ASCE UESI Surveying Competition
2022 Rules and Regulations

2022 Rules Committee
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ASCE UESI Surveying Competition Rules and Regulations Table of Contents

Overview

The following set of rules and regulations will be used for the 2022 ASCE Student Symposia and the 2022 ASCE UESI Surveying Society-wide Finals Competition.

The educational and professional goals of this competition include a recognition of the importance of basic surveying principles to all civil engineering projects. Students will be required to use standard field and office equipment and procedures to solve common problems encountered in industry. A clear understanding of and ability to apply basic surveying principles will assist the graduate civil engineer in communicating and working with the surveying professionals on the job site and during the design process.

The UESI Surveying and Geomatics Division is pleased to announce that the 2022 ASCE UESI Surveying Society-wide Finals Competition will be held in conjunction with the ASCE Concrete Canoe and ASCE Sustainable Solutions Society-wide finals competitions at Louisiana Tech University. This will provide students the opportunity to display their surveying skills to other students and practitioners in the field and further highlight the importance of surveying in civil engineering.

Participation and Teams

Participation in the surveying competition is limited to one (1) team per college/university. Each team may consist of a single team of up to six (6) total members for Tasks 1B, and 2 through 5. The team shall consist of undergraduate students enrolled during all or part of the current competition academic year. Team members must be members of an ASCE Student Chapter in good standing and be Society Student Members of ASCE. (Society student membership is free; be sure to join.)

In keeping with the values of ASCE, each surveying team that registers 2, 4, or 6 members shall be comprised of 50% of the participants that identify with the pronouns she/her/hers and 50% of the participants that identify with pronouns he/him/his. Each surveying team that registers 3 members shall include at least one participant that identifies with the pronouns she/her/hers and one participant that identifies with pronouns he/him/his. Each surveying team that registers 5 members shall include at least 2 participants that identify with the pronouns she/her/hers and 2 participants that identify with the pronouns he/him/his. When a team includes participants that identify as they/them/their or participants that do not distinctly identify with she/her/hers or he/him/his, the difference in the number of participants that identify with pronouns she/her/hers and he/him/his should aim to achieve a difference that is NOT greater than one.

ASCE Student Chapters hosting symposia may invite Official Guest teams, which are teams from colleges or universities that have an official ASCE Student Chapter that is not assigned to any Student Conference. Official Guest teams are eligible (if they meet requirements, including eligibility standards to advance to Society-wide finals) to be invited to the Society-wide competition. Official Guest teams may compete in only one student symposia per year. ASCE

Student Services shall be notified by the ASCE Student Symposium host school of an Official Guest team prior to the start of the student symposium. Notification can be by e-mail to student@asce.org. Conference assignments and student symposium host chapters are listed at https://www.asce.org/communities/student-members/conferences.

Eligibility to Advance

There are two levels of competition: the ASCE Student Symposium level and a Society-wide Finals level. Winning teams from the student symposia may be invited to the Society-wide Finals Competition. Eligibility to advance to the 2022 ASCE UESI Surveying Society-wide Finals Competition includes those eligibility standards set by ASCE. These standards can be found at https://www.asce.org/communities/student-members/conferences/eligibility.

At the end of the student symposium competition, the student symposium host shall promptly submit the completed official scoring spreadsheet for the competition to student@asce.org. Teams will not be invited to the ASCE UESI Surveying Society-wide Finals event until this spreadsheet is received and eligibility is confirmed.

Awards and Recognition

The top surveying team at each 2022 ASCE Student Symposium will receive a plaque and, upon meeting ASCE eligibility rules, will be invited to participate in the 2022 ASCE UESI Surveying Society-wide Finals Competition June 3-5, 2022 in Ruston, Louisiana.

A select number of wildcard teams that also meet ASCE eligibility rules may also be invited.

The top three (3) teams at the 2022 ASCE UESI Surveying Society-wide Finals Competition will receive a plaque and monetary award to be given to their ASCE student chapter. All Surveying Society-wide Finals Competition participants will receive a certificate of participation and each team will receive a participation memento.

