



ENTRY GUIDELINES

Revised August 2021

INTRODUCTION

The WEF® Student Design Competition (SDC) is intended to promote “real world” design experience for students interested in pursuing an education and/or career in the water and wastewater fields. Students with interest in protecting public health and the environment through use of the sciences, engineering, or other degree programs are encouraged to participate. This competition tasks individuals or teams of student members within WEF® to demonstrate their ability to evaluate alternatives, develop a comprehensive design, and present a solution that meets the requirements of a socially relevant problem statement.

For more information, contact:

E.J. Katsoulas, Subcommittee Co-chair for the WEF Student Design Competition
Phone: (720) 326-9264 or Email: EJ.Katsoulas@tetrattech.com

Guy Yager, Subcommittee Co-chair for the WEF Student Design Competition
Phone: (209) 769-5083 or Email: YagerG@bv.com

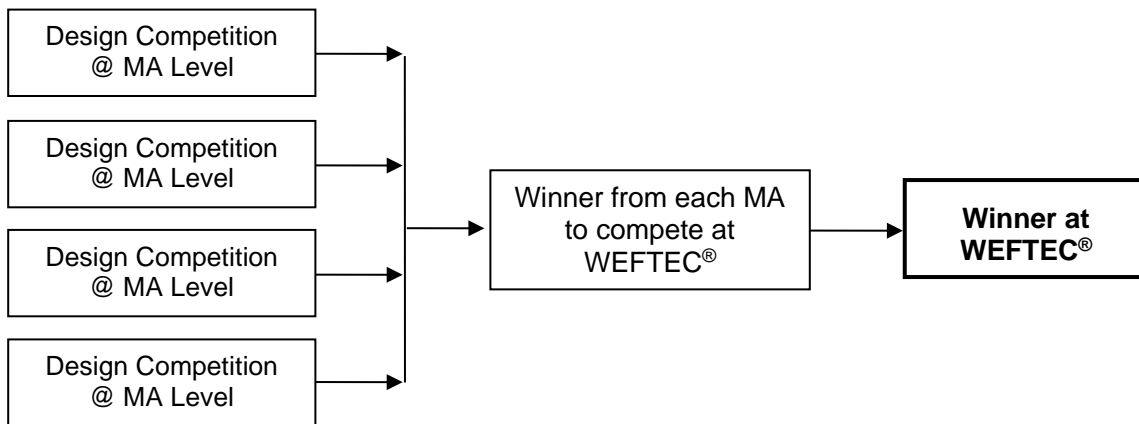
Brad Lovett, Manager, Association Engagement – Students and Young Professionals
Phone: (703) 684-2455 or Email: BLovett@wef.org

The WEF® Students & Young Professionals Committee (SYPC), of which the SDC is a part, is always looking for interested persons to help further the activities supported by the committees. If you are interested in becoming a member and helping on one of the SYPC subcommittees, please contact Brad Lovett.

BACKGROUND

The original student design competition concept was based on a student competition held within the Florida Water Environment Association. The concept was then expanded to the national level, and more recently, the international level, which is organized by the WEF® SYPC. A WEF® SDC Subcommittee within the SYPC was formed to lead the effort in establishing the WEF® Student Design Competition to be held annually at WEFTEC. The WEF® competition is ***intended*** to be the culmination of various member association (MA) level competitions (typically at the state or regional level), where student groups who have won their MA's competition will compete at WEFTEC.

The competition promotes interests and skills that will prove to be extremely valuable as students enter the professional world. It is the intent of the WEF® SDC Subcommittee to foster and promote this competition at the MA level as well as internationally. These guidelines represent a general guide to what the WEF® SDC Subcommittee envisions; however, not every MA or student group will be able to follow these steps directly. Below is a schematic of the ***intent*** of this competition.



Each MA will choose a design problem for its competition(s) and distribute the problem(s) to participating schools within the MA. Alternatively, MAs may allow each school to choose an individual design problem that meets the guidelines set forth herein. Typically, students will be given a period of time equivalent to one semester to conduct their alternatives analysis and finalize their design with the appropriate recommendations. At the discretion of the MA, schools may be given up to a full school year to develop their design report. If more than one school or student group participates, student teams will present their designs during a Student Design Competition held at the MA level. The winner of each MA competition, as determined by members of the MA, will be invited to compete in the WEF® Student Design Competition held in person at WEFTEC later that year. Furthermore, it is at the discretion of each MA to adopt and/or change rules of these guidelines as needed to suit the MA in order to have a successful competition at the regional MA level.

