

## Minutes of the BoS Meeting-CSE (held on 10<sup>th</sup> July 2023, Time 9.30-01.25 PM)

### Present members

1. Prof C.Pandurangan
2. Prof Subhamoy Maitra
3. Dr.Jagdish Bhandarkar
4. Prof.Somnath Tripathy
5. Prof Rahul Banerjee (Invited)
6. Prof Vish Malhotra (Invited)
7. Dr. Preety Singh
8. Dr. Sakthi Balan Muthiah
9. Dr. Subrat Kumar Dash
10. Dr. Rajbir Kaur
11. Dr. Shweta Bhandari
12. Dr. Sudheer Kumar Sharma
13. Dr. Sunil Kumar (Invited)
14. Dr. Varun Kumar Sharma (Invited)
15. Ujjwal Agrawal
16. Ayush Ku Dhoot
17. Dr. Jayaprakash Kar (HOD)

The Department of Computer Science and Engineering is in the process of developing a new curriculum for its B.Tech. (CSE) programme, M.Tech CSE Programme and M.S (By Research). The proposed curriculum was discussed in BoS on 10<sup>th</sup> December, 2021 and incorporated the suggestions raised by the previous BoS members. Subsequently, a Departmental Committee has reviewed it and also has taken feedback from various stakeholders. The soft copy of the revised proposal was circulated to all BoS members. The proposal was appreciated and discussed thoroughly.

The discussion points are as under.

### PART-A

#### B.Tech CSE Programme

The BoS members have suggested the following points

1. National Credit Framework requirements to be included.
2. Few premier foreign Universities curriculum to be checked for core courses.
3. Full form of 'IKS for Global Well Being' to be mentioned.
4. Content-based specific names for IT Workshop 1 and 2 should be mentioned.
5. Check separation of theory and labs. If additional knowledge is imparted in lab, keep it as a separate course.
6. Pre-requisites for all courses should be clearly specified.

7. Orientation session should be conducted for students to make an informed decision while choosing electives courses.
8. Ordinary Differential Equations (of ODELA course) should be merged with 'Calculus' course of 1<sup>st</sup> semester. Linear Algebra should be an independent course in 2<sup>nd</sup> semester.
9. Discrete Mathematical Structures to be renamed as 'Discrete Mathematics'.
10. Renaming of Computer Programming course to "Programming for Problem Solving". There should be more focus on problem solving and Syntax may be explained in Lab.
11. In 4<sup>th</sup> semester, the HSMC course can be put in a Soft Core bucket.
12. The number of core courses should be reduced. Few core courses can be offered as Soft Cores. Some Soft Cores can be as follows:
  - a. Artificial Intelligence
  - b. Computer Security
  - c. Machine Learning
  - d. Parallel & Distributed Computing
  - e. Embedded Systems
  - f. Principles of Programming Language
  - g. Compiler Design
13. Embedded Systems can be a Soft Core. It can be replaced by following ESC courses:
  - a. Thermodynamics
  - b. Quantum Computing
14. Graph Theory can be offered as an Elective as most of the topics required for CSE students are mostly covered in other courses like Data Structure, Discrete Mathematics and Design and Analysis of Algorithms. It can be replaced by following BSC courses:
  - a. Numerical Computing / Numerical Methods
  - b. Modelling & Simulation
15. Software Engineering (SWE) course lab component to be hand-held by industry for specific case studies.
16. Summer internship can be done at end of 1<sup>st</sup> year or 2<sup>nd</sup> year. If not done, student should do Mini Project in 5<sup>th</sup> semester.
17. BTP can be taken in other departments but under the co-supervision of faculty advisor from parent department on a topic related to the discipline of the students which needs to be approved by CSE HoD.
18. BTP in 6<sup>th</sup> and 7<sup>th</sup> semesters to be renamed as BTP-1 and BTP-2
19. Preferably, only one course in 8<sup>th</sup> semester. Others can be shifted to previous semesters.
20. 8<sup>th</sup> semester internship/project to be renamed as Industry Project/Development Project.
21. Exit option as per the NEP to be carefully looked into.

PART-B  
M.Tech CSE Programme

1. Program Core Courses

(i) Mathematical Structure for Engineers

It was suggested to rename the course “Mathematical Structure for Engineers” as Mathematical Foundations for Computer Science (MFCS). The following five broad topics could make up the curriculum of the MFCS course:

- Discrete mathematics
- Linear Algebra
- Mathematical Logics and Reasoning
- Probability Theory
- Number Theory

The internal subtopics, however, can be chosen afterwards.

There may be five well-trimmed broad topics (as mentioned earlier) that are each broken up into 8 hours because the course is of three credits.

(ii) Advanced Data Structure and Algorithms

The members observed that topics mentioned in ADSA course is extensive which cannot be covered in a forty hour course. It can be split into two courses (Advanced Data Structures and Advanced Algorithms) with appropriate content or offer it as a single course by reducing the content. The topics such as hashing, text processing, Network flow with multiple source & sinks, Push-Relabel & Relabel-to-front Algorithm, Sorting Networks: Comparison Networks, Boyer Moore algorithm can be removed.

(iii) System related core course

It was suggested to include a system related course which can be named as “Computer System” OR “Computer System Engineering” with topics like Operating Systems, Computer Networks, and any other system related topics.

(iv) Research Methodology and IPR

There is a requirement of including soft skills and technical writing based topics in the program. The broad topics can be Research Methodology, Technical writing and soft skills, and IPR.

2. Program Elective and Open Elective Courses

- All core courses may be placed in first semester along with one track based program elective. An OE course can be placed in II semester. However, other dependent PEs can be placed in subsequent semesters (II and III).

- MLPR and Distributed Systems should be offered as PEs. However, Software Design Lab need to be remove.

### 3. Possible Structure of the curriculum

Members suggested the following points for the overall curriculum

- Curriculum may contain 4 PCs (may offer in first semester) along with six PEs.
- Based on the available faculty strength of the department, PEs can be offered in track format.
- Possible suggestions include AI&ML and Security.

### 4. M.Tech. Thesis/Dissertation can be renamed as M.Tech Project.

### 5. Year Long Internship (YLI)

The curriculum may have a provision for year-long internship during III and V Semester in place of M.Tech project.

## PART C

### M.S. (by Research) CSE

It was suggested by BoS members that the M.S (by Research) program should be focused more on research work.

### **Curriculum Structure**

The curriculum can be divided into two parts called course work and thesis.

- Thesis credits need not to be mentioned explicitly in the structure. The credits will only be defined with PC and PE courses.
- There can be 5 courses: 1 PC and 4 PEs
  - 1 PC (Technical Writing and Research Methodology)- Mandatory course.
  - 4 PEs (in core area of his/her research). A student can opt for the PEs as recommended by his/her research committee.
  - One Semester course work and the rest is MS Thesis.
  - There should not be exact duration for the program. It will be dependent on student's work. However, a department can specify the minimum and maximum duration of the program.
  - In place of MS Thesis, I, II, III, and IV, it should be only MS Thesis.

## **General Suggestions**

- M.S. (by Research) can also be an exit option for PhD students.
- Industry partnership: - Industry people can also be attracted to the program. A student can complete 1<sup>st</sup> semester course work in the institute itself while remaining thesis work can be done in industry provided there should be a local mentor together with Industrial mentor.

Based on the discussion in the BoS meeting, HoD agreed to share the modified version of the curriculum within one week. If required a subsequent online meeting can be scheduled to finalize the curriculum.

Meeting ended with thanks to all members.