Announcement

Illinois Water Environment Association
2015 Student Design Competition

When: Tuesday, February 24, 2015 – 9-11am

Where: iHotel – Champaign, IL
1900 S. 1st Street

Registration Deadline: Saturday January 31, 2015 - www.iweasite.org

Introduction
The WEF® Student Design Competition is intended to promote “real world” design experience for students interested in pursuing an education and/or career in water/wastewater engineering and sciences. This competition tasks individuals or teams of student members within WEF® to design and present a solution meeting the requirements of the problem statement. The problem statement shall be in one of the areas of conventional wastewater Design, which includes traditional wastewater design projects or Environmental Design, which includes contemporary engineering design topics like sustainability, water reuse, wetland construction and Engineers Without Borders projects.

Workload
The project will include a problem statement (developed by the design team), a development of alternatives and a recommended solution. The depth of the effort should be comparable to a preliminary design; a step in the professional engineering field that includes layout plans, relevant calculations, a preliminary construction cost estimate, and evaluation of alternatives. A key criterion in the judging of the competition is the manner and level of effort spent in evaluating the alternatives. Students are expected to work with little assistance from an advisor and/or professor, and as a team with other students to find a solution to the problem statement. Students may use whatever references or resources they choose.

Students will derive a design problem and submit the problem and application form by the above date.
Requirements
Teams may consist of more than four members, but only four students may present at the competition.

Student teams will compete through oral presentations. Each presentation will be 20 minutes followed by a 10 minute question and answer period. The presentation should be in Power Point format.

Each team will submit a design notebook complying with the requirements set forth in the design competition entry guidelines.

Timeline
- January 31, 2015 – Entry Form and Problem Statement Due
- February 6, 2015 – IWEA approves problem statement and notifies teams
- February 24, 2015 – Student Design Competition at 9:00 am
- September 27, 2015 – 1st Place Team Competes at WEFTEC2015 – McCormick Place, Chicago, IL

Selection
The IWEA Student Design Panel will judge the design competition based on these four elements: Content, Organization, Delivery and Effectiveness, and Discussion. Sample scoring sheets are provided below.

Awards
First Place - $400
Second Place - $200

In addition to the above prize, the First Place team will win the opportunity to present at the national WEF conference (WEFTEC), held on Sunday September 27, 2015 in Chicago IL. Prizes for the winning team at WEFTEC will vary depending on sponsorship opportunities. Monetary awards typically provided by WEF for the top 4 design teams are: 1st place $2,500, 2nd place $1,000, 3rd place $750, 4th place $500.

For Additional Information contact Louis Storino at louis.storino@mwr.org
Or Archana Kuchimanchi at ksaiaarchana@gmail.com

Entry Form on Next Page
Illinois Water Environment Association
2015 Student Design Competition
Entry Form

Name of University: ____________________________________________________________

Address:_____________________________________________________________________

City: _________________________ State: __________ Zip: __________

Phone: ____________________  Fax: _____________________

Name of Individual to Contact:____________________________________________________

Address (if different): ___________________________________________________________

City: _________________________ State: __________ Zip: __________

Phone: ____________________  Fax: _____________________

Email:______________________________________________________________

Name of Faculty Advisor:________________________________________________________

Address (if different): ___________________________________________________________

City: _________________________ State: __________ Zip: __________

Phone: ____________________  Fax: _____________________

Email:______________________________________________________________

Project Name: ________________________________________________________________

Name(s) and email of Team Members: (use additional paper if necessary)

Name: ________________________ email: ___________ Year in School: ___

Name: ________________________ email: ___________ Year in School: ___

Name: ________________________ email: ___________ Year in School: ___

Name: ________________________ email: ___________ Year in School: ___

☐ Wastewater Design   ☐ Environmental Design

Design Problem Statement: _________________________________________________________

____________________________________________________________________________

____________________________________________________________________________

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Nature and Manner of Presentation
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 and oral 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. Written and oral skills will be evaluated separately and the scores will be added for the total score (see Scoring Sheet - Attachment C). The written submission (submitted in hard copy and electronic format) will be evaluated by the judges and scores for the written submission of the competition will be submitted prior to the oral presentations. The written submission may be available to the judges during the oral presentation for their reference and questions may be posed to the teams based on information contained in the written submission. All scores will be kept confidential. Judges comments regarding that team’s performance may be provided at that team’s request.

Design Notebook Requirements
A single volume bound by a three-ring binder, spiral, or comb binding (not greater than 1-inch in size) shall be used to compile documents that describe the entry for judging. A CD containing an organized and easily viewed electronic copy of the compiled design notebook shall also be created. An original hard-copy of the notebook and copies of the CD must be submitted to the Sub-Committee by the stated deadline. The Sub-Committee will inform students of the number of required CD and hardcopies in advance of the deadline. Noncompliance with these requirements may result in penalties (see below).

The project name, team name, and entrant’s names shall be affixed to the spine and front of the design notebooks, as well as labeled on each CD. Project materials will 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 notebooks double-sided and incorporate sustainable practices into their submittals. The design notebook and each CD shall include, in the following order:

1. **Entry Form** - Please use the original entry form supplied and check which design group the presentation will fall into.

2. **Abstract** – Provide a brief summary of the design, **not to exceed 200 words**. See Attachment B for a template to be used for the abstract submittal.

3. **Project Description** – Provide a description of the project or program, including the following information:
   - A summary of the project team, including:
     - Each team member’s role in the effort
     - The names of any other individuals that assisted in the effort
   - A discussion of the design solution (not to exceed 20-pages*). The discussion must cover the salient facts upon which the recommendation is made, give a clear analysis of the evaluation technique, and present a clear recommendation of action. Relevant data should be presented in the discussion in a clear form. All elements shown on the judging form should be addressed.