If there is only one participating school within the MA, that school’s student team may compete at WEFTEC, assuming they meet the guidelines set forth herein and have received approval from their MA to be their representative at the WEF® Student Design Competition. Ultimately, participation of such teams is left to the discretion of the WEF® SDC Subcommittee. **All teams must have the support of their MA to participate at the WEF® Student Design Competition.**

Due to the rapid growth of the WEF® Student Design Competition in recent years, there will be a maximum occupancy of 34 teams allowed to compete at WEFTEC. This means that no more than 17 teams will be permitted to compete in each competition category. At a minimum, the WEF® SDC Subcommittee will allow the participation of one team from each MA, provided said team meets the standards described herein. However, each MA is granted permission to register one team to compete in each competition category, for a total of two teams from each MA. In the event that more than 34 teams apply to compete at the in-person WEF® Student Design Competition, the WEF® SDC Subcommittee will contact MAs after the virtual competition results have been decided to convey their decision on which team shall be admitted to the WEFTEC in-person competition. The WEF® SDC Subcommittee reserves the right to accept or refuse a team from the WEFTEC in-person competition. All MAs are welcome and encouraged to send all their teams to WEFTEC.

This year, to accommodate increased participation and teams which may be only able to participate virtually, a virtual competition will accompany the in-person competition. Teams wishing to participate in the in-person competition will be required to participate in the virtual competition. Student teams may participate in only the virtual competition (due to travel restrictions), but all teams will be expected to participate in the WEFTEC in-person competition if possible. Competing student teams will be asked to electronically submit pre-recorded presentations in addition to their design reports for the virtual competition. Judging will be

conducted by a panel of SYPC judges. For those teams wishing to attend the in-person SDC at WEFTEC, the results of the virtual competition may be used to determine qualification (*in the event that more than 34 teams apply for the in-person competition*).

INTENT OF THE STUDENT DESIGN COMPETITION

The WEF® Student Design Competition is based on problems relating to protection of the water environment including sewer and pump station design, wastewater treatment plant expansions/upgrades, biological treatment, reuse, constructed wetlands, sustainability efforts, stormwater management, and other related topics. At this time, traditional drinking water treatment and distribution projects are not accepted for the WEF® Student Design Competition.

The WEF® Student Design Competition hosts two separate competitions at WEFTEC, a Wastewater Design Competition and a Water Environment Design Competition. Students will need to specify which group they believe their project falls into.

Final grouping of each Competition (Wastewater and Water Environment) is at the discretion of the Subcommittee and will be determined upon review of the application materials. The application includes both an abstract and either an executive summary or in-progress report. An in-progress report does not need to be fully complete and will not be considered when the team is scored at WEFTEC. However, it should include sufficient detail for the WEF® SDC Subcommittee to determine the scope of the project and whether it meets the criteria set forth herein. Additionally, due to space constraints and the continued growth of the WEF® SDC, the WEF® SDC Subcommittee may re-categorize each competition to fill all available presentation space throughout the day, thus maximizing the number of teams who can compete at WEFTEC. Sub-categories within each of the two competitions may be created as necessary to ensure grouping of like design projects.

The Wastewater Design Competition is intended to include, but is not limited to, traditional wastewater collection and treatment design projects, e.g. hydraulic capacity design, upgrades to existing treatment systems, biosolids handling, small-scale community wastewater treatment designs, and other related topics. The Water Environment Design Competition is intended to include design projects related to stormwater management, watershed management, green infrastructure, low impact development, water reuse, wetland construction, distributed treatment systems, groundwater treatment, and other related topics. Both competitions will follow the same guidelines and the same scoring system. Each MA may only select one team per competition per year to participate. However, individual consideration will be given to team placement in either competition on a case-by-case basis at the discretion of the WEF® SDC Subcommittee.

The scope and extent of the project should be consistent with the level of a senior or graduate engineering/science design or capstone course. Please note that the WEF® SDC Subcommittee encourages teams to balance the quality of their work with the quantity of design components, and for each MA to consider this when determining the scope of their problem statement. For example, design of both a collection system and facility expansion may be too broad of a scope for the confines of this competition. Students are expected to work with little assistance from an advisor, professor, and/or industry professionals/consultants. However, the students may seek expert advice and ask questions of industry professionals to aid in their decision-making process, at the discretion of their MA, so long as the students are performing all work themselves. The students are expected to work together as a team to prepare a complete engineering design solution. Students may use any printed or digital references or resources they choose, with appropriate citations.