Request for Information (RFI)

Requests for information (RFIs) regarding the 2022 surveying competitions should be sent to student@asce.org with the subject line "**2022 Surveying Competition RFI**". Clarifications will be posted at the ASCE UESI Surveying Competition Collaborate Site every Friday starting September 24, 2021 until February 11, 2022. Each post will address the questions received from the previous week through the Wednesday before 11:59 p.m. Eastern time. The cutoff date for submitting a RFI is Wednesday, February 9, 2022, at 11:59 p.m. EST. Those received after this date will not be acknowledged or addressed. **Teams are strongly encouraged to submit RFIs to avoid misinterpretation of the rules and project tasks. All RFIs will be made public**. All teams are responsible for all information provided in the Rules and Regulations and RFI responses posted to the Collaborate site.

Ethics
This competition is to be conducted with the highest regard for ethical responsibility per ASCE's Code of Ethics. All members of ASCE, regardless of their membership grade or job description, commit to all of the ethical responsibilities in this Code. All ASCE members should make themselves familiar with ASCE's Code of Ethics.

Required Conduct
All participants shall act professionally and respectfully at all times. Failure to act appropriately can result in sanctions, disqualification, and loss of invitations to future symposia or ASCE UESI Surveying Society-wide Finals competitions. The inappropriate use of language, alcohol, materials and equipment, uncooperativeness, or general unprofessional or unethical behavior will not be tolerated.

COVID-19 Safety
All participants are responsible for complying with all campus protocols and procedures including but not limited to COVID-19 guidelines related to in-person meetings, masking, social distancing, etc., at all times in connection with planning, preparation, or participation in the competition.

Given the continually changing environment surrounding COVID-19, virtual competition provisions are provided in the rules and may be activated in coordination with ASCE.

Penalties
Penalties will be assessed for the following items. No other penalties shall be added to this competition by the symposium hosts.

Late submittals
Task 1A Projects are due at 5:00 pm Eastern Standard Time (EST), Monday, February 28, 2022. Projects submitted after this date and time are subject to a late penalty. Late penalties will be assessed as follows:

Submitted on February 28, after 5:00 pm EST = 10 point deduction
Submitted on March 1 by 11:59 p.m. EST = 20 point deduction
Submitted on March 2 by 11:59 p.m. EST = 30 point deduction
Submitted on March 3 by 11:59 p.m. EST = 40 point deduction
Submitted on or after March 4, 2022, at 11:59 p.m. = 0 point for submittal, teams may still participate and get points for the presentations and field tasks.

Any Task 1A project submitted after 11:59 p.m. EST, March 4, 2022, will not be accepted and that team will receive 0 points for all aspects of Task 1A. Task 1B will occur at the symposium and society-wide finals competitions.

Team members completing more than three (3) tasks
10 point deduction for each team member that completes four (4) tasks

20 point deduction for each team member that completes five (5) tasks

Presentation length
Failure to observe time limit: A 15 point penalty shall be assessed when the official time exceeds 5 minutes 5 seconds (5:05). An additional 15 point deduction shall be assessed for exceeding each additional minute or fraction thereof, i.e., 6:00, 7:00, etc.

Failure to have at least 2 presenters: 15 point deduction

Missing or incorrect file type submittals
Files submitted in a format other than a PDF and an XML will not be judged.
Missing XML files = 20 point deduction.

Exceeding field task time limits
No time extensions will be granted for the completion for any field task. This includes tasks 2, 3, 4, and 5.

Competition Tasks

Overview

The surveying field competition will involve five (5) separate tasks, each comprising a maximum of three or four (3 or 4) team members to demonstrate the ability to apply the techniques of land surveying. Members for each task will be randomly chosen on the day of the competition. Each member of the team may only perform a maximum of three (3) tasks. In the event that this competition becomes a virtual event, only Tasks 1A and 1B will be required at the symposiums. Task 1B will be a live virtual presentation. An additional task, beyond Tasks 1A and 1B, will be added to a virtual Society-wide finals competition.

