DEPARTMENT OF CIVIL ENGINEERING

B.Tech Civil Engineering

Action Taken Report on Curriculum Feedback for Academic Year 2023-2024

Stakeholder	Suggestions
Student	• Students suggested to include basics of core civil engineering subjects in the early semester rather than subjects from other disciplines. • Suggestion for including more lab courses and hands on training programme. • MOOC course to be made as the part of curriculum. • Recommendation to include more minor courses which could provide employability to them. • More importance and weightage should be given to comprehensive course work subject. • Suggestion on regular site visits, mandatory internship program. • Skill development course to be implemented from the first semester.
Alumni	• The B.Tech curriculum of civil engineering should be more department specific. • Regular guest lectures on relevant happening topics. • Hands on training on various industrial civil engineering softwares. • Inter department programs to be introduced. • More humanities and social science subjects like professional communication, labour law, general law to be given as courses. • Extra mandatory internship of minimum 6 months after the course completion. • Online courses from different universities.
Faculty	• Non credit subjected to be eliminated and more course with industrial relevance needs to be included. • Lab courses should be integrated with the corresponding theory courses and done in the same semester.

	• Students should be given opportunities for self-learning • More program electives to be incorporated • Six-month mandatory internship for the students • Minimum one Project Based Course should be introduced in each stream
Parents/Industrial representatives	• Need more emphasis on industry related courses • Artificial Intelligence in civil engineering need to be incorporated • More number of civil engineering software related subjects to be introduced • At-least a six-month internship needs to be mandatory

Action taken report: 2023 -24

- New core courses such as Building Materials and Construction Technology, Design Studio etc were introduced in the first-year of 2023 curriculum.
- The advanced topics in structural engineering is incorporated the course of Applied Mechanics, that comes in the first year so that the students are introduced to specific core portions early.
- Introduced fundamental concepts of programming language and various problem-solving strategies in the new course Problem Solving and Programming which comes in the first year. The latest programming language Python is introduced in the above course.
- Introduced a new course of Application of Artificial Intelligence in Civil Engineering considering the relevance of the topic and the feedback from industry.
- Introduced lab integrated courses such as Water and Waste Water Engineering.
- Introduced project-based courses such as Quantity Surveying and Valuation, Traffic Engineering and Management and Application of Artificial Intelligence in Civil Engineering in the 2023 curriculum.
- Six months internship is possible in the final year of the new 2023 curriculum.
- In 2023 curriculum, students are getting opportunities to involve more in co-curricular and extra-curricular activities and credit can be earned through this.
- Industry related talks were arranged for students in each subject for every semester.
- Hands on training and skill development programs such as Building Information Modelling, Program on Revit Architecture etc. were organised.
- More site visits are planned as the part of various course such as Building Materials and Construction Technology, Hydrology and Water Resources Engineering, Design of Reinforced Concrete Structures, Design of Steel Structures etc.

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

B.Tech COMPUTER SCIENCE AND ENGINEERING

Action taken Report on Curriculum Feedback 2023-2024

Stakeholder	Suggestions
Student	These are some suggestions to enhance the curriculum and opportunities for Computer Science students: • **Web Development Course:** In order to fulfill the increasing demand for web developers, include courses on Web Development in the curriculum. • **Relevant Programming Languages:** Programming languages that are industry relevant and helpful to students should be taught in the curriculum. • **Workshops and Expert Talks:** In order to comply with industry standards, increase the number of workshops and industry oriented talks. • **Industry-Relevant Courses:** Introduce courses like Cloud computing, Artificial intelligence, Machine learning, Cybersecurity, and Data Science that are very relevant to the industry. • **Promote Hackathons**: Promote hackathons conducted on campus. • **Collaboration with Foreign Universities:** Form alliances or exchange programs with respectable international universities to provide students with exposure to other cultures and research collaborations. • **Skill-based Courses**: Provide skill based courses for students in the latest technologies to improve employability. • **Non-technical courses :** Introduce non-technical sessions and skill development courses like professional communication, aptitude training etc. • **Minor Courses:** Increase the number of minor courses offered so that students can learn about topics from other departments.
Alumni	These are some suggestions from Alumni to enhance the curriculum and opportunities for Computer Science students: • **Need of department specific subjects in first year:** There is a necessity to have more department specific components in the first year. • **Program electives:** Curriculum can include more Programme electives so that students get an opportunity to learn courses in their area of interest. • **Mandatory Summer Internships:** Make summer internships mandatory as part of the curriculum.Encourage online industry relevant certification and courses. • **Live Projects:** Introduce the concept of live projects, where students work on real-world projects with industry partners or clients.

