



UNESCO CHAIR ON ENGINEERING EDUCATION PROGRESS REPORT

- **Title of the Chair/network:** UNESCO Chair on Engineering Education, UCEE (www.ucee.ut.ac.ir)
- **Host Institution:** University of Tehran, Iran, www.ut.ac.ir
- **Date of establishment of the chair/ network:** April 26, 2014
- **Period of activity under report:** April 2017-April 2018
- **Report established by:** Hossein Memarian UNESCO Chair holder for Engineering Education, and Professor of Geo-engineering, University of Tehran, (<https://rtis2.ut.ac.ir/cv/memarian/?lang=en-gb>)

1. Executive Summary:

The primary initiative in launching UNESCO Chair on Engineering Education (UCEE) was started in 2010. This Chair was founded officially on April 26, 2014 in a ceremony in the presence of **Ms. Irina Bokova** UNESCO Director General, as well as the president of the University of Tehran. The first annual report of the chair was presented on May 2015. This report covers the activity of the chair for the period of April 2017 to April 2018. The main activities and research projects performed in the mentioned period can be summarized as follows:

Educational design: Designing new courses and educational programs for engineering education.

Educational Training: Holding diverse educational workshops for the professional development of faculty members and teaching assistant

Lecture: Oral presentations in different universities and professional centers, in various areas of engineering

Research: Conducting diverse research projects on different areas of engineering education.

Publications: Publishing new book and research articles in engineering education.

Contribution: Active member of the boards of directors of Iran Society of Engineering Education (ISEE), Iran Accreditation Institute for Engineering Education (IAIEE), Center for the Quality Assessment of College of Engineering of University of Tehran and Engineering Branch of Academy of Sciences of Iran

Cooperation: National and international relations with signing memorandum of understandings (MOU's)) for joint cooperation with universities, societies and related organizations and associations

2) Activities:

a) Education/Training/Research

i. Education (leading to certificate)

- Designing a new graduate program “Masters of Engineering Education” which is the first of its kind in Iran.
 - Designing and implementing series of workshops for professional development of faculty members and teaching-learning skills of teaching assistants concerning following purposes:
 1. Preparing educational objectives
 2. Teaching and learning styles
 3. Active learning
 4. Learning Assessment
 5. Assessment by rubrics
 6. Teaching experiences
 7. Teaching assistants (TA) training
 8. Accreditation of engineering programs
 9. Standard engineering education
 10. Deficiencies of Iran engineering education
 11. Teaching engineering design
 12. Academic ethics
 13. Role of advisors in engineering education
 14. Preparing educational materials
 15. Promoting students motivation to learning
 16. Online engineering education
- At the end of each workshop, a certificate is granted to participants.

ii. Training (short term)

During the report period, several workshops are presented for the professional development of faculty members and training of teaching assistants (TA). These workshops are presented in conjunction with the Centre for Quality Assurance of the College of Engineering, University of Tehran:

- 4 days educational course of “professional development”, for faculty members of the College of Engineering and members of some other universities, University of Tehran (October 11, 12, 18 & 19, 2017).



Four days faculty development educational course, October 2017

- TA training (or successful teaching assistantship), for teaching assistants of the College of Engineering, University of Tehran (April 22, 2017; November 7, 2017; March 6, 2018).



TA training workshop, March 6, 2018

- The role of Supervisors in Engineering Education (November 5, 2017)

iii. Research

Several research projects were carried out by the chair during the report period. The results of these researches were presented to the chair's steering committee. The 19 members of this committee represent different fields of engineering at the College of Engineering of the University of Tehran. Steering committee approved the results of the following research projects during its monthly meetings. Most of these approvals are implemented at the College of Engineering of the University of Tehran and also are posted on the website of the chair to be used by other universities.

