National Engineering College
(An Autonomous Institution Affiliated to Anna University, Chennai)
Kovilpatti-628503

Feedback Report about 2019 Regulations and Curriculum from Various Stake holders (Alumni, Employer, Academic Expert, Student and Parent)

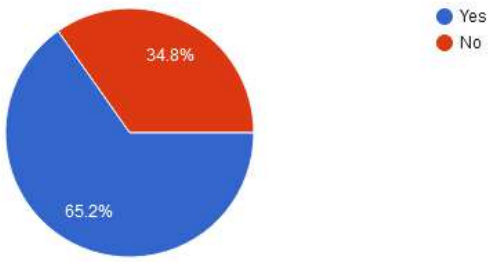
1. Department of Computer Science and Engineering

1.1 The number of responses received from the department is as follows.

Stake holder	Feedback Form Sent	Responses Received
Alumni	100	23
Employer	50	12
Academic Expert	40	9
Student	250	149
Parent	100	56

1.2 The following are the responses received from **ALUMNI** stake holder regarding the 2019 regulations and curriculum

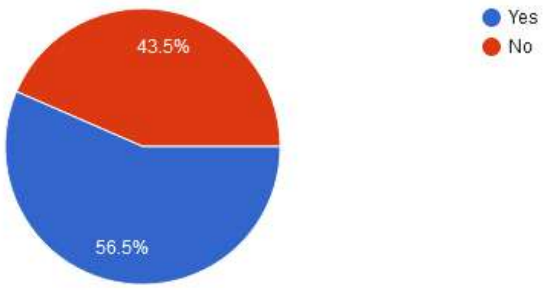
1. Does the Regulation-2019 curriculum map with the emerging industry trends?



If no, kindly suggest new courses that meet the requirements of the industries.

- MEAN stack and Full stack development
- Cloud Technologies like AWS, Azure, GCP
- Flutter and React
- Low code application like Zoho Creator , Oracle Apex
- DevOps
- Bluetooth LE audio and Wi-Fi 7
- Building up micro services and implementation
- Web3 Frontend
- React with PEGA

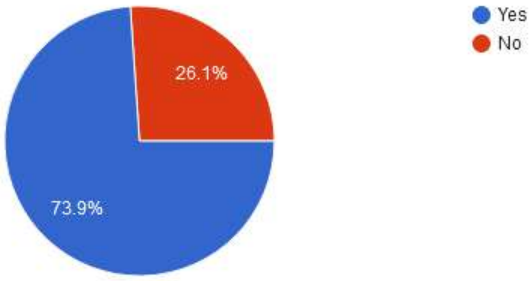
2. Whether you are exposed to the latest technologies in your field during the period of study at NEC?



If no, mention the gap need to be addressed in the curriculum

- Javascript should be taught deeply for the students
- Providing online courses for students on new technologies
- Include DevOps and cloud computing such AWS, Azure, GCP
- Exposure to AI and Big Data needed
- Didn't have latest programming language Node.js, Angular, Advanced Python and Dashboard designs (tools like powerBI, Tableau, Spotfire).

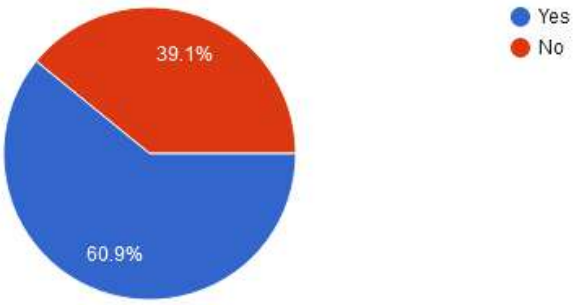
3. Does the curriculum have enough courses for developing innovation?



If No, Kindly suggest new courses for developing innovation

- Set up IDEA Labs or TBIs for improving the startup ecosystem.
- Problem solving, Data structures and Algorithms need to be focused more.
- Javascript, React JS, Ember JS, Node JS, Even Graphics designing (Adobe Photoshop, Illustrator) can be taught in college. There are tremendous opportunities available for UI/UX roles as well.

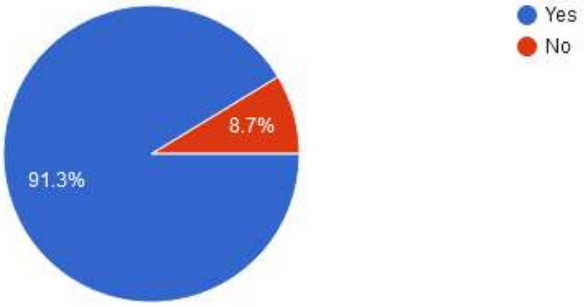
4. Do the tools used to teach experiments in the laboratory courses match the current industrial needs?



If No, Kindly suggest new tools needed for laboratory courses

- Cloud tools like docker, kubernetes, AWS, Azure, elastic search, kibana etc
- GIT and GitHub usage in all the laboratories
- Due to the fact that programs like Android Studio require more RAM, the lab machine configurations can be improved with the newest hardware, and MAC computers can be added for increased functionality.
- Need to provide access to internet resources as much as possible during lab sessions

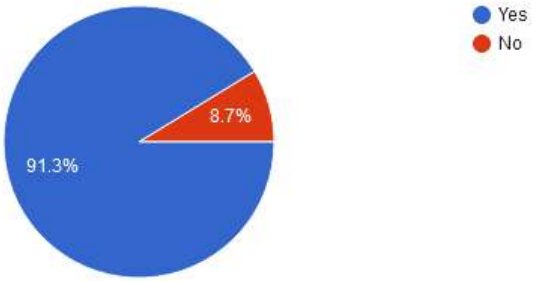
5. Whether the curriculum encourages the life-long learning?



If No, Kindly give your comments

- Industry keep on changing with new trend i strong believe lifelong earning expect from person who has logical thought process in any new tech. So logical skill with adapting to the new technologies is more important.

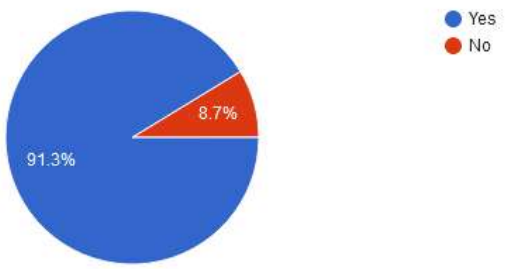
6. Can we include experiential-based learning in our curriculum for better employability? (Experiential Learning allows the learners to apply concepts learned in the classroom in simulated and real work situations.)



If yes, how many hours per week can we allot for experiential-based learning per course?

- Per day 4 hours lab, 4 hours theory
- 4 hrs/ 2 days
- Similar to one practical lab
- Experiential-based learning. We can bring this in two ways. (1) A qualitative analysis on engineering topics like TCP/IP vs QUIC TP. Why TCP/IP will always have a slow start. Demonstration of the same. These are short burst projects that can span across an internal exam or biweekly. (2) A semester spans projects that actually encourage engineering a real world solution. Ex-1 : Writing a proper cache eviction strategy in a distributed system.(LRU cache with cache version maintained in a common store like redis) Ex-2 : Writing a reallocation strategy when a node falls in a distributed cluster(Consistent hashing)
- Even if that is conducted in an effective way daily an hour by the staff that will be a great move for student. But proper preparation from Staff for that one hour is more important by gather in internet. And validation of the task in the each week Friday is also more important so that we know the levels of student. And 2 or 3 months once expertise session from the industry for the relevant course can be conducted to fill the gaps and also to confirm you are in the right track on the daily progress.

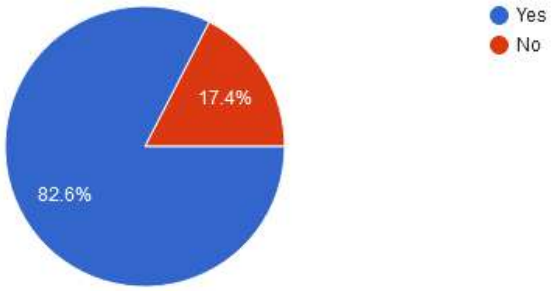
7. Can we include project-based learning in our curriculum for better employability?



If yes, how many hours per week can we allot for project-based learning per course?

- 4 hrs/ 2 days
- One laboratory class in one semester
- A 2 hour window should do just fine. It should go hand in hand with the experiential based learning and should complement each other. Plus, documenting solution alone should be enough as too much formalisation of the procedures takes the fun out of it.
- After the experiment based learning course a project should be submitted by the student according to the industry standard based on the experiment based learning course. So that will help them to learn strongly. For Validation of the projects can be done by industrial expert that will give them more input from concern person.

8. Whether the courses like audit courses, mandatory courses, inter-disciplinary, trans-disciplinary courses may be evaluated without the end semester examination?



9. Recommend the obsolete courses which can be removed from the existing curriculum

- No need of more electronics and other branch subjects, more focus on today trending it courses

- Practical Blended Approach to every Theory Class is required. Other than that no obsolete courses are there in our department.
- Courses on Technologies we don't use anymore
- Obsolete projects in final semesters need to be removed. It would be great they start building project early than doing in last semester alone.

10. Kindly suggest some of the industry-recognized global certifications that would help for better employability
    - CS50
    - Pega System Architect
    - AWS global certification or Cloud Azure certification
    - Cisco CCNA global certification
    - Salesforce certification, DevOps based certification, PowerApps certification
    - Uipath, Automation Anywhere, Microsoft Data Science certification
    - Oracle Java certifications, Codechef, Hacker Rank provides more opportunities for competitive programming candidates.
    - SAP certifications
    - ISPMA Software product management, AWS, GCP, Azure cloud certification, Agile certification
11. Kindly suggest the skill sets/courses/training needed for getting placement in the dream and super dream companies
    - Data Structures like Hackerrank regular practices
    - Data structures and Algorithms, Design and Analysis of Algorithms, Operating Systems, Unix Internals.
    - Start competitive programming from the second year itself using websites like Skill Rack and Hacker Rank.
    - Need to good at atleast one programming language C/C++/Java along with good at data structures and algorithms. Please involve interested students in competitive coding platforms like codechef and hacker rank. There are lot of hackathon provides job opportunity and gifts to the winners.
    - Doing Laboratory Exercises on their own by understanding logics and implementing will make any one eligible to top tier companies
    - Start the Practical Programming Lab Activities from 2nd Semester itself

- Oops concepts, Java / python with frameworks , data structures
- OOPS, Data structures and Algorithms, System Design(HLD and LLD)

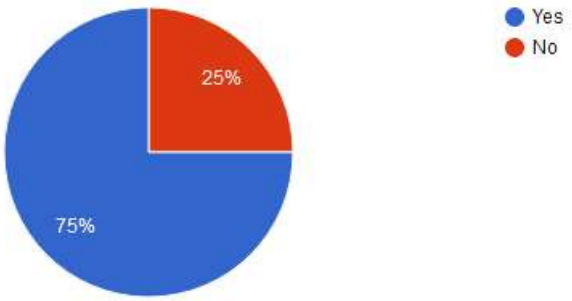
12. To promote start-ups, suggest courses that can build their entrepreneurial skills
    - Full stack development
    - Web application based development easy way using sharepoint, power aps etc or using programming languages. Using React js, creation of plugins to MS excel and word is emerging concepts.
    - Encourage one-person or two-person projects based on an idea and offer initial funding and advice from professionals in the field or from our faculty.
    - Business management, finance courses
    - Learn end to end software development, deployment, maintenance
    - Conduct sessions regularly from successful entrepreneurs. Start TBIs. Give grace marks and enough leaves for entrepreneurs. Active student participation in professional societies like IEEE, ACM, CSI, etc.
    - Picking up Social problem in the society and bring the solution for it during project-based learning per course will be helpful. Every 3 months once a during project based learning it should be resolving problem of society that will increase the entrepreneurial skills
13. Kindly give your suggestion for improving the Teaching-Learning Process to enhance the quality of the students
    - Give some real time examples of the courses which you are handling. Let us take DBMS for instance and dive deep on every aspect. Teaching : Undoubtedly staffs definitely know what is the purpose of every query but what gives the thrill of learning is, Evolution of Databases - Document model, relational model, network model and their purposes - Data structure applied - ANSI query standards - Query processing Engine - Query Planner - Analyzing commands like explain, analyze explain and so on. These have to be covered before going to query part and transactions. Student: Student should be encouraged to find the internal workings of it. Create a deadlock transaction and observe how row locks function - allowing dirty read and see the inconsistency and witness traditional read-write problem and need for semaphore i.e. txn lock in this case. Using Mysql tables

as queues at least on paper with some real world examples. Teachers should help students in projects. So that projects can be done internally with their support. I would recommend more than 30 percent effort put by teachers as well. So that students take the projects seriously.

- Regular updates in technical and make habit of coding in online platforms like hackerrank, havkerearth
- More industrial talks from our alumni or those who have recently joined companies for 1-2 years from various companies and current technologies must be conducted in a recursive manner to close the college-industry gap.
- Less Theory , More Practical
- To improve coding skills - hackathon / coding contests fortnightly once. To improve soft skills - ppt sessions to be presented by students by selecting random students, Group discussions on technical topics once in a week
- Teachers must be heavily updated to guide the students.
- Knowledge about new trends, challenge students, Get feedback very often. Reduce written work. Encourage students to do side projects. Introduce them to competitive programming contests.
- The best approach which I encounter in my management course from Indian Institute of Management is to allocate few marks for class participation, individual and group assignments which will help students to keep them more interactive during the course.
- In a simple word all teaching should be done with a practical example. Even the mathematics which is thought should have an example related to Artificial Intelligence (algorithms). So all teaching should have practical example if that example is related to industry that is really great. Staff should complete certification every year so they will have enhance their teaching and also staff should attend the course conducted by industry expert person to know more about industry and teach that to student. Enhancement of staff should more to enhance the skill of the student.
- Youtube sessions (for mandatory chapters)- students can use the link and learn it any time.

1.3 The following are the responses received from **EMPLOYER** stake holder regarding the 2019 regulations and curriculum

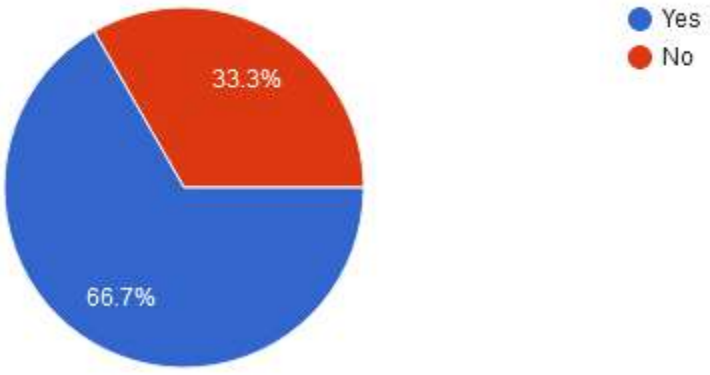
1. Does the R-2019 curriculum meet the need of the industry?



If No, suggest your opinion to meet the need of the industry.

- Setting the Python at the start of the semester does not appear to be a good strategy. Instead, we can integrate Python with machine learning in the 7th semester. It's better to start the programming with C.
- Need to add topics which are currently used by industries like java spring. From second year to fourth year maintain an project where they should implement the topics or technologies they have learned accordingly.
- Include optional subject on latest languages like Dart, Solidity, Javascript libraries & frameworks, etc & Game engines like Unity / Unreal.
- The theory curriculum looks promising but the lab curriculum is missing web technologies. I believe the product design lab involves students a lot through web tech.

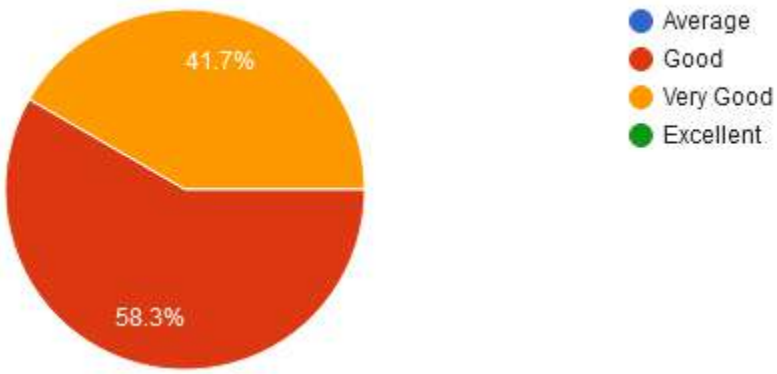
2. Does the R-2019 curriculum enough to develop practical solutions for solving workplace problems?



If No, suggest your opinion to develop practical solutions for solving workplace problems.

- Maybe lab tech with real life problems could give more exposure to students in solving real world problems
- Need more practical courses. Initially, even if some projects readily available on github, we can ask them to clone the project and make it work. Atleast they would know how to resolve errors manually and how we can make it work. Git and Github knowledge is merely important for any roles.
- Staffs should bring in small use cases in problems which could possibly boom as a startup & students should be organized in teams to work on it. This helps the students to understand how a team works, ideation of a product & rest of its stages.
- Can merge product development and product design and development practical solutions can be clubbed into one and introduce some practical sessions for AI ML(Which can also have some sessions for NLP Natural language processing, Document digitization using AI logics..etc..) Or Data mining and data science together

3. At what levels do the students' acquired skills and knowledge at our college, aid them in terms of the present employment market in India and abroad?