Students are expected to perform the necessary design calculations for the project. **This is not intended to be a study or research project or literature review.** Although some initial literature review and/or research will be required, the bulk of the project should incorporate pertinent calculations for the design.

A standard design project involving a wastewater treatment plant expansion would include many or all of the following components:

- Sufficient background information with a clearly stated problem statement;
- Analysis of alternative solutions which may include a decision matrix;
- Hydraulic profile;
- Preliminary sizing of major equipment (aeration basins, clarifiers, chlorine contact chambers, etc.);
- Incorporated information from different manufacturers;
- Population analysis to determine design flow rates; and
- Preliminary cost evaluation for both capital and operational costs.

All of the design work should be submitted in the design report, clearly labeled and referenced. See below for information regarding the report.

Timeline:

Experience and conversations with students who have participated in this type of competition in the past indicated the need for the problem statement to be given approximately 3 to 4 months prior to the competition. A sample timeline is shown below to give relative timeframes that would be ideal for the competition to be successfully completed on the MA level. It should be noted that the dates are given only as a guideline and may be adjusted to suit the MAs and/or student chapters participating. The WEF® Student Design Competition specific timeline follows later in this package.

1. MAs develop a problem statement and assemble design competition packets. (November)
2. MAs distribute the problem statement to interested student chapters or teams. This would be the formal beginning of the regional competition. (January)
3. MA level competitions held. (April/May)
4. The winner from each MA to compete nationally at WEFTEC. (September/October)

REQUIREMENTS OF THE WEF® STUDENT DESIGN COMPETITION

1. **TO BE ELIGIBLE**, each presenter must be a registered WEF® student member who has been *both*:
 - Selected by his/her student chapter to participate.
 - Certified by the individual Member Association as a WEF® student member in good standing.

To be thusly certified, a new WEF® student member must have filed an application and paid the required dues for membership before the first day of the month prior to that year's competition. The same holds true for continuing student members.

****The WEF® SDC Subcommittee acknowledges that schools willing to participate may not have a WEF® Student Chapter. Under these circumstances, as long as the**

participants are WEF® student members and student members of their local MA, they will be allowed to participate.

2. Student members who have graduated at the time of WEFTEC will be allowed to participate, if they were a registered student within the last 12 months.
3. Teams may consist of more than four members. However, a maximum of four team members shall be permitted to present at WEFTEC. One additional team member may be on the presentation platform but shall be dedicated solely to advancing the presentation slides. If desired, additional team members may participate in the question and answer portion of the presentation. The team members listed at the time of abstract submission are final and may not be changed, unless under extenuating circumstances.
4. Student teams who are accepted into the WEF® Student Design Competition will compete through a written submission and an oral presentation. See below for information on submission deadlines for each of these two deliverables.
 - a. Written: A design report complying with the requirements set forth in this document must accompany each entry.
 - b. Oral: Each team’s presentation will be 20 minutes followed by up to a 10-minute question and answer period. Team presentations will be held to the 20-minute time limitation and will be not be permitted to continue beyond the limit. The presentation files shall be saved in the PowerPoint format provided by the WEF® SDC Subcommittee and submitted per the requirements set forth in this document. The PowerPoint file submitted will be the version presented at the competition. Teams will not be permitted to revise the files following submission.
 - c. Both written and oral presentations are subject to questioning during the question and answer period. However, questioning is limited to the judging panel only.

ENTRY FEE - There is no entry fee for the WEF® Student Design Competition.

TIMELINE OF THE WEF® STUDENT DESIGN COMPETITION:

DATE	ACTION ITEM
April 30, 2021	Teams shall notify the SDC Subcommittee Co-chairs of their intent to participate in the WEF® Student Design Competition. Teams shall indicate whether or not their local MA will be hosting or has hosted an MA level Student Design Competition.
May 28, 2021	Teams shall submit the completed Entry Form to the SDC Subcommittee Co-chairs. See Attachment A.
May 28, 2021	Teams will submit an executive summary or “in-progress” written report for review by the WEF® SDC Subcommittee. In addition, teams shall submit a detailed abstract to serve as a brief summary of the design, not to exceed 200 words. The project name, university name, advisor’s name, and entrants’ names shall also be included with the submission. Refer to Attachment B for details on submission requirements.