The five (5) tasks will be as follows:

Task 1: Topographic mapping project and presentation
Task 2: Pacing
Task 3: Differential Leveling
Task 4: Building Stakeout
Task 5: Determining the depth of a proposed sewer line and the cut at each station

Teams may use the attached Task Resource Estimate chart to determine how their team members might complete each task. At competition, the judges will randomly select team members for each task using the attached Task Resource Estimate chart.

The times to complete competition site tasks (Tasks 2 through 5) will be recorded by a judge and will be used as a tie breaker.

Scoring Breakdown

For each task, teams will be evaluated according to the parameters provided within the description of each task. The team with the highest number of points from the sum of all five (5) tasks will be the overall winner. In the event that multiple teams receive the same overall score, the shortest overall time for Task 2 through Task 5 will be the tie breaker. See the attached Scoring Rubrics for detailed scoring breakdowns.

Materials

The tasks are project-oriented problems; therefore, for Task 1A (Topographic mapping project), the use of any civil design software is recommended for individual team practice and at each symposium. ASCE UESI can recommend free educational civil design software and online training videos upon request. Teams are responsible for all necessary software and safety equipment for symposium competitions, if needed. For Task 2 through Task 5, the field methods may vary amongst teams. The use of traditional surveying equipment (transits/theodolites/total stations, tapes, prisms, prism poles, conventional optical levels, level rods) is recommended for individual team practice and at each symposium competition. Proper safety equipment is required. Examples of appropriate safety equipment include eye protection for the staking crew,

safety vests, and protective head and foot-wear. Digital levels*, robotic total stations*, GPS – RTK receivers are **NOT** permitted. *Digital levels and Robotic total stations will be permitted to be used in **manual mode only**.

ASCE UESI will provide all necessary surveying and safety equipment with the exception of appropriate footwear at the Surveying Society-wide Finals Competition **only**. ASCE UESI's representative will provide training on the equipment the day of the event for the Surveying Society-wide Finals Competition only. Teams are responsible for all necessary surveying and safety equipment for student symposium competitions.

Judging

The student symposium host shall recruit judges. Three to five judges are recommended. Tasks 1A, and 2 through 5 will each be scored out of 100 total possible points, plus 50 points for Task 1B (topographic mapping project presentation); therefore, each team will have the opportunity to achieve a possible total of 550 points. The decision of the judges is final. The top three (3) teams with the highest overall score will be recognized.

Task Descriptions

Task - 1 Topographic Mapping

Task 1A: Mapping Project
To be submitted by 5:00 pm Eastern Standard Time, Monday, February 28, 2022.

A point file in a text format of PNEZD and a description of map boundary will be provided on the ASCE UESI Surveying Competition Collaborate Site by 5:00 pm Eastern Standard Time, Monday, January 10, 2022.

Each team will be required to prepare a 1-foot contour topographic map with details specified by competition committee. The final submittal will be a 24”x36” PDF and landXML file. Each team will be expected to comply with all required items listed in the specifications. Specifications are listed in the judging form. Teams will be evaluated on the map accuracy and aesthetics. Teams may not include more than five (5) pages in the PDF file to present their mapping project.

The symposium host will coordinate with ASCE to provide contestants with instructions for how to submit their Task 1A submittals via a unique link to ASCE’s Cerberus ftp server.

Task 1B: Presentation
A maximum five (5) minute live presentation with at least two (2) presenters is required for the mapping project. The presentation should focus on how to create the given topographic map. Briefly summarize the process from receiving the point file to producing a 24”x36” PDF and landXML. Teams should demonstrate competency in mapping the topographic map, such as identifying the boundary, control points, breaklines, etc. The intent of this presentation is to showcase the understanding of topographic mapping and drafting. Specifications are listed in the judging form.

Task 2 - Pacing

At the competition site, there will be a triangle staked out. Up to three (3) participating members will start at a different vertex of the given triangle. Once the signal has been given to begin, each participating member will pace the perimeter of the triangle in a clockwise fashion, returning to the point at which they began. Each member may pace the perimeter of the triangle up to three (3) times. Each team will submit a final recorded ground distance for each side of the triangle upon conclusion of their pacing. Teams will be evaluated on their accuracy and will be given a maximum of thirty (30) minutes to complete this task. Each team’s overall time for this task will be recorded by a task judge.