	• **Mini/Micro Projects:** Include mini projects as part of the curriculum to give students exposure and hands-on experience before their final-year project. • **Humanities and social science courses:** Introduce subjects like humanities and professional communication to prepare students for job interviews and enhance their communication skills. • **Ideathons and hackathons:** Introduce ideathons and hackathons to boost confidence in technical areas. • **Industry Internships:** Facilitate internships with industry partners to provide students with exposure to the requirements and workings of the industry • **New courses:** Add more industry-competent courses like Data analysis, Full stack development, Power BI etc as a part of the curriculum.
Faculty	Some additional suggestions to enhance the curriculum and opportunities for Computer Science • **New courses:** Include courses like Computer Vision and Image Processing, Block Chain etc. so as to improve the industrial.competency. • **Case Studies:** Examine and incorporate case studies in the specific courses. • **Use of Simulators:** To enhance the quality of instruction, incorporate resources such as virtual environments or simulators. • **Teaching Learning Tools:** To enhance lectures, use innovative tools like flipped classrooms, peer group learning and provide self learning materials available in NPTEL (National Programme on Technology Enhanced Learning) , Springboard etc. • **Team Work:** Evaluate students' work via group projects, presentations, and other interactive techniques which encourage team work. • **Skill Development Programs:** Include Skill development programs and industry-oriented training.
Parents/ Industrial representatives	Suggestions from Parents and Industrial Representatives • **Emphasis on Python Programming:** More minor courses that let students investigate topics from different departments should be included. • **Introduce Mathematical foundation courses for Machine Learning-** More courses may be introduced which can enhance mathematical foundation concepts to enable students to understand the basics of Machine Learning. • **Object-Oriented Programming (OOP) in Python:** Introduce the basics of Object-Oriented programming in the context of Python. • **Minor Subjects in AI:** Introduce topics that focus on areas related to Artificial Intelligence. • **Industrial Collaborations:** Students can work on projects that are relevant to the industry. • **Project-Based Learning:** Encourage students to work on course-specific micro projects.

Action taken report to enhance 2022 Curriculum

- **Expert Talk Sessions:** Conducted various technical and non-technical talk sessions by industry experts from organizations like CDAC, UST, and IIT Guwahati.
- **Industrial training programs** Conducted for students from UST Global, Enxcl etc, giving them a hands-on introduction to the working world and the skills needed in the industry.
- **Internships**: Initiated internships for selected students
- **Workshop on Curriculum Design**: Conducted a workshop to incorporate industrial competency into the curriculum design.
- **Hackathons and Boot Camps**: Designed to provide students hands-on experience with cutting-edge technologies, hackathons and boot camps are organized.
- **Participation in National Talk Series and Competitions**: Encouraged students to participate in national talk series, coding competitions, and certification courses to enhance their technical abilities and showcase their talent.
- **Industry Supported courses**: Industry supported course on Applied data science using python was introduced in collaboration with Nissan Digital.
- **Introduced course on Probability, Statistics and Numerical Methods:** This course was introduced in the curriculum to enable students to learn the mathematical foundations of machine learning.
- **Certification Course on AI and ML**: Successfully conducted a certification course on Artificial Intelligence and Machine Learning, providing students with specialized knowledge in these cutting-edge fields.
- **Project Exhibitions and Technical Expo**: Conducted project exhibitions and technical expos to showcase the technical skills of students and provide a platform for industry interaction and feedback.
- **MongoDB Workshop:** In response to industry demands, a workshop on the well-known database system MongoDB was arranged.
- **Cybersecurity Workshop:** Conducted a three-day workshop on cybersecurity as an awareness program. This aimed to educate students about the importance of security in the digital era and enhance their understanding of cybersecurity practices.
- **Skill Development Courses:** Initiated skill development courses on Arduino, Python programming, Web development, and Full Stack development. These courses aimed to enhance students' technical skills and make them industry-ready.
- **Micro Projects**: Assign micro projects for specific disciplines to give students real-world experience and improve their technical and project management abilities.

