time.



4. Each student will start at the flag and pace out the given distance, reporting the paced distance to the judge located at the end stake. Students may not use any equipment (calculators, paper, etc) to calculate the distance. Students will report the distance to the nearest half foot.
5. The next student in the team may not start pacing until the prior student has completed the pace and the judge signals the next student to proceed.
6. This event will be timed by judges. The first student may start the pacing once the judge starts the timer. Time ends when the final (third) student of each team reports the measured distance to the judge. Time does not stop at any point during the event in order to allow students time to calculate and report the distance.
7. Teams that take more than five minutes to complete the event will incur a score penalty.
8. An open reel measuring tape will be used to measure the actual distance between the stakes. Judges shall record the accuracy to the nearest 1/2”.

Scoring

The final score for each team will be calculated using the following formula:

$$Score = \left| D - \frac{\sum_i^3 L_i}{3} \right|$$

Where D is the actual measured distance (in feet) between the stakes and L_i is the distance (in feet) measured by each student. The team that completes the event in the quickest time will have 1 foot subtracted from their score and the team with the second quickest time will have .5 points subtracted from their score. Any team that takes more than five minutes to complete the competition will have 1 foot added to their score. Any team that takes more than ten minutes will have 50 feet added to their score.

The team with the lowest score will receive 17 points, the team with the second lowest score will receive 16 points, the team with the third lowest score will receive 15 points etc.

Event 2: Differential Leveling

Competition

Teams will be judged on how quickly and accurately they can find the elevation of a known point using the technique of differential leveling. Teams will also be judged on the quality of their accompanying field notes.



Required Equipment

Each team will be required to provide their own equipment that complies with the following regulations. Judges reserve the right to disqualify or penalize any teams that do not comply. Each team will need the following:

- (1) Tripod
- (1) Level
- (1) Leveling Rod
- (1) Non-programmable calculator-must be a calculator that is allowed on the FE exam (see <http://ncees.org/exams/calculator-policy/>)
- Pencil

Each team will be provided with a typical field note book.

Rules

1. All three (3) students from each team must participate in this event.
2. The start and end of the leveling transit will be marked with flagged stakes.
3. Teams will be given the elevation of the starting stake.
4. Using the technique of differential leveling, teams must measure and compute the final elevation of the ending stake.
5. Throughout the event, teams must keep record of all measurements and calculations using standard surveying field notes practice in the provided field notes book.
6. The actual elevation of the ending stake will be measured by the judges using standard surveying techniques prior to the start of the competition.
7. This is a timed event. Judges will start the timer and teams may begin the leveling transit when time begins. Time will end when the team hands their field notes with the final calculations in it to the judges.

Scoring

The initial score for each team for this event will be calculated using the following formula:

$$Score = |E - E_m|$$

Where E is the actual elevation (in feet, to the nearest thousandth) as measured by the judges and E_m is the elevation (in feet, to the nearest thousandth) as measured by the team. Any team that



takes more than 45 minutes to complete the event will have 1 foot added to their score. Any team that takes more than 1 hour to complete the event will have ten feet added to their score.

The team with the lowest score will receive 17 points, the team with the second lowest score will receive 16 points, the team with the third lowest score will receive 15 points etc.

The quality of the field notes completed by each team will also be factored into each teams' score. Each team will receive a score ranging from 0-5 depending on the quality and neatness of the field notes recorded. A score of 5 corresponds to field notes that are very neat and organized, with proper diagrams drawn (if applicable), and conform to standard field note taking practice. A score of 0 will be given if no field notes were recorded or if they are completely illegible.

The final score for this event will be calculated by adding the scores from the accuracy (17 possible points) and field notes (5 possible points) sections.

Final Surveying Competition Score

The final score for each team for the entire event will be determined by adding the scores from the two events together. The team with the highest score will receive first place, the team with the second highest score will receive second place, etc.



