A REPORT ON THE 8TH

WORKSHOP AND MEETING OF BOS FOR THE REVIEW AND REVISION OF CURRICULUM

Organized on

29th of April 2016

Department of Computer Science & Engineering Shri Mata Vaishno Devi University Kakryal Katra-182320

A Workshop and the Board of Studies meeting was conducted on 29th of April 2016 to review and revise the curriculum of various programs offered by Department of Computer Science & Engineering (DoCSE). The details are given as under.

WORKSHOP AND BOS MEETING OBJECTIVES

1. Review/revision of curriculum in line with emerging areas of importance with reference to present needs in Higher education, Industry & Research and scope of employability.
2. Inclusion of latest text books and reference books.
3. Prerequisites of Courses
4. Instructions for paper setting (Minor & Major) for each course.
5. Any other related matter suggested by Expert and Faculty members.

DETAILS OF THE WORKSHOP

Date	29th of April 2016
No of Participants	15
Participants	Prof Saroj Kaushik(IIT Delhi), Prof Dev Anand (CU Jammu), *Mr. Krishna Kant (EMC^2 New Delhi), Mr. Amit Rawat(EMC^2 New Delhi) and all the faculty members of CSE Department
Venue	Conference Room of Department of CSE SMVD University- Katra

*Due to unavoidable circumstances, Mr. Krishna Kant from EMC^2 could not attend the meeting.

Schedule of the workshop Cum BOS

Day/Date	Time	Topic	Mode	Resource Person
Friday 29th of April 2016	2:00-2:05	Welcome address		Dr Ajay Koul
	2:05-2:10	Faculty introduction		
	2:10-2:40	About the Department & Broad areas of Research	Presentation	Dr. Ajay Koul
	2:40-3:10	What industry Needs	Presentation	Mr. Krisnakant/Amit Rawat
	3:10-3:40	How to build the Gap	Discussion	Open for all
	3:40-7:30 onwards	Agenda items	Review/Discussion	Open for all
	7:30	Vote of thanks		Dr. Sakshi Arora

Introduction

Computer Science & Engineering is defined as the discipline that embodies the science and technology of design, construction, implementation, and maintenance of software and hardware components of modern computing systems and computer-controlled equipment. Computer engineering has traditionally been viewed as a combination of both computer science (CS) and electrical engineering (EE). It has evolved over the past three decades as a separate, although intimately related, discipline. Computer engineering is solidly grounded in the theories and principles of computing, mathematics, science, and engineering and it applies these theories and principles to solve technical problems through the design of computing hardware, software, networks and processes. Technological advances and innovation continue to drive computer engineering. There is now a convergence of several established technologies (such as television, computer, and networking technologies) resulting in widespread and ready access to information on an enormous scale. This has created many opportunities and challenges for computer engineers. This convergence of technologies and the associated innovation lie at the heart of economic development and the future of many organizations.

With the ubiquity of computers and computer-based systems in the world today, computer engineers must be versatile in the knowledge drawn from standard topics in computer science and electrical engineering as well as the foundations in mathematics and sciences. Because of the rapid pace of change in the computing field, computer engineers must be life-long learners to maintain their knowledge and skills within their chosen discipline.

In business organizations, some 53% employers say that a typical new recruit does not meet their
'Reasonable expectations' – and year on-year data shows that employers are growing more and more concerned that recruits do not meet their expectations. Nearly two thirds report that graduates are the biggest challenge and a similar percentage is concerned that the education system will struggle to keep up with the skills required for technological change. Employers say the main skills gap across all candidates are business acumen, practical experience, leadership, management skills and, more generally, the 'soft' and work ready' skills. Many organizations point to a problem with education and the relevance of qualifications and training: 28% of organizations do not feel that degrees meet their needs, with claims that technical degrees do not develop practical skills, have insufficient depth, and are not up to date.

So keeping the above points in mind a workshop was organized in the Department of CSE on 29th of April to discuss about different new areas of research and how the curriculum updating of the Department will help in imparting the required research bent of mind and technical skills in students.

BROAD AREAS DISCUSSED

A presentation on current course structure of B.Tech, M.Tech and MCA was given by Dr. Ajay Koul. He also highlighted the data collected from the academic institutions and professional bodies like IEEE and ACM. He further clarified that the following broad areas have been suggested by the professional bodies like ACM and IEEE to be covered in the curriculum in order to provide sufficient knowledge to the students in the field of Computer Science & Engineering. The External Experts and other BOS members discussed the importance of all the areas and provided their necessary inputs in terms of inclusion of subjects related to new areas like

1. Computational Science

2. Graphics and Visualization

3. Human-Computer Interaction

4. Machine Learning

5. Information Management

6. Platform-based Development

7. Social Issues and Professional Practice

UG and PG Courses offered at the Institutions of National Importance

Prof. Saroj Kaushik of IIT Delhi made a presentation on UG and PG courses at the institutions of national importance with special reference to IIT Delhi. She mentioned that the Education at IIT's are organized around the semester-based credit system of study where a student earns credit for it, if he/she has registered for that course and gets a valid grade. She presented the overall course credit structure of B.Tech program at IIT Delhi and emphasized that any B.Tech program structure should lay emphasis on foundational courses with focus on courses of current relevance as well. Fast changing technology should not impact the curriculum frequently. Specialized modules can be designed to cater such need.