Action taken report to enhance 2023 Curriculum

These are some actions taken to enhance 2023 Curriculum

- **Introducing the CS courses in first year:** In order to give students a foundational understanding of Computer Science, included C programming, Python Programming and Digital Electronics courses in the first year.
- **Web Development Courses**: To address the rising demand for web developers, Web Technology course was added to the curriculum.
- **Internships**: Internships were included in curriculum
- **Micro projects**: Included micro projects as part of curriculum for specific courses
- **Industry-Relevant Courses**: Introduced courses that are highly relevant to the industry, such as data science, artificial intelligence, machine learning, cybersecurity, and cloud computing.
- **Industry Supported courses**: To improve students' employability, industry supported courses like Applied data science using python and Machine Learning were introduced.
- **Professional Communication and Business Writing:** To help students prepare for job interviews and improve their communication skills, introduce topics like business writing, professional communication, and interview preparation in the curriculum.
- **Mini Projects:** Included mini projects as part of the curriculum to give students exposure and hands-on experience before their final-year project.
- **MOOC Courses:** Flexibility for taking elective as MOOC courses in final year is provided in the curriculum to enable students to go for internships in industries.

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Action Taken Report on Curriculum Feedback (2023-2024)

- Python programming has been introduced as a lab-integrated course in Semester 2, aiming to develop strong computational thinking and coding proficiency to tackle engineering challenges effectively.

- Collaborations with organizations such as Tata Elxsi, Vinvish Technologies Pvt. Ltd., NISH, BSNL, etc. facilitated internship opportunities for students during their semester breaks. These internships provide students with hands-on industry experience, bridging the gap between theoretical knowledge and practical applications.

- To equip students with industry-relevant skills and exposure, initiatives such as the Intel Unnati Industrial Training Program and a Bootcamp on 'Allied Technologies and UAS/Drone' have been conducted. These programs focus on cutting-edge advancements, including AI integration in drone technology.

- It has been proposed to revise the curriculum of the third-semester course 'Logic Circuit Design' to incorporate state machine design and, to emphasize more on Verilog programming and FPGA implementation in the corresponding lab course, as these are essential for modern digital design and hardware development. Additionally, it has been suggested that the courses in the minor basket on Signal Processing be updated to incorporate the advancements in AI and signal processing technologies, and the same has been presented to the Board of Studies (BoS).

- Course on Universal Human Values (UHV) has been suggested to be included in the curriculum to promote holistic development among students and the same has been presented to the BoS.

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7/6/24

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Action Taken Report on Curriculum Feedback

AY 2023-24

The following suggestions were put forward by the Stakeholders on the curriculum

- The curriculum should be updated to reflect the latest industry trends and technologies that employers seek.
- It would be beneficial to introduce more department-specific topics in the first year to help students become familiar with their courses.
- A greater emphasis on practical introductory courses is necessary for hands-on learning.
- Incorporate more interdisciplinary courses to broaden students' skill sets.
- Minor programs that enhance employability should be introduced, focusing on emerging fields.
- A stronger focus on simulation components and programming is required in the curriculum.
- More awareness should be provided regarding software tools related to circuit design, 3D printing, CAD, etc.
- Communication skills need to be given more emphasis, as they are vital for success in GDs, interviews, and abroad studies.
- Include courses that provide insight into starting a business and entrepreneurial ventures.
- Introduce skill development programs that prepare students for industry demands and make them job-ready.
- Practical applications and industrial exposure through hands-on sessions and collaborations with industries will enhance student learning.
- More mini-projects should be included in the curriculum to offer students practical experience.
- There should be regular industrial visits to give students more exposure to real-world applications.
- Add lab-integrated courses to enhance both theoretical and practical knowledge.
- Encourage multidisciplinary projects to foster collaboration across different fields.
- A support system, mentor, or group should be available for students to stay updated on emerging technologies and industry opportunities.
- Provide students with the opportunity to visit more industries within their core fields to gain relevant insights.
- The use of industry-standard software like MATLAB, ANSYS, PSPICE, and KEIL should be integrated into courses to offer a better understanding of real-time applications.

