



Date: 02 November 2024

Curriculum Conclave

(Computer Stream)

Date: 29 October 2024 Venue: Senate Hall, III Floor, MAHE Manipal

Event Summary

The curriculum conclave (Computer Stream) commenced with the welcome address delivered by Dr. S N Bhat, Associate Director, Faculty Development and Welfare, MIT, Manipal. He outlined the need for the conclave, presented a brief overview of the program and welcomed the Dignitaries from MAHE, participants from the sister institutions and MIT Manipal.

Lt. Gen. Dr. M. D. Venkatesh, Vice Chancellor of MAHE, Manipal delivered the opening remarks and initiated the conclave proceedings. In his opening remarks, the Vice Chancellor highlighted the importance of the curriculum conclave which involves discussion with the experts from academic, industry, and management. He emphasized the need for a relevant, robust and futuristic curriculum and at the same time he opined that the curriculum should be flexible enough to accommodate technological changes. He also said that periodic revision based on the inputs from the key stakeholders is necessary to make the curriculum acceptable to the stakeholders and competitive at the global level. Dr. Venkatesh highlighted that the curriculum should improve the students' problem-solving ability, incorporate experiential learning, and inculcate self-learning among students. He said that unless a good curriculum is in place pedagogy can't help much. He also suggested that faculty development should happen parallel with curriculum development, incorporate online resources, and certification by the faculty to enable them to deliver the curriculum effectively. He wished to have collaboration with foreign universities to set a model curriculum for the Computer Science stream, so that it will be on par with global standards while meeting the local requirements.

Dr Narayana Sabhahit, Pro-VC (Tech & Sc), MAHE, Manipal spoke on the expectations of the management. He pointed out that a good curriculum with good teachers is the need of the hour. He also highlighted the importance of establishing a good connection with the industry as the students and parents are keen on the placement and packages offered. He suggested that higher studies need to focus on student research and crediting, entrepreneurship and undertaking multi-disciplinary studies. He also suggested that the curriculum should be flexible, have option for blended learning with online components and self-learning modules so that the students eventually be able to learn independently.

The main agenda of the day, presentation of the revision in the CS curriculum was led by Dr. Preetham Kumar, Deputy Registrar - Academics (Technical). He gave an overview of the BTech program in Computer Science stream along with the program structure including the



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specializations, honors and other highlights of the curriculum applicable to the students seeking admission starting from the year 2025. He said that while the students of the computer science stream will study common computer science subjects of 10 credits in the first year, the entire second year of the BTech will be common for CS Stream students. In the third year, the student can pursue a specialization in any one of the proposed specializations. In the fourth year, the students can study programs and open electives of their choice and opt for study abroad program in a partner university. Dr. Krishnamoorthi Makkithaya, Head of the Department of Computer Science, presented the core courses included in the BTech Computer Science program.

Dr. Prema K V, Associate Director, Professor, and Head of Department of Computer Science & Engineering, MIT, Bengaluru presented the structure of B.Tech specialization on AI & Quantum Computing. She emphasized the highlights of the Chintan program held in the Bengaluru campus and discussed the need to start electives early in 2nd year. She also suggested to incorporate certification courses with credits, integrate Leetcode into the data structure course, making management courses as flex core, and draw from a pool of electives. Dr. Dayanand P, HoD of IT, MIT, Bengaluru presented the curriculum for Cyber Security specialization. Dr. Vijay Arjunan, Additional Professor, Dept of CSE, MIT Manipal presented the subjects a student has to study to be awarded a degree in artificial intelligence and machine learning specialization. Dr. Smitha N Pai, Professor and Head of the Department of Information and Communication Technology, MIT Manipal presented the structure of the Information Technology and Computer Communication specializations. The curriculum experts suggested that the names of these two specializations need to be changed to make it relevant to the student community. Dr. Radhika M Pai, Professor, and Head of the Department of Data Science and Computer Applications, MIT Manipal presented the program structure and key features of the Data Science specialization.

The inputs from external experts from Academics were led by Dr. Ananthanarayana V. S, Professor in IT & former Dy Director, NITK Surathkal. He said that all the subjects mentioned as mandatory by the regulatory bodies should be included in the Computer Science core. He also suggested that some of the three credit courses mentioned in the minor specialization may require a laboratory course to make it more relevant. Further, he pointed out that the curriculum delivery and evaluation are as important as the course structure and curriculum. He suggested that students should be able to do industry projects in the minor specialization as capstone project. Dr. Dileep A D, HoD of Computer Science from IIT Dharwad appreciated the BTech Computer Science course curriculum as a good initiative. He mentioned that the completion of paper publication for the BTech honors program should not be made mandatory.

Inputs from external experts- Industry was led by Mr. Raghupathy C. N, Director, MILES Bengaluru and former India business head of Infosys. He opined that we need to focus more on core courses; specializations come later and may change with industry and technology trends. According to him, New-age companies are product-oriented and not service-oriented and the students should go beyond coding, use GitHub copilot for coding, and learn full stack,



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architecture, and performance of computing systems. He also said that emphasis should be given to mathematics, entrepreneurship and Operational technology - a combination of software, hardware, and telecommunication. He suggested that Quantum technology courses should include Quantum physics and quantum mathematics. Dr Prashant Bhat, CTO of Manipal Dot Net, mentioned that fundamental subjects like computer organization and operating systems need to be theory-based and to be covered in classrooms, while subjects like compilers, git, scripting, and cloud are laboratory-based learning. Students require well-rounded professional skill sets, both technical and non-technical. Dr Bhat suggested that the students should develop an attitude of self and continual learning, seriousness of purpose, professional ethics, and integrity. He also suggested that students should contribute to open-source projects. He opined that there should be an engineers oath on ethics and integrity and should be administered to the engineers.