Week of June 21, 2021	At least one representative member of each team shall participate in a webinar hosted by the WEF® SDC Subcommittee to review design report submittal requirements, expectations for competition participants, and general competition questions. One team member is required to participate but other team members are permitted as well. Webinar information will be provided to the team via the contact information provided on the official Entry Form.
August 27, 2021	<p>Electronic and hard copies of the design report are required for a complete competition entry. Teams shall submit a package containing one hard copy of the design report. Packages shall be postmarked no later than this date and addressed to the following:</p> <p>ATTN: Brad Lovett, SDC 601 Wythe Street Alexandria, VA 22314</p> <p>A single electronic file, as a PDF, of the compiled design report shall be uploaded to a collection site as directed. Uploads shall be completed no later than this date.</p>
October 1, 2021	<p>Teams shall submit a copy of PowerPoint presentation (updated based on virtual competition judge feedback if teams so choose). The PowerPoint file submitted will be the version presented at the in-person WEFTEC Competition. Revisions at the Competition will not be permitted. Uploads shall be completed no later than this date.</p> <p>Teams who will be competing the WEFTEC SDC competition virtually shall also submit their prerecorded presentations at this time.</p>
October 17, 2021	<p>WEFTEC STUDENT DESIGN COMPETITION in Chicago, IL. Virtual participants will participate in a live Q&A via ZOOM with Judges at schedule time on this day.</p>

OVERVIEW OF THE WEF® STUDENT DESIGN COMPETITION

It is recognized that engineering professionals must possess a well-developed ability to communicate both orally and in writing. The competition is designed to emphasize the value of delivering both high quality written reports and technical presentations. Scoring of the design will be determined through an evaluation of both the competitors' written and oral presentation skills, along with the technical content of the design solution. Scoring sheets have been developed for evaluating both the written (design report) and the oral presentations and will be used by the judges as the basis for judging all competing teams (see Scoring Sheet - Attachment C).

The written submission (in electronic format) will be evaluated by the judges and scores for the written submission of the competition will be submitted to the Subcommittee prior to the oral presentations. An electronic copy of the written report will be available to the judges during the oral presentation for their reference.

Prior to the competition, teams are encouraged to practice presenting their oral presentations in front of professors, students, and/or advisors to receive feedback regarding presentation timing, content, and delivery. During the competition held at WEFTEC, the oral presentations will be

evaluated by the judges, based on both the quality of the presentation and proficiency in answering questions in the ensuing judge Q&A period. Scores for the oral presentations will be submitted by the judges to the Subcommittee.

A representative of the Subcommittee will compile the written and oral presentation scores and determine the final ranking of the teams participating in the competition. All scores will be kept confidential. Judges' comments regarding that team's performance may be provided at that team's request following the completion of the WEF® Student Design Competition. Hard copies of the written presentations will be available in the Student Lounge once the oral presentations have commenced.

The order of team presentations will be selected at random prior to the competition. Teams will be notified of their time slot prior to the WEF® Student Design Competition. Competing student teams are encouraged to watch other student teams' presentations. Student teams are further encouraged to invite leadership and members of their MA to attend the competition. Student teams are strongly encouraged to be present for the entire day of the oral presentations through the conclusion of awards ceremony. They are also encouraged to participate in the Process Challenge, networking opportunities, and dessert reception as well as other events put on throughout the day of the competition.

DESIGN REPORT REQUIREMENTS

Hard copy of the design report shall be a single volume bound by a three-ring binder, spiral, or comb binding (not greater than 1-inch in size) and be comprised of the documents that describe the problem, alternatives evaluation, recommendations, and design solution. The project name, university name (team name), year, and entrants' names shall be included on the front cover of the design report. If a three-ring binder is used, the project name and university name (team name) shall be affixed to the spine. Submission of an unbound hard copy of the design report will result in a deduction to the team's overall score.

Electronic copy of the design report shall be created in a single PDF format file that is organized similarly to the hard copy report with cover pages, table of contents, report sections, and appendices, if used. The single PDF file shall be uploaded to a OneDrive collection site as directed by the Subcommittee. Failure to submit the electronic copy in a PDF format will result in a deduction to the team's overall score.