- Preparing a document for “promoting international cooperation in engineering education” as a part of Iran education 2030 document, according to the UNESCO Education 2030 Incheon Declaration. This document was published by IRUNESCO.
- A new “Master of Engineering Education program” for Iran higher education system is designed by the chair and offered to the Ministry of Science, Research and Technology of Iran. This graduate program is planned to be started at the college of engineering of university of Tehran in September 2018.
- A new postgraduate course entitled “Engineering Education” is designed by the chair. This course will be preceded for PHD students of engineering in September 2018. A Textbook has been prepared by the chairholder for this course is published by the university of Tehran press.
- The title of some other researches carried out by the chair during the report period. The results of these researched presented as “educational suggestions”:

1. Supplementary paper-base student's survey.
2. Promoting the motivation of engineering students.
3. Preparing Course outline.
4. Multiple intelligence and learning.
5. Achieving further skills during *BSc capstone course*.
6. Challenges of online Education in Engineering.
7. Master of engineering education.
8. New graduate course on engineering education.
9. Educational course for professional development of Teaching-Learning skills for faculty members.
10. Difficulty of education in engineering education.

b) Conference/Meetings

i. Other conferences/organizational activities undertaken by the Chair

Annual advisory board seminar on “revival of engineering education” was held on December 20, 2017. The seminar was attended by members of the advisory board of the chair and related centers to gain consultation in the area of engineering education in Iran.



Annual advisory board seminar, December 20, 2017

ii. A selection of international conference presentations by the Chairholder and other colleagues

- A representative of UNESCO Chair on Engineering Education participated in the conference of UNESCO science chairs held in **Geneva** from 5 to 7 July 2017.



UNESCO Science Chairs, Geneva, 5 to 7 July 2017

- A representative of UNESCO Chair on Engineering Education participated in the regional meeting of UNESCO in **Malaysia** from 29-30 November 2017



UNESCO regional meeting, Malaysia, 29-30 November 2017

- A representative of UNESCO Chair on Engineering Education participated in the regional meeting of UNESCO in **Indonesia**, from 21-22 December 2017.



21-22 December 2017, Indonesia

c) Interuniversity Exchange/Partnerships

- The Chair-holder gave a lecture on challenges of engineering education, in the gathering of faculty members of Amirkabir University of Technology (9 January, 2018)



Lecture on Amirkabir University of Technology, 9 January, 2018

- The Chair-holder was invited as guest speaker to the meeting “Education, Planning and Assessment“, in Science and Industry University (15 January 2018).



Lecture in Science and Industry University, 15 January, 2018

- Signing MOU with Iran University of Science and Technology (15 January 2018).



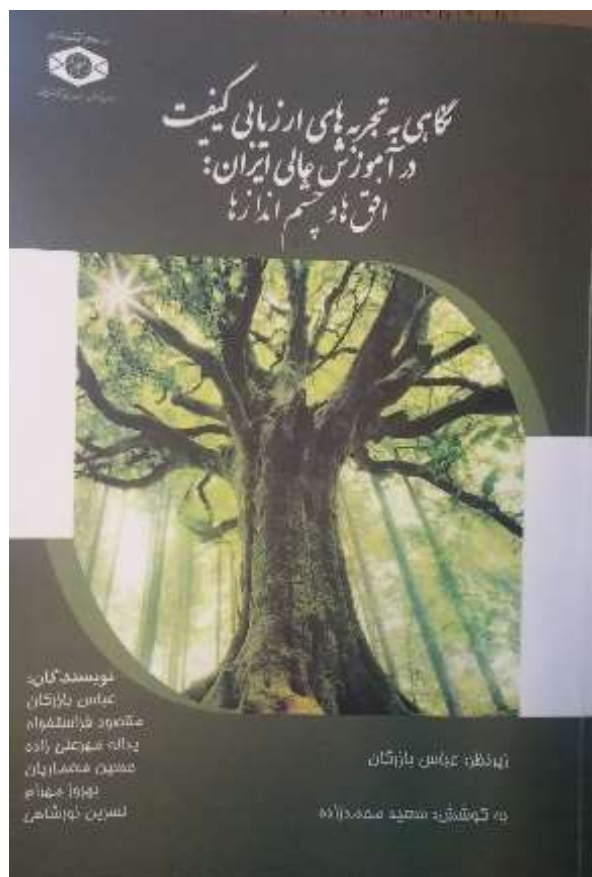
Signing MOU with Iran University of Science and Technology, 15 January, 2018

d) Publications

Books Chapter

Memarian H. et.al. 2016. Bazargasn A., Farasatkah M., Mehralizadeh Y., Memarian H., Mahram B.,

Noorshahi N. 2017. Quality assessment in higher education of Iran: horizons and prospects, Institute for research and planning in higher education, 108 pp.



