

MASTERS OF EDUCATION – STEM OSU-INDIA DUAL-DEGREE PROGRAM 2014-2016

Pursuant to the successful proposal on the partnership between the Ohio State University (OSU) and Aligarh Muslim University (AMU) for the project entitled “*Training the Next Generation of STEM Faculty at Higher Education Institutions in India*” that received an Obama-Singh 21st Century Knowledge Initiative award of the U.S.-India Education Foundation (USIEF), the following curriculum proposal (attached) outlines the salient features of a *dual-degree program* will provide an OSU MEd-STEM degree. The proposed program composed largely of the existing MEd program administered by the College of Education, with some modifications to accommodate the novel features of the project. The proposal was submitted by the Office of Global Strategies (William Brustein), and approved *a priori* by the participating departments and colleges of Education, Arts and Sciences, and Engineering. The accompanying Letter of Endorsement was signed by (former) Executive Dean Joseph Steinmetz, Dean of Graduate School Patrick Osmer, Dean of Education Cheryl Achterberg, and the Dean of Engineering David Williams. The salient features of the proposed MEd-STEM (for India) program are as follows.

1. The USIEF award spans a timeframe of 3 years from July 2013 to June 2016 to support a Pilot Project (hereafter the Project) that (I) Establishes a STEM Education and Research Center at AMU, and (II) launches a dual-degree concurrent program for a graduate doctoral degree at AMU, and a two-year program for Med degree with STEM specialization from OSU.
2. There will be 4 AMU students, two males and two females, in the first batch, to be admitted by April 2014; they will have completed all AMU course requirements and will be “post-candidacy” students ready to assume faculty status upon completion.
3. The AMU students will attend two semesters at OSU, AU14 and SP15, followed by two semesters of Field Experience in undergraduate STEM teaching at AMU from AU15 to SP16 under the joint supervision of AMU and OSU instructors.
4. A unique feature of the MEd-STEM program is significant emphasis on graduate research at OSU and AMU, essential for training world-class STEM faculty, the explicit aim of the Project. Therefore, the modified MEd-STEM curriculum (attached) requires additional credit-hours, beyond the existing MEd program, dedicated to advanced research under the guidance of OSU and AMU advisors.
5. The program also parallels the existing dual-degree program with Indonesia; some courses will have the same content.
6. Two courses will be e-taught by OSU instructors, tentatively scheduled for SU14 prior to arrival at OSU, in digitally equipped classrooms at AMU as specified in the OSU-AMU Memorandum-Of-Agreement. The 6 credits earned are expected to be transferred to OSU upon registration of AMU students in AU14. (These two courses are also expected to be transmitted concurrently to the Indonesian students.)
7. The two-year MEd-STEM (India) program will conclude with a Thesis/Project report and examination in SP16 to be conducted in the presence of an OSU instructor and AMU counterparts.
8. The attached chart with the modified curriculum and detailed comparison with the existing MEd program illustrates the course differences between the existing and proposed program. The proposed Med-STEM program also requires an additional credit hours devoted to research for a total of 41 credit-hours.

OSU Masters in Education with STEM Specialization (MEd-STEM)

Submitted by the College of Education for a Pilot Project under the Obama-Singh Award for a Dual-Degree program between the Ohio State University and the Aligarh Muslim University (AMU) to train STEM faculty in India at the university level for education and research, with joint supervision and advisors at OSU (Colleges of A&S, Engineering, Education) and AMU.

1. **Program:** Modified version of existing MA and MEd programs with combined features
2. **Admission:** By Petition only; Application before Jan 2014; Admission by Apr 15, 2014
3. **Expected enrollment:** 4 AMU “post-candidacy” PhD students in science or engineering with minimum of 5 years of undergraduate and graduate study
4. **Requisites:** All AMU graduate coursework completed; equivalent of 3.0 GPA; TOELFL (No GRE)
5. **No Ohio Department of Education certification required**
6. **No Graduate Teaching Assistant duties at OSU (No TSE)**

<u>Timeframe</u>	<u>Course</u>	<u>Credits</u>	<u>Description</u>	<u>MED equivalent</u>	<u>Credits</u>
SU14: June 1-21	T&L 6808	3	Multicultural & Global Perspectives EDUTL 6808	Equity & Diversity EDUTL 5005	3
SU14: June 25--Aug	T&L 5741	3	e-Distance Learning & Cognition EDUTL 5741	Learning and Cognition EDUTL 5741	3
AU14	Team-Taught 8998	3	Apprentice UG Ed+A&S/ENG EDUTL 8898	Field Experience & seminar EDUTL 5189, 5195	4
AU14	T&L 5722	5	STEM teaching methods 2 EDUTL 5722	STEM teaching methods 2 EDUTL 5722	5
AU14	Research	8	OSU Advisor		
SP15	Research	5	OSU Advisor		
SP15	T&L 6053	3	Assessment for Teaching & Learning EDUTL 6053	STEM Assessment EDUTL 5745	3
SP15	T&L 8998	3	Apprentice UG Ed+A&S/ENG EDUTL 8898	Internship & Seminar EDUTL 5191, 5195	11
SU15	Research	0	AMU/OSU Advisors		
AU15	Field Experience	2	Apprentice UG Ed+A&S/ENG EDUTL 8898	Internship & Seminar EDUTL 5191, 5195	
Au15	Research	3	AMU /OSU		
Sp16	Research	5	AMU/OSU		
SP16	Thesis Project	3	AMU/OSU Independent study EDUTL 7193	OSU Graduation	
TOTAL	CREDIT HOURS	41			29