Materials Competition

Recycled Concrete Cylinder Competition

In this competition, teams will design a sustainable, lightweight, and efficient concrete mixture and cast two (2) cylinders from this mixture as per the specifications below. Each cylinder will be weighed and tested in compression. Each team will be scored on the average stiffness to weight ratio, the average strength to weight ratio, and the average ratio of the volume of recycled materials to the volume of the cylinder. Slump shall be self-reported and fall with a 3 inch +/- 1 inch tolerance. Each cylinder must be at a maximum age of 14 days.

The recycled concrete cylinder competition will be held using the following rules. Any entry that does not conform to the rules will be disqualified at the judge's discretion.

1.1 Design Specifications

The following design specifications will be examined either before or after testing, as appropriate:

- Each cylinder must be nominally 3 inches by 6 inches. Any cylinder not meeting ASTM C39-14a will be rejected. The cylinders will be tested using removable steel caps to set the cylinder in place in the testing machine.
- Any cylinder not within 2.9 and 3.1 inches in diameter and 5.9 and 6.1 inches in height, inclusive of any capping compound used, will be disqualified. The diameter shall be calculated according to ASTM C39-14a.
- Cylinder must follow the material specifications outlined in Section 1.2.
- A mixture design report must accompany cylinder following the formatting guidelines listed in Section 1.4.



- Cylinder will be tested in accordance with Section 1.3. If there is an equipment problem that prevents Section 1.3 from being followed, the test plan will be modified to allow for the test to be run and each entry will be tested with the new regime. If the equipment problem occurs during the competition, the judge will make a determination on how to continue while being fair to each entry.
- In all cases, the judge's ruling is final

1.2 Material Specifications

1.2.1 Aggregates

All coarse aggregates must be replaced by any type of recycled material. This recycled material can be any material to be used as some type of recycled replacement material. This can include glass, rubber, recycled concrete (even though recycled concrete contains coarse aggregate, its use is still permitted), asphalt, etc. Fine aggregates must be sand (not recycled material) as defined by ASTM C33.

Any coating or chemical treatment applied to the aggregates must be accounted for in the mixture design report.

1.2.2 Cement and Cementitious Materials

Any type of cement or cementitious material at any proportion may be used in the competition. This includes common cement and cement replacement materials such as Portland cement (any type), fly ash, ground granulated blast furnace slag (GGBFS), and silica fume. Less common cementitious materials may also be used, including recycled materials.

1.2.3 Admixtures

Any admixture(s) may be used in the concrete mixture. All admixtures shall be included in the mixture design report. Water from admixtures must be accounted for in the mix calculations. The manufacturer recommended dosage range of each admixture should also be reported in the mixture report.



1.2.4 Epoxy and Other Confining Reinforcements

The cylinder surface must be concrete only. No epoxy, fiberglass resin, or other coating material may be applied to the surface. Discrete wires, threads, or meshes are also not allowed on the cylinder's surface and are only allowed internally if they are part of a recycled aggregate.

1.2.5 Fibers and Other Reinforcing Materials

Fibers and other reinforcing materials of any kind are not allowed in the concrete mixture.

1.2.6 Specimen Preparation

The specimen must be made in accordance with ASTM C192-13 §7.3, ASTM C1176-08, or ASTM C1435-08. Any attempts to create a “structure” will result in the immediate disqualification of the entry.

The specimen may be cured in any manner but must be indicated on the design report. In addition, the specimen must be at room temperature when tested. Excessively cold or hot specimens will be disqualified. Specimens may be wet, with water, during testing. The slump shall be self-reported on the design report. The slump must be 3 in. +/-1in. Points will be deducted if a mix does not meet the designated slump tolerance.

1.3 Testing Regime

1.3.1 Compressive Test

Each team will weigh their cylinders on a scale and record each cylinder's weight before the testing begins. The testing regime will follow ASTM C39-12a. Teams will place their cylinder into the test machine and position it as they wish.

The testing machine will apply a steadily increasing load on the specimen until failure. The extensometer will be added to the cylinder before the test begins then removed once the strain in the cylinder exceeds 0.0004. While the extensometer is removed, the machine will maintain its current load without increasing, and once it is completely removed, the operator will continue the machine at a steady loading increase. Loading



will then continue until failure. Failure will be defined as the point when the load drops more than 20% from the maximum load. It is each team's responsibility to ensure the capping or grinding is done properly to prevent premature failure. Unbonded caps will be used to test each cylinder, so each group needs to ensure proper capping or grinding to maintain a level surface. Strain will be calculated by the stiffness value using the stress and strain at 0,0 and the stress that corresponds to a strain of 0.0004.