Comments Given by the External Expert Mr. Krishna Kant from EMC² via E Mail

Hello Sir,

I will not be able to participate in the meeting due to an urgent family medical emergency. I apologize for the last minute cancellation from my side.

However, I would like to share my perspective on IT for the meeting tomorrow via this email. I believe that the IT industry is going through a very rapid and fundamental transformation. The IT design and consumption models are undergoing a gigantic shift and decisions in BOS can help students better prepare for a career in the new age IT industry. We should be focusing on teaching technologies which are in practice or currently evolving and have the potential to be the mainstream in IT in times to come. Following are the areas of technologies we should be focusing on:

1. Cloud
2. Data Science & Analytics
3. Infrastructure Design
4. Information Security
5. Internet of Things
6. App development
7. Social Media
8. 3D printing
9. Smart Devices (self-driving cars, virtual reality googles & content, Apps for device mesh, etc.)

Including these subjects shall definitely create a differentiator for SMVDU students. BOS should try to incorporate as many of these subjects as possible. One of the challenges I foresee is developing teaching competencies for these areas of technology. From that standpoint, EMC is committed to help the university develop talent in the areas where EMC possesses expertise. My colleague Amit Rawat shall be participating in the meeting. He shall share his perspective and how EMC can contribute to SMVDU.

Regards,
Krishna Kant

What Industry Needs

A presentation on the skill requirements in the industry was given by Mr. Amit Rawat. He said that the Corporate sector always look for candidates who are technically sharp, creative and with analytical bent of mind. They are in search of people who don't need training and can immediately start working. That is the reason that the budding B.E/B.Tech Engineers or MCA face a number of problems when they apply for jobs after finishing their degree. So the Course structure should be designed in such a way so that it automatically builds up the efficiency and widens the logical skills of students, so that they can think according to industrial needs and play a major role in it. He further added that more industry academic collaboration should be facilitated so that the industrial needs are identified. The students should be more oriented towards research and some courses in collaboration with the industry should be offered to provide the overall exposure of problem solving and latest technological trends to the students.

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Agenda item No. 1: To consider & approve the introduction of new subjects for pre- Ph.D. course work

The Department of CSE currently has only one approved course for pre-Ph.D. course work and therefore there remains no choice for the students to opt for Pre-Ph.D. courses related to their research work. The faculty doing research in their respective areas have proposed the following courses. The detailed syllabus of the courses mentioned below is attached at Annexure-A

1. Advanced Algorithms.
2. Computational Intelligence.
3. Digital Image Processing.
4. Mobile Computing.

The Board after discussion approved the above mentioned courses and also instructed to include the list of elective courses of M.Tech. in this category to offer to the students of Ph.D. for course work.

Agenda item No. 2: To discuss the program objectives and various course outcomes of M.Tech B.Tech. and M.C.A program

The Department of CSE recently framed the various course outcomes and program objectives of M.Tech, B.Tech and MCA Program. The Board is requested to approve the same. The details are attached at Annexure B

The Board approved the new course structure attached at Annexure-B after including new subjects in the list of Electives

Agenda item No. 3: To discuss about the revision and review of the academic course structure of various programs offered by the Department

The course structure of various programs (B.Tech, M.Tech and M.C.A.) offered by the department is attached at Annexure-C. The Board is requested to provide the valuable suggestions & consider also the discussions held in the Workshop. on the basis of skills in demand in the industry, employability in the Govt. as well as in the private sector The Board approved the new course structure attached at Annexure-C after including new subjects in the list of Electives.

Agenda item No. 4: Instructions for paper setting (Minor & Major) for each course.

The Department of Computer Science & Engineering (DoCSE) has formulated the instructions for paper setting (Minor & Major) which needs to be followed while setting the paper for various courses so that the pattern for paper setting adopted by the faculty members will be uniform throughout the department. The instructions for paper setting is attached at Annexure-D

The Board approved the instructions given at Annexure-D

Agenda item No 5: Prerequisite for the courses

The Department of CSE has prepared a list of courses along with the prerequisites attached at Annexure E. The Board approved the List of Prerequisites.