Journal Articles (refereed)

- Jalali S., Mojarad M, Memarian H., Shahabadi M. 2017. M., The eligibility of scientific evaluation based on the criterion of “published paper” in engineering education of Iran. Iranian Journal of Engineering Education, Academy of Science of Iran, No. 75. Pp55-73.
- Memarian H. 2017. Faculty development for Iranian engineering education programs. Iranian Journal of Engineering Education, Academy of Science of Iran, No. 75. Pp 55-73.

Multimedia Materials (Video)

- Short course video “how to prepare course outline”, presented by the chair-holder



- Short course video “Engineering program outcomes”, presented by the chair-hold



Multimedia Materials

Lectures presented on 2nd Seminar of Advisory Board of UCEE (20 Dec, 2017)

Professor Nasser Soltani, Dean Faculty of Engineering,
University of Tehran

“What is a good education”



Dr. Sadolah Nasiri Geydari, UNESCO National
Commission Secretary General

“Teaching and learning, UNESCO perspective”



Professor Saeed Sohrabpoor, Head of Engineering Group of Academy of Science of Iran

“Challenges of Engineering Education”



Professor Jalal Hejazi, Head of Mining and Metallurgy branch of Engineering Group, Academy of Science of Iran

“Current challenges of Higher Education”



Dr Magsoud Farasatkah, Faculty Member, Institute for Research and Planning in Higher Education

“Proposing HE Index for Faculty Members Assessment”



Eng Ebrahim Abtahi, Faculty Member, School of Computer Engineering, Sharif University of Technology

“Challenges of Promoting Research in Engineering Education”



Professor Hossein Memarian, UNESCO Chair-holder for Engineering Education.

“UNESCO Chair on Engineering Education Annual Report”



- Updating and maintaining the bilingual website of the UNESCO Chair on Engineering Education (ucee.ut.ac.ir)
- Promotion of UCEE activities by Newsletter, The third electronic newsletter, Mar 2018

(<http://uceetest.ut.ac.ir/cms/42334>)

e) Cooperation with UNESCO Headquarters, Field Offices

- Active participation in the conference of UNESCO science chairs, held in **Geneva** from 5 to 7 July 2017
- Active participation in the regional meeting of UNESCO, held in **Malaysia** from 29-30 November 2017
- Active participation in the regional meeting of UNESCO, held in **Indonesia**, from 21-22 December 2017
- Active collaboration and participating in meetings and activities of UNESCO National Commission.

Future Plans and Development Prospects

- Cooperation with universities and related centers to expand the process of accreditation of engineering education programs.
- Supporting research projects on challenges of engineering education.
- Defining annual prizes for the best research projects on engineering education.
- Holding training courses and workshops for professional development of faculty members and teaching assistants (TA).
- Promoting the process of retraining engineers employed in industry and seeking industry collaboration to promote the professional engineer (PE) program in the country.
- Designing and implementing educational courses, including master's degree program in engineering education.
- Presenting educational and research advice and services to universities, organizations and industry.
- Expanding the activities of the chair to the neighboring countries and others in the region, with the aim of establishing the "Regional Center for Engineering Education".
- Establishing links with related centers at international level and other UNESCO chairs, in order to exchange the findings.
- Planning to join the world conventions in the area of engineering education (e.g. Washington Accord).

Appendix

1) Human Resources

The chair structure consists of steering Committee, board of advisors and the office of the chair holder.

Strategic Council: The role of strategic council is to propose the general guidelines and monitor the macro policy of the chair. The 19 members of this council (14 full professors) represent different fields of engineering at the College of Engineering, University of Tehran.

Advisory Board: The purpose of advisory board is to gain consultation in the area of macro engineering education and to establish links between UNESCO Chair on Engineering Education

and other related centers at national, regional and international levels. The members of the advisory board are pioneer professors in the fields of engineering and pedagogy and experts from industry.

Chair office: Technical staff and secretary.

2) Financial Resources

Financial contribution and specify the amount in U.S. dollars

Host Institution: 35000 \$

NGO: 4000 \$

Space

A 120 square meter office, with three personnel

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UNESCO chair-holder for Engineering Education, 22 May 2018



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