Post lunch, group discussions were held in separate venues, and the teams discussed the structure and curriculum based on the inputs received from the external experts. The convergence arrived after the group discussion was presented by the heads of various departments as the revised structure in the main hall and the feedback was sought from the experts. Theory of computation was added as a core computer science subject and Security was made part of every specialization. The committee suggested that students must have a GitHub repository from the first year. For the IT and CCE courses, new titles like Software Engineering and Networks/ Integrated system engineering were suggested and will undergo further discussion. He suggested that AI & Quantum Computing specialization will be called Quantum Computing and structured accordingly.

As a part of the observer's feedback, Dr Karunakar Kotegar, Pro-President of Manipal University Jaipur (MUJ), emphasized the need for collapsing the walls of departments and to take advantage of the new policy of the AICTE applicable to the intake. He said that Faculty training is important and suggested that the faculty can take a sabbatical for six months in the industry. As semester abroad programs may have credit acceptance issues, and the syllabus has to be looked at in terms of the requirements of international credit transfer requirements. The Dean, Faculty of Engineering and Directory Academics at MUJ spoke of operational issues concerning capacity building, the need for holistic development in pedagogy, and need for teaching students lifelong learning and analytical skills. The Director of Sikkim Manipal Institute of Technology, Sikkim, Cdr. Dr. G L Sharma, mentioned that NEP has changed the curriculum structure and that 90 credits should be common, and 24 credits should be allotted to specializations like AI, ML, and Blockchain. The teacher training should be in-depth in each specialization. He suggested that student projects should start from the third semester and faculty need to be associated with that so as to result in quality student publications. He suggested infusing NPTEL courses into the curriculum with teacher as facilitator.



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Dr. Vinod V Thomas, Registrar Evaluation, MAHE, Manipal, mentioned that the National Framework requires 1200 hours of student engagement. Per credit, the student is expected to put in thirty hours and should include equal contributions from the teacher and self-learning from the student. Hence going forward, engagement beyond the classroom is important and will result in a change in the BTech programs and the pedagogy. Dr Giridhar Kini, Registrar, MAHE Manipal mentioned the objective of the curriculum revision and highlighted the need for focusing on the stakeholder requirements. He also wished that the curriculum would remain relevant for the duration of the program. He also appealed to the faculty that they need to put aside personal preferences while designing the curriculum and think with the philosophy of organization first.

As a part of remarks from the HoIs, Dr Shri Krishna Pandey, Chairperson, SoE-IT, Dubai hoped that the curriculum will satisfy stakeholders and that assessment and delivery will make a change. He suggested module wise teaching as a method to integrate subjects. Dr. Iven Jose, Director of the Engineering Program at MIT, Bengaluru appreciated the curriculum and said that effort should be put into how to deploy and train the faculty appropriately. He suggested that the industry tutorial could be integrated with the courses and that teaching could be extended to businesses and startups with certification. In his concluding remarks, Cdr. Dr. Anil Rana, Director, MIT, Manipal, mentioned that training of faculty and students is already happening. He suggested to go for faculty certifications and the merger of departments into the computer science stream.

Towards the end, Dr. S N Bhat, Associate Director (FD&W) proposed the vote of thanks to the dignitaries from MAHE, participants from sister institutions, the leadership from MIT and the DCC Members.

A total of 56 members participated in the conclave.



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Compiled by : Dr Rohini Rao, Associate Professor, Dept of DS&CA

Edited by: Dr S N Bhat, Associate Director (FD&W)



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Program Schedule

Time	Agenda
9:30 AM	Welcome (Dr S N Bhat, Associate Director - FD&W, MIT Manipal)
9:35 AM	Opening Remarks (Lt Gen (Dr) M D Venkatesh, Vice Chancellor, MAHE Manipal)
9:45 AM	Expectations from the Management (Dr Narayana Sabhahit, Pro-Vice Chancellor (Tech & Sc), MAHE Manipal)
10:00 AM	Presentation of CS Curriculum (Teams from MIT Manipal & MIT Bengaluru)
11:30 AM	Inputs from External Experts - Academics (Dr Ananthanarayana V S, Professor, Dept of IT and Former Dy Director, NITK Surathkal)
11:45 AM	Inputs from External Experts - Academics (Dr Dileep A D, HoD of CSE, IIT Dharwad)
12:00 Noon	Inputs from External Experts - Industry (Mr Raghupathi C N, Director, MILES, Bengaluru & Former India Business Head at Infosys)
12:15 PM	Inputs from External Experts - Industry (Dr Prashanth Bhat, CTO, Manipal Dot Net, Manipal)
12:30 PM	Lunch
2:00 PM	Group Discussion
3:30 PM	Presentation of Revised Curriculum Structure (Teams from MIT Manipal & MIT Bengaluru)
4:00 PM	Remarks by the external experts
4:30 PM	Observations from Team Lead, Manipal University, Jaipur
4:35 PM	Observations from Team Lead, Sikkim Manipal University, Sikkim
4:40 PM	Remarks by the MAHE Officials
5:00 PM	Concluding Remarks by the Directors (MAHE Dubai, MIT -B & MIT-M)
5:15 PM	Vote of Thanks (Dr S N Bhat, Associate Director - FD&W, MIT Manipal)

Organised by Office of the Associate Director (FD&W)

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Shankaranarayana Bhat
Associate Director
Faculty Development & Welfare
Manipal Institute of Technology
Manipal - 576104