- The curriculum can be expanded to include more courses on new technologies and emerging areas.
- Emphasize practical applications and focus on clarity in teaching, rather than overwhelming students with complex topics.
- A dedicated period for referring to library resources would encourage students to think critically and innovate.
- Entrepreneurship courses should be included to help students gain the skills necessary to launch their own startups.
- Courses that improve communication skills should be prioritized, as they are essential for facing interviews and group discussions.
- Only a basic understanding of humanities courses is needed to complement the technical curriculum.
- More seminars and webinars should be conducted to expose students to modern trends in engineering, software, and hardware.
- Students should be encouraged to participate in workshops, hackathons, and conferences for hands-on learning.
- Mini projects provide students with a better understanding of the final year project process.
- It is suggested to shift the seminar course to the fifth semester for better alignment with the academic schedule.
- Only one comprehensive viva course is needed in the curriculum.
- Second-year students are in a better position to begin skill development, as they will have a stronger foundation in their curriculum.
- Focusing more on electrical design software will help students become proficient in key tools for their field.
- Affiliation with industry partners should be pursued to allow students to gain real-world experience through internships.
- Courses should aim to provide a clear understanding of industrial requirements, rather than just preparing students for exams.
- Hands-on projects in collaboration with industries can provide valuable exposure to current trends and industrial applications.
- A more balanced approach between theoretical and technical knowledge will better equip students for core job roles.
- Sports-based courses would be a valuable addition to the curriculum for overall student development.

<u>The actions taken based on the suggestions put forward by the Stakeholders are as follows:</u>

- Lab integrated courses are incorporated in 2023 curriculum to enhance both theoretical as well as technical knowledge of students.
- Introduction of CAD based courses in curriculum
- Simulation lab included in curriculum so as to develop the programming skills and

familiar with new softwares. Labs are equipped with licensed software like MIPOWER, MATLAB etc.

- Institute elective added in 2023 curriculum to promote more interdisciplinary electives.
- Minor programs that enhance employability and emerging areas like AI and ML are included.
- Comprehensive course work removed in 2023 curriculum
- Industry elective is added in M tech curriculum that includes the latest industry trends, that employers are looking for.
- Invited talks, webinars on modern engineering software, hardware and recent trends were organized.
- More internship opportunities are provided. Students are encouraged to undergo internships at renowned industries, Govt organizations like KSEB, KEL etc to get industrial experience.
- Most of the final year projects are done in collaboration with various industries like Adani Port Ltd, CocoNeo and renowned organizatons like C-DAC, KSEB, NISH etc. This enhances the students employability.
- Encouraged students to participate in workshops, hackathons, conferences etc..
- More industrial visits are provided to students to various organizations like, KEL, TELK, Adani Port Pvt. Ltd. etc.
- Skill development programs are introduced with a view to get students familiarized with modern softwares and hardwares.
- Placement cell and IEDC groups are very strong in campus which acts as a support system to get students updated on different technologies and opportunities.
- IEDC provides a good guidance for students to incubate their startups and improves the entrepreneur skills.
- In first semester communicative courses added in curriculum to improve the communication skills of students which is very beneficial for students during placements like facing GD and interview and studies abroad.
- Included more electives that focus more on new technologies and emerging areas
- Sports based courses are included in curriculum.
- CAD based Electrical Design included in 2023 curriculum

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DEPATMENT OF MECHANICAL ENGINEERING