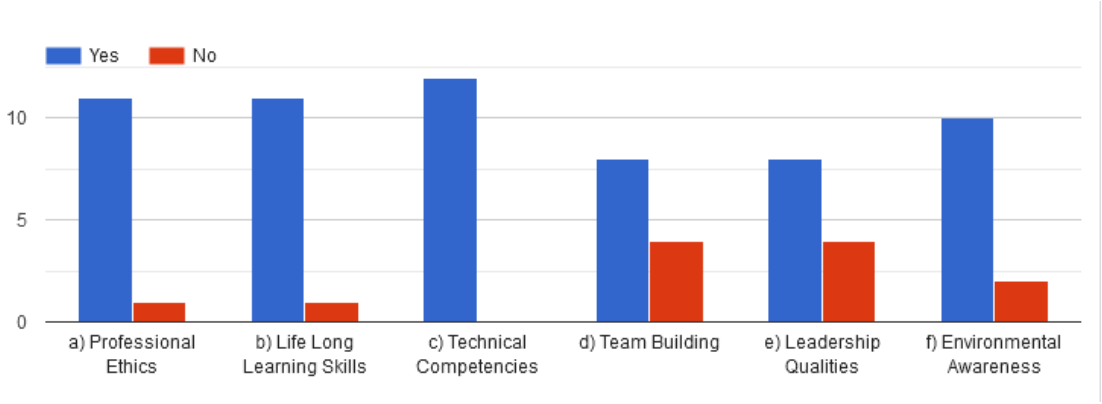
If needed, kindly give your valuable suggestion

- Technology doesn't matter for surveying in industry, whoever completing engineering (all departments, including aeronautical) and other arts and science graduated people are entering into IT sector. More than technology it's important to know how to implement the technology for business and

how to provide the solution by thinking out of the box, I hope business process management in sem VI helps students to understand this

- Yes, Comparing to people who were graduated from NIT's or IIT's, and from Tier-1 Colleges, we need to make our self competitive with them, as in recent times, everything we can get from online, but the well structure plan is needed, that we gain from college degree. The main difference i could see from those people is their problem solving skills and innovating ideas. Problem solving skills is gained from consistent practice. Those people are consistent in one programming language and good at data structures and how to do it in a optimized way. We need to add System Design Patterns and Data Structures in a more advanced way like Part 1 and Part 2, as Data Structure is a vast concept, covering it in a single semester is not effective. Also, as 3rd Semester alone covers DS, we would easily forget for the forth coming semesters and used to recap only during interview times. These were mainly needed to improve our computational thinking and problem solving.
- Curriculum is very good. Software Testing & Project management can be included.

4. Are the Curriculum contents helpful for the development of the following areas?



If No, suggest your opinion on the areas that would require development.

- When working as a team, assigning students individual roles & helping them walk through that role's shoes would give them more confidence.
- Professional Ethics doesn't cover most of software related areas when comparing to CS degree. Kindly add more content considering IT workplace.
- Team building and Leadership are better learnt over a period of time, and through extra-curricular activities.

- Students know that leadership/responsibility is needed. But they don't know how to expose that quality

5. Kindly suggest new courses to be included in the R-2023 curriculum to meet the requirements of the current and future industry trends in core and multidisciplinary activities.
    - Can include a paper on cloud computing
    - Cyber security/Data security, Data science and Analytics
    - Spring, react js, angular, vue.
    - A elective on how to create & run a business along with finance & accounting, a more robust web tech, AI laboratory courses, exposure towards cloud technologies (AWS, AZURE)
    - Ethical hacking as a main paper
    - System Design, DS and Advanced DS, Introduction to DevOps, Python with Django, Self improving courses related to Innovation , Practical classes on trending software productivitiy Tools like how to use git, github, VS Code, working in a linux environment for programming than on windows, learn how to use command line tools than on downloading any software's directly from website.
    - Game development using Game engines, Metaverse & NFTs, DeFi
    - Peer-to-peer computing & data transfer
    - Around Entrepreneurship - How to build a product from scratch and Go-to-market strategies. Business modeling, Value proposition, Building for Customers, Customer Experience.
6. Kindly suggest any existing courses in the R-2019 curriculum that can be found obsolete
    - COA
    - Semiconductor Physics, Constitution of India, Environmental Science, We can cover 4 sem Maths to 3 semesters and more focus on Computer Courses. Maths is equally important though, we can merge 4 sems of maths to complete in 3 sems instead of omitting.
    - DBMS & SQL can be clubbed together to single course, Internet & Computer networks, COA & OS.

- Operating systems, SQL programming, Object oriented Design

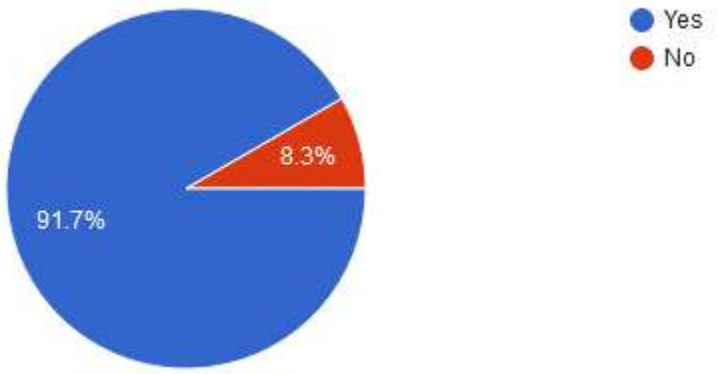
7. Kindly suggest the percentage of Core and Multidisciplinary courses that can be offered in R-2023 (Note: The present R-2019 regulation has 80% of core courses and 20% of multidisciplinary courses)
    - 80&20
    - 50-50 should give students the flexibility of choosing their stream
    - 70% core & 30% Multidisciplinary
8. Kindly suggest course/training that can be included for improving the problem-solving skills and soft skills towards the career settlement of the students
    - Work with competitive coding platforms to integrate them as an exercise on lab courses.
    - Separate Sessions about logical thinking
    - Consistent training needed for problem solving and soft skills, instead of making that in a particular day like in weekends, most people wont attend, that can be added as part of classroom learning itself. Such as while learning python programming itself, the students can learn one word based logical programming quizzes on every programming classes, the group tests can be conducted. Instead of individual learning, group learning helps to explore more. Couple of group tests followed by individual tests is helpful. Group projects can be encouraged from 2nd semester itself, or instructors can found couple of easily available open source github projects and ask them to resolve on their own. In workplace, Merely we are not going to fully develop our project by own. Googling is a main skill but people lack on how to apply them. Ask students on how to post on stackoverflow, create github account, post their developed projects. Learn more on Why and how, than on what. The main lack could see in students, is interconnectivity between subjects. Students were learning different subjects every semesters. But not good at relating those subjects. Once then we start to connect the dots, we can understand the real picture of Computer Science.
    - Courses on edX, khanAcademy and udemy were also good, But for concepts we can learn from those websites. But problem solving and soft skill is more of practising. Starting with very small programs/programming quizzes

focused on one programming language, practising on leet code or any websites but consistently helps to develop program solving skills. For soft skills also, more than having one dedicated subject for one semester alone, we can conduct often based on their interesting technical topics. Having seminars, group communication, Leadership activities, situational thinking, how to resolve conflicts, behaviour attitude, those can be given frequently, more of QA sessions is needed. The main fear with students is asking questions or how to ask infront of many people. That needs to be resolved. Even a lame question is good to improve our knowledge. Students should know that not knowing is ok but what should be resolved is , not learning though we understood that we need to know.

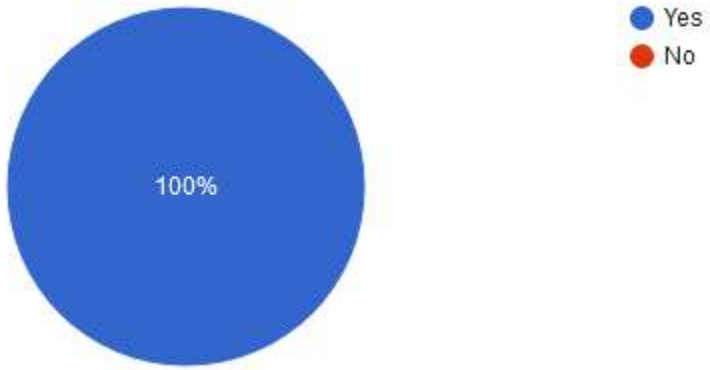
- Frequent Group discussion activities

9. Kindly suggest the percentage of courses for problem-solving skills and soft skills in the R-2023 curriculum (Note: The present R-2019 regulation has 80% of courses for problem-solving skills and 20% of courses for soft skills).
    - 60-40
    - Same %
    - 80%. 20% is good
10. Kindly suggest the courses for the improvement of the innovation and entrepreneurial skills of the students
    - Brainstorming sessions in PRODUCT DESIGN curriculum which can bring a bunch of ideas, work through them & prepare a roadmap document on how to build a product from the idea.
    - I see project guided courses from coursera, and google is offering many courses in official website: https://grow.google/intl/en_in/certificates/.
    - Encouraging students to participate in opensource contribution. Or instructors/alumnis can create official opensource projects and students can contribute them. Using LinkedIn much more in a healthy way, can create a pathway to understand technology better.
    - Creative Thinking & Effective problem solving.
    - Many hackathons with latest usecases

11. Can we consider the winning of technical contests like Hackathon/Coding/ Innovation challenges etc, organized by premier Industries/Institutions to transfer the credits (exempt from one elective course)?



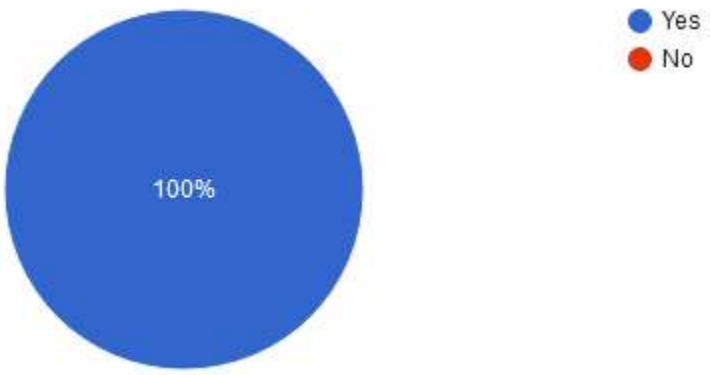
12. Can we include experiential-based learning in our curriculum for better employability? (Experiential Learning allows the learners to apply concepts learned in the classroom in simulated and real work situations.)



If Yes, how many hours per week can we allot for experiential-based learning per course?

- 10% of allocated hours
- 8 - 10 hours
- 6 hours
- Adding to lab hours is enough
- Monthly once you can have this session on any weekend Saturday(3-4hrs session)

13. Can we include project-based learning in our curriculum for better employability?



If Yes, how many hours per week can we allot for project-based learning per course?

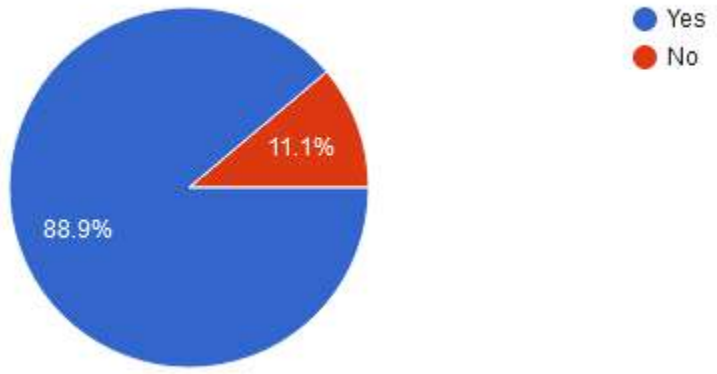
- 2-3(or Weekend Saturday with 3-4hrs session)
- 20 hours a month
- 20hrs
- 10% of allocated hours
- 8

14. Kindly suggest the skill set needed for acquiring dream and super dream offer for the students
    - For college interviews, most companies prefer basics of computer subjects, Being good at Trending technologies is fine, but more than that, students should learn the basics and real time use of subjects and their relation. Most companies would restructure the employee in their own way of needs. So flexibility to adapt and open to learn is the major skill needed. So, learning the basics and good at coding in one core programming such as c, c++ or java, (python is good to have, but as python is more handy, it doesn't give chance to understand much internals)
    - Strong knowledge in one program, Good with its Data Structures, System Design is most needed (as per interview from tier 1 global companies like MAANG, Walmart, Swiggy, Flipkart and more)
    - Explaining a complex topic without using any jargon words. Have a decent idea in breadth of topics, but deeper knowledge in selected topics. Flow of thinking and communicating the same.

15. Kindly suggest some of the industry-recognized global certifications that would help for better employability
    - Black hole, No code low code platforms, Python, Cloud based course certification, Kindly encourage them to get certified and be a professional partner like MSP, Professional partners for UiPath, Microsoft, Google.. That speaks more than certification, coz certified professional are lot there in market.
    - Appian, RPA Certification, AWS
    - EdX, Coursera, Udemy, Khan Academy, Harvard University Courses, Grow with Google.
    - Codechef, Devfolio, Gitcoin , Topcoder
    - Coursera (AWS/GCP/Azure/IBM)
    - Google summer of code

1.4 The following are the responses received from **ACADEMIC** stake holder regarding the 2019 regulations and curriculum

1. Does the Regulation-2019 curriculum incorporate technical advancements in the relevant field of study?

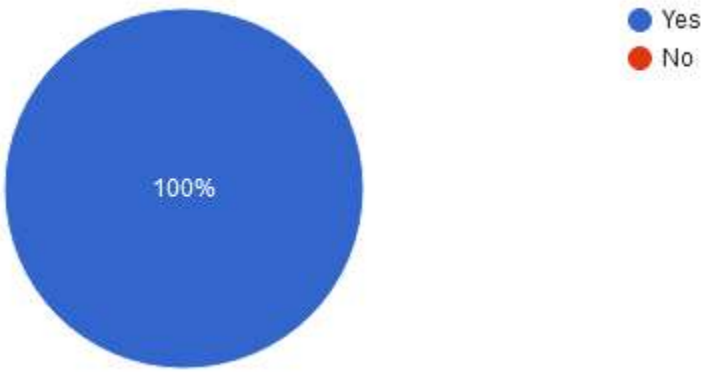


If no, kindly suggest new courses to meet the technical advancements

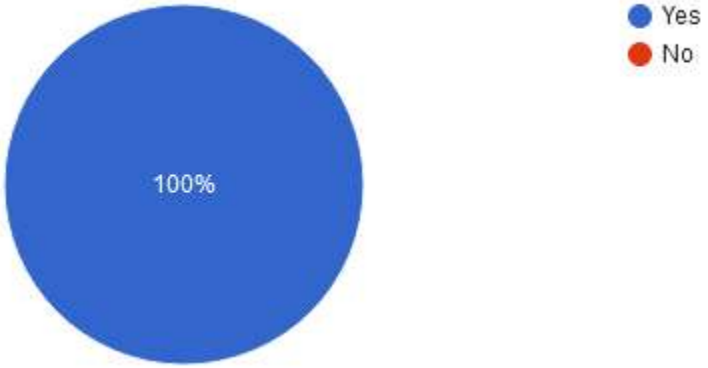
- You can add verticals in recent technical advancements for elecive streaming as suggested by Anna University
- Can have IP, IP lab in IV sem as it will be helpful for the students to take internships, In 5th Semester, ML and ML Lab can be there, as this will be helpful for the students to go for Internship to take up the Internship. Also it will be useful for giving Honors degree.

- Though I have marked yes, I feel 5G or 6G architecture can be part of electives list and Wireless Networks can be part of core courses

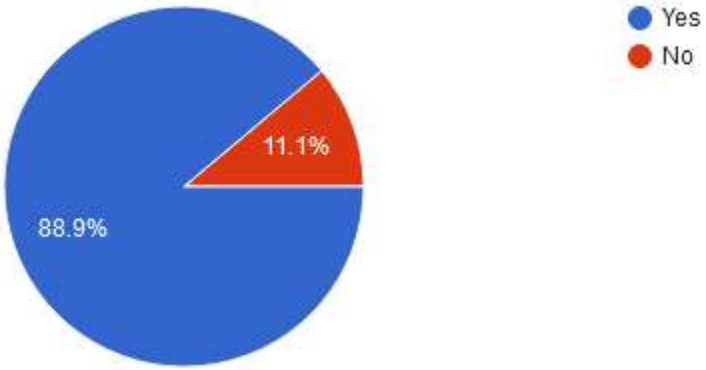
2. Does the Choice Based Credit System (CBCS) adapted in the Curriculum improve the academic flexibility?



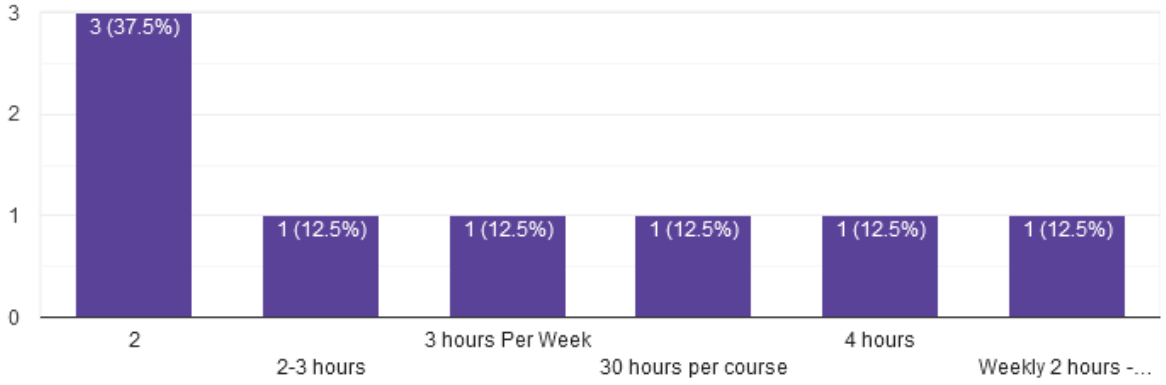
3. Does the curriculum focus the employability of the students?



