

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

Pursuant to the successful proposal entitled “*Training the Next Generation of STEM Faculty at Higher Education Institutions in India*”, and award to the partnership between the Ohio State University (OSU) and the Aligarh Muslim University (AMU) by the U.S.-India Education Foundation (USIEF) under the Obama-Singh 21st Century Knowledge Initiative, the following proposal outlines the salient features of a *dual-degree program* comprising of an OSU MEd-STEM curriculum (attached) that essentially incorporates the existing MEd program administered by the College of Education, with relatively minor 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 (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 with a graduate doctoral degree at AMU, and a two-year MEd program with STEM specialization from OSU.
2. There will be 4 AMU students 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 Field Experience in undergraduate STEM teaching at AMU from SU15 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 a maximum of 6 out of 30 credit-hours difference. 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	OSU Graduation	
TOTAL	CREDIT HOURS	41			29

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

- A. Technology used in STEM teaching, EDUTL 5744 (3 credit hours)
- B. Inclusion: Philosophical, Social, and Practice Issues: Secondary Education EDUTL5504 (3 credit hours)
- C. Reading across the curriculum, EDUTL5442 (3 credit hours)
- D. 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. T&L 6808, Multicultural and Global Perspectives is substituted for Edu T&L 5743.

- 6808: Examines knowledge, pedagogy, reforms, and resources that support education for cultural diversity and equity in an interconnected world.

This course is part of the Indonesia Dual 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.

- 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.

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2. T&L 8998 will replace the Field Experience T&L 5189 and Reflective Seminar 5195.

- 8998: The process of researching teaching and learning are explored through working with a faculty member on an established research project.
- 5189 Planned field experience under supervision in a P-12 classroom.
- 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

- 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.
- 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 is open to students from all disciplines.

4. Substitute Apprentice UG ED + A&S/ENG EDUTL 8898 substitutes for Internship & seminar EDUTL 5191 and 5195.
 - 8998: The process of researching teaching and learning are explored through working with a faculty member on an established research project
 - 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.
 - 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 their 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, 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. 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.