Action taken report on Curriculum feedback 2023-2024

Stakeholder	Suggestions
Students	Our students suggested to incorporate the following courses and suggestions during the next curriculum revision: · Artificial intelligence · Robotics · computer languages · Toyota Principles of production · Basics of Data Analytics. · EV, CAD softwares, and more programming languages. Python is the best option · Personal Finances management. · Business studies and entrepreneurship · Engineering Management · Additive manufacturing
Alumni	Our alumni suggested to incorporate the following courses and suggestions during the next curriculum revision: · Subjects like AMOS should be kept an elective as it should be learnt by students who are keen on learning such topics ... these type of subjects will not help most students after graduation. · Machine Learning, Autonomous Driving · AI assisted cooling systems for battery packs in electric vehicles · 3D printing · AI assisted shock adjustment and traction control according to terrain. · Future industrial advancement in mechanical engineering · Basics of Project Management, Piping Engineering, Naviswork Software · *Hydraulic & Pneumatic Systems (Where the Pneumatic and Hydraulic circuits, their design controls etc in industries are studied - actually this course is provided as honours course in KTU curriculum - Fluid Power Automation); · *Control Theory (A core course in EC n EE curriculum but it is really required in the current trend of the industry), · MEMS and additive manufacturing, *Condition Monitoring (Actually it's a subject which comprises of Vibration + Tribology + Sensorics + Signal Processing + ML) · Also please bring back the subject Electrical Drives and Control for Automation which was there for the 2016 curriculum, as it gave an in depth idea of Electrical machines. · Holistic Thinking and Problem Solving. This can be a module inside the Management for Engineers course. · Subjects like environmental engineering and sustainable engineering are compulsory courses with credits. To drive the students in solving problems sustainably and with a sight on the future. And again should be taught in such a way that students should see that it is an essential part of the innovation and problem solving process and should be driven to think sustainably while designing. · Subjects like project management, Product management, etc, would be beneficial as they can help the students to learn how to understand a business

	better and can develop some managerial skills
Experts from Industry and Academia	Selected experts from industry/academia suggested to incorporate the following courses and suggestions during the next curriculum revision: • Fundamentals of Micro-scale Heat Transfer • Advanced Heat Transfer Enhancement Technique • Introduction to CFD would be a good choice as elective subject in S6 or S7. It would be really beneficial for students going for higher education in the field of thermal engineering. • PLM and Machine learning • Mechatronics • Design for manufacturing and assembly • Fundamentals of robotics • Industrial Automation • Machine Learning • Fault diagnosis training for daily use machines • Applied robotics • Agile practices • Lean Manufacturing and Robotics Automation. • More of project based courses, exams should not be the main focus point for completing a subject. • Predictive modelling using R/Python • Data visualization using Tableau / PowerBI • Basics of Supply Chain Management • Replace programming basics with C • The programming language is rarely used • Linear optimization (Travelling salesman problem/ Assignment problem / Simplex method) • Computational Fluid Mechanics • FEM • Simulation Analysis with CAD (Assuming CAD is also available as course), various courses from Autodesk/ CATIA. • Aeronautical engineering (an overview). • FM lab hours may be used to impart knowledge and work experience on maintenance of pump (including preventive maintenance methods used in industry, methods for assembling and removing bearings etc.), mechanical seals (assembly and disassembling), couplings (types and its use), alignment of pump and motor using dial gauge and laser alignment kit. • More internships under the guidance of the college and the faculty would be beneficial to the students. The students should have a clear idea on how to put all the theory learned in class into practice by the time they pass out rather than passing out and then trying to do the same without any guidance.
Faculty	MBCET ME faculty suggested to incorporate the following courses and suggestions during the next curriculum revision: : • Industry 4.0 and digitizing Manufacturing Processes through IoT integration • Artificial Intelligence and Machine Learning • Models on Industrial Equipment Big Data • Innovations in Electric Vehicle Engineering Technology • Clean Energy Transformation in Automobile Industry • Introduction to python • Robotics Systems engineering • Dynamic space flight

	• Adaptive learning • Six Sigma for Design

Action taken report in 2023 MED curriculum

New management courses are being offered by MED in 2023 UG curriculum

- Marketing Management
- Total Quality Management
- Material Handling & Facilities Planning
- Supply Chain & Logistics Management
- Entrepreneurship Management
- Operations Research
- Industrial Engineering and Management
- Principles of Management
- Management Informaton System
- Technology Management
- Advanced Decision Modelling

New elective courses offered by MED in 2023 UG curriculum under technology sector

- Data Analytics for Engineers
- Artificial Intelligence & Machine Learning
- Additive Manufacturing
- Computational Fluid Dynamics
- Hybrid and Electric Vehicle Technology
- Rapid Prototyping
- Hydrogen And Fuel Cell Technology
- Micro And Nano Manufacturing

New Industry electives offered by MED in 2023 UG curriculum

- Aerospace Engineering
- Agriculture Engineering
- Bio Medical Engineering
- Food Technology
- Marine Engineering
- Textile Engineering

It was decided to discuss the left over suggestions from the stake holders in the department curriculum constitutive cell and implement the possible one in the subsequent curriculum revisions.

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