The original hard copy of the report and the single electronic file must be submitted to the Subcommittee by the stated deadline. Non-compliance with these requirements will result in penalties (see below). Project materials may not be returned to team after the competition. Teams should produce a copy of their materials for their own records.

Teams are encouraged to print their reports double-sided and incorporate sustainable practices into their submittals. Both the hard copy and electronic copy of the design report shall include, in the following order:

1. **Cover Page** – with project name, university name (team name), year, and entrants' names.
2. **Table of Contents**

3. **Abstract** – Please use the original abstract form submitted (see Attachment B), which includes a brief summary of the design, **not to exceed 200 words**.
4. **Summary of Project Team Effort** – Provide a 1 to 2 page summary of the project team effort, including:
 - Each team member’s name and role in the effort
 - Names of any other individuals that assisted in the effort
 - MA representatives who facilitated the design project
5. **Project Description** – Provide a description of the design problem, alternatives evaluation, and recommended design solution (**not to exceed 20 pages***), including the following information:
 - **Statement of design problem.**
 - **Discussion of alternatives evaluation** – Discussion should provide a clear description of the alternatives and evaluation technique.
 - **Description of recommended design solution** – Discussion must cover the salient facts upon which the recommendation is made, present a clear recommendation of action, and provide bases for design. Relevant data should be presented in a clear manner. All elements shown on the judging form should be addressed, including economic analysis.
 - Formatting to include a minimum of 0.75 inch margins on all sides; Calibri, Arial, or Times New Roman font with a minimum 11-point font size.
 - Pages of the Project Description portion of the report shall be continuously numbered.
 - Color diagrams, graphics, plots, and photographs may be included that reflect the unique features of the project. Each is to be identified with an appropriate descriptive caption. Graphics/photos included within the project description will count toward the 20-page limit.

***The number of pages used in the Project Description is checked to ensure compliance with the 20-page limit. Non-compliance may result in penalties (see below).**
6. **Supporting Documentation** – If needed, provide drawings, calculations, tables, vendor submittals, detailed cost estimates, and other voluminous documents, as appendices.
7. **References/Acknowledgements** – All references and resources used for this project shall be cited appropriately.

The judges will be directed to focus their review on the Project Description section of the design reports. Teams shall develop their materials such that their complete analysis and design solution may be understood from the 20 pages of material provided in the Project Description.

Teams are encouraged to use a checklist to ensure all necessary documents are included in the design reports. Failure to ensure all documents are accounted for may result in a team penalty.

The Subcommittee will not review any submittal prior to the official submission.

PRESENTATION REQUIREMENTS

A presentation describing the team’s design problem, approach, evaluation, design effort, and recommendations shall be created in PowerPoint format. This information will be presented by the team during the oral portion of the competition at WEFTEC. Prior to the

competition, the single PowerPoint file using the template provided shall be uploaded to a OneDrive collection site as directed by the Subcommittee. Teams must notify the Subcommittee of any imbedded animations or video material to confirm that this material is compatible with the computer that will be used during the competition. The PowerPoint file must be submitted to the Subcommittee by the stated deadline. Non-compliance with these requirements may result in penalties (see below). Project materials may not be returned to teams after the competition. Teams should produce a copy of their materials for their own records.

No presentation remotes (AKA clickers or pointers) will be provided by the WEF® SDC Subcommittee. However, students may bring their own for use during their presentation. USB connected remotes generally are more compatible than Bluetooth connected remotes. Students will not have the opportunity to test out any electronic devices prior to the start time of their oral presentation.

A typical presentation room layout is shown below. Materials include a podium with microphone, tables and chairs, presentation screen, and stage.



JUDGING CRITERIA

WEF® is a multi-disciplined environmental professional organization dedicated to quality in practice of the profession. Accordingly, judging will be based on the elements outlined below and in the scoring sheets provided in Attachment C. Subcommittee reserves the right to adjust the format and content of the scoring sheets provided in Attachment C prior to commencement of the competition. Participating teams will be provided with a copy of the revised sheets prior to the competition if such adjustments are made.

