Kick off meeting - Rome, March 14-18

Zewail City for Science and Technology - Zewail City - Egypt

Dr Ibrahim Ashour, iashour@zewailcity.edu.eg

Egypt’s National Project for Scientific Renaissance
Visionary Behind the Project

Nobel Laureate Ahmed Zewail (1999 in Chemistry)
City Objectives

Prepare a New Generation Capable of

Thinking Critically and Creatively

Mastering Basic Sciences

Linking Academia with Industry

Building Entrepreneurship

Delivering Outcomes that Have a Significant Impact on Society and Economics
Structure of Zewail City

Zewail City

Research Institutes

University of Science and Technology

Center for Strategic Studies

High School

Technology Pyramid

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Undergraduate Curriculum

First Year
Core Courses (STEM Based)

Engineering Majors
Four Years

- Nanotechnology Engineering
- Environmental Engineering
- Renewable Energy Engineering
- Space and Communication Engineering

Science Majors
Three Years

- Intellectual Property, Technology Transfer & Commercialization
- Humanities and Social Sciences
- Nanoscience
- Materials Science
- Biomedical Science
- Physics of Earth and Universe

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Admission Criteria

- **High School Score**
- Score of Basic Sciences
- Admission Exam
- Interview
- English Proficiency Exam

**Academic Excellence is the Only Admission Criteria**

- Physics, Chemistry, Biology and Mathematics
  - To measure depth of knowledge and understanding
- Pre-university English Program

> 96% for 2014/2015
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Research Institutes at Zewail City

Imaging and Visualization
- Center for Imaging and Microscopy
  - Nanotechnology Center

Energy, Environment and Space
- Center for Photonics and Smart Materials
  - Center for Nanoelectronics and Devices

Nanotechnology
- Center for Material Science

Economics and Global Affairs
- Talaat Harb Center for Economics
  - Center of Excellence for Stem Cells and Regenerative Medicine

Basic Sciences
- Center for Theoretical Physics
  - Center for Genomics

Helmy Institute for Medical Science
- Center for Aging and Associate Diseases

Other Centers:
- Center for Imaging and Microscopy
- Center for Material Science
- Center of Excellence for Stem Cells and Regenerative Medicine
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Master Plan
Working group

Program of Renewable Energy Engineering (REE)
Program of Environmental Engineering (ENV)

Staff Members:
Dr Ibrahim Ismail (REE)
Dr Fareed Aboul Ela (ENV)
Dr Ibrahim Ashour (ENV)

Students from the two programs

(Zewail City of Science and Technology – Ibrahim Ashour)
Working group

The expertise ZC organization intends to bring about the project

- Environmental impact assessment
- RES technologies
- SMEs involvement
- Recycle of solid wastes
- Desalination
- Cleaner Production

(Zewail City of Science and Technology – Ibrahim Ashour)
Target curricula

Curricula have developed in ZC are undergraduate programs, namely Renewable Energy Engineering and Environmental Engineering, which are related to energy.

Current Orientations:
• Establishment and building a foundation for identify development our students as thoughtful individuals growing intellectuals and active members of society.
• Research oriented
• Shift from teaching to learning
• Incubator for industrial innovation and development project
Target curricula (cont.)

Deficiencies:

• Some laboratories are still under establishment
• Space problems till moving to new campus
• English language
• Unsatisfactory scholarship
Target curricula (Cont.)

Internship (Industrial Training), and Capstone (Graduation project) (IGP) are our target in ENEPLAN.

Students whom involve in Task 2.4 testing in Cmap 2.0 Tool:

Year 4/course IGP
- 5 students from REE
- 5 students from ENV
Educational models

• Two semesters per year 18 credits each, number of students ranges from 12 to 30 per section.
• Frontal lecture, laboratory.
• Elearning is available (Learning management system (LMS) using black board).
• Educational model is problem based and project based learning, and problem solved learning is used in basic courses and considered advanced in my country.
REE Program

Basic Courses Math, Physics and Chemistry

Engineering Sciences and humanities

Applied and technical elective courses

Internship (summer of year 3 & 4)

Capstone courses (Graduation project)

PV, Wind, Biofuels in year 3, 4, 5

Integrated Knowledge bounded by Environmental, economic and design constraints

Education model is credit system and based on student centered