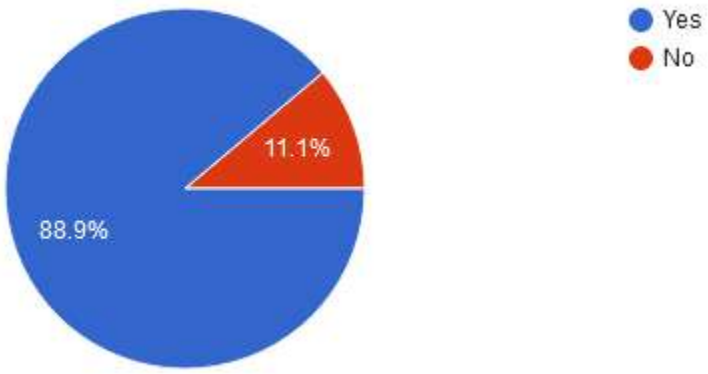
4. Can we include experiential-based learning in our curriculum for better employability? (Experiential Learning allows the learners to apply concepts learned in the classroom in simulated and real work situations).



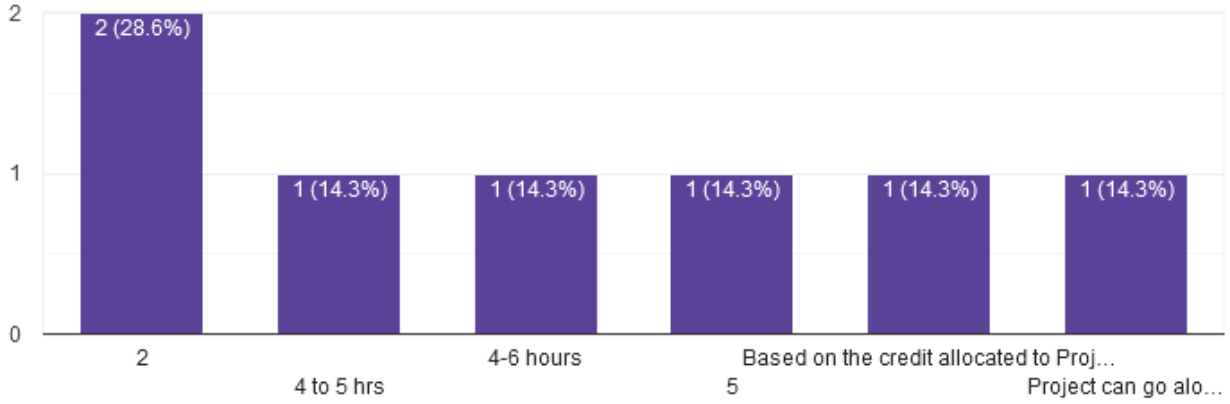
If yes, how many hours per week can we allot for experiential-based learning per course?



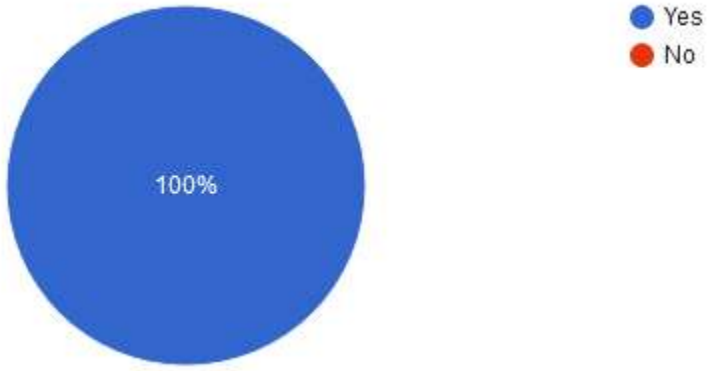
5. Can we include project-based learning in our curriculum for better employability?



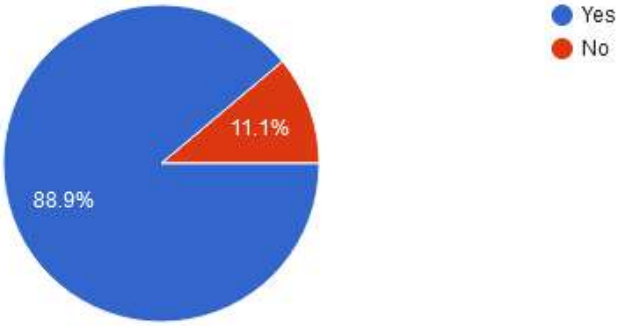
If yes, how many hours per week can we allot for project-based learning per course?



6. Does the curriculum have the theory and practical courses in good proportionate?



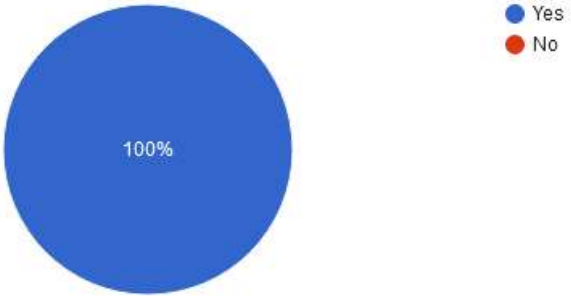
7. Do the tools used to teach experiments in the laboratory courses match with the current industrial needs?



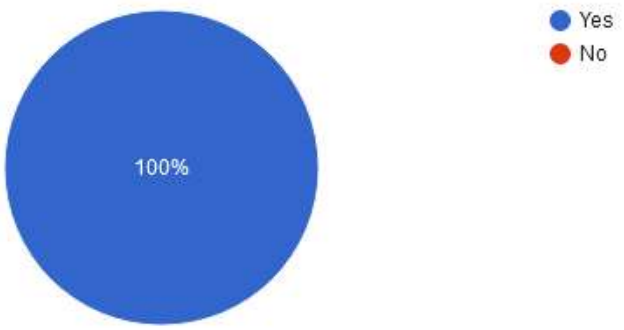
If No, Kindly suggest new tools needed for laboratory courses

- Cloud Lab, AI & ML Tools
- Marked yes but ensure that hands-on sensors/IoT lab is there
- I feel python based frameworks, students may miss as AI, ML and DL are cutting edge technologies required for the industry

8. Whether the curriculum encourages the life-long learning?



9. Whether the courses like audit courses, mandatory courses, inter-disciplinary, trans-disciplinary courses may be evaluated without the end semester examination?

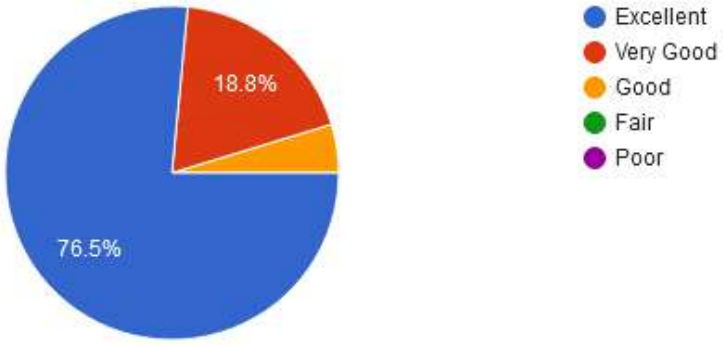


10. Kindly suggest any existing courses in R-2019 curriculum that can be found obsolete
    - Semiconductor Physics, if it includes Digital Electronics content, its fine. Else, has to be done
    - Finance and accounting
11. Kindly suggest some of the industry recognized global certification that would help for better employability
    - Cloud Certification, Programming Language certifications
    - Agile SAFe, ScrumMaster kind of certification courses, Google Cloud Professional Data Engineer, AWS Certified Solutions Architect, Springboard Software Engineering Career Track, Salesforce Administrator
    - Oracle certification
    - Full stack development
    - Definitely, Some of the NPTEL or coursera courses would help the students for better employability
    - Spoken Tutorial ,Google Cloud, CCNA
12. Suggest any innovative content delivery method for problem oriented courses
    - Flip classroom, Tutorial Based Teaching
    - Live demonstration
    - In class Quiz activity
    - Animation or Video mode Step by Step explanation
    - Through simulation

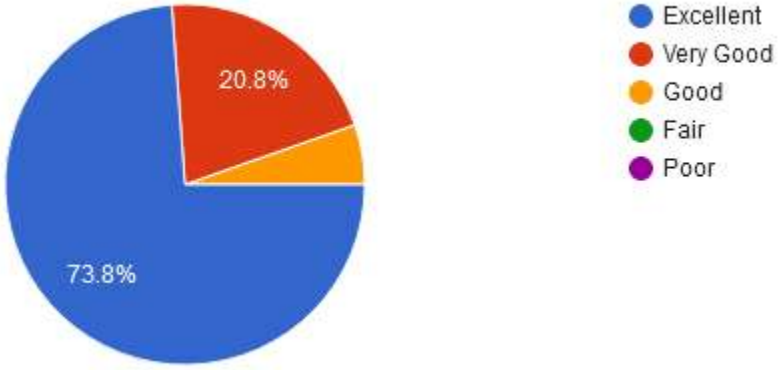
13. Kindly give your suggestion for improving the Teaching-Learning Process to enhance the quality of the students
    - Hands on teaching, Inculcating self learning skills in students
    - More activities to engage them like team projects, presentations, activities
    - Elective courses may also be handled as Theory cum lab
    - Activity based learning, Online coding for certain courses (i.e developing the code in the class which will be helpful for the students to realize the concepts in class itself)
    - Periodic Analysis apart from internals. (Every Negligence must be intimated to parent through mentor. (One mentor have only 15 to 20 students)
    - All practical oriented teaching
14. Suggest your views to impart graduate attributes (PO7 to PO12) apart from the curriculum
    - More student participation in Coding Contests, Hackathon, International / National level conferences, workshops, Technology Incubation
    - The importance of these has to be emphasized but at the same time no dry theory to impart these, has to be done through activities
    - During curriculum design itself care has to be taken for coverage of POs
15. Kindly suggest the verticals / specializations to be introduced in the curriculum for the award of B.E. / B.Tech. Honors / Minor degree
    - Machine Learning, Computational Intelligence, Tech. stack Development, Networks & Security,
    - Data Science, Cyber Security, Software Engineering, Internet of Things
    - AIML, DATA SCIENCE
    - Cyber security/ Machine learning
    - Artificial Intelligence, Blockchain, Big Data Analytics, Cybersecurity
16. Kindly suggest the verticals/specializations that can be found obsolete
    - In CSE, things cannot be ruled out but has to be shaped up into a new vertical
    - Networking

1.5 The following are the responses received from **STUDENTS** stake holder regarding the 2019 regulations and curriculum (149 Responses Out of)

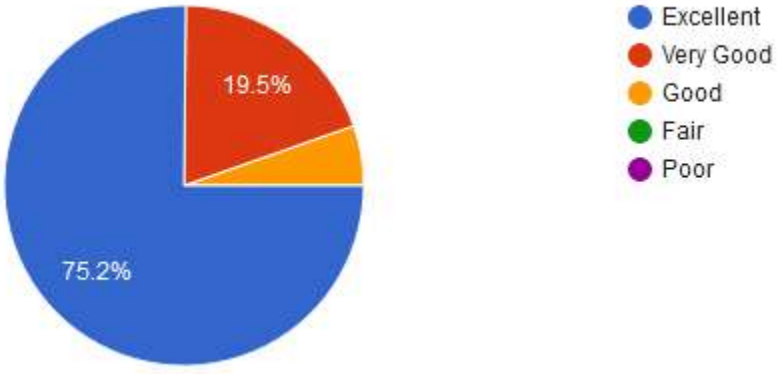
1. Rate how the curriculum and syllabi offered by the programme give opportunities to enhance your knowledge and skill



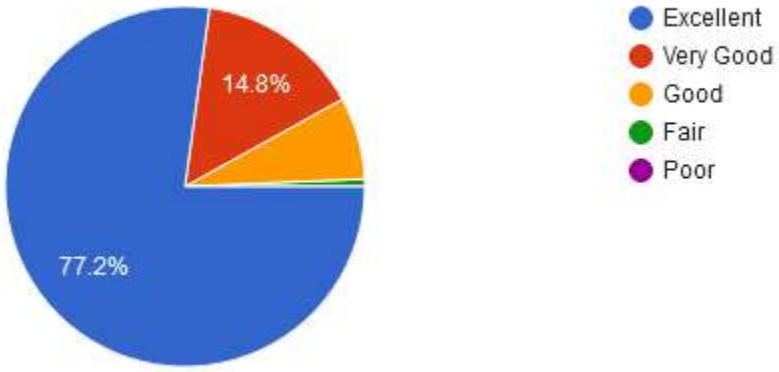
2. Rate the appropriateness of the sequence of the courses provided by the curriculum



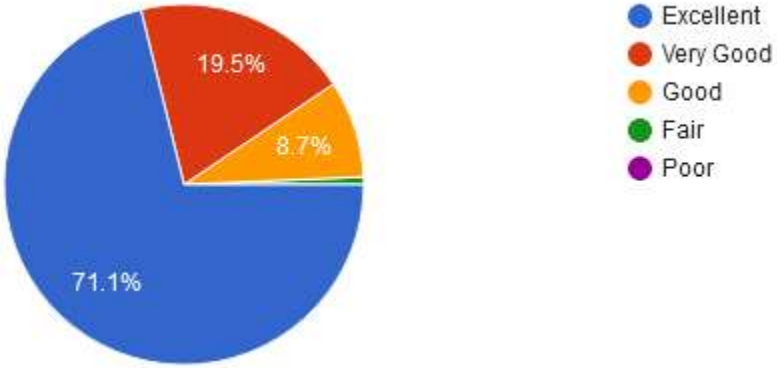
3. Rate the course content providing opportunities towards your participation of various events such as Hackathons, internships, field visits, etc.



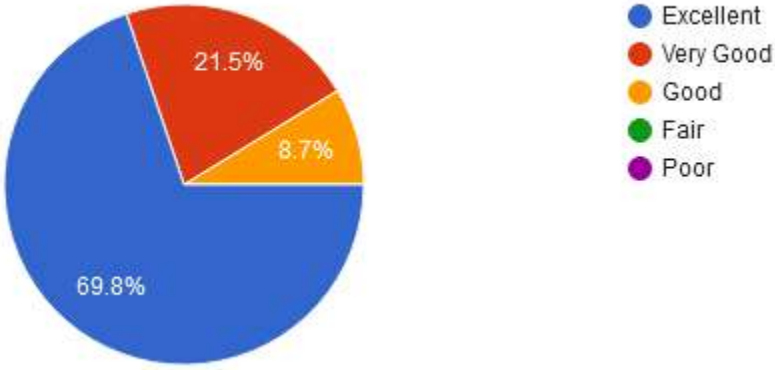
4. Rate the flexibility in choosing the program elective courses towards your technology advancement.



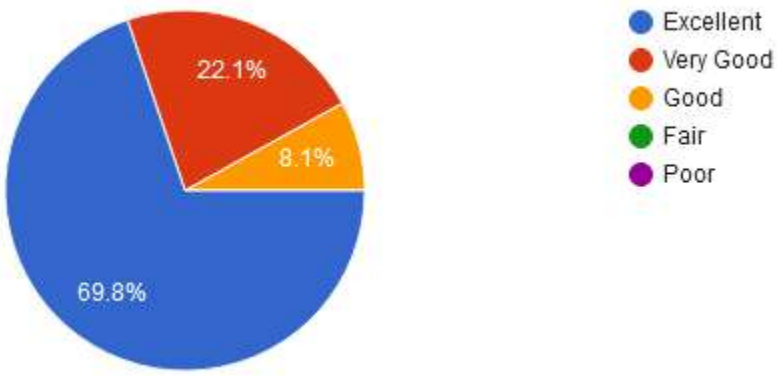
5. Rate the balance between the theory and practical courses in the curriculum



6. Rate the quality of the teaching learning process



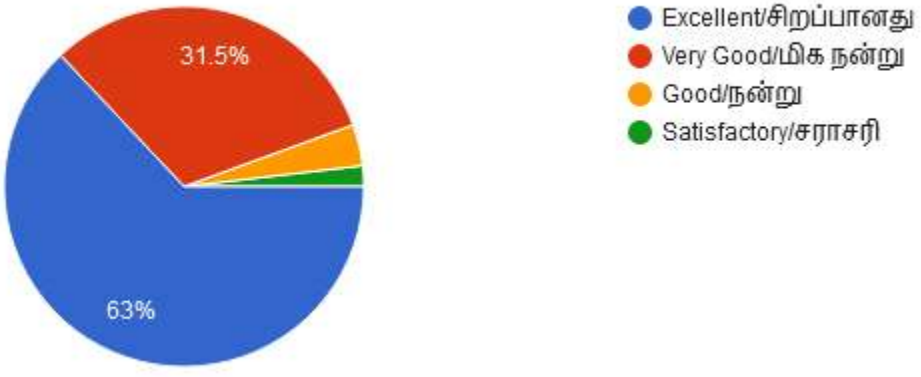
7. Rate the employment opportunity gained through your curriculum



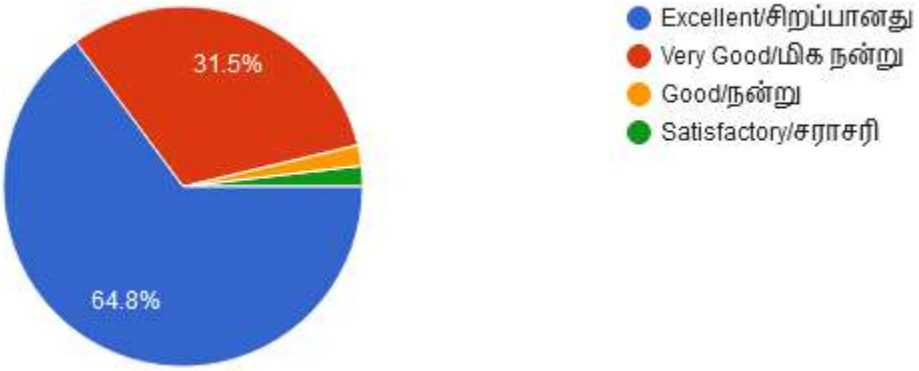
8. Any other Suggestions to improve further for the design and development of curriculum
    - Have to allocate more time for practical projects than academics.
    - Need more notes
    - Prefer practical over theory
    - If the curriculum is related to practical study, student can easily understand the concepts. If it is very good.
    - If syllabus related to practical work, student can easily understand the concepts.
    - Still we need some real time learning aspects in new emerging technology.
    - Train us for other college events like hackathon, codeathon etc
    - Discuss extra coding problem in classroom.