1. DESIGN REPORT:

- a. **Technical.** Was the Project Description section of the report organized effectively with a Statement of Problem, appropriate background information, clear description of the alternatives evaluated, etc? Was a continuous, logical sequence of steps taken to solve the design problem? Was the recommended solution feasible and appropriate to address the problem statement? Was creativity and an innovative approach used? Was knowledge of subject matter demonstrated? Was the design solution analyzed for economic feasibility; was this analysis presented? Were works cited and credit to resources and assistance correctly presented? Was the complete analysis and design solution presented clearly within the 20-page Project Description?
- b. **Presentation.** Were visual aids (graphs, supporting info, pictures, etc.), presented clearly? Were correct grammar, correct spelling, and appropriate technical writing methods used? Was the formatting and organization of the report presented in a logical manner?

2. ORAL PRESENTATION:

- a. **Content.** Was subject technical or general in nature? Was technical subject matter relevant to design? To what extent was subject of interest to a technical audience? Was knowledge of subject and presentation content exhibited by team members? Was the work presented independent and original? Was credit given for source of material or contribution by others? Was there any novel approach to the solution?
- b. **Organization.** Was there sufficient background information provided in order to introduce the audience to the subject? Were facts developed in logical and continuous sequence? Was there a definite conclusion and was it adequately based on the facts or data presented?
- c. **Delivery and Effectiveness.** Was appropriate volume used to reach all audience members? Did team members use proper English? Was the vocabulary used sufficient? Were the words distinctly pronounced? Was personal appearance appropriate? Were there any distracting mannerisms? Was the manner of delivery (conversation, memorized, read from manuscript) satisfactory? If visual aids were used, how effectively were they used?
- d. **Discussion.** Did the presentation evoke spontaneous questions from the panel? Did questions indicate the need for clarification of facts presented or were they merely of the type seeking additional information? How readily and with what self-assurance did the speaker answer questions? Did the answers indicate knowledge of subject beyond that disclosed in the original presentation?

The judges will have the opportunity to comment on the design reports and presentations during the judging process. Judging comments for each submittal will be made available to the corresponding team after the competition at the request of the team. Teams will not be allowed to view the scoring of any other team within the competition.

PENALTIES

Failure to comply with the above requirements may result in penalties to a team's final score. Teams will be notified of the penalties they have received prior to the competition at WEFTEC.

Penalties are at the discretion of the Subcommittee but may include, but are not limited to, the following:

- Failure to submit an executive summary/in-progress report and abstract within the guidelines set forth herein;
- Failure to submit an electronic copy of the design report in PDF format within the guidelines set forth herein;
- Failure to submit a bound hard copy of the design report within the guidelines set forth herein;
- Failure to submit the PowerPoint presentation within the guidelines set forth herein; and
- Failure to submit entries on-time.

AWARDS

Winning teams will be announced immediately after the completion of both competitions. Prizes for the winner(s) at WEFTEC will vary depending on sponsorship opportunities and are subject to change at the discretion of the Subcommittee. Each participating team will receive certificates of participation. Winning teams may also receive a recognition plaque. Monetary awards are at the discretion of the Subcommittee. 1st place in each category of the in-person WEFTEC competitions can look forward to \$2500 being awarded to their respective MAs, who are then responsible for awards funds.

Plaques and prizes will be distributed from WEF to the winning team's MA after WEFTEC. Efforts may be made to deliver the plaques to the winning team's advisor based on the contact information provided on the Entry Form. The amount of monetary award and manner of delivery to the winning team by the MA is at the MA's discretion. The representative teams are responsible for understanding their MA's policies prior to the team's participation at WEFTEC.

Monetary prizes are intended to be awarded to offset student travel to WEFTEC and to support the student chapter at the winning school. Every opportunity should be made by the MA to assist the student team in competing at WEFTEC, and serious consideration should be made for awarding money toward travel expenses to attend WEFTEC. Similarly, each MA might seek out sponsorships from local industries, municipalities, and consulting firms in order to help the winning team attend WEFTEC.

While overall grand prizes will be awarded at the in-person WEFTEC competition, recognizing the all-around 1st -4th place teams in each category, the virtual competition will be an opportunity to showcase and award unique and innovative projects and, especially, to award the technical talent that goes into an effective virtual presentation. This keeps the virtual and in-person competitions complimentary and parallel and avoids redundancy. Also, given the diversity and thoughtfulness of projects, the virtual platform is an opportunity to expand our recognition of exceptional work.