I. **Courses in the current MED that are EXCLUDED from the India STEM MED.**

- Technology used in STEM teaching, EDUTL 5744 (3 credit hours)
- Inclusion: Philosophical, Social, and Practice Issues: Secondary Education EDUTL5504 (3 credit hours)
- Reading across the curriculum, EDUTL5442 (3 credit hours)
- Methods in Teaching Secondary Science I, EDUTL5721 (3 credit hours)

II. **Courses in the India STEM MED that are SUBSTITUTIONS for courses in the current MED.**

1. Substitute EDUTL 6808, Multicultural and Global Perspectives for EDUTL 5743.

- EDUTL 6808. Examines knowledge, pedagogy, reforms, and resources that support education for cultural diversity and equity in an interconnected world.
- EDUTL 5005. Focuses on issues of diversity, equity, teacher beliefs, and multicultural education. Emphasis is placed on the roles of identity and lived experience and its influences on approaches to teaching and learning in educational settings.

The EDUTL 6808 course is part of the Indonesia Dual MA Master's Program and is taught for the Indonesian students in Indonesia during the summer. The course addresses issues of diversity that are appropriate for the Indonesian context. As part of the Med-STEM program, the course will address issues of diversity and multicultural education appropriate to both India and Indonesia.

2. Substitute EDUTL 8998 for the Field Experience EDUTL 5189 and Reflective Seminar EDUTL 5195.

- EDUTL 8998. The process of researching teaching and learning are explored through working with a faculty member on an established research project.
- EDUTL 5189. Planned field experience under supervision in a P-12 classroom.
- EDUTL 5195. Seminar held in conjunction with field experience or student teaching internship. The goals are to process, reflect upon, and enhance benefits of the school experiences.

The India dual degree candidates will work with an OSU advisor and an Arts and Sciences advisor on the research of teaching and learning. This experience replaces the Field experience in a P-12 classroom that is part of our MED program.

3. Substitute Assessment for Teaching & Learning EDUTL 6053 for STEM Assessment EDUTL 5745

- EDUTL 6053. Balanced assessment for Teaching and Learning: Organized to follow the conceptualization, design, and implementation of a balanced, coordinated approach to formative instructional and assessment practices.
- EDUTL 5745. Assessment in STEM I: Explores how prior knowledge and reasoning strategies impact meaningful learning in STEM fields. Discussions of assessment design and evaluation are framed within a value-added model of STEM teaching and learning.

The 6053 and 5745 courses both address assessment in education. The 5745 course is STEM focused, and the 6053 part of the current MA program in education and is open to students from all disciplines.

4. Substitute Apprentice UG ED + A&S/ENG EDUTL 8898 for Internship & seminar EDUTL 5191 and 5195.

- EDUTL 8998. The process of researching teaching and learning are explored through working with a faculty member on an established research project
- EDUTL 5191. Student teaching internship in a P-12 classroom where students assume major teaching responsibilities under the guidance of a cooperating teacher and university supervisor.
- EDUTL 5195. Seminar held in conjunction with field experience or student teaching internship. The goals are to process, reflect upon, and enhance benefits of the school experiences.

During the spring semester, the Indian students will experience the university version of student teaching. They will be apprenticed to an Arts & Science or Engineering faculty member in their discipline and will assist that instructor with his/her instructional duties. This experience parallels the student teaching experience of the MED student. Instructional duties include co-teaching (under the direct supervision of the responsible instructor), advising, committee work, and working with graduate students. The Teaching and Learning Advisor will administer this experience, working as a team with the faculty mentor and the Indian student.

III. **Courses in the India STEM MED that are ADDITIONS to the current STEM MED.**

1. Research with their OSU/AMU advisors. Students will be paired with OSU advisors who have research interests in parallel with their AMU advisors. They will engage in research during their year in Ohio. This aspect of their program will introduce them to the advisor/advisee relationship as part of their apprenticeship to becoming a university professor in India.
2. Independent Study Field Experience Capstone project EDUTL 7193. The Indian student participants will conduct a research project during their final spring. An advisor from OSU will be present at their final examination and oral presentation of their project.

STEM MEd India Semester Program 2014-2015 October 30, 2013

	India	Columbus		India		
	Summer 2014	Autumn 2014	Spring 2015	Summer 2015	Autumn 2015	Spring 2016
1.	STEM-Teaching-Methods-I (3) EDUTL-5721	Equity & Diversity, EDUTL 5005	Internship (8) 5191	Reading Across the Curriculum (3) If Needed 5442	Field Experience in India, practice teaching EDUTL 8898 (2)	Independent Study Field Experience Capstone project (3)[OSU faculty present] EDUTL 7193
2.	Learning & Cognition (3) EDUTL 5741 (distance)	Technologies used in STEM (3) EDUTL 5744	Seminar (3) 5195	Research AMU/OSU advisor	Research, AMU/OSU advisors (3) (independent study)	
3.	Multicultural & Global Perspectives EDUTL 6808 (3)	Field Experience (2) EDUTL 5189	Assessment in STEM I: Introduction & Methods (3) EDUTL 5745			
4.		Reflective Seminar (2) EDUTL 5195	Research with OSU A&S or Eng advisor (5) (independent study)			
5.		STEM Teaching Methods II (5) EDUTL 5722	Apprenticeship UG Ed & A&S; EDUTL 8898 (3)			
6.		Apprenticeship UG Ed & A&S; EDUTL 8898 (3)				
7.		Research with OSU A&S or Eng advisor (8)				
	6 semester hours	16 semester hours	11 semester hours	0 semester hours	5 semester hours	3 semester hours

STEM MEd 41 Semester Hours