1.6 The following are the responses received from **PARENTS** stake holder regarding the 2019 regulations and curriculum (54 Responses Out of)

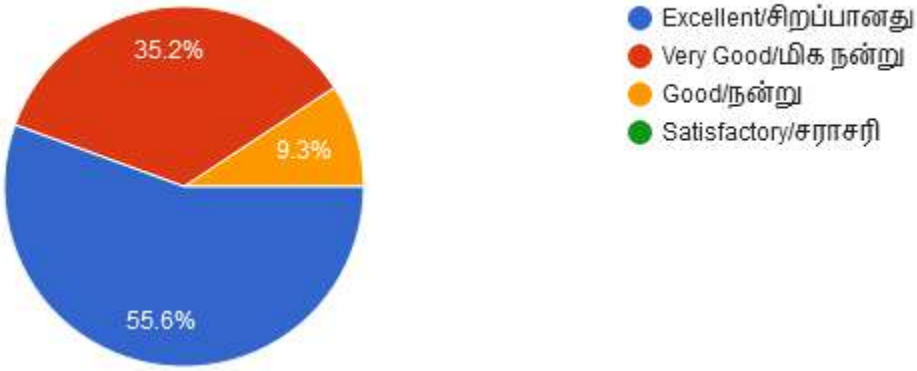
1. The teaching learning process of NEC imparts the value based learning in terms of knowledge, skill and critical thinking of the students



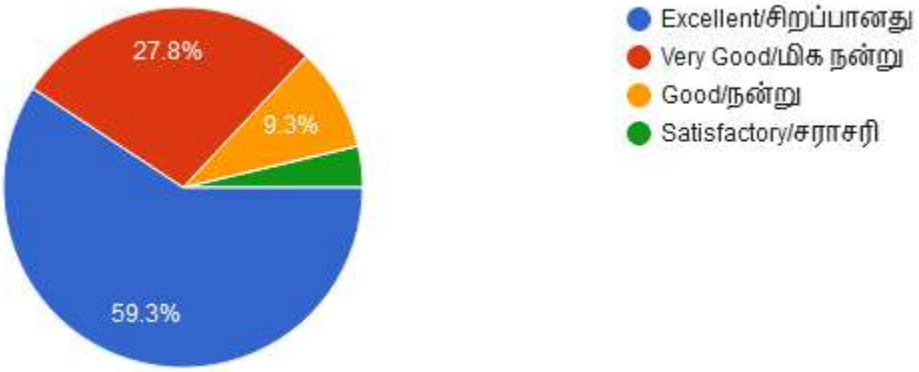
2. How do you rate the faculty-students interaction in terms of teaching learning process?



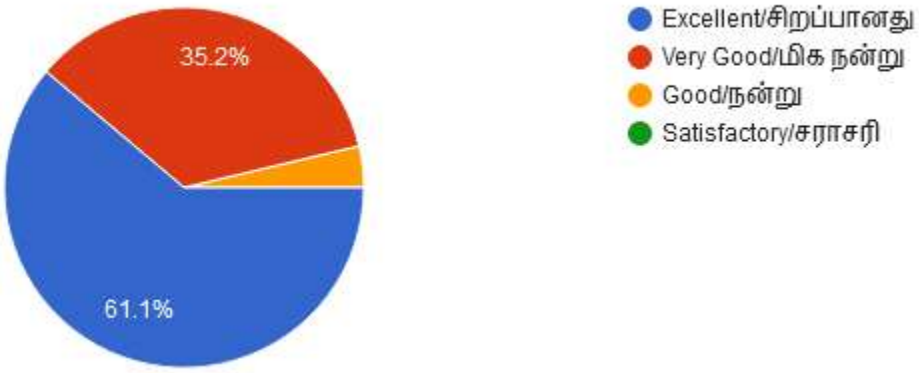
3. How do you rate the outcomes that your son/daughter has achieved from the programme of study leading to placement or higher studies or entrepreneur?



4. Rate the Co-curricular (Add-on Courses / Seminar / Guest lecture etc.) & extra-curricular (Sports/Cultural/NSS) activities organized by the institute.



5. How do you feel that the courses have inculcated social and ethical values to your son/daughter?



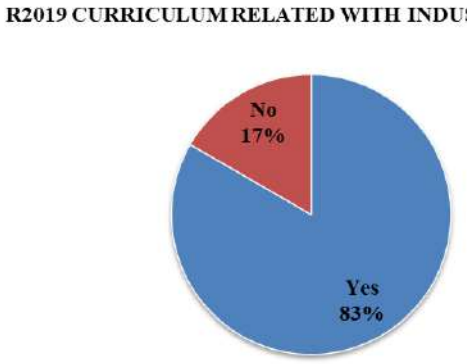
2. Department of Civil Engineering

2.1 The number of responses received from the department is as follows.

Stake holder	Feedback Form Sent	Responses Received
Alumni	30	12
Employer	08	02
Academic Expert	20	12
Student	50	50
Parent	30	17

2.2 The following are the responses received from **ALUMNI** stake holder regarding the 2019 regulations and curriculum

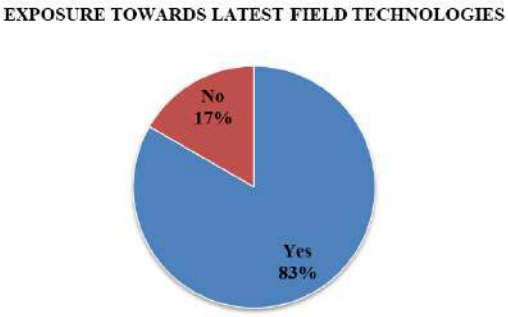
1. Does the Regulation-2019 curriculum map with the emerging industry trends?



If no, kindly suggest new courses that meet the requirements of the industries.

- IOT - Automation techniques in Civil engineering, Marine and offshore civil Engineering, International Standards in civil engineering, Rebar detailing, Water Quality monitoring techniques can also be considered and added,
- Recent Advanced modeling software's like Abacus, SAP, SAACS must be included.
- The curriculum can be enriched with software-based courses,
- The curriculum can be enriched with more practical courses rather being theoretical

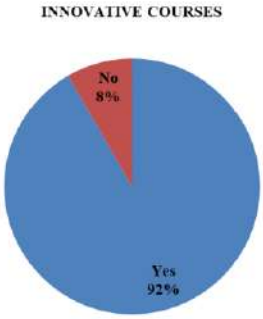
2. Whether you are exposed to the latest technologies in your field during the period of study at NEC?



If no, mention the gap need to be addressed in the curriculum

- It has been suggested to involve students in consultancy works for field exposure.
- Knowledge about Research Institutes, Civil engineering association and opportunities in IITs are to be included. Importance of research publications and industrial training must be explained well,
- Some gaps which can be included are: Green Buildings, Sustainability

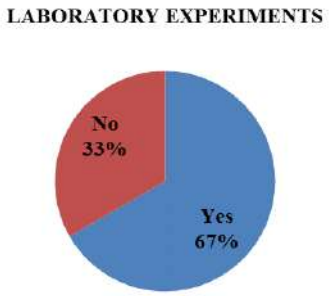
3. Does the curriculum have enough courses for developing innovation?



If No, Kindly suggest new courses for developing innovation

- IOT - Automation techniques in civil engineering
- Marine and offshore civil Engineering
- International Standards in civil engineering
- Rebar detailing
- Water Quality monitoring techniques can also be added.

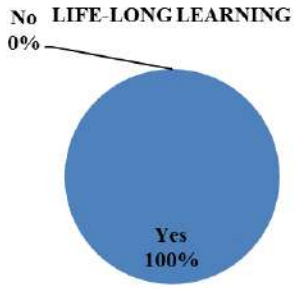
4. Do the tools used to teach experiments in the laboratory courses match the current industrial needs?



If No, Kindly suggest new tools needed for laboratory courses

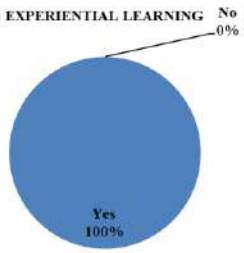
- Recent Advanced modeling software's like Abacus, SAP, SAACS must be included,
- Excel sheet preparation for structural elements and NDT equipments,
- Advanced learning tools,
- BIM, AutoCAD

5. Whether the curriculum encourages the life-long learning?



If No, Kindly give your comments: Nil

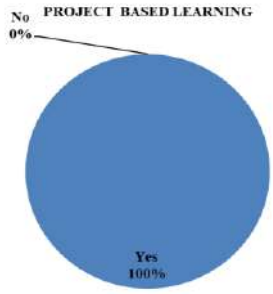
6. Can we include experiential-based learning in our curriculum for better employability? (Experiential Learning allows the learners to apply concepts learned in the classroom in simulated and real work situations.)



If yes, how many hours per week can we allot for experiential-based learningper course?

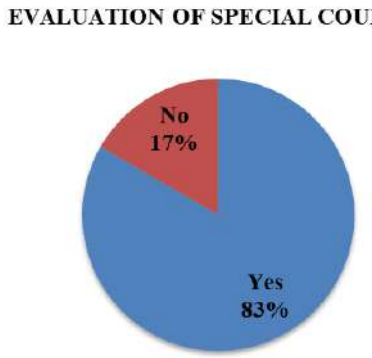
- More than 3 to 4 Hours
- 3 to 4 Hours
- Less than 3 to 4 Hours
- No Suggestion

7. Can we include project-based learning in our curriculum for better employability?



If yes, how many hours per week can we allot for project-based learning per course? NIL

8. Whether the courses like audit courses, mandatory courses, inter-disciplinary, trans-disciplinary courses may be evaluated without the end semester examination?



Recommend the courses to include in existing curriculum

Human Resources Development and Organization Behavior

9. Recommend the obsolete courses which can be removed from the existing curriculum

- Nil

10. Kindly suggest some of the industry-recognized global certifications that would help for better employability

Category	Nature of Responses	Number of Responses
1.	Technical Software Courses (a) AutoCAD, (b) Building Information Modeling, (c) MS Project, (d) Primavera, (e) STAAD Pro, (f) ARC GIS, (g) SAACS, (h) ETABS, (i) ABACUS, (j) SAP, (k) Tekla, (l) Online Courses.	5
2.	Certification Courses (a) OSHA Safety Certificate, (b) NEBOSH, (c) LEED AP Building Design + Construction (LEED), (d) AWS Certified Solutions Architect Professional, (e) Design Certification courses, (f) IGBC, (g) CAPM.	4
3.	Inter-disciplinary courses (a) Python, (b) Java. (c) SQL.	1
4.	No Suggestions	2

11. Kindly suggest the skill sets/courses/training needed for getting placement in the dream and super dream companies

Category	Nature of Responses	Number of Responses
1.	Technical Software Courses (m) AutoCAD, (n) Building Information Modeling, (o) MS Project, (p) Primavera, (q) STAAD Pro, (r) Civil Technical Concepts.	2
2.	Inter-personal skill development and soft skills (h) MS Office, (i) Communication skills, (j) Personal Evaluation, (k) Leadership skills, (l) Managerial skills, (m) Aptitude solving ability.	6

3.	Training Programs by Industry professionals	1
4.	Certification Courses & Real time projects	1
5.	No Suggestions	2

12. To promote start-ups, suggest courses that can build their entrepreneurial skills

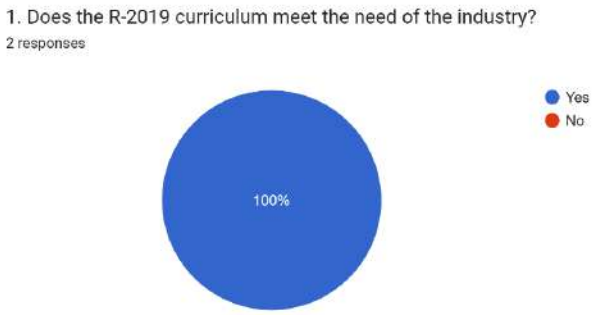
Category	Nature of Responses	Number of Responses
1.	Courses/topics to develop managerial skills (s) Human Resources Development and Organization Behavior Development, (t) Entrepreneurship and Business Life coach Certification, (u) Business Strategy, finance management ,Trading (v) Social Business Model and Planning for Social Innovation, (w) How to monetize their project, (x) Project Management.	4
2.	Courses/topics to develop inter-personal skills (n) Communication skills, (o) Confidence development.	1
3.	Courses/topics to develop professional skills (a) Recent field practices and material values, (b) Structural design software courses, (c) Estimation, (d) Geotechnical investigation, (e) Real Estate development.	3
4.	Online Courses (a) Coursera:https://www.coursera.org/specializations/33hartor entrepreneurship	1
5.	Other modes rather courses (a) Interaction with field professionals and entrepreneurs.	1
6.	No Suggestions	2

13. Kindly give your suggestion for improving the Teaching-Learning Process to enhance the quality of the students

Category	Nature of Responses	Number of Responses
1.	Student Participative Learning through (y) Presentations, (z) Seminar, (aa) Case studies, (bb) Group Discussions.	4
2.	Experiential Learning through (p) Industrial visits, site visits and internships, (q) Technical videos from Industries.	4
3.	Other recommendations including (f) Student poll box, suggestion box and its monthly review, (g) Additional Tutorial Hours	2
4.	No Suggestions	2

2.3. The following are the responses received from **EMPLOYER** stake holder regarding the 2019 regulations and curriculum

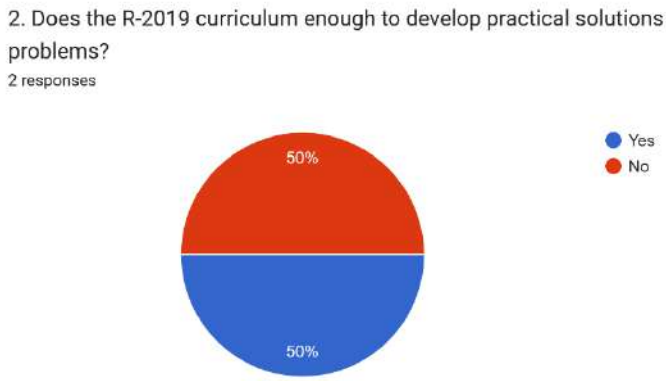
1. Does the R-2019 curriculum meet the need of the industry?



If No, suggest your opinion to meet the need of the industry.

- It covers the basic requirements. Need to make students aware of the practical conditions of the Industry. ie., focus to be made more on practical areas like Concrete mix design, Construction Materials and its natures etc.,

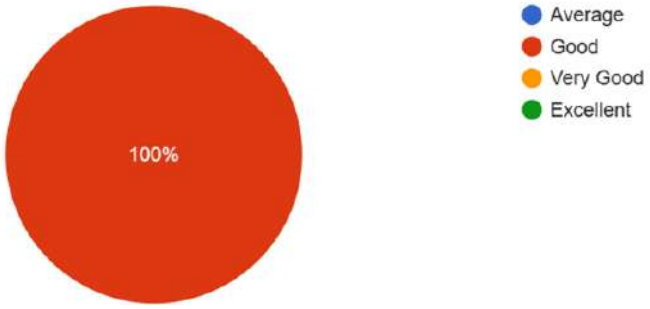
2. Does the R-2019 curriculum enough to develop practical solutions for solving workplace problems?



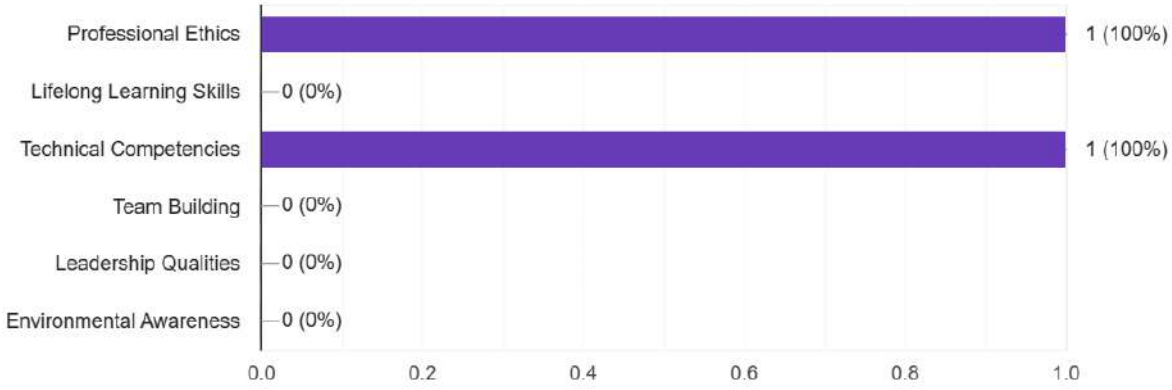
If No, suggest your opinion to develop practical solutions for solving workplace problems.

- Need to make students aware of the practical conditions of the Industry. Ie., focus to be made more on practical areas like Concrete mix design, Construction Materials and its natures etc

3. At what levels do the students' acquired skills and knowledge at our college, aid them in terms of the present employment market in India and abroad?

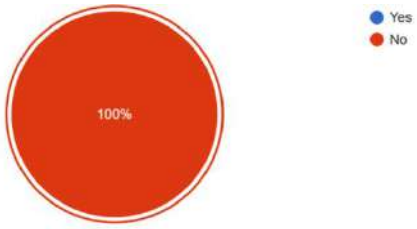


4. Are the Curriculum contents helpful for the development of the following areas?



5. Kindly suggest the percentage of Core and Multidisciplinary courses that can be offered in R-2023 (Note: The present R-2019 regulation has 80% of core courses and 20% of multidisciplinary courses)
    - 80&20 is ok
6. Kindly suggest course/training that can be included for improving the problem-solving skills and soft skills towards the career settlement of the students. NIL
7. Kindly suggest the percentage of courses for problem-solving skills and soft skills in the R-2023 curriculum (Note: The present R-2019 regulation has 80% of courses for problem-solving skills and 20% of courses for soft skills).
    - 80%. 20% is good
8. Kindly suggest the courses for the improvement of the innovation and entrepreneurial skills of the students.
    - Concrete mix designs
    - Basic Shuttering methodologies
    - Reinforcement works.

9. Can we consider the winning of technical contests like Hackathon/Coding/ Innovation challenges etc, organized by premier Industries/Institutions to transfer the credits (exempt from one elective course)?

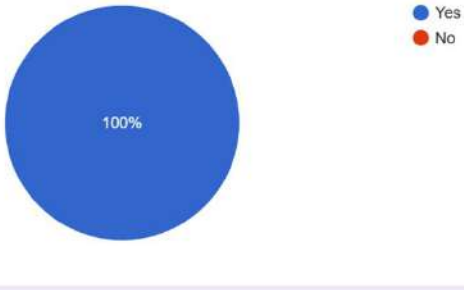


10. Can we include experiential-based learning in our curriculum for better employability? (Experiential Learning allows the learners to apply concepts learned in the classroom in simulated and real work situations.)

If Yes, how many hours per week can we allot for experiential-based learning per course?

- 8 - 10 hours

11. Can we include project-based learning in our curriculum for better employability?



If Yes, how many hours per week can we allot for project-based learning per course.

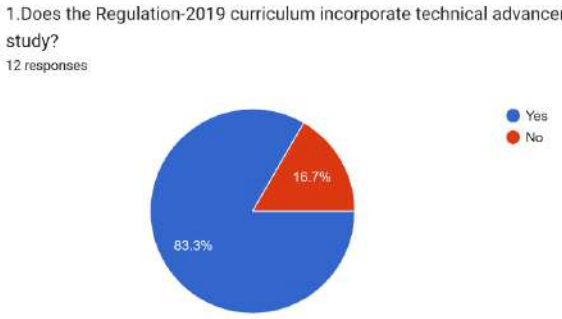
- 3 -4 weeks

12. Kindly suggest the skill set needed for acquiring dream and super dream offer for the students

    To acquire technical as well as practical competency in all areas rather than only book knowledge

2.4 The following are the responses received from **ACADEMIC** stake holder regarding the 2019 regulations and curriculum

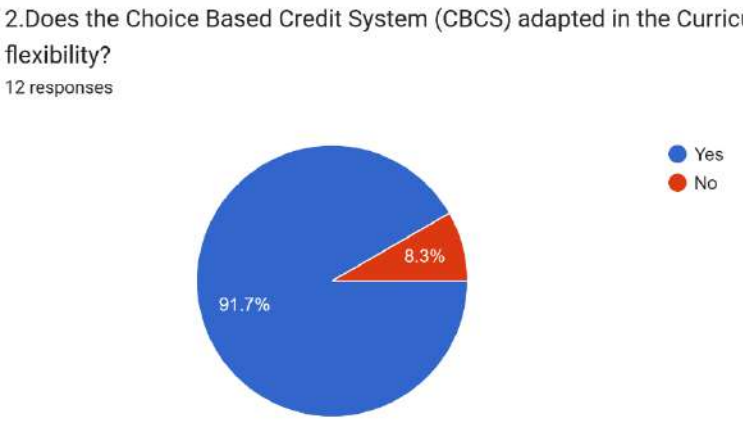
1. Does the Regulation-2019 curriculum incorporate technical advancements in the relevant field of study?



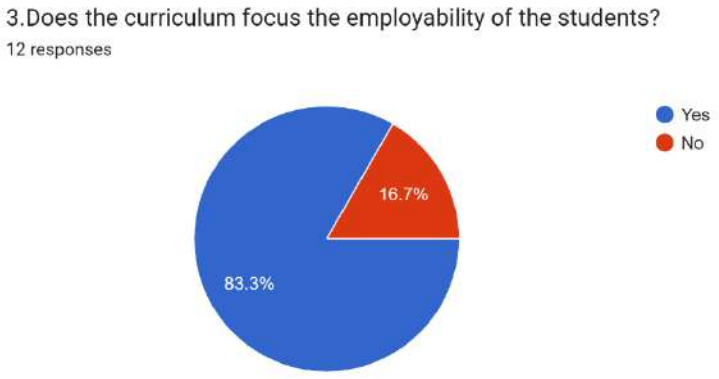
If no, kindly suggest new courses to meet the technical advancements

- A course on "Civil Engineering Applications of Drone-Technology" can be initiated/developed
- Climate change, Data analytics for Civil Engineers, AI for Civil, Python, R, Machine learning for Civil, Sustainable Urban Infrastructure Design, Retrofitting of structures, rehabilitation of water bodies
- Green Building, Smart Construction Materials, Intelligent Buildings, Artificial Intelligence in Civil Engineering

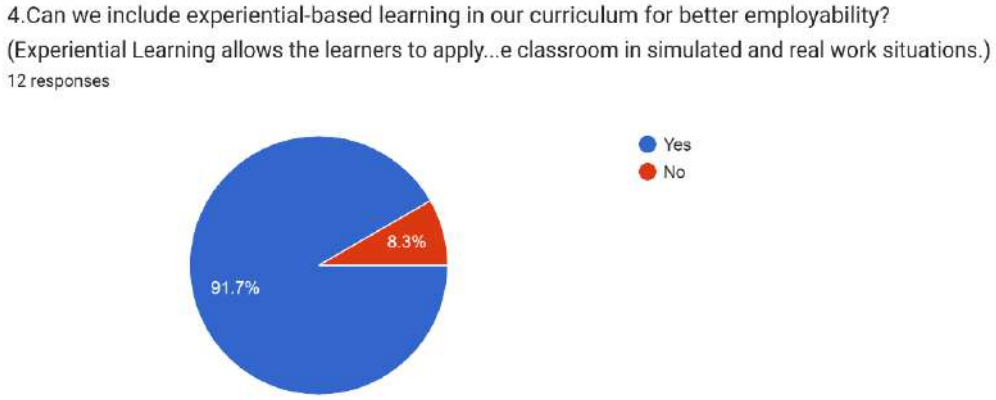
2. Does the Choice Based Credit System (CBCS) adapted in the Curriculum improve the academic flexibility?



3. Does the curriculum focus the employability of the students?



4. Can we include experiential-based learning in our curriculum for better employability? (Experiential Learning allows the learners to apply concepts learned in the classroom in simulated and real work situations.)

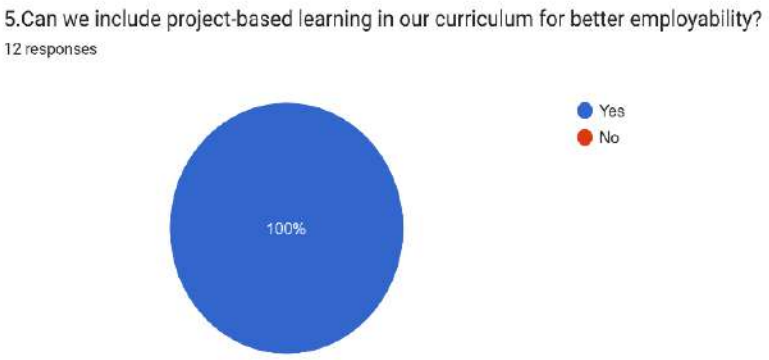


If yes, how many hours per week can we allot for experiential-based learning per course?

- Two fruitful hours in a week devoted to each specialization for e.g. structures, geotech, water resources.
- You can embed the experiential learning as a part of the continuous assessment procedure.
- minimum 4 hours
- cannot be for all courses, may be for some specific courses one hour per week
- It is suggested to add software lectures as a lab course. Encourage field trips as part of the subject.
- 2 hours
- 1 or 2 Hours

- Current Demand in construction industries to be incorporated particularly on Drones, BIM, GIS
- 1 hour
- 4 hours per week -Single Subject.
- 2 hours per week

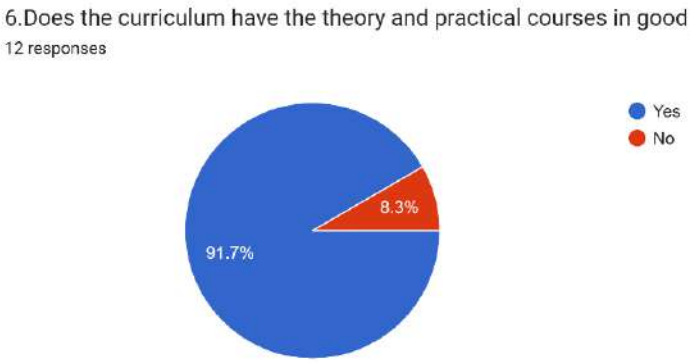
5. Can we include project-based learning in our curriculum for better employability?



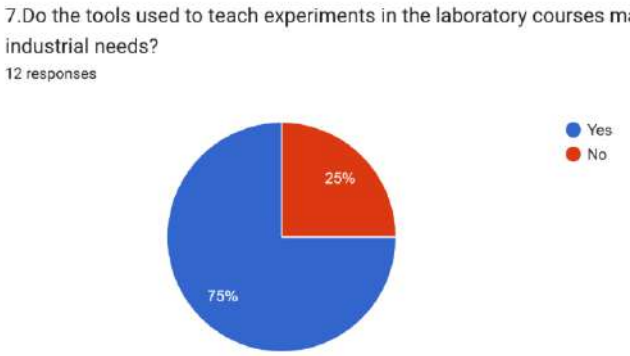
If yes, how many hours per week can we allot for project-based learning per course?

- 2 hours per week per course
- Project should be strictly (practical) design oriented. 1-2 hours in a week would be sufficient to start with.
- May be a mini project per year from third year onwards
- 4 hours
- One project per semester on specific domain, all domains to the possible extend to be covered.
- Instead of a separate hour, include project work as one of the assessment patterns for important subjects.
- one hour
- 4 Hours
- From 3rd year it can be introduced

6. Does the curriculum have the theory and practical courses in good proportionate?



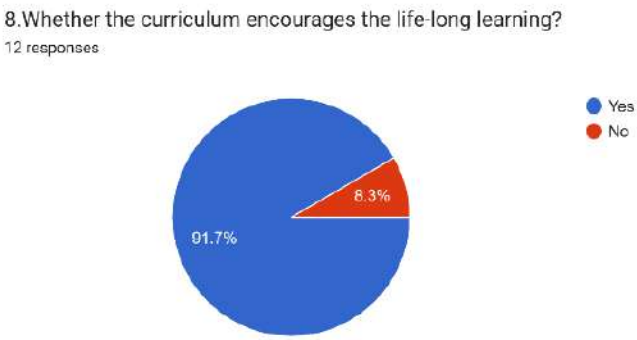
7. Do the tools used to teach experiments in the laboratory courses match with the current industrial needs?



If No, Kindly suggest new tools needed for laboratory courses

- computer based simulation labs can be added value for the learning process
- actually not specified in the Syllabus
- STAADPro/E-Tabs, BIM, PRIMAVERA, WATERGEMS

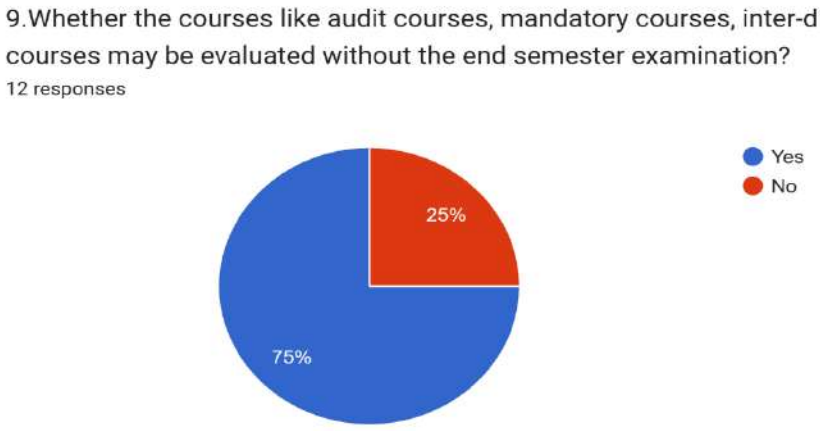
8. Whether the curriculum encourages the life-long learning?



If No, Kindly give your comments

- Group discussion on lifelong learning is suggested

9. Whether the courses like audit courses, mandatory courses, inter-disciplinary, trans-disciplinary courses may be evaluated without the end semester examination?



10. Kindly suggest any existing courses in R-2019 curriculum that can be found obsolete

- None
- NIL
- Nil
- No course is obsolete if you keep on revising or updating the syllabus on par with the new developments
- nil
- not obsolete really, but for want of space may be removed and even more relevant courses can be brought in. Already mentioned in the earlier feedback question.
- I've already commented on the previous section. It has covered many basic courses and relatively fewer advanced courses. The syllabus may include advanced subjects in all specializations.
- No
- Soid mechanics and strength of materials instead you can put SM-1 and SM-2

11. Kindly suggest some of the industry recognized global certification that would help for better employability
    - ABET
    - Bentley, Autodesk certifications can be opted.
    - nil

- Certificate on STAD Pro, Certificate on PRIMEVERA
- certificates from Association of Civil Engineers based on Seminars
- "Environmental Health and Safety", "Construction Project Management", "Sustainable Strategies for Environmental Protection", etc..
- CAD, BIM, MS project, Primavera
- BIM Certification, IGBC Certification, Project Management Certification
- Make MOU with Industry.
- No Idea

12. Suggest any innovative content delivery method for problem oriented courses
    - Flip classroom, Tutorial Based Teaching
    - Live demonstration
    - In class Quiz activity
    - Animation or Video mode Step by Step explanation
    - Through simulation
13. Kindly give your suggestion for improving the Teaching-Learning Process to enhance the quality of the students
    - A teaching learning center may be made more effective
    - By Initiating Group activities in a class E.g. Model Making
    - Teachers should use interactive platforms such as Mentimeter etc for more engagement with the students in the class room.
    - use flipped class and blended learning
    - Dedicated Teaching with sincere class room Tutorials
    - Participation in Seminars and field visits and association with Govt. Projects
    - Concentrating more on Learning of Fundamentals and solving basics of problems and then big theories and problems
    - One to one
    - Industry lecture and visit should be integral part of the teaching-learning process
    - Special Attention for Slow learners.
    - open ended questions and flip the class room

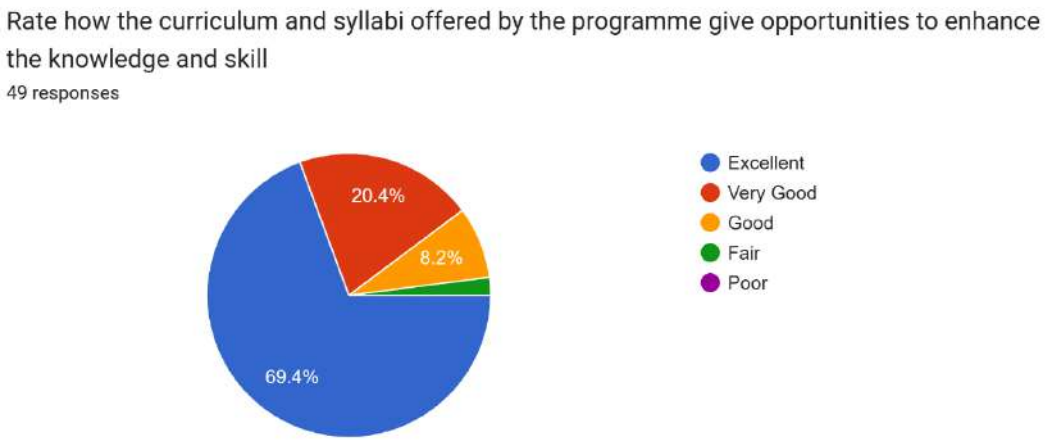
14. Suggest your views to impart graduate attributes (PO7 to PO12) apart from the curriculum
    - None
    - NIL
    - nil
    - Students need to be made to understand the significance and Objective of POs
    - Marginal mark enhancement to the tune of 5% in related courses will add value to attitudes
    - Introducing new courses like "Linear and Circular Economy", "Product Life Cycle Analysis", "Environmental Protocols and Conventions" etc.
    - Nil
    - Allow them to participate in Club activities and Professional Societies. Workshops/Seminars can be conducted periodically.
    - Na
15. Kindly suggest the verticals / specializations to be introduced in the curriculum for the award of B.E. / B.Tech. Honors / Minor degree
    - One degree is sufficient. A minor degree may add value to the student.
    - Remote sensing, Foundation Design, Metro rail Technology, Environmental Engineering -Solid Waste Management.
    - Machine learning / data analytics/ for civil engineering applications
    - Application of different soft ware tools in Civil Engineering
    - Vertical totally focusing Construction management oriented courses
    - Transportation Engineering, EE, and Multidisciplinary course
    - Environment Design/Construction/Material/ Software may be treated as verticals for specializations
    - Courses like "Consumerism and Mitigation" , "Waste Prevention and Control" etc. at B.Tech level.
    - AI applications in Civil Engineering
    - Digital Construction Technology
    - Geosynthetics and Reinforced Soil Structure, Geo-Environmental Engineering, Earth and Earth Retaining Structures, Underground Structures.

- Theory of elasticity, Structural Dynamics, Finite element analysis and stability of structures to get minor degree

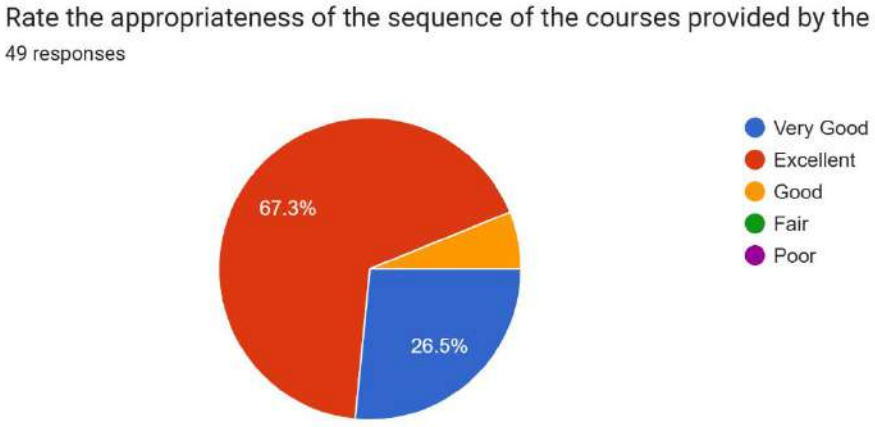
16. Kindly suggest the verticals/specializations that can be found obsolete:
    - Geotechnical Engineering vertical need to be strengthened further.
    - Nil
    - Nil
    - No Comments
    - Basics like irrigation management

2.5 The following are the responses received from **STUDENTS** stake holder regarding the 2019 regulations and curriculum

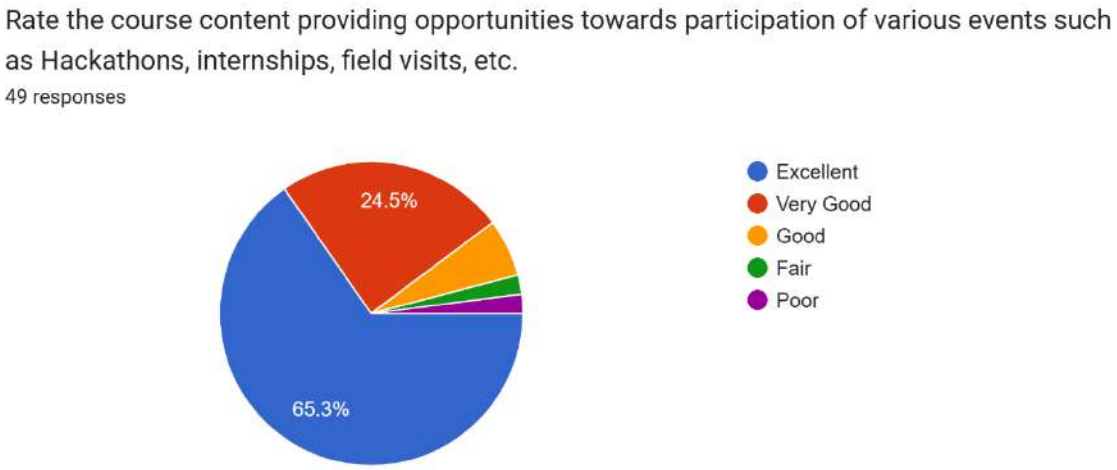
1. Rate how the curriculum and syllabi offered by the programme give opportunities to enhance your knowledge and skill



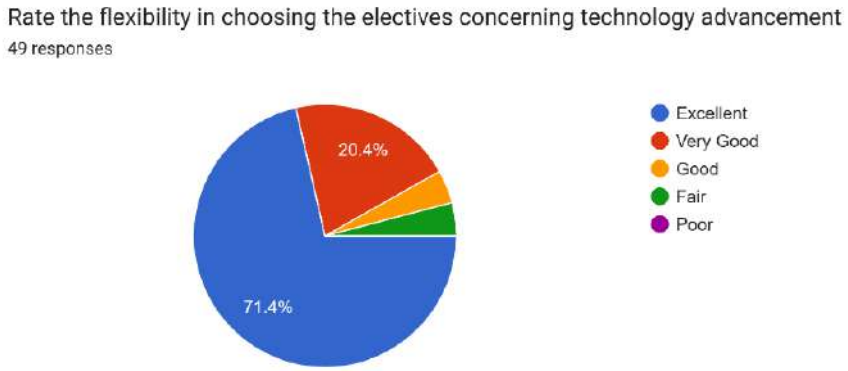
2. Rate the appropriateness of the sequence of the courses provided by the curriculum



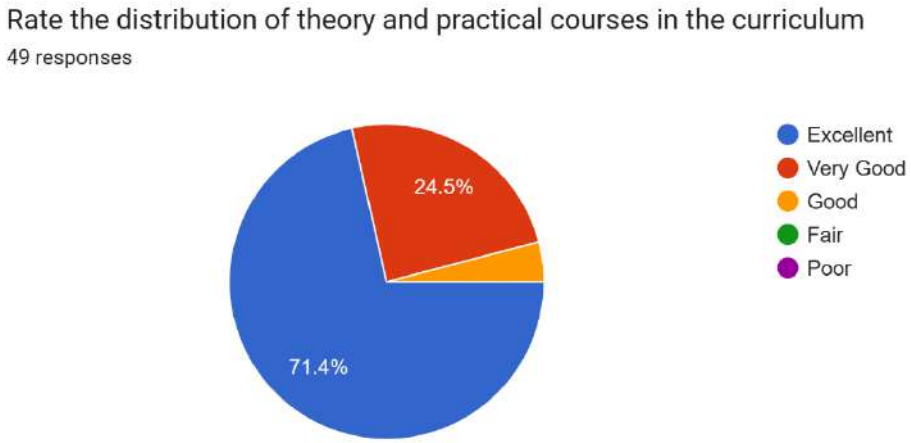
3. Rate the course content providing opportunities towards your participation of various events such as Hackathons, internships, field visits, etc.



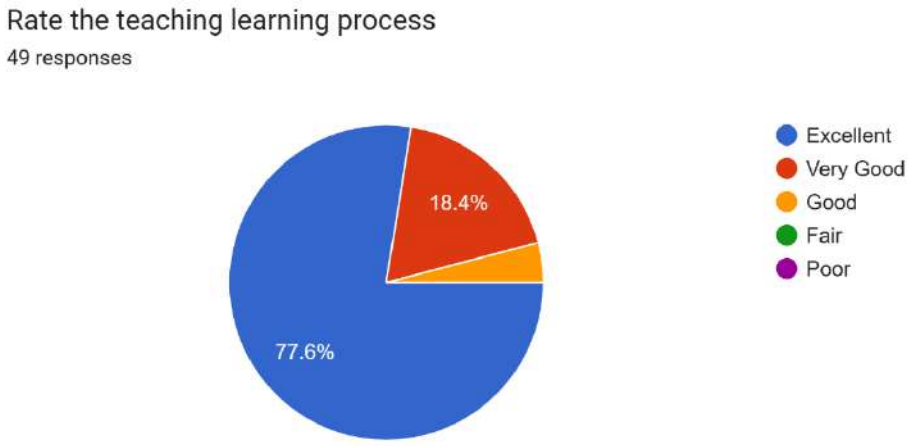
4. Rate the flexibility in choosing the electives concerning technology advancement



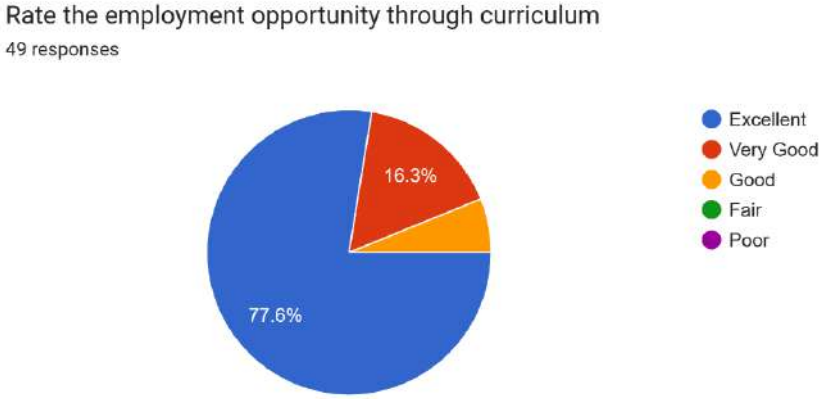
5. Rate the balance between the theory and practical courses in the curriculum



6. Rate the quality of the teaching learning process



7. Rate the employment opportunity through curriculum



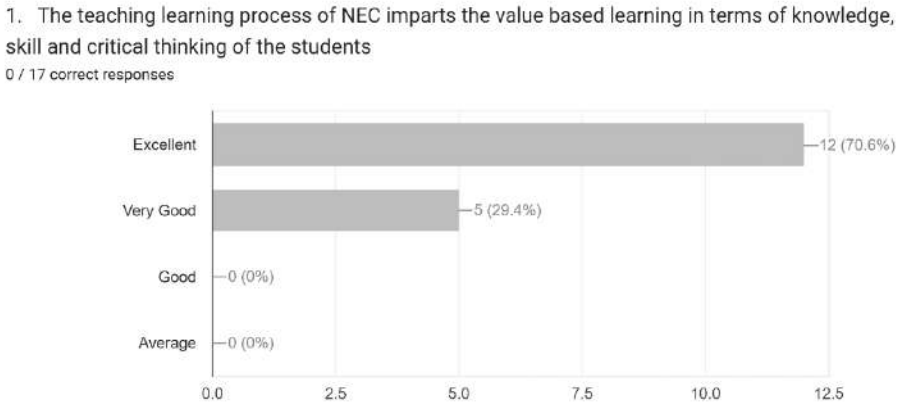
8. Any other Suggestions to improve further for the design and development of curriculum
    - It was well and good
    - Everything is good.. nothing to improve
    - Null
    - More field visit
    - Change to the syllabus
    - Can include some BIM courses and field visits
    - Need more practical knowledge
    - Syllabus has to be changed
    - Provide the intern for two months

- To be add latest technology related subjects
- Everything is good
- I request core software related training for the next curriculum
- I like core software related training for the next curriculum
- Nill
- Building information modelling lab
- Add Seperate Theory Subject for planning an building and supervise the construction work
- Give importants to sports.Reduce the time limit of college.
- Give importance to plan drawing and BIM
- Alterating the present curriculum into competition exams oriented and industries exposured based to the fullest.
- To enhance student knowledge and skill in plan drawing
- Give importance to plan drawing and BIM
- Improve the syllabus in current generation update is need
- Nil
- Class work is good but sir can't use a english language in class lectures at least we need a 20 or 30 percent lecture in English
- We need extra staff ...we also need surveying camp...we need advanced equipment in the laboratory
- More practical courses
- Improve the laboratory methods with advanced equipment
- More labs needed
- In general some portions are being outdated but limited classes to be provided in syllabus just to gain knowledge instead to focus on what is being currently used Moreover to separate the SIG earlas possible and to allocate separate classes as it is held in other departments. Definitely a monthly holiday to be provided so that not only for recreation but also day to makeup everything that is being covered up. Also to inform the importance of credit transfer early. Moreover the communication between tutor and students must be in honest manner so that to get use of tutors more efficiently. Also
- Not necessary

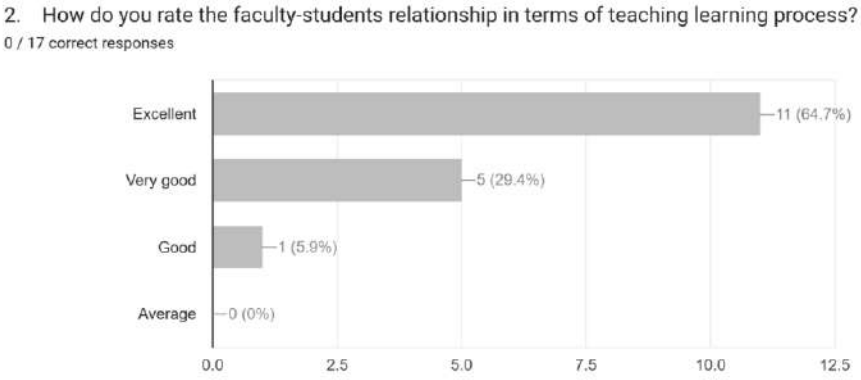
- As of now everything was well and good.
- We extra language need
- Teach some extra course
- We need extra class for exam preparation like gate ,cat,gre, also communication class to develop our communication during placement. At last ,class for core software knowledge
- Provide communication classes
- Providing futuristic technology & focus on skill training efficiently

2.6 The following are the responses received from **PARENTS** stake holder regarding the 2019 regulations and curriculum

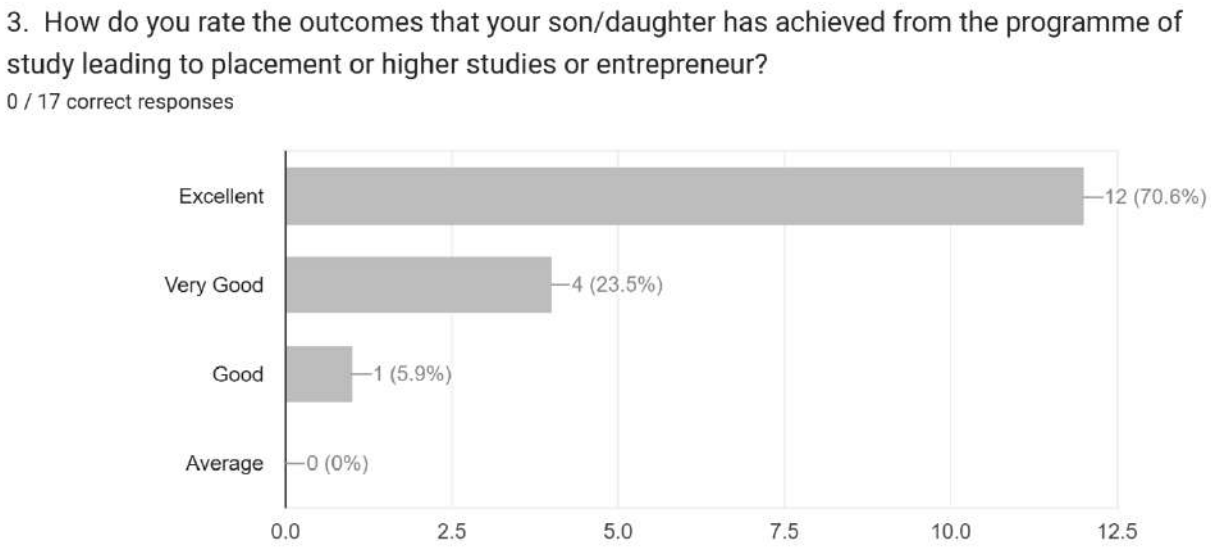
1. The teaching learning process of NEC imparts the value based learning in terms of knowledge, skill and critical thinking of the students



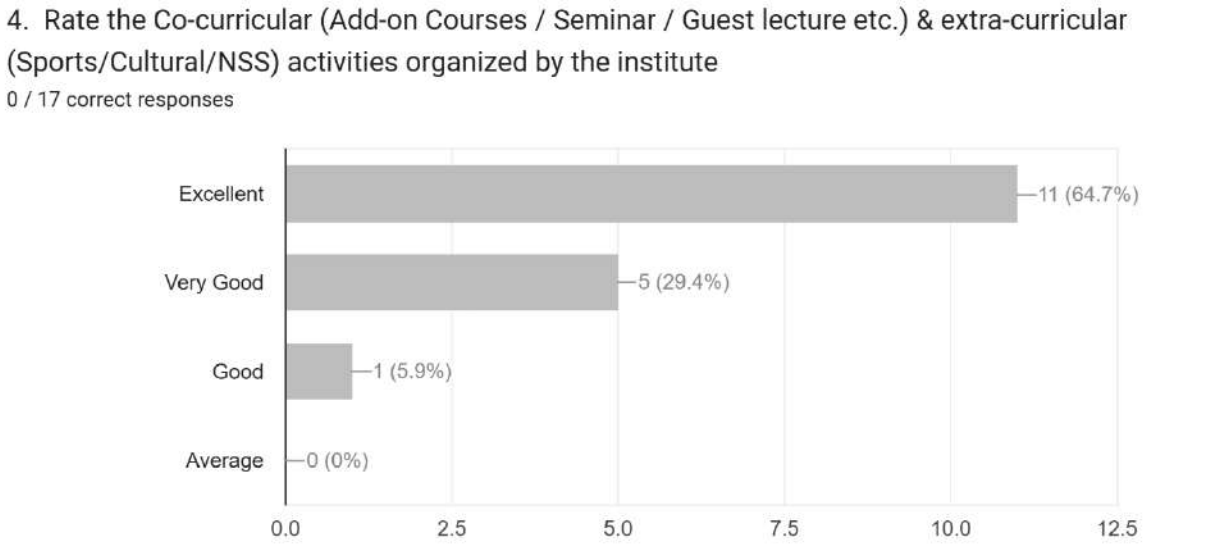
2. How do you rate the faculty-students relationship in terms of teaching learning process?



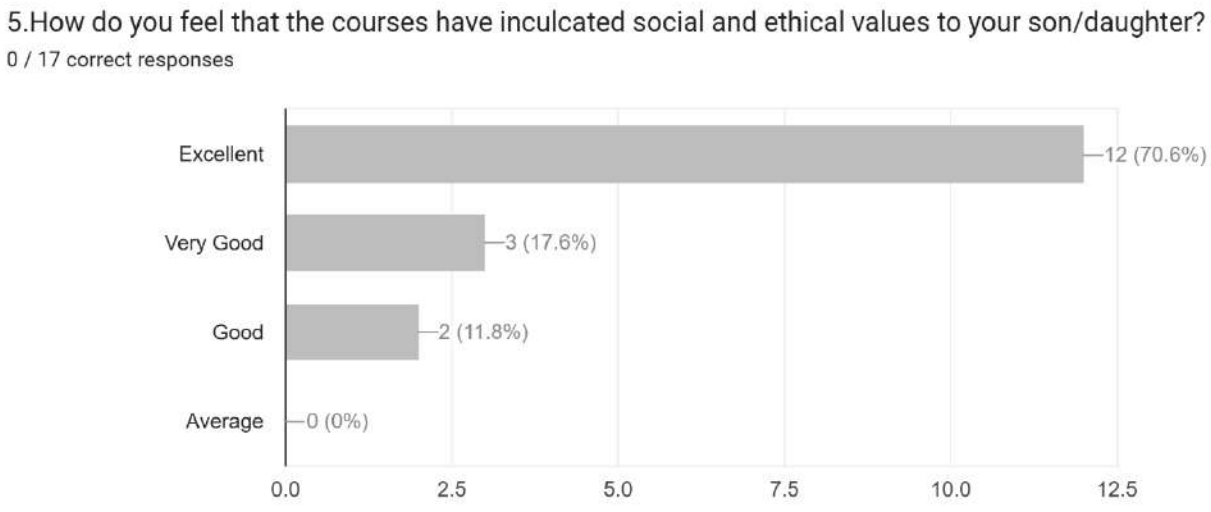
3. How do you rate the outcomes that your son/daughter has achieved from the programme of study leading to placement or higher studies or entrepreneur?



4. Rate the Co-curricular (Add-on Courses / Seminar / Guest Lecture etc.) & extra-curricular (Sports/Cultural/NSS) activities organized by the institute.



5. How do you feel that the courses have inculcated social and ethical values to your son/daughter?



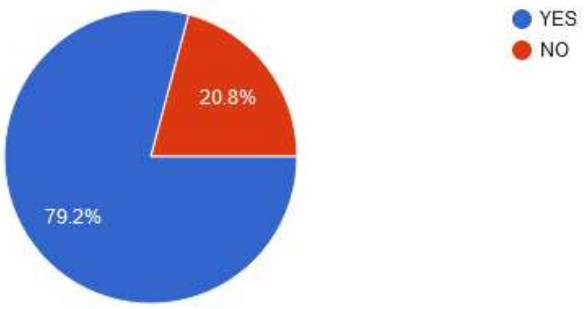
1. Department of Mechanical Engineering

3.1 The number of responses received from the department is as follows.

Stake holder	Feedback Form Sent	Responses Received
Alumni	920	240
Employer	56	5
Academic Expert	50	10
Student	325	135
Parent	45	26

3.2 The following are the responses received from **ALUMNI** stake holder regarding the 2019 regulations and curriculum

1. Does the Regulation-2019 curriculum map with the emerging industry trends?

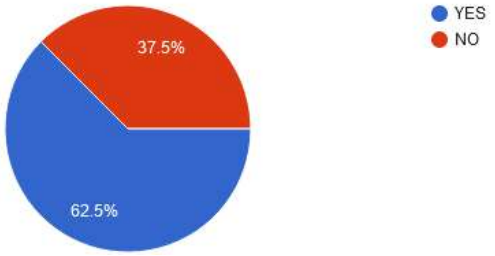


If No, kindly suggest new courses that meet the requirements of the industries.

- Machine Design - Motors, Gearbox, Controllers, Hydraulics & Pneumatics 2. Sensors, Automation & IOT 3. Robotics 4. Industry 4.0 -Smart & Digital Manufacturing 5. Additive manufacturing 6. EV Design
- Calibration Technology,
- Add international language course
- Some Subjects related to oil & gas industry shall be included (Piping Design, Piping Stress Analysis) shall be include.
- Electronics, AutoCAD
- Geometric dimensioning and tolerancing (GD&T) & Design of press Tools, Jigs and Fixtures (Mandatory) & Rapid Prototyping and Testing (Latest Trends), Intellectual Property Rights and International patents (Final Semester) Operation Research (Mandatory) not in elective
- Finite Element Analysis (Structural, Thermal, Fluid, etc.) as a laboratory course with hands-on training on FEA tools
- Lot of opportunities in Heat Treatment
- The curriculum matches the trend of the current industrial practices. I see it as two parts Theory and the applications. The theoretical part matches the trend of the

industrial requirements; however, the cutting-edge applications are missing here. I would recommend to replace certain Management and language courses with Scientific Computing and more hands on programming experience (Only one programming language focus C/C++/Java/Python. Only one. The concepts will be elaborated here) with more exposure to application focusing FEA / FVM/ Automation. Open source softwares are recommended to be promoted.

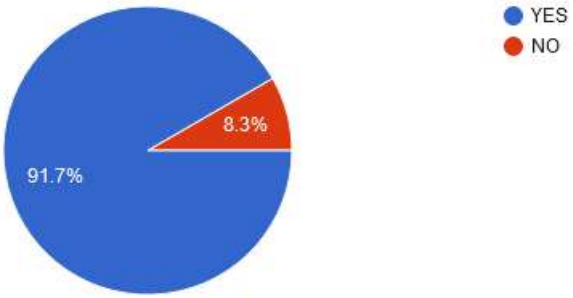
2. Whether you are exposed to the latest technologies in your field during the period of study at NEC?



If No, mention the gap need to be addressed in the curriculum

- Field training in companies is mandatory
- Basic Polymer technology
- Sustainable goal-based course
- Need more practice Modeling & CNC programming using NX & CATIA
- I have not exposed to oil and gas field and it is requirements.
- Industrial drawing GD&T plays a vital role which any engineer working in design and manufacturing field need to know. Hence GD&T has to be compulsorily taught to all the students irrespective of the domain to know the feasibility and precision of manufacturing any component. Also Modelling, Design calculations and Material Selection were taught separately, it would be better to make an activity in Internal assessment to combine all this knowledge and apply to any component so that the Engineer would become Industry ready in these basic things.
- Electrical and Electronics

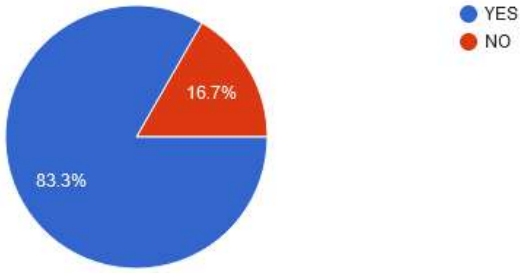
3. Does the curriculum have enough courses for developing innovation?



If No, Kindly suggest new courses for developing innovation

- Data Analysis
- Need to add some language courses
- NX Unigraphics & CATIA modeling and CNC programming
- Entrepreneurship and Innovation shall be a combined elective for people with start-up aspirations.

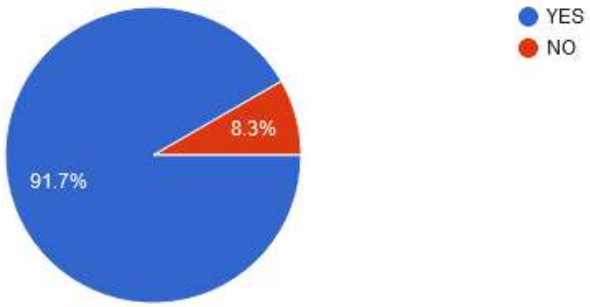
4. Do the tools used to teach experiments in the laboratory courses match the current industrial needs?



If No, Kindly suggest new tools needed for laboratory courses

- 1. Integration of Mechanical & Electrical/ electronic components, PLC integration 2. Python & Machine Learning implementation assignments 3. EV related working 4. MATLAB, Simulink
- CMM inspection
- Implement industry 4.0
- Some of the software (PDS, PDMS, SP3D, Caesar II, Auto Pipe) shall be included
- Automation in Mechanical Machinery
- Innovation through design thinking II would be in 3rd year as well.
- Update the Lab Machine & Equipment
- Versatile FEA Simulation Software

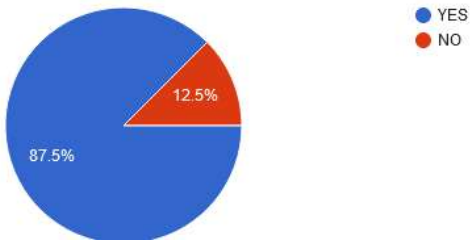
5. Whether the curriculum encourages the life-long learning?



If No, Kindly give your comments

- As a curriculum, it does a better job in imparting knowledge to students in wide areas of Engineering and also the credit system encourages students to develop various technical, non-technical and managerial skills. The Entrepreneurship Development Cell encourages and gives confidence to budding Entrepreneurs. But along the way to knowledge, marks and job, most of the times the curriculum fails to give a spark and interest for learning and research, which is necessary for a student to become employable or entrepreneurial in a specific area of curriculum. Problem solving and Research activities can be increased more to make the students self-learn the problems and processes.
- I see good number of courses in the 2019 curriculum. But not all interested courses are accessible to students. The institution can offer online/offline certification or diploma courses to encourage life-long learning

6. Can we include experiential-based learning in our curriculum for better employability? (Experiential Learning allows the learners to apply concepts learned in the classroom in simulated and real work situations.)

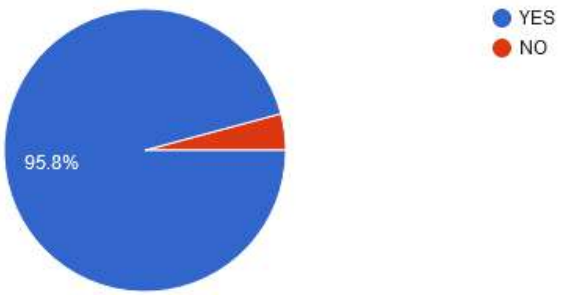


If yes, how many hours per week can we allot for experiential-based learning per course?

- 2 hrs
- 6 hrs
- Weekly one day
- 8 hrs
- 10-15% of working hours in a week
- 1 Hr per day must be included.
- 5 HOURS /week
- 3 hours
- Last two hours on all days can be allotted for experiential-based learning (8 to 10 hours in total / week)
- 20 hrs

- 1 hour per course. Better if it involves more than one course like Material Technology and Manufacturing, Design and Heat flow analysis and Interdisciplinary courses like IoT.

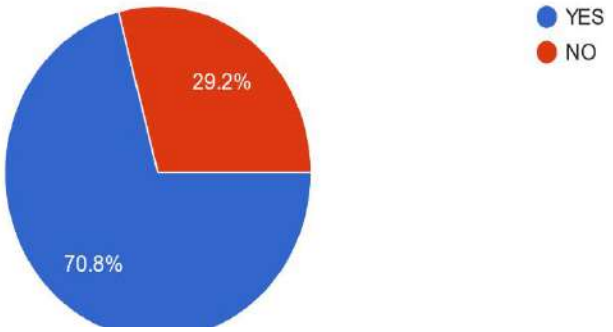
7. Can we include project-based learning in our curriculum for better employability?



If Yes, how many hours per week can we allot for project-based learning per course?

- 3 hrs
- At least for an hour
- 6 hrs
- It depends on area of project taken
- 8 hrs
- 10% of working hours in a week
- Weekly - 2 hrs may be Saturday.
- 3 to 6 hrs
- 5 HOURS
- 1 hour per week
- Second half of middle working day of the week can be allotted for project-based learning (4 hours total / week)
- 16 hrs
- 30 minutes per course for projects which can be in the form of case studies and solving of Industrial problems of the subject as projects involving only a specific course hardly excites the students to drive them do it sincerely.

8. Whether the courses like audit courses, mandatory courses, inter-disciplinary, trans-disciplinary courses may be evaluated without the end semester examination?



9. Recommend the obsolete courses which can be removed from the existing curriculum.
    - Probability, Statistics, Constitution
    - Chemistry
    - constitution of India-- I didn't understand the deep meaning why we choose for mechanical engineers
    - Total Quality management, Lean manufacturing, Implementation of Quality management System
    - internships
    - Remove Constitution of India.Better add specific Industrial Law to them.
    - Design of Jigs and Fixtures
    - Replace two English with one and arrange for additional free English course early morning before course begins or after the classes.
    - In my point of view, all the existing courses including electives are ok. If a student wants to study, they can study. If not, he/she will choose another course. Better we can add new courses without removing the existing.
    - EVS
    - Basic EEE course - course content should be more related to practical application rather than the theoretical working of motors etc.
    - Aerospace and defence standards and requirements
    - Microprocessor, Microcontroller and applications. 2) Impact of social media on Society.
    - Matt lab

10. Kindly suggest some of the industry-recognized global certifications that would help for better employability

    - ISO
    - NX Unigraphics & CATIA modeling and CNC programming , CNC Machine maintenance
    - PMP SAP
    - Geometric dimensioning and tolerancing (GD&T) & Project management
    - Machine learning, Data Analytics, Python
    - IATF internal auditor
    - NCG Chennai Ltd. (Wind Turbine Gear Box Manufacturer)
    - Certified in Production and Inventory Management (CPIM)
    - 1. GD&T Certification 2. CAD - CATIA, NX, Creo 3. PLM Basics - Windchill, Enovia, Teamcenter 4. Six Sigma belts 5. NDT & Quality certifications
    - AS9100, NADCAP, ISO9001, etc.
    - Six Sigma, SAP Modules, Siemens NX, SOLIDWORKS, CATIA, Unigraphics, ANSYS, Hyper mesh, Automobile Interior Design, NDT, FEM.
    - Solid works Dassault system

11. Kindly suggest the skill sets/courses/training needed for getting placement in the dream and super dream companies

    - SAP
    - Industrial Energy auditing
    - Skills: 1. Mechanical to Electrical/ Electronics - MATLAB, PLC Integration, 2. Mechanical to CS: Python, AI & ML 3. Mechanical Automation: Sensors, IOT, Robotics, Smart & Digital Manufacturing Certifications: 1. GD&T Certification 2. CAD - CATIA, NX, Creo 3. PLM Basics - Windchill, Enovia, Teamcenter 4. Six Sigma belts 5. NDT & Quality certifications
    - Python analysis software
    - Aptitude, Reasoning
    - Soft Skill
    - Manufacturing related courses - Mould design, simulation, Fanuc and Siemens controllers
    - Training in related software
    - Our college does a good job in streamlining and guiding the students based on their interests after UG. In case of Thermal domain Solar PV Design, Boiler design, Piping and PDMS are a good set of skills desirable. In case of Design domain, good knowledge in modeling and analysis is desirable for starting level jobs, whereas for Tier-I companies mostly experience is expected or

else great subject knowledge along with great projects in design are expected. As a fresher, a fair level of basic Industrial knowledge is expected through projects and internships.

- Presentation Skills and latest Technology if possible preferable has domestic patents
- AI, Machine learning, Data Analytics, Python, Automation
- Communication, seminar, MS office, etc.
- Communication and resumes write up
- Scientific computing, solving numerical equations with programming, open-source culture, interdisciplinary approach.
- EVERY SEMESTER INDUSTY TRAINING SHOULD BE GIVEN
- GDT& Industrial Drawing reading

12. To promote start-ups, suggest courses that can build their entrepreneurial skills

- Commerce, Management courses
- Courses may not help, need motivations
- Financial Management
- Entrepreneurship program
- Entrepreneurship and Management Functions- Available in all major IIT course program
- Financial management, Innovation,
- Marketing analytics
- Regularly Conduct the Guest Lecture from IIM or Industrialists.
- New Product Development
- How To Start A Business From Business Idea
- Financial freedom
- Entrepreneurship Courses from various online platforms
- The ED Cell of our college is doing a great job in encouraging the budding entrepreneurs. I don`t have exposure in that field to suggest courses, but more than courses an entrepreneur requires more exposure to products, processes and business aspects in the recent past, hence programmes, camps and guidance from business people and getting them a chance to pitch their ideas and correcting their course of action would be of great help.

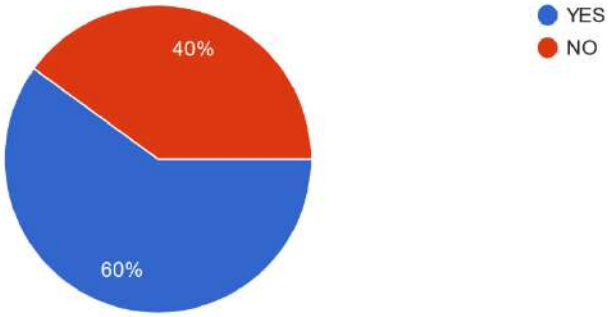
13. Kindly give your suggestion for improving the Teaching-Learning Process to enhance the quality of the students

- Application wise teaching is mandatory
- Online learning
- The teaching learning process can be of collaborative supportive and interactive way of learning. The topic on the next day/ week shall be announced to the students priorly and the students can also look into the topics, discuss the trends the next day.
- Basics of industry habits
- Take trip to abroad university
- Manufacturing aerospace, need potential of doing 3D modeling & CNC programming with 3,4 &5 axis. more over all top management need single page report of PPT/ Excel its useful
- If possible, include Laboratory based theory courses
- The existing continuous assessment process has an edge over the other methods in overall point of view. After each chapter, solving some of the related GATE problems would help the students get more ideas on approach to the problems on application level.
- Engineering Logic is what an engineer need
- Practical based Teaching. And arrange field visit related to subject for better learning.
- Universities in Singapore incorporate internships as part of curriculum. Students spend one semester with the industry to get practical experience and network with colleagues. This increases their exposure and chances of getting placed. If the institution can find ways to accommodate internships within curriculum and collaborate with industries it would drive the placements. https://www.ntu.edu.sg/education/career-guidance-industry-collaborations/for-employers/hire-ntu-students-as-interns/local-internships
- Industrial experience with Application and Importance shall be brief to students
- Informal interaction with eminence
- Practical sessions and more student encouraging approach
- Use ICT tools and digital game-based learning.

- Try to enhance the students to solve equation, problematic assignment, Lab reading in Matt lab ,Excel (Graph etc.), Rdata. Don't do regular paper work structure is my kind advice.
- Teacher is the one who helps the students to get a better career. So, they should be polite, positive, encouraging, supporting & motivating. They have to teach in a manner so that it shouldn't be like a teaching but it should be like telling a story and in interesting manner (like watching movie)
- Using mixed teaching aids like black board, PPT and animations

3.3 The following are the responses received from **EMPLOYER** stake holder regarding the 2019 regulations and curriculum

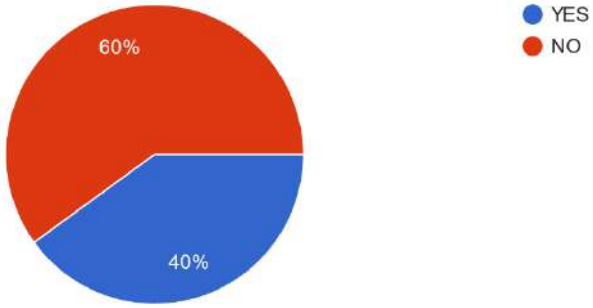
1. Does the R-2019 curriculum meet the need of the industry?



If No, suggest your opinion to meet the need of the industry.

- Need to add few subjects as must in the regular curriculum. New product development, Engineering Economics and Cost Analysis, Industry 4.0, Supply Chain Management etc.
- The industry needed topics in electives, Most of the students will not benefit as per my view. If most of the students selected, then it is great.

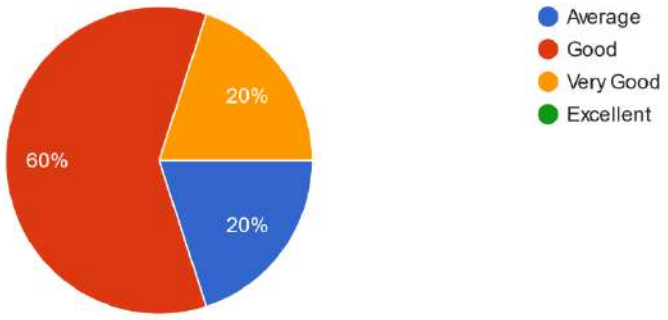
2. Does the R-2019 curriculum enough to develop practical solutions for solving workplace problems?



If No, suggest your opinion to develop practical solutions for solving workplace problems.

- Need to have full 6 weeks internship, Solving an industrial problem to their capacity, Demonstration of any new technology etc.
- Network design in supply chain and AIML
- The gap between practical problem of industry to theory is of study has to come to close.

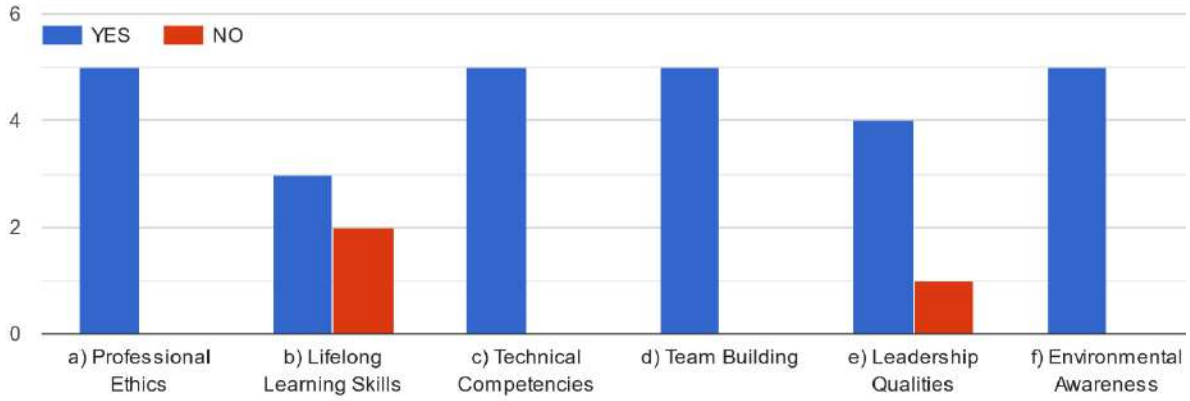
3. At what levels do the students' acquired skills and knowledge at our college, aid them in terms of the present employment market in India and abroad?



If needed, kindly give your valuable suggestion

- Apart from curriculum, language likes German, Japanese etc. Arts like painting, music need to be encouraged.
- Boldness, communication and soft skill development
- Globalization has been an important in engineering. More awareness is required with international standards of Mechanical engineering
- practical exposure to industrial environment is very important during education, this is one of the reasons why candidates struggle to cope up after joining
- I gave the average rating based on recent intake for my firm. I don't have exposure with NEC students. Students have exposure on bit and pieces on latest technology, but they don't have strong fundamentals as well as no interest to deeper into the latest technology

4. Are the Curriculum contents helpful for the development of the following areas?



If No, suggest your opinion on the areas that would require development.

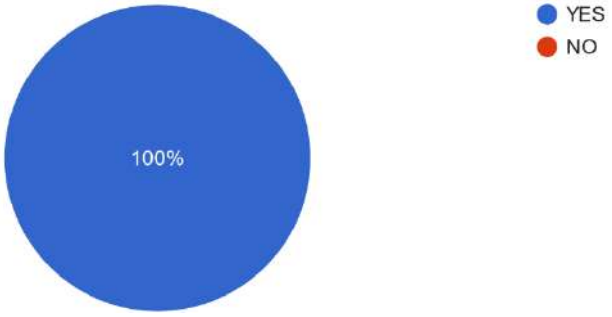
- Should involve professional coach have Team Building, Leadership qualities etc.
- The above-mentioned qualities are hard to justify with the curriculum. there are different approaches to evaluate these qualities if students.
- As per my industry experience, we always face the students lose their interest of learning and update their knowledge to face the global challenge once they enter the industry. Also, very few has leadership qualities and others just follow the instruction of leads. They lack in communication with team and constructively give the feedback on their views.

5. Kindly suggest new courses to be included in the R-2023 curriculum to meet the requirements of the current and future industry trends in core and multidisciplinary activities.

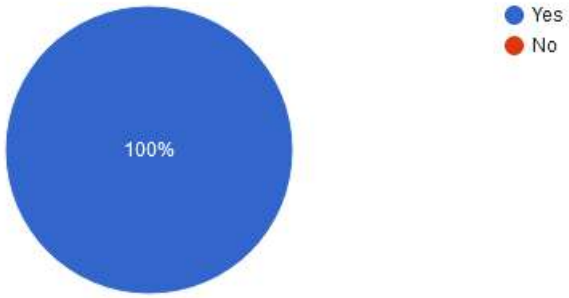
- Fuel cell, Battery, Renewable - Need to be imparted
- Network design, supply chain and warehousing
- Smart engineering, Smart Production, Smart services etc. is the part of Industry 4.0 development. More focus on Sustainability in both technology & environmental. recommending to associate with industry for long term collaboration.
- As an extension of programming (Python, Java) can include CAD automation programming in electives
- Curriculum has great topics which industry needed on this time. Like AI & ML for manufacturing, Composites etc., May be concentrated in Additive Manufacturing and Model Based Engineering further.

6. Kindly suggest any existing courses in the R-2019 curriculum that can be found obsolete
    - Few courses have to be merged to accommodate new subjects.
7. Kindly suggest the percentage of Core and Multidisciplinary courses that can be offered in R-2023 (Note: The present R-2019 regulation has 80% of core courses and 20% of multidisciplinary courses)
    - Have mentioned areas of Alternate energy, Supply chain management, Industry 4.0, Block chain etc.
    - Move more to Disciplinary
    - in another perspective, the integration of core & multidisciplinary should focused.
    - This is good
    - I too feel 80-20 is right combination. Engineer should develop the soft skills which are industry entry tickets, but to sustain here, engineers should develop core engineering to excel. At least in 2 areas, should be masters out of all core subjects.
8. Kindly suggest course/training that can be included for improving the problem-solving skills and soft skills towards the career settlement of the students
    - Listening skills, Communication, Negotiation skills and concentration on the soft skills and Lateral thinking to resolve complex problem
    - Continuous learning and development
    - Operational skills, Experimental skills, Social skills & Cognitive skills.
    - Experiential learning programmes
    - Give the opportunity to express their views without fear at any circumstances in constructive way without hurting others.
9. Kindly suggest the percentage of courses for problem-solving skills and soft skills in the R-2023 curriculum (Note: The present R-2019 regulation has 80% of courses for problem-solving skills and 20% of courses for soft skills).
    - Need to keep as capstone exercise
    - Fine
    - Logical thinking, Critical thinking & Logical reasoning -> should be increased.
    - this % is good
    - 10-10%

10. Kindly suggest the courses for the improvement of the innovation and entrepreneurial skills of the students
    - Need to understand the content before suggesting.
    - Working with startups and seed funding program
    - There are different levels of Innovation -> providing experience with real world problems to Students, apart from the fundamental research.
    - As I have mentioned practical exposure to industrial environment is a basic requirement
    - I could not collect any courses as of now to boost the innovation. On each subject, students should be encouraged to go out of box thinking and present from the 1st Semester.
11. Can we consider the winning of technical contests like Hackathon/Coding/ Innovation challenges etc, organized by premier Industries/Institutions to transfer the credits (exempt from one elective course)?



12. Can we include experiential-based learning in our curriculum for better employability? (Experiential Learning allows the learners to apply concepts learned in the classroom in simulated and real work situations.)

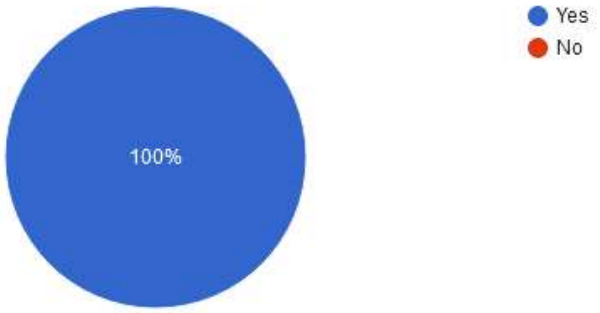


If Yes, how many hours per week can we allot for experiential-based learning per course?

- 20%

- 12 hrs
- Experiential learning is a very important topic and industries give training to employees using this approach. The reason why Experiential learning is effective is because understand of training material is high
- 2 to 3 Hrs out of 40 hrs in a week

13. Can we include project-based learning in our curriculum for better employability?



If Yes, how many hours per week can we allot for project-based learning per course?

- up to 20%
- 12
- 2 hours
- 2 to 3 Hrs out of 40 hrs in a week

14. Kindly suggest the skill set needed for acquiring dream and super dream offer for the students.

- 1. Need to be strong in their basics. 2. Soft skills like observation and communication 3. Negotiation and ensure task accomplishment
- Interaction with global institutions, engage with IIM, ISB
- Understanding of fundamentals with strong on specify to industry, aware of technologies, tacit knowledge & design making. finally excellent communication to demonstrate his/her abilities.
- In addition to technical competencies ability to sell themselves
- Strong fundamentals and deeper learning in the project executed as part of curriculum, and keen interest to develop on latest technologies. Lastly, Better communication to express what you have learned till date.

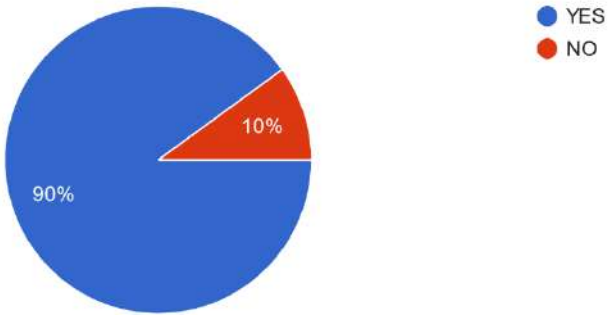
15. Kindly suggest some of the industry-recognized global certifications that would help for better employability

- Recent courses like Data analytics, Supply chain management etc. But we need to create sustained employment.

- Depends on various verticals. ISM for supply chain, work with skill and NDC council
- the niche areas are "Gear technology, Multi body simulation, Vibration specialist, Lubrication specialist & welding technology"
- Areas in design, additive manufacturing, Model Based Engineering, AI& ML certification will be helpful.

3.4 The following are the responses received from **ACADEMIC** stake holder regarding the 2019 regulations and curriculum

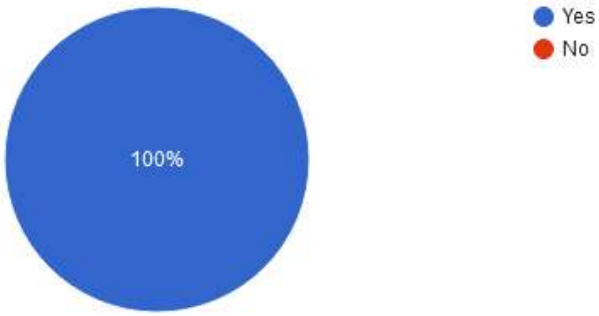
1. Does the Regulation-2019 curriculum incorporate technical advancements in the relevant field of study?



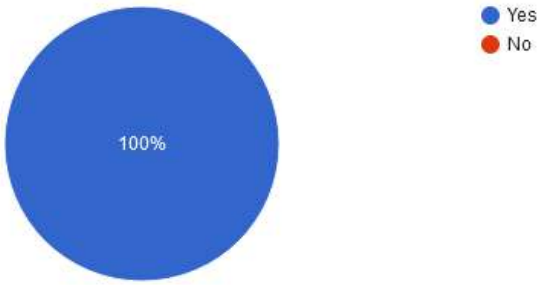
If No, kindly suggest new courses to meet the technical advancements

- The course Computational Fluid Dynamics can be added in the core course instead of elective course
- Topics on Digital twins, AI /ML may be added appropriately
- There should be a weighting given to courses in Industrial Engineering specialization

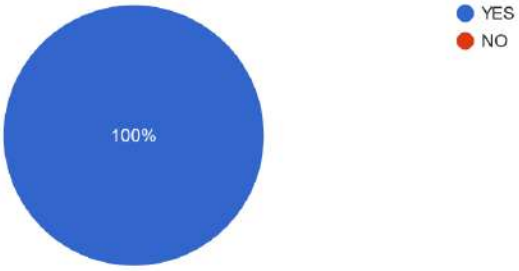
2. Does the Choice Based Credit System (CBCS) adapted in the Curriculum improve the academic flexibility?



3. Does the curriculum focus the employability of the students?



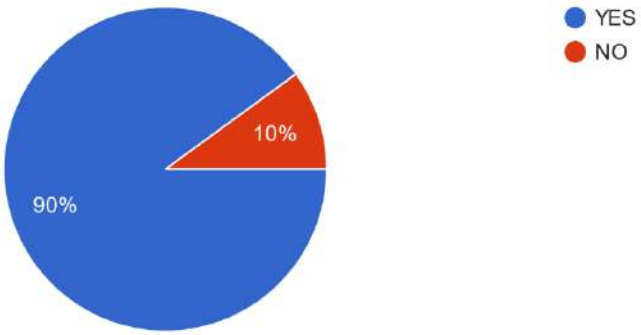
4. Can we include experiential-based learning in our curriculum for better employability? (Experiential Learning allows the learners to apply concepts learned in the classroom in simulated and real work situations).



If Yes, how many hours per week can we allot for experiential-based learning per course?

- One full session (3 hrs) can be given
- 2 hours
- At least one hour
- 3 hrs
- 4 hours , 3 theory and 1project
- 1 hour per course
- There are a few theory cum practical courses that may be offered

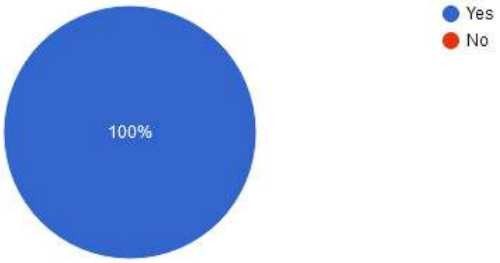
5. Can we include project-based learning in our curriculum for better employability?



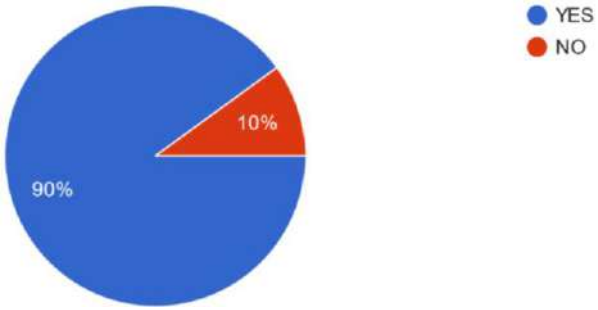
If yes, how many hours per week can we allot for project-based learning per course?

- Parallel project must be given to each student and it must be evaluated on weekends.
- 2 hours
- May give mini projects in the subject and review in a periodic manner
- 5 hours per week
- 4 hours
- From the fourth semester to the seventh semester, courses such as Engineering Exploration, Engineering Design Project, and Capstone Design Project may be offered. Each course is to be awarded three credits.

6. Does the curriculum have the theory and practical courses in good proportionate?



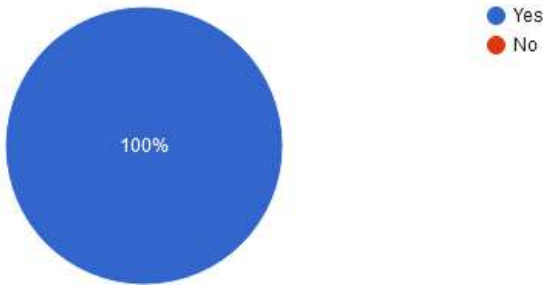
7. Do the tools used to teach experiments in the laboratory courses match with the current industrial needs?