INCREASING THE VALUE OF COMPETITION ATTENDANCE

Teams are encouraged to check the WEFTEC schedule for additional opportunities for technology transfer (technical sessions, workshops, exhibit tours), networking (career fair, student social events, university lounge), and volunteering (service project, committee meetings) and to make necessary travel arrangements to take full advantage of the WEFTEC attendance experience for students as well as for young professionals.

QUESTIONS OR COMMENTS

Please review the entire package and contact the WEF[®] SDC Subcommittee for clarification on any of the requirements or guidelines of the competition.

SAMPLE PROJECT

Below is a sample information packet that would be given to each student team wishing to compete at the MA level. This was an actual problem description and packet given to a student team competing at the MA level. Note this is only given as a general idea of sample project description and information. This packet would vary with the amount of information provided and contact names. A copy of the Student Design Competition Guidelines should also be included.

DESCRIPTION OF PROJECT

This year's design project is a three-part project and includes the preliminary design of a sewer collection system, a wastewater treatment plant expansion, and a reuse irrigation distribution system for a large development in Jupiter, FL known as Abacoa. A contact at the WWTP should be provided if possible so that teams may arrange tours of the plant as part of the project.

Part 1 – Sewer Collection

Based on Abacoa's community master plan, design the back-bone sewer infrastructure that will collect sewage from the community and transport the sewage to the treatment plant location.

Part 2 – Sewage Treatment

As a result of the growing community, the Loxahatchee River District's (LRD) Regional Wastewater Treatment Plant (WWTP) will need to be expanded. With reuse being a favorable method of effluent disposal, LRD desires the expansion to contain nitrogen reduction processes that would drive the nitrogen under the existing ground water standards of 10 ppm.

Part 3 – Reuse Irrigation

Based on the community's irrigation needs, design a reuse irrigation system and backbone distribution system that will provide irrigation-quality water from the WWTP to the development.

The following documents are attached to assist in the preparation of the recommended program developed by the student chapters:

- Exhibit A - Development master plan of Abacoa
- Exhibit B - Map of Jupiter
- Exhibit C - Loxahatchee River District Wastewater Treatment Plant Drawings
- Exhibit D - WWTP Monthly Operating Report (MOR)
- Exhibit E - WWTP Capacity Analysis Report
- Exhibit F - Abacoa Irrigation Master Plan
- Exhibit G - Scoring Sheet for Student Design Competition
- Exhibit H - Entry Form

ATTACHMENT A

TEAM ENTRY FORM

Please note: As of 2019, the team entry form was converted to an electronic format. Teams should review the information required in this, Attachment A, as it is the same information required in the electronic entry form to be submitted on May 28, 2021.

TEAM ENTRY FORM

WEFTEC 2021 STUDENT DESIGN COMPETITION

SUBMIT ENTRY FORM BY May 28, 2021

Please note - Names provided below will be printed in competition brochures, on participation certificates, and on plaques for the winning teams, as shown. Please make sure all names are included and written correctly.

Project Title: _____

Wastewater Design Competition Water Environment Competition

Name of University: _____

Address: _____

City: _____ State: _____ Zip: _____

Faculty Advisor:

Full Name and Credentials (PE/PhD/etc): _____

Phone: _____ Email: _____

Team Leader / Responsible Contact Individual:

Name: _____ Level in School: _____

Phone: _____ Email: _____

Name(s) of Additional Team Members: *(use additional paper if necessary)*

Name: _____ Level in School: _____

Email: _____

Name: _____ Level in School: _____

Email: _____

Name: _____ Level in School: _____

Email: _____

Name: _____ Level in School: _____

Email: _____

Name: _____ Level in School: _____

Email: _____

Team's Member Association Contact: *(MA Competition Chair, MA Student Activities Chair, other)*

Name: _____ Position: _____

Phone: _____ Email: _____

ATTACHMENT B

PROJECT ABSTRACT FORM

Please note: As of 2019, the project abstract form was converted to an electronic format. Teams should review the information required in this, Attachment B, as it is the same information required in the electronic entry form. Executive Summaries or In-progress Reports should be uploaded as a separate PDF at the time of entry form and abstract submission.

PROJECT ABSTRACT FORM
WEFTEC® 2021 STUDENT DESIGN COMPETITION

SUBMIT ABSTRACT FORM BY May 28, 2021

Project Title: _____

University: _____

Faculty Advisor: _____

Team Members: _____

Abstract (not to exceed 200 words) – failure to comply to fully detail project description can result in rejection of abstract. Abstracts will be used in marketing materials for the competition.