   - Formatting to include 1-inch margins on all sides; Calibri, Arial, or Times New Roman Font with a minimum 11-point font size.

   - Color diagrams, charts and photographs that reflect the unique features of the project. Each is to be identified with an appropriate descriptive caption. Graphics/photos can be included within the project description and will count toward the 20-page limit, or can be included as supporting documentation in the appendices and will not count towards the 20-page limit.

* The number of pages used in the discussion is checked to ensure compliance with the 20-page limit. Noncompliance may result in penalties (see below).
4. **Supporting Documentation** – Provide drawings, calculations, tables, vendor submittals, cost estimates, and other voluminous documents, as appendices.

5. **References/Acknowledgements**

The judges will be directed to focus their review on the Project Description section of the design notebooks. Teams shall ensure 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 notebooks. Failure to ensure all documents are accounted for may result in a team penalty.

The Sub-Committee will not be able to review any submittal prior to submission.

**Conduct of the Contest**

The same individuals will judge throughout the contest. Competing teams are allowed and are encouraged to watch another team’s presentation. The scoring sheet has been developed for the convenience of the judges in evaluating both the design notebooks and presentations and will be used by the judges as the basis for judging all the student teams (see Scoring Sheet)

**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.

1. **PRESENTATION:**
   a. **Content.** Was technical subject matter relevant to design? To what extent was subject of interest to a technical audience? Was credit given for source of material or contribution by others? How much knowledge of subject was exhibited? Was work independent and original? Was subject technical or general in nature?
   b. **Organization.** Was there any novel approach to the subject? 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.** Were the words distinctly pronounced and was proper volume used to be heard by all? Did the contestant use proper English and was the vocabulary sufficient? 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? Was the presentation completed within the time limit of 20 minutes?

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?

2. **DESIGN NOTEBOOK:**

   a. **Technical.** Was the notebook organized effectively with Introduction, Statement of Problem, Background information, etc? Was a continuous, logical sequence of steps taken to solve the design problem? Was the solution feasible & logical for problem statement? Was creativity and innovative approach shown? Was knowledge of subject demonstrated? Was the 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 in the 20 page Project Description?

   b. **Presentation.** Were visual aides (graphs, supporting info, pictures, etc.), presented clearly? Correct grammar, spelling & technical writing? Logical formatting, organization of report, table of contents?

The judges will have the opportunity to comment on the design notebooks and presentations during the judging process. Judging scoring sheets and 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. Penalties are at the discretion of the Sub-Committee but may include the following:

- Failure to submit an abstract within the guidelines set forth herein – 1 point;
- Failure to submit a design notebook within the guidelines set forth herein – 1 point; and
- Failure to submit entries on-time – 1 point per day, up to a maximum of 3 points for late entries.

The maximum penalties a team can incur are five points. Teams will be notified of the penalties they have received prior to the competition.

Questions or Comments
Please contact Louis Storino at louis.storino@mwr.org
Or Archana Kuchimanchi at ksaarchana@gmail.com

Sample Project
Note this is only given as a general idea of sample project description and information.

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 team:

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 – Entry Form
Illinois Water Environment Association
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Scoring Tally Sheet

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**SCORE**
(Sum of Average Scores)
Illinois Water Environment Association
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Presentation Scoring Sheet

Name of University: ____________________________________________________

Title: _________________________________________________________________

Judge: ________________________________________

Content - 45 pts

1. Technical subject matter relevant to design (20 pts) ................................... ________
2. Personal contribution, library research, innovative project (10 pts) ............. ________
3. Knowledge of subject & content (15 pts) ..................................................... ________

TOTAL (45 pts) ...... ________

Organization - 20 pts

1. Introduction, background, objectives, presentation outline (5 pts)........ ________
2. Continuity, essential facts developed in a logical sequence (10 pts) ...... ________
3. Conclusion, definite & based on facts (5 pts)............................. ________

TOTAL (20 pts) ..... ________

Delivery & Effectiveness - 25 pts

1. Vocal delivery, conversation vs. memorized, proper volume, distinct pronunciation, timing (10 pts)........................................................................ ________
2. Body Language, eye contact with audience, distracting mannerisms (5 pts)._______
3. Visual aides legibility & effectiveness (10 pts)........................................_______

TOTAL (25 pts) ...... ________

Discussion - 10 pts

1. Questions & Answers, Clarification & spontaneous (10 pts) ...................... ________

Penalties........................................................................................................_______

GRAND TOTAL (100 pts) ...... ________

Illinois Water Environment Association
Name of University: 

Title: 

Judge: 

**Technical - 70 pts**

1. Introduction, statement of problem, background information (5 pts) ........... ________
2. Continuity, logical sequence of steps to solution (10 pts).......................... ________
3. Conclusion, definite based on logical steps to solution (10 pts) ................. ________
4. Solution feasible & logical for problem statement (15 pts)......................... ________
5. Creativity, innovative approach, applicability (5 pts)........................................ ________
6. Knowledge of subject & content (10 pts) .................................................... ________
7. Economic analysis, feasibility, presentation of economics (10 pts)............... ________
8. Bibliography, credit to resources & help (5 pts) .................................................. ________

TOTAL (70 pts) ...... ________

**Notebook Presentation - 30 pts**

1. Visual aides (graphs, supporting info, pictures, etc.), presented clearly (10 pts) ................. ________
2. Grammar, spelling & technical writing (10 pts) .............................................. ________
3. Formatting, logical organization of report, table of contents (10 pts)........... ________

TOTAL (30 pts) ...... ________

**Penalties**.......................................................... ________

GRAND TOTAL (100 pts) ...... ________