

Annex to
The Application of Dr. Radwan Al-Weshah
Civil Engineering (Water Resources and Environment)

Statement of Teaching Philosophy

Civil Engineering is a very challenging profession and a rewarding career. I believe in my active role in preparing future civil engineering professionals well equipped with the necessary knowledge base, professional and interpersonal skills. Therefore, my teaching philosophy aims at preparing students for becoming successful civil engineers and industry leaders capable of tackling major challenges in a changing global environment.

I use a variety of pedagogical methods grounded in my beliefs about teaching and learning using my diverse and accumulated engineering experience. I utilize the Socratic-method in my classroom enabling the student to actualize self-discovery in the learning process. I encourage my students to understand the nature of learning as a life-long process that does not end with graduation. In turn, I continue to learn from the experiences and insights of my students. Rejuvenation and adaptability are core competencies for successful faculty member. My style of instruction rests on fostering self-instruction, formulating questions rather than answers, and establishing high expectations.

My teaching philosophy entails four goals:

1. To create an environment in which students learn the basics principles. As a teacher, I leverage my experience and expertise to guide the students in fully comprehending course readings and projects;
2. To encourage creative thinking after a solid knowledge foundation is in place. I use multiple methodologies to foster innovative thinking and self-discovery including team-based learning, real life applications, and case studies;
3. To incorporate the students into the learning process by serving as mentor, adviser and coach. I share my time, research interests and skills, and international network with my students. Mentoring is tailored to the individual student because the classroom experience, no matter how interactive, will not meet the needs of each student; and
4. To promote learning is a life-long activity as I work to excite them about civil engineering future challenges through active involvement. I enthuse them with high expectations and help them meet those expectations while enabling them to do self-learning. I urge my students to be keen in considering leaning and professional development throughout their careers.

The success of my teaching philosophy and performance has been tested and evaluated in real world applications during my long academic career. I expect my students to take key issues away from their learning experience, for example:

1. The ability to analyze, to think critically and to exercise sound professional and ethical judgment;
2. The successful utilization of engineering principles and applications into real life problems and challenges with feasible, effective and sustainable solutions; and
3. The mastery of essential technical writing, communication, and technology applications skills to be able to communicate effectively in a global and changing environment.

To encourage my students to synthesize and demonstrate what they have learned, I use performance-based assessments. In these assessments, students participate in different aspects of professional practice and projects that they will be expected to enact as civil engineers. These activities enable students not only to apply their new knowledge and skills but also to develop a sound engineering sense and professional judgment.

To help my students expand their initial ideas and abilities, I expose them with a variety of learning activities and experiences through:

- 1- Implementing active learning techniques: My interaction with students to engage all students in the learning process through collaborative and cooperative learning among them using masterly leaning models.
- 2- Adopting curricular support for diversity: I am efficient in creating and adopting inclusive curricula and teaching methods that engage students from underrepresented groups. These curricula and methods of instruction for example use carefully construed examples and metaphors that relate to the cultural background of the entire audience and not just the majority group;
- 3- Integrating information technology in engineering education: During my academic work experience, I strive extensively covering and integrating state of the art advancements in computing and information technology in my course syllabi;
- 4- Embracing a multi-disciplinary integrative approach to engineering education: The international nature of my work experience showed me that the eroding boundaries between the different disciplines including socio-economical and environmental aspects. I always expose my student to various global experience and applications in civil engineering academic, consultation and research areas.
- 5- Fostering communication, leadership, and research skills: The mentorship I received during both my industrial and academic experience from a number of

key professionals networks highlighted to me the importance of effective communication, leadership, and research skills for civil engineers. I strongly believe that the civil engineering educational process can play a very important role in developing these skills in future practitioners. Therefore, I plan on fostering these skills in my future students by mimicking real life team collaboration efforts in courses, and by tutoring and mentoring these students in both formal and informal settings; and

- 6- Seeking and creating strong partnerships with civil engineering practitioners: During my long academic and industrial experience I recognize the importance of involving of civil engineering practitioners in the educational process significantly enhances the pedagogical impact of civil engineering course curricula on the engineering market. The participation of practitioners broadens the spectrum of professional issues addressed by course curricula, and also gives students opportunities to experience the civil engineering practice prior to their graduation.