1.4 Design Report

The design report consists of a single mixture design table. This table is heavily influenced by the concrete canoe mixture design table released by ASCE. A 20% deduction will be applied if the design report is not completed properly. This will be at the discretion of the judge.

Make sure to include in the design report the self-reported slump of the mixture design as well as how sustainable the mixture design is. In other words, why are the replacement recycled materials sustainable? Each report shall be a maximum of 1000 words with a description of how the final mix design was reached.

The design report is due on March 31 at 11:59 PM.

1.4.1 Density Measurement

There are several ways to measure density of fresh and hardened concrete. The density must be measured with one of the standards below and indicated in the design report:

- ASTM C138-13
- ASTM C567-11
- ASTM C642-13
- ASTM C1040-08
- ASTM C1170-08

1.5 Scoring



Each team will receive points as to where they ranked in each of the following average calculations between the two (2) cylinders: stiffness to weight ratio, the strength to weight ratio, and the volume of recycled materials to volume of the cylinder. These equations can be found below. The team with the best ratio in each category will receive the most points, and each subsequent team will receive one less point. The team with the most points after all calculations will be declared the winner. The design paper is required but does not contribute positively to a team's score. However, failure to submit a design report, or submitting a design report with errors, will cause the team's score to decrease by 20%. Teams will also lose points if the mix does not fall within the slump tolerance of 3 +/-1 inches.

$$\frac{\textit{Cylinder Stiffness}}{\textit{Cylinder Weight}}$$

$$\frac{\textit{Cylinder Strength}}{\textit{Cylinder Weight}}$$

$$\frac{\textit{Volume of Recycled Materials}}{\textit{Cylinder Volume}}$$

Quiz Bowl Competition Rules



Participants:

- Each school may register and enter ONE team
- Each team may be made up of no more than FOUR members
- Each team member must be a undergraduate registered participant of the 2015 ASCE Great Lakes Student Conference

Skills Needed:

- Willingness to learn about and test a broad knowledge of civil engineering topics
- Fun and competitive attitude
- School spirit and team focus

Event Description:

- First Round – Each team will answer a general knowledge test of 40 questions worth 1 point each.
- Second Round – The top four (4) teams based on overall score will compete head-to-head in a three game round-robin style tournament to determine the top two teams.
- Final Round – The top two (2) teams will compete head-to-head in best of three final match.

Rules:

- **First Round**
 - The First Round will be administered in 4 groups of Y (exact number TBD based upon total registrants). Efforts will be made to group teams according to other commitments so that participation is not restricted by other events.
 - Each team will be given two answer sheets and play along with a powerpoint slideshow of 40 broad knowledge civil engineering questions in a group setting.
 - Each question will be projected on a screen and read aloud by a Proctor and teams will have 10 seconds following the conclusion of the reading of the question to write their response. The members of the team may collaborate at any point during the reading of the question or after but do so at their own risk of other teams overhearing.



- Every correct response will be awarded one (1) point. Every incorrect response will be awarded negative one (-1) points. Every blank response will receive zero (0) points.
 - There will be a 2 minute break after 20 questions to allow participants to stand, stretch, etc. but no conferring with electronic devices, the audience, or Proctors is permitted.
 - There will be no computational questions in this round of competition. However terminology associated with computations is fair game.
 - Each team will turn in one (1) answer sheet to the Proctor at the end of the round and keep one (1) answer sheet for their record. Answer keys for the round will be distributed following the conclusion of the round. Concurrently the answer sheets will be scored by the Proctors. It is the responsibility of the team to check their answers against the answer key and bring any challenges for points to the Judges before leaving the room. A team's score will be permanent once a team has left the room.
 - Teams will be provided scratch paper and writing utensils. No electronic devices.
 - The top team by points from each group will advance to the Second Round. Ties will be resolved using the Tie-Breaker Protocol outlined below.
- **Second Round**
 - The top four (4) teams by points will compete head-to-head in a three (3) game round-robin tournament to determine the top two (2) teams by wins and points.
 - The style of play for this round is different from the format used in the First Round.
 - There will be no computational questions in this round of competition. However terminology associated with computations is fair game.
 - This round of games will be played using buzzer systems which will require that team members ring in to state their answer.
 - The teams will sit facing a Proctor who will verbally state each question and allow ten (10) seconds for a response. Each question is worth one (1) point. There will be no visual display of each question.
 - A team member is permitted to ring in at any point during the question but each team is only allowed one (1) ring-in per question.
 - There is no other penalty for ringing in early and answering incorrectly.