Task 3 - Leveling

At the competition site, each team will be required to start from a benchmark of known elevation and perform differential leveling operations to establish the elevation of a temporary point of unknown elevation. Each team will submit a final recorded elevation for the temporary point of unknown elevation upon conclusion of their differential leveling operation. Teams will be evaluated on their accuracy and will be given a maximum of forty-five (45) minutes to complete this task. Each team's overall time for this task will be recorded by a task judge.

Task 4 - Building Stakeout

At the competition site, using appropriate stakeout techniques, teams will be required to stake out a proposed building with appropriate offsets. Two (2) designated control points for set up and backsight will be given to measure the angles and distances to the proposed building points. The angles and distances to be calculated and measured will be given on the day of the event. The judges will measure the hubs/tacks as set by teams upon conclusion of their stakeout. Teams will be evaluated on their accuracy and will be given a maximum of forty-five (45) minutes to complete this task. Each team's overall time for this task will be recorded by a task judge.

Task 5 - Determining depth of proposed sewer line and the cut at each station

At the competition site, teams will find centerline and offset stakes for a proposed sewer line. On the day of the competition, each team will be given the invert of the existing pipe where the proposed sewer line will connect. Teams will also be given the slope and size of the proposed sewer line. Teams will have to determine the amount of cut at each predetermined station location and the elevation of the invert at the opposite end of the proposed sewer line. Station numbers will be supplied on the centerline stakes. Calculations will be recorded by each team in the field and turned in to the judge upon conclusion of the task. Teams will be evaluated on their accuracy and will be given a maximum of thirty (30) minutes to complete this task. Each team's overall time for this task will be recorded by a task judge.

It will be at the discretion of the host school on whether they will include each task for Tasks 2 through 5 for their symposium. Tasks 1A and 1B are required at all symposiums. If a symposium host does not include all five (5) tasks, it will be understood that a team moving forward to the Society-wide finals competition will be expected to compete in all five (5) tasks in the competition rules as outlined above to be awarded the full number of points.

ASCE UESI Surveying Competition

Judging Form

College/University Name _____

Team Member Names: _____

Task 1A - Topographic Mapping Project Grading Rubric

	Possible points	Score
Title Block		
Map title	2	
Location of survey	2	
ASCE Student Symposium name, college/university name	2	
Survey by: Crew members	2	
Sheet # of # sheets	2	
Written description of horizontal and vertical controls	2	
Map Contents		
Contour map accuracy (rectify incorrect elevations, create breaklines*, and survey boundary)	25	
Triangulated Irregular Network (TIN), display with 1-foot elevation banding in color	10	
1-foot contours with major contours (5-foot contour lines) labeled	5	
Key elevations labeled (walks, top of curbs, ground shots, etc.)	5	
Topography features labeled (i.e. sidewalks, parking lots, trails, landscaping, buildings, etc.) Note: no parking space lines are required.	5	
Line types	2	
Line weights	2	
Legend	5	
North arrow	2	
Map scale (written and graphical)	2	
Symbols (for miscellaneous features on the map)	2	
Property Boundary (shown and labelled)	8	
Presentation and aesthetic (15 points Excellent, 10 points Good, 5 points Fair, 2 points Poor)	15	
Mapping Total	100	

Submission Date: _____ **Time:** _____ **Late Deduction**:** _____

College/University Name _____

Team Member Names: _____

Task 1B - Topographic Mapping Presentation Rubric

	Possible points	**Score**
Presenters		
Preparation Level	10	
Confidence/Voice Projection	3	
Overall Demeanor	2	
Presentation		
Quality of Audio/Visuals	5	
Content	20	
Professionalism	10	
Subtotal	**50**	
Deductions:		
Failure to observe time limit: A 15 point penalty shall be assessed when the official time exceeds 5 minutes 5 seconds (5:05). An additional 15 point deduction shall be assessed for exceeding each additional minute or fraction thereof, i.e., 6:00, 7:00, etc.		
Failure to have at least 2 presenters: 15 point deduction		
Presentation Total		