The above strategies for achieving the objectives of my teaching philosophy are not static pillars. In fact, in order for these strategies to succeed, they need to be continuously evaluated and revised in closed feedback cycles. The main source of feedback would be student evaluations and peers feedback.

I am very proud of my long and diverse academic career, the outstanding and excellent evaluation that I got through confidential feedback and evaluation from different student in classes I have taught over a long period of time at the University of Jordan, The Brigham Young University in Utah, and the Middle East University in Jordan.

After my than 29 years of academic career, the rewards are immense as I enjoy seeing my students as successful professionals and some of them are in leading key roles and colleagues. My teaching philosophy is defined by my belief that a good teacher is a good learner, or someone who is always seeking out ways to improve his teaching abilities, whether by accessing professional teaching resources and learning from the feedback of students.

I have proof records of excellent teaching and instructions skills based on student evaluation in various classes and from different regions in Jordan and United States.

Teaching Interests (classic and tailored courses)

a. General

- Technical writing
- Statics
- Engineering statistics
- Numerical methods in engineering
- Surveying
- Strength of material

b. Undergraduate

- Fluid mechanics
- Hydraulics
- Hydrology
- Water resources engineering
- Water resources and environmental management
- Environmental engineering
- Irrigation
- Hydraulic structures
- Computer applications in water resources engineering.

c. Graduate Courses

- Surface water hydrology
- Groundwater hydrology
- Hydrosystems engineering
- Hydrodynamics
- Modeling of water systems
- Floods hydrology and mitigation
- Stormwater and highway drainage
- Design of water distribution/sewer networks
- Design of small dams
- Stochastic hydrology
- Integrated water resources management
- Wadi hydrology
- Ecohydrology of drylands

Statement of Research Philosophy and Research Interests

Scientific research plays essential roles in the development and welfare of human being. As a water expert and profession, my scientific research focus on sustainable development and engineering of natural resources with special focus on water resources. I grew up in a water scarce country and water availability was a big concern to everybody in our region. I tried in my research to employ the technical and scientific knowledge to coop with water scarcity in our region. Water is a driving force for integrated and sustainable development all over the world. Despite the gloomy picture of water shortage and its availability for future generations, I see that as a golden opportunity, rather than a constraint, for researcher to find innovative solutions to this challenging water crisis.

My research focuses on addressing emerging issues of water and environment including experimental work, field investigation, computer simulation and modeling as well as combination of these tools. My research covers areas like integrated water resources management, integrated watershed planning, interaction between the hydrological, ecological and socio-economical cycles, climate change risk management, shared water resources management, extreme events analysis and mitigation, and the various aspects of water and society and how to market the research finding to policy makers and leaders. My doctoral thesis was on the performance and management of water systems under water scarcity and drought. My career at UN system enables me to reach and influence many government policies related to water and environmental sustainability through scientific-based evidences supported by applied research. We have succeeded in achieving this goal in many water basins in the Middle East and North Africa.

More specifically my research interests cover the following areas:

1. Surface water and wadi hydrology processes and modeling.
2. Rainwater harvesting and artificial groundwater recharge in semi-arid regions
3. Groundwater management, protection and vulnerability mapping
4. Climate change risk management on environment and water resources
5. Shared water resources management and water cooperation
6. Non-conventional water resources (desalination, treated wastewater, recycled water)
7. Reliability and operation of water systems
8. Water resources policies and strategies
9. Optimization of water systems and water use efficiency
10. Socio-economical aspects of the water resources
11. Water saving and conservation and public awareness
12. Sustainable water resources and environmental management
13. Watershed management and erosion control
14. Flood mitigation and risk management
15. Drought mitigation and risk management.