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MISSION, VISION, OBJECTIVES AND OUTCOMES

UICET CHANDIGARH

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Foreword

In our November 22nd Zoom call meeting, one of the action items was to prepare a *Mission, Vision, Objectives and Outcomes* document that may be used as a basis for discussion and follow-up with the Department by the 1966 batch team which will be visiting Chandigarh from December 22 – 25, 2023 in connection with the 4th PU Global Annual meet and felicitation of Arun and Arvind for their large donation to the UICET. Enclosed, is a draft of such a document for your comments and builds.

Broadly speaking, what I heard yesterday was that the purpose of our involvement with the department will be to genuinely try to restore it back to its original glory, as perceived by us, when we were attending the school from 1962-66. In the zoom meeting Arun mentioned that the department ranked 4th in the nation back then. I have no way of confirming or denying that, so I am accepting that data at its face value. My quick search on the internet reveals that it is currently ranked # 54 among Chemical Engineering colleges in India by NIRF (National Institute ranking framework). While that confirms our impression (casual observation) that the department's standing may have gone down over the years, it also points out the magnitude of the challenge. To restore the department back to being # 4 means it will have to beat most of the IITs, with the exception of perhaps Delhi, and Madras which rank # 1 and # 3 respectively. In case you are curious, Indian Institute of Science Bangalore is ranked # 2 in the nation today.

To methodically approach this task, the starting point in my view has to be Mission, Vision, Objectives and Outcomes - which I personally consider as a blue print for any organization, for conducting its business. At the very least it clearly defines the goal, its reason for being, and a high-level strategy to achieve those goals.

Approach

Rather than starting from scratch, I searched the internet to see if there exists a current UICET Mission and Vision document and found that in fact it does. I used that as a starting point. The next step was to search the internet for best chemical engineering institutes in India and in the U.S. and examine their Mission and Vision statements. In the U.S. I was most impressed by University of Stanford Chemical Engineering Department's stated Mission

and Vision. I looked at some other universities in the U.S. as well. In India, I looked at the IIT's (Delhi, Madras, Mumbai, Kharagpur etc.). The purpose of this review was to pick the language that could be used for inclusion in the UICET document to achieve our stated objective. After these reviews, I went through the exercise of developing a suggested Mission, Vision, document for UICET Chandigarh. What is included in this document is both the Current and Suggested Mission, Vision, Objectives and Outcomes document for UICET. You will see that in some places the changes may be subtle but I believe, the impact of such changes will be profound.

Gap

All of us have gone through the exercise of developing Mission, Vision statements in our careers, so in that sense it is like preaching to the choir. Most often such documents get developed and then put on the shelf. I believe that appears to be the case with UICET. When we hold such discussions with the department, we should confirm that and also ask whether there exists a follow-up plan to the Mission/Vision document. If so, please get a copy so we can study it and incorporate it in our thinking and future guidance. If not, then after getting department's buy-in to the suggested changes, our next step should be to develop a **Plan of Implementation with specific metrics and time lines as to what will be achieved by when and by whom, as we embark on this path.** Lack of a plan of implementation is the Gap that must be fulfilled to achieve stated objectives.

Next Steps

Request the department to designate a point person with responsibility to conduct quarterly or semiannual reviews, and report progress on the short- and long-term milestones and metrics with an assessment whether or not the department is on the right track to achieve its stated objectives.

S.S. Bhatnagar University Institute of Chemical Engineering & Technology (UICET)

Mission

Current

- To develop human resource in chemical engineering, food technology and allied areas to cater to the requirements of industry, academics and R & D organizations, both at national and international levels, by providing value based high quality technical education.
- To equip the students with technical, research and personality development skills by providing them competitive and stimulated academic environment and to create awareness about the needs and requirements of the society and industry by regularly revising and reorienting courses and curriculum.
- To make significant contributions towards improving the quality of life by involving students in basic and applied research in collaboration with industries and research institutes to meet the changing needs of society.

Suggested

Chemical engineers conceive and design processes to produce, transform and transport materials — beginning with experimentation in the laboratory and followed by implementation of technologies in full-scale production.

The mission of the undergraduate and graduate program in Chemical Engineering and allied fields is to develop students' understanding of the core scientific, mathematical and engineering principles that form the foundation underlying these technological processes, to serve and to enhance the wellbeing of the citizens of India and the world.

Vision

Current

To achieve national and international recognition in the field of chemical engineering and allied fields fulfilling the Panjab University's proud heritage

through excellence in teaching, research and service.

Suggested

To achieve national and international recognition in undergraduate and graduate programs in chemical engineering and allied fields through excellence in technical education, basic and applied research, innovation, and entrepreneurship in cooperation and consultation with the industry.

Objectives and Outcomes

Objectives*

Current Objectives

The graduates must have the ability to

- Apply knowledge of physical sciences, mathematics and chemical engineering, food Technology and allied fields.
- Identify, formulate and solve engineering problems using fundamental and engineering sciences.
- Conduct experiments and design commercial equipments or processes with specific consideration of environmental, social, health and safety aspects in the area of chemical engineering and allied fields.
- Use research methods, design of experiments and analysis techniques to analyze, interpret and present data and to solve complex engineering problems and provide valid conclusions.
- Use the IT techniques, modeling and simulation skills, and modern engineering tools necessary for engineering practice.
- Analyze the local and global impact of engineering solutions and applications on individuals, organizations and society as well as the impact of society on professional engineers.
- Design a system, a component, or a process to solve the problems within realistic constraints such as economic, social, environmental, ethical, health and safety, manufacturability and sustainability.
- Understand the importance of professional ethics.

- Function effectively either individually or as a member of a team with the objective of performing and achieving goals.
- Communicate and present themselves effectively.
- Recognize the need for, and to engage in continuous professional development.
- Understand the principles of engineering and management and apply these to the discipline as a member or leader in a team, to manage projects.

Suggested Objectives

The graduates will be:

1. Effective in applying the basic chemical engineering principles along with analytical problem-solving and communication skills necessary to succeed in diverse careers including chemical engineering practice and academic research.
2. Effective life-long learners especially in a field whose focus areas, tools, and professional and societal expectations are constantly changing.
3. Equipped to successfully pursue postgraduate study in engineering or in other fields.
4. Prepared to consider the broader context of social, environmental, economic and safety issues and demonstrate high standards of professional and ethical conduct to become responsible citizens and leaders in the community and in the field of chemical science.

Suggested Outcomes

The graduates will demonstrate an ability to:

1. Apply knowledge of mathematics, science and engineering.
2. Design and conduct experiments, and to analyze and interpret data.

3. Design a system, component or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability.
4. Function on multidisciplinary teams.
5. Identify, formulate and solve engineering problems.
6. Function professionally and ethically.
7. Communicate effectively.
8. Understand the impact of engineering solutions in a global, economic, environmental and societal context.
9. Recognize the need for, and an ability to engage in, life-long learning.
10. Deal with contemporary issues.
11. Use the techniques, skills and modern engineering tools necessary for engineering practice.

***Note:** Current statement combines Objectives and Outcomes under Objectives only. It is suggested that they be separated as shown.