Judging Form

College/University Name _____

Task 2 – Pacing Grading Rubric

Course _____

	MEASURED	DIFFERENCE (ABSOLUTE VALUE)
Distance A-B		
Distance B-C		
Distance C-A		
Total		

POINTS _____

TIE BREAKER

TIME _____

SCORING:

1ST CLOSEST = 100 POINTS

2ND = 95 POINTS

3RD = 90 POINTS

UNTIL ALL TEAMS SCORED (-5 POINT SCALE) 0 IF TEAM DOES NOT COMPLETE

Judging Form

College/University Name _____

Task 3 – Leveling Grading Rubric

Course _____

MEASURED ELEV. OF UNKONWN BM _____

ELEV. OF UNKNOWN BM _____

DIFFERENCE (ABSOLUTE VALUE) _____

POINTS _____

TIE BREAKER

TIME _____

SCORING:	**1ST CLOSEST**	**= 100 POINTS**
	2ND	**= 95 POINTS**
	3RD	**= 90 POINTS**

UNTIL ALL TEAMS SCORED (-5 POINT SCALE) 0 IF TEAM DOES NOT COMPLETE

Judging Form

College/University Name _____

Task 4 – Building Stakeout Grading Rubric

Course _____

	MEASURED	DIFFERENCE (ABSOLUTE VALUE)
Distance 1		
Distance 2		
Distance 3		
Distance 4		
Distance 5		
Total		

POINTS _____

TIE BREAKER

TIME _____

SCORING:

1ST CLOSEST = 100 POINTS

2ND = 95 POINTS

3RD = 90 POINTS

UNTIL ALL TEAMS SCORED (-5 POINT SCALE)
0 IF TEAM DOES NOT COMPLETE

Scoring Guide

0.1 FEET	=	100 POINTS
0.2 FEET	=	95 POINTS
0.3 FEET	=	90 POINTS
0.4 FEET	=	85 POINTS
0.5 FEET	=	80 POINTS
0.6 FEET	=	75 POINTS
0.7 FEET	=	70 POINTS
0.8 FEET	=	65 POINTS
0.9 FEET	=	60 POINTS
1.0 FEET	=	55 POINTS
1.1 FEET	=	50 POINTS
1.2 FEET	=	45 POINTS
1.3 FEET	=	40 POINTS
1.4 FEET	=	35 POINTS
1.5 FEET	=	30 POINTS
1.6 FEET	=	25 POINTS
1.7 FEET	=	20 POINTS
1.8 FEET	=	15 POINTS
1.9 FEET	=	10 POINTS
2.0 FEET	=	5 POINTS

Judging Form

College/University Name _____

Task 5 – Cut & Fill of Sewer Grading Rubric

Course (L/R)_____

STATION	GROUND ELEVATION	CUT	DIFFERENCE (ABSOLUTE VALUE)
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
Total	_____	_____	_____

POINTS _____

TIE BREAKER

TIME _____

SCORING:

1ST CLOSEST = 100 POINTS

2ND = 95 POINTS

3RD = 90 POINTS

UNTIL ALL TEAMS SCORED (-5 POINT SCALE)
0 IF TEAM DOES NOT COMPLETE

JUDGES SCORE THE CUTSHEET STATION

ANSWERS TO 0.01 FEET

FIND DIFFERENCE ATSTATION/ OFFSET

SUM DIFFERENCES (USEABSOLUTE VALUE

DO NOT ACCOUNT + AND -

Task Resource Estimate

College/University Name _____

Instructions: College/university should fill in team member names. If less than 6 team members, draw a line through the middle of the row throughout the tasks.

	Task 1B Min 2	**Task 2** Max 3	**Task 3** Max 4	**Task 4** Max 4	**Task 5** Max 4
How many team members should complete each task?					
Team Member Name		To be filled out by judge:			
1	X				
2	X				
3					
4					
5					
6					