EXECUTIVE SUMMARY OR IN-PROGRESS REPORT
SUBMISSION
WEFTEC® 2021 STUDENT DESIGN COMPETITION

SUBMIT EXECUTIVE SUMMARY OR IN-PROGRESS REPORT DRAFT BY May 28, 2021

The Executive Summary or In-progress Report will be reviewed by the WEF® SDC Subcommittee to determine placement of each team in the most appropriate competition category. Content included in either the Executive Summary or In-progress Report draft should be sufficient to demonstrate the progress of the team as well as the scope of the project. Page requirements and limits are as follows:

If an Executive Summary is submitted to meet this requirement, it should be no less than 2 pages and no more than 5 pages, including figures.

If an In-progress Report draft is submitted to meet this requirement, it has no page restrictions but should be submitted without appendices. The In-progress report is intended to be a copy of the design report at the time of entry material submission.

ATTACHMENT C

EXAMPLE SCORING SHEETS

EXAMPLE SCORING TALLY SHEET 2021 STUDENT DESIGN COMPETITION

Team:			
Title:			
	Report Score	Presentation Score	Total
Judge #1			
Judge #2			
Judge #3			
Judge #4			
Average Score			
Penalties (to be assessed by Subcommittee)			
FINAL SCORE (Sum of Average Scores minus Penalties)			

**EXAMPLE SCORING SHEET
2021 STUDENT DESIGN COMPETITION
DESIGN REPORT**

Name of University: _____

Project Title: _____

Judge: _____

Technical Content - 70 pts

1. Appropriate level of detail used in introduction, statement of problem, background information provided to ensure reader fully understands the scope of the project? (5 pts)..... _____
 2. Continuous, logical sequence of steps to solution presented including justification for decisions and clearly demonstrating the team's technical knowledge? (15 pts) _____
 4. Was design solution feasible and appropriate to address problem statement? Were all relevant aspects required by the problem statement included in the final design solution? (15 pts) _____
 5. Were creativity and innovative approaches applied? (20 pts) _____
 6. Was knowledge of subject matter demonstrated? (10 pts)..... _____
 7. Were appropriate economic and feasibility analyses presented? (10 pts) _____
 8. Were appropriate citations use to credit resources? (5 pts) _____
- TOTAL (80 pts) _____**

Report Appearance and Organization - 30 pts

1. Were visual aids (graphs, supporting info, pictures, etc.) presented clearly? (10 pts) _____
 2. Were correct grammar, correct spelling, and technical writing methods used? (5 pts) _____
 3. Was formatting and organization of report presented in a logical manner? (5 pts) _____
- TOTAL (20 pts) _____**

GRAND TOTAL (100 pts) _____

COMMENTS:

**EXAMPLE SCORING SHEET
2021 STUDENT DESIGN COMPETITION
PRESENTATION**

Name of University: _____

Project Title: _____

Judge: _____

Presentation technical Content - 45 pts

- 1. Presentation included sufficient depth of technical information (15 pts)..... _____
 - 2. Team displayed adequate knowledge of subject and presentation content (15 pts)..... _____
 - 3. Recommended design solution was original and innovative (15 pts)..... _____
- TOTAL (45 pts) _____**

Presentation Organization - 20 pts

- 1. Sufficient background information was provided (5 pts) _____
 - 2. Essential facts were developed in a logical and continuous sequence (10 pts)..... _____
 - 3. Recommended design solution was based on facts and data presented (5 pts) _____
- TOTAL (20 pts) _____**

Delivery & Effectiveness - 25 pts

- 1. Presentation and visual aides were clear, legible, and effective (10 pts) _____
 - 2. Vocal delivery was appropriate (not memorized nor read directly; proper volume, distinct pronunciation, and appropriate vocabulary used) (10 pts) _____
 - 3. Eye contact was made with judges and audience(5 pts)..... _____
- TOTAL (25 pts) _____**

Discussion - 10 pts

- 1. Answers to questions posed by judges were clear and technically correct (5 pts)..... _____
 - 2. Answers indicated knowledge of subject beyond presented material (5 pts)..... _____
- TOTAL (10 pts) _____**

GRAND TOTAL (100 pts) _____

COMMENTS:
