Engineering Training Seminar in New Delhi, India

Training Dates: December 28-January 7, 2017

Location: New Delhi, India

Partnership Objective:

This intervention is part of the partnership between the University of Nebraska at Omaha (UNO), the University of Nebraska-Lincoln (UNL), and Kabul Polytechnic University (KPU) Partnership in Master's in Hydraulics and Hydrotechnical Construction (HHTC) Degree is to improve academic quality of KPU through curriculum and faculty development to ensure quality education and employment for a larger number of Afghan men and women in the HHTC field.

New Delhi Intervention Purpose:

The purpose of this academic training in New Delhi was to develop new curriculum and develop quality teaching and learning materials relevant to the market-oriented knowledge and employability. It is also to develop the teaching skills of KPU faculty in quality teaching. Lastly to develop the skills of Master Board Committee members in quality monitoring, supervision and implementation of revised curriculum for the HHTC.

The agenda for this training included:

- Discussions about policy document
- Lesson writing and material production
- Curriculum development
- Syllabus development
- Discussion about learning material
- Professional faculty development
- Teaching methodology
- Classroom management

UNO team members offered power point presentations and lead discussions concerning the topics mentioned above.

As planned, 11 faculty members from Kabul attended this training program. Four UNO team members who traveled to India conducted the training. The program was conducted at Jamia Millia Islamia University in New Delhi. India.

This seminar was very successful. The faculty of Kabul Polytechnic University attended 12 days of seminars covering a wide array of material. Afghan and American faculty who attended the seminars were able to learn a lot from each other. It was a great learning and team building opportunity for the attendees. The feedback received was that this seminar was very helpful to the attendees and they appreciated the time spend together.

UNO and Kabul Polytechnic University will jointly designed further activities to build on these
achievements.

UNO/UNL/KPU India Workshop Itinerary Preliminary

Here is my summary of the sections I propose in the itinerary:

Teaching Skills – Wednesday through Sunday – We will present good preparation and teaching methods, provide examples, and give KPU a chance to formulate syllabi, a lesson, and have three of them present a 30 to 40 minute lesson with approximately 10 minutes of discussion afterword for self-assessment – point out potential areas of improvement. Within this set of days, I can present information on teaching models, defining objectives, and syllabus design, as well as good presentation practices. Junke can guide a workshop on selecting textbooks. Each of us can present a well thought out class lesson (~40 or ~50 minutes). Tian and I can oversee teaching workshops, where the KPU professors spend time producing their own lesson. Three of the KPU professors will present lessons... The rest of us will watch and identify strengths and potential areas of improvement. We need to make sure that KPU professors bring syllabus material and course content... we should do the same and work on our own material simultaneously during active workshops. It will be a true group activity.

Research Skills – Devote Monday and Tuesday to development of research skills and prioritizing equipment and future software purchases.

Policy – Devote Wednesday through mid-Saturday to Assessment, Continuous Improvement, and policy development

In the table below, initials of leaders of each session are provided. If there is a W, it indicates a work activity and the leader is just a designated moderator, though all of us will be there to help out. There will likely be some preparation required to make each workshop activity run smoothly (i.e., development of worksheets/guidance).

Following the tables is a description of each presentation/activity

Key

DA	David Admiraal
JG	Junke Guo
SA	Sher Jan Ahmadzai
TZ	Tian Zhang
W	Workshop Activity

Week 1 Itinerary

Sunday 25/12/16	Monday 26/12/16	Tuesday 27/12/16	Wednesday 28/12/16	Thursday 29/12/16	Friday 30/12/16	Saturday 31/12/16
25/12/16	26/12/16	27/12/16	9:00 - 9:45 (JG/SA) G1 Introductions Opening Comments Workshop Goals 9:45 - 10:30 (DA) T1 Instructional Models	9:00 - 9:45 (<i>JG</i>) A4 Software Installation 9:45 - 10:30 (<i>DA</i>) T3 Presentation Skills and Learning	9:00 - 9:45 (TZ) T5 Effective Assignments, Quizzes, and Exams 9:45 - 10:30 (DA) T6 Examples and Demos	31/12/16
			10:30 - 11:00	Styles 10:30 - 11:00	10:30 - 11:00	
			Break	Break	Break	
			11:00 - 11:45 (DA)	11:00 - 11:45 (TZ/JG)	11:00 - 11:45 (DA)	
			T2 Syllabi, Defining	S1 Sample Lesson 1–	S2 Sample Lesson 2	
			Objectives	Topic TBD	– Point of Sail	
	Depart Omaha Travel Day		11:45 - 12:30 (DA/W)	11:45 - 12:30 (DA)	11:45 - 12:30 (DA/W)	
			A1 Prepare Syllabi	T4 ExCEEd	A6 Workshop (Cont.)	
			10.20 0.00	Teaching Model	10 20 1 20	Ina Dunalyan Day
		Travel Day	12:30 – 2:00	12:30 - 1:30	12:30 - 1:30	Ice-Breaker Day
		, , , , , , , , , , , , , , , , , , ,	Lunch	Lunch	Lunch	Visit Taj Mahal
	·		2:00 - 2:45 (<i>DA/W</i>) A1 Prepare Syllabi	1:30 - 2:15 (<i>TZ/KPU</i>) A5 Teaching	1:30 - 2:15 (<i>DA/W</i>) A6 Workshop	Tour New Delhi
				Methodologies - KPU Professors	(Cont.)	
			2:45 - 3:30 (DA/W)	2:15 - 3:00 (DA/W)	2:15 - 3:00 (DA/W)	
			A2 Present and Discuss	A6 Workshop -	A6 Workshop (Cont.)	
			Syllabi	Develop 30-40 minute		
				Lesson Based on		
			3:30 - 4:00	Course Material 3:00 - 3:30	3:00 – 3:30	
			3:30 - 4:00 Break	3:00 - 3:30 Break	3:00 = 3:30 Break	
			4:00 – 4:50 (JG/W)	3:30 - 4:15 (DA/W)	3:30 - 4:15 (JG)	
			A3 Select Textbooks	A6 Workshop	T7 Laboratory	
			112 Scient Temotoms	(Cont.)	Courses	
			4:50 - 5:00 (<i>JG</i>)	4:15 - 5:00 (<i>JG</i>)	4:15 - 5:00 (<i>JG</i>)	
			Closing Remarks	Discussion	Discussion	
13>13>13>13>1551515151515151515151515151	1	i .	1	Closing Remarks	Closing Remarks	

Week 2 Itinerary

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1/1/17	2/1/17	3/1/17	4/1/17	5/1/17	6/1/17	7/1/17
9:00 - 9:45 (TZ/W)	9:00 - 9:45 (<i>JG</i>)	9:00 - 9:45 (<i>JG</i>)	9:00 - 9:45	9:00 - 9:45 (DA)	9:00 - 9:45 (TZ)	9:00 - 9:45 (DA/W)
A7 Demo Lesson 1	Software	R5 Literature	Status of Women	P2 Accreditation	P4 Outcomes	A21 External Contacts,
- KPU Professor	Installation	Review/Journal	(Joint Session)	Criteria	Assessment Tools/	National Framework
		Publications			UNL Process	
9:45 - 10:30 (<i>TZ/W</i>)	9:45 – 10:30 (<i>JG</i>)	9:45 - 10:30 (<i>TZ</i>)	9:45 - 10:30	9:45 - 10:30 (<i>DA/W</i>)	9:45 - 10:30 (DA/W)	9:45 - 10:30 (<i>JG/W</i>)
A7 Demo Lesson 1	R1 Introduction to	R6 Environmental	Discussion	A16 Accreditation	A19 Defining	A22 Strategic
- KPU Professor	Matlab	Laboratory	(Joint Session)	Needs Breakouts	Outcomes and	Planning, Governance
10 20 11 00	10 20 11 00	Experiments	10 20 11 00	10 20 11 00	Assessment Tools	G3 Assignments
10:30 – 11:00	10:30 - 11:00	10:30 - 11:00	10:30 - 11:00	10:30 - 11:00	10:30 - 11:00	10:30 - 11:00
Break	Break	Break	Break	Break	Break	Break
11:00 - 11:45	11:00 – 11:45 (TZ)	11:00 - 11:45 (DA)	11:00 - 11:45	11:00 - 11:45 (DA/W)	11:00 - 11:45 (DA/W)	11:00 - 11:45(DA/W)
(TZ/W)	R2 Hypothesis Driven	R8 Review of Lab		A16 Accreditation	A19 Defining	A23 Student
A7 Demo Lesson 3 - KPU Professor	Research	Facility Strategy		Needs Breakouts	Outcomes and Assessment Tools	Development Activities Breakout
11:45 - 12:30	11:45 - 12:30 (DA)	11:45 - 12:30 (DA/W)	11:45 - 12:30	11:45 - 12:30	11:45 - 12:30 (DA/W)	11:45 - 12:30 (TZ/W)
(TZ/W)	R4 Developments in	A9 Discussion of Lab	11:45 - 12:50	(DA/W)	A20 Development of a	A25 Long term
T8 Team Exercises	Experimental	facilities		A16 Accreditation	Survey Tool for Student	strategy
16 Team Exercises	Technology	racinties		Needs Breakouts	Evaluation	Closing Remarks
12:30 – 1:30	12:30 - 1:30	12:30 - 1:30	12:30 - 1:30	12:30 - 1:30	12:30 - 1:30	12:30 - 1:30
Lunch	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch
Dunen	Dunen	Lunch	Dunen	Dunch	Lunch	Lunch
1:30 - 2:15 (JG)	1:30 - 2:15 15	1:30 - 2:15 (TZ/W)		1:30 - 2:15 (DA)	2:00 - 3:30 (DA)	
P1 Introduction to US		A10 Identification of		P3 Outcomes	P5 Vision for	
Hydraulics Curricula		Lab and Equipment		Assessment	National Program	
		Needs			Development	
2:15 - 3:00 (<i>JG/TZ</i>)	2:15 - 3:00	2:15 - 3:00 (<i>JG/W</i>)		2:15- 3:00 50 (<i>TZ/W</i>)		
A14 Internal Course		A11 Identification of		A17 Engaging		
Collaborations		Software Needs		Stakeholders		
3:00 – 3:30	3:00 - 3:30	3:00 - 3:30		3:00 - 3:30	3:30 - 4:30	
Break	Break	Break		Break	Break	
3:30 - 4:00(JG/KPU)	3:30 - 4:15	3:30 - 4:15 (TZ/W)		3:30 - 4:15 (TZ/W)	4:30 - 6:00	
Book Purchase	3.30 - 4.13	A12 Prioritization of		A18 Stakeholder	7.50 - 0.00	
20011 divinuo		Lab and Equipment		Tools	Closing Ceremony	
		Needs				
	4:15 - 5:00 (<i>JG</i>)	4:50 - 5:00 (<i>JG</i>)		4:15 - 5:00 (JG)		9:00 pm
	Discussion	Discussion		Discussion		Depart New Delhi
	Closing Remarks	Closing Remarks		Closing Remarks		T

Notes

G1 (General Session 1) – Introductions, Opening Comments, Workshop Goals. This should be delivered by Junke Guo and/or Sher Jan. I suggest preparing a slide that shows the goals of the workshop. These goals should be based on our work plan and on the content of the itinerary. I think we should have a short ice-breaker in which everyone can introduce themselves by Name, Rank, provide a little background, perhaps a hobby or something they like to do. We can provide a cue sheet that they can fill out before they introduce themselves. Second, Junke and/or Sher Jan should provide a message to open up the workshop – a welcome with some background and some hopes and dreams ©. Also, perhaps a comment about how everyone will be expected to participate because it is a workshop – not just a monologue from the UNL professors.

T1 (**Teaching Session 1**) – Instructional Models. This is a presentation I have created on instructional models. It includes four different teaching models that have different purposes and utility. The models can be used to design courses, design lessons, and select appropriate objectives, examples, and assignments. Several will be built into later activities.

T2 (**Teaching Session 2**) – Syllabi/Defining Objectives. This is a presentation I am preparing on doing a good job of laying out a course and selecting appropriate objectives. I think that the focus will be on objective choice. There will be discussion about how to incorporate Bloom's Taxonomy into objective choice.

A1 (**Activity Session 1**) – Prepare Syllabi. UNL and KPU Professors will prepare/modify their own syllabi during this activity. This will include things like providing a well-formatted syllabus with necessary information and developing good objectives to go with each lesson. **We need to be sure that every professor brings a syllabus from one of his classes and content from his course to work on.**

A2 (Activity Session 2) – Discuss Syllabi. UNL and KPU Professors will present syllabi or partially completed syllabi created during activity A1

A3 (Activity Session 3) – Select Textbooks. UNL and KPU Professors can work in teams/groups to identify appropriate textbooks and reference books for purchase for the library during this activity. We can divide into teams with UNL professors acting as secretaries and recording selected books. Teams should probably split based on subject area. This activity will help in identifying books to be purchased by the program. We should make sure that KPU professors and UNL professors bring lists of books that they know are useful and relevant.

A4 (Activity Session 4) – Software Installation. We will spend one session working on installation of software.

T3 (Teaching Session 3) – Presentation Skills and Learning Styles. Presentation of important techniques when developing slides, writing on the board, producing handouts, etc. Also, there will be information about learning styles embedded in this presentation.

S1 (**Sample Session 1**) – 40 minute teaching example. Lesson given by Tian or Junke – provide topic – should incorporate good teaching methods: Something to get their attention, good objectives, recall of previous knowledge, content, example, class exercise, feedback, assessment, advertisement of the next step (see Gagne's model). Leave time for discussion.

T4 (**Teaching Session 4**) – The ExCEEd Method. Presentation of important elements of the ExCEEd method of learning.

A5 (**Activity Session 5**) – KPU Teaching Methodologies. KPU professors will be asked to provide presentations on teaching methodologies that they employ. This could fall flat if we aren't careful, so we should have a back-up plan. We can assign some professors to work on this instead of producing a lesson, have everyone from the group contribute a little to this, or we could let it fall into discussion if there is no input from professors. We should discuss. We can ask KPU in advance if they will prepare something.

A6 (**Activity Session 6**) – Preparing Lessons. UNL and KPU Professors will develop 30-40 minute lessons together, including objectives, content, examples, demonstrations, exercises, feedback, assignments, etc. Two or three professors will be asked to give presentations followed by a feedback period from the remainder of the group. We need to be sure that every professor brings course content from one of his classes to work on.

T5 (**Teaching Session 5**) – Effective assignments presentation – reference the Gagne and Bloom models. May include an activity that allows professors to develop their own assignment problem statement on a topic of their choice. Assessment using quizzes and exams – develop a presentation that refers to the effective use of exams and quizzes to assess students and provide feedback for student performance. May include an activity that allows professors to develop their own exam problem based on a topic of their choice.

T6 (**Teaching Session 6**) – Examples and Demos. Presentation of ways to improve the learning experience including choices of examples and demonstrations – these will reference the Gagne and Bloom models.

S2 (**Sample Session 2**) – 40 minute teaching example. Point of Sail lesson given by Dave – should incorporate good teaching methods: Something to get their attention, good objectives, recall of previous knowledge, content, example, class exercise, feedback, assessment, advertisement of the next step (see Gagne's model). Leave time for discussion.

T7 (Teaching Session 7) – Laboratory Exercises – presentation of all topics relevant to laboratory style classes. Focus on best teaching practices in these settings. May also include discussion of safety issues.

A7 (**Activity Session 7**) – KPU Demonstration Lessons. Two or three KPU professors will be asked to give presentations followed by a feedback period from the remainder of the group.

T8 (**Teaching Session 8**) – Team Exercises – the new ABET outcomes include "An ability to function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty." These topics, and relevant ways of addressing them, should probably be included in this presentation.

R1 (**Research Session 1**) – Introduction to Matlab. Junke will give us an introduction into using Matlab. I guess he will be working live with the program while the KPU professors can follow suit on their laptops.

A8 (Activity Session 8) – Matlab Project. I think Junke will be having the KPU professors do a pipe network problem in Matlab.

- R2 (Research Session 2) Hypothesis Driven Research. Tian has prepared a presentation on this very subject
- R3 (Research Session 3) Experimental Approach. I will outline important strategies in the experimental approach, including defining goals and objectives, uncertainty, equipment, writing, etc.
- **R4** (**Research Session 4**) Developments in Experimental Technology. I am going to cover experimental technology that I think will be useful to them in the field and in the lab. This will provide them with some ideas about equipment we can purchase from project money.
- **R5** (**Research Session 5**) Publication. Junke will discuss different approaches and plans for successful publication. Discussion of peer review processes. Discussion of plagiarism and ethical issues, etc.
- **R6** (**Research Session 6**) Environmental Laboratory Experiments. Tian can go with this where he wants to. Safety is probably important. Might also cover some of the equipment that is useful for doing environmental experiments. Maybe also discuss equipment needed to do experiments with soil since they do a lot of that (e.g., ovens and soil testing equipment). Can work with Jiong Hu to get more information on this.
- R7 (Research Session 7) Computational Approaches in Hydraulics Research. Junke can provide an overview of computational modeling. I would suggest briefly alluding to N-S equations, give a summary of DNS, LES, RANS, K-E, etc. Discuss the utility of such models. Give a listing of examples (perhaps not just from hydraulics). Show an example from your research with results. There should be plenty to show here... probably too much, so we need to make it clear and focused.
- **R8** (**Research Session 8**) Review of Lab Facility Strategy. I would like to review what we know about their lab facility and equipment and get more information from them about it and how it would be used. I would start off this activity with review of what we know and some ideas about how to proceed.
- A9 (Activity Session 9) Discussion of Lab Facilities. I think Junke will be having the KPU professors do a pipe network problem in Matlab.
- A10 (Activity Session 10) Identification of Lab and Equipment Needs. We can produce a worksheet that allows the professors to identify pieces of equipment that they think are useful, identify the courses or masters research that they think it will be useful for, and provide some comment about how important it is. I can come up with a preliminary list based on the discussion in A7 that allows us to move forward. Also, if they are aware of cost or other information, they can provide that.
- **A11** (Activity Session 11) Identification of Software Needs. Similar to worksheet for lab and equipment needs. Note that while KPU professors are doing this, A UNL professor can organize results of Session A8 for presentation in A10.
- **A12** (**Activity Session 12**) Prioritization of Lab and Equipment Needs. This might be a review of what was given in 8 followed by prioritization if we have a printer, we can print out a list and have individual professors prioritize so that senior professors do not dominate the discussion.
- A13 (Activity Session 13) Prioritization of Software Needs. Similar to item A10, except for software.

P1 (**Policy Session 1**) – Introduction to U.S. Hydraulics Curricula. I have a set of slides that looks at M.S. curricula for several different hydraulics/water resources programs. The emphasis is on the diversity of the education for different students that all fall under the same degree. This presentation is a lead in to the next activity, which is a discussion of interdepartmental course collaborations.

A14 (**Activity Session 14**) – Internal Course Collaborations. In this activity, we can take time to discuss the different departments at KPU and discuss the possibility of combining existing courses and sharing courses across departments to build up a set of potential electives. Instead of focused specializations, we can encourage a broader range of education options for students.

A15 (Activity Session 15) – Time and Space Matrices – I would like to give the professors time to provide us with more detailed information about their facilities and time. Each professor will fill out a worksheet that includes hours of time spent during the week on each activity that they do on campus. Likewise, we will work with the professors to prepare a diagram of the KPU facility that shows the lab, class, and office space dedicated to HHS professors. I think that I would ultimately want information about the amount of area that is available. The information can help us to strategize how to utilize their time and space in more productive ways.

P2 (**Policy Session 2**) – Accreditation Criteria. I prepared a presentation on ABET Accreditation Criteria. I will update this with Afghanistan Accreditation Criteria and Present (or have someone else present).

A16 (**Activity Session 16**) – Accreditation Breakout Sessions. There are a significant number of requirements that need to be met for the program to become accredited. We can address requirements one at a time by doing breakout activities in order to develop a long-term approach to pursuing accreditation. Some of the requirements are national and some are ABET. We can look at the national requirements first and then move on to ABET requirements that have not been covered. The idea is to get the professors involved in deciding on an approach to tackle the ones that are not yet met. I have allocated three time slots for this activity, but I have a difficult time gaging how much time it will take.

P3 (**Policy Session 3**) – Outcomes Assessment. I prepared a presentation on Outcomes Assessment. Maybe Tian can present this. It is useful for those who are unfamiliar with assessment and provides a good starter for them for preparing outcomes and assessment tools.

A17 (**Activity Session 17**) – Identifying and Engaging Stakeholders. In this activity, we should produce a definitive list of all of the potential stakeholders of the MS program, from students, to employers, to ministries, to universities. This includes all places where they are hired and affect things. We should also brainstorm methods of engaging these stakeholders.

A18 (Activity Session 18) –Stakeholder Tools. Let's develop some survey tools that allow us to determine what the stakeholders are thinking. I know that at least we have access to the graduate students, and many of them have access to employers. We can use the tool to either (1) develop a better stakeholder involvement plan, or (2) make the tool the access point to the stakeholders every year (the advisory panel will change from year to year depending on who employs the current students).

P4 (**Policy Session 4**) – UNL Outcomes and Assessment Tools. I have a presentation that covers all of the outcomes and assessment tools that we use at UNL. This can be used to give them a head start on developing their own outcomes and assessment tools.

- **A19** (Activity Session 19) Start Identifying Outcomes and Assessment Tools. Come up with a list of desirable student outcomes. Identify potential tools for assessing these outcomes. We can spend a pretty significant chunk of time on this, but I'm not sure how much.
- **A20** (**Activity Session 20**) Development of a Survey Tool for Student Evaluation. Here we will develop an evaluation tool for student input. This tool can be used to obtain feedback from students regarding what can be done to improve lessons and courses. We can also use this to evaluate if teaching strategies that we work on improve their learning.
- **P5** (**Policy Session 5**) Vision for National Program Development. We should introduce the KPU professors to the concept of national organizations and licensure. I think that we can give a nice presentation on ASCE, NCEES, NSPE, and Engineering Boards. What I would really like to do here is to get them to start pushing towards more connectivity and better oversight of engineering projects.
- **A21** (**Activity Session 21**) External Contacts, National Framework. It would be nice to start developing a list of contacts from other universities and the government, along with a mapping of linkages throughout Afghanistan that would allow us to start pushing KPU towards better connectivity with other engineers.
- **A22** (**Activity Session 22**) Strategic Planning, Subcommittees, and Governance. I think it would be good to start showing U.S. models of department governance, including information about different subcommittees, strategic planning, etc. We should start with a presentation about our program, and finish with discussion of where they want to take their department, in terms of governance. This discussion can be directed to include issues about diversity, giving authority to young professors, etc.
- **A23** (**Activity Session 23**) Student Development Activities Breakout. In the U.S. we have student organizations, guest speakers, and other activities to keep our students engaged. We should introduce them to organizations like EWB, ASCE, and how we arrange guest speakers. Introduce them to the concept of design contests and social events that help build knowledge and collegiality. Followed by brainstorming of what can be done on the KPU campus to encourage these types of activities.
- **A24** (**Activity Session 24**) Web Page Development. In anticipation of better access to the network, I would like to actively work, possibly using software like WordPress, to develop web pages for each professor. Basically, through the two periods, we can develop a one or two page on-line C.V. with links to other material.
- **A25** (**Activity Session 25**) Long Term Strategy Co-teaching Framework. 50 minute discussion of possible course collaborations what topics, when they would be co-taught, how they would be co-taught.
- **A26** (Activity Session 26) Long Term Strategy Research Collaboration. Identifying topics of interest of the professors who are present. Developing research bios and topic lists for sharing with everyone.

G2 (**General Session 2**) –Closing Discussion. Where do we want to see the partnership go from here? What do we want to accomplish in the time between now and the next meeting. What are concerns, comments? We probably should develop a list of talking points to facilitate discussion.

G3 (**General Session 3**) – Assignments. Closing Remarks. This should be done by Junke and/or Sher Jan. It would be helpful to assign tasks to the KPU professors if we decide that something needs to be done as a result of the workshop. These tasks should have specific deadlines – some may be for the next visit to Kabul. I do not know what assignments we will have, all I know is that it would have been nice to have instructor profiles and course syllabi for all MS courses by now, and we don't. There will likely be other tasks that we need them to complete. Closing remarks should involve words of thanks, encouragement for the future, etc.