Agenda item No 6: Inclusion of Colloquium in MCA program

The course curriculum of MCA does not have the provision of including the colloquium currently in their course structure. The faculty of DoCSE deliberated on this issue and are of the opinion that the same should be included. The Board is requested to kindly look into this matter and approve the same. The course structure for MCA program is attached at **Annexure-C**

Agenda item No.7: To consider and approve the changes in the existing course curriculum

The Department of Computer Science & Engineering conducted the 7th Board of studies meeting on 20th of June 2014 and several changes were suggested in the course curriculum of various programs. After incorporation of the changes, several mistakes were identified in the credit allocation. The department has now corrected the errors in consultation with all the faculty members. The faculty members has also provided some new inputs in terms of syllabus updation. The details are attached at **Annexure-F**

The Board considered and approved the changes in course structure of MCA program

Agenda item No.8: To introduce Lab course for the Image processing course offered in B.Tech and M.Tech Program

The faculty member teaching the above mentioned course of DoCSE felt that there should be Lab course in MATLAB for the course in order to provide exposure to students about various image processing developmental techniques in MATLAB and to provide them the practical exposure. The details are attached at <u>Annexure G.</u>

The Board Considered and approved the Lab Course

Agenda Item No: 9 : To discuss the Mission and vision for the School

The faculty of the Department has worked on reframing the Mission and Vision for the Department. The Board is requested to provide the valuable inputs and approve the same. The New Mission and Vision statement is given below

Vision: To achieve Excellence in offering high quality education with emphasis on ethical values to the students in the area of Computer Science and Engineering to meet the challenges of industry and diverse needs of the society.

Mission: To impart education in the emerging fields of computer Science & Engineering to meet the competitive global industrial needs by producing high quality workforce
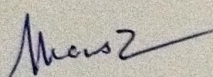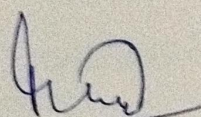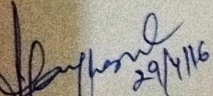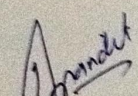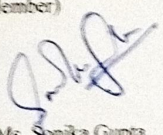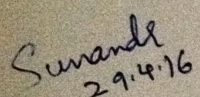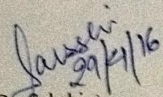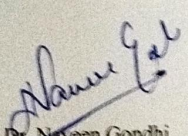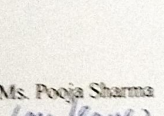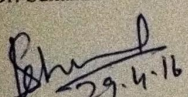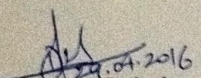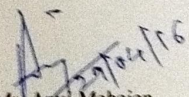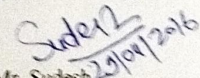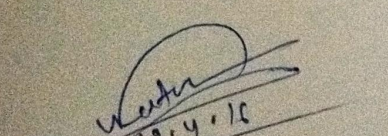
Agenda item No 10: Inclusion of Latest Text Books & Reference Books

The Following books have been recommended by the faculty of DoCSE for the various new Courses introduced in the programs offered by the Department.

1. Thomas H. Cormen, Leiserson, C. E., Rivest, R. L., & Stein, C. (2009).Introduction to algorithms (Vol. 6). Cambridge: MIT press.

2. Kleinberg, J., & Tardos, É. (2008). Algorithm design. Pearson Education India.
3. Motwani, R., & Raghavan, P. (2010). Randomized algorithms (pp. 12-12). Chapman & Hall/CRC.
4. Vazirani, V. V. (2013). Approximation algorithms. Springer Science & Business Media.
5. Chakrabarti, S. (2005). Mining the Web: Discovering knowledge from hypertext data. Elsevier.
6. Elaine Rich & Kevin Knight," Artificial Intelligence ", 2nd Ed .(TMH Edition).
7. Patrick Henry Winston, 'Artificial Intelligence', Pearson Education.
8. A. P Engelbrecht, Computational Intelligence: An Introduction, Wiley .
9. Adversarial planning (games) and belief space planning (POMDPs)
10. Sandeep K Gupta, Frank Adelstein, Golden G. Richard, Loren Schwiebert, Fundamentals of Mobile and PervasiveComputing: TMH
11. AI By Dr Kaushik

The Board approved the above mentioned Text books recommended by the faculty for various courses

Prof. (Dr.) Saroj Kaushik, Professor, Deptt. of CSE, IIT Delhi (Member: External Expert)

Prof. (Dr.) Devanand Head, Deptt. of CS& IT Central University of Jammu (Member: External Expert)

Mr Amit Rawat EMC² New Delhi (Special invitee External Expert from industry)

Prof. (Dr.) V. Verma Dean, Faculty of Engineering (Member)

Dr. Ajay Koul I/c Head, SCSE (Member)

Dr. Amit Kant Pandit I/c Head, SESE (Member: Internal Expert)

Mr. Manoj Kumar

Ms. Sonika Gupta

Dr. Sunanda

Dr. Sakshi

Dr. Naveen Gondhi

Ms. Pooja Sharma (on leave)

Mr. Sanjay Sharma

Mr.Deo Parkash

Mr. Anuj Mahajan

Mr. Sudesh

Dr. Neetesh Kr.