- If both teams ring-in and answer incorrectly the correct response will be read and the match will move on.
 - Each set of head-to-head matches will consist of two (2) ten (10) question halves consisting of two (2) questions from each of the following categories:
 - Statics/Dynamics
 - Structural Engineering
 - Environmental Engineering
 - Geotechnical Engineering
 - Transportation Engineering
 - Water Resources Engineering
 - Engineering Ethics/History
 - Fluid Mechanics/Hydraulic Engineering
 - Engineering Materials/Economics
 - Wild Card
 - There will be a 2 minute break after 10 questions to allow participants to stand, stretch, etc. but no conferring with electronic devices, the audience, or Proctors is permitted.
 - Each top four (4) team will play the three (3) games of the Second Round unless a team forfeits at which point the other team will be awarded an automatic win but no game points.
 - Any challenges will be addressed immediately and the Judge has final say.
 - Ties will be resolved using the Tie-Breaker Protocol outlined below.
- **Final Round**
 - The Final Round will be a best of three match between the top two (2) teams based on wins and score from the Second Round.
 - Teams will be allowed to use graphing calculators, rulers, scales, compasses, or any other non-transmitting instrument along with provided scratch paper and writing utensils
 - The Final Round will utilize the buzzer system from the Second Round.
 - The first half of each game will comprise of ten (10) short computational and current event questions which will require each team to buzz in to answer. The second half of the game will comprise of one (1) long-answer computational question.
 - An example of a short computational question might be “calculate Poisson’s ratio given certain quantities”



- An example of a long answer computational question might be “determine the support force at point A given a loaded diagram”
 - Each team will be able to wager points on the long-answer question.
 - The long-answer question will be all or nothing. Non-exact but close answers will be evaluated and determined by the Judge.
 - The winner of each game will be determined by total points.
 - The team that wins two (2) of the three (3) games will be declared the winner.
 - Ties will be resolved using the Tie-Breaker Protocol outlined below.
 - Awards will be given to the top (2) teams and the other two (2) top four (4) teams will be acknowledged during the awards ceremony.

Other:

- Spectators are welcome! We ask that spectators remain observant and respectful during competitions, do not discuss questions in common areas after each competition, and hold any show of appreciation until the end of competition.
- Schools are encouraged to have students mentally play along with each question but we ask that there is no conferring amongst students while competition is live.
- Challenges to any answer must be made by the team in play and not by a member of the audience.

Tie-Breaker Protocol

- Each team will receive bonus points to be applied in the event of tiebreakers as follows. It is the responsibility of the team to identify class level and provide supporting documentation:
 - Teams comprised of all one class (i.e. all seniors) will receive 1 bonus point
 - Teams comprised of members from two classes (i.e. juniors and seniors) will receive 2 bonus points
 - Teams comprised of members from three classes (i.e. sophomores, juniors, and seniors) will receive 3 bonus points
 - Teams comprised of members from all four classes (i.e. freshman, sophomore, junior, and senior) will receive 4 bonus points



- Teams having no senior class level members will receive an additional 1 bonus point on top of any previously earned bonus points. (i.e. a team of sophomores and juniors will receive 1 extra bonus point for a total of 3 bonus points).
- If a match is still tied after the application of bonus points teams will compete head-to-head over questions pertaining to all things ASCE. The first team to answer a question correctly will win the tie breaker.
 - An example of a tie breaker question about ASCE might be “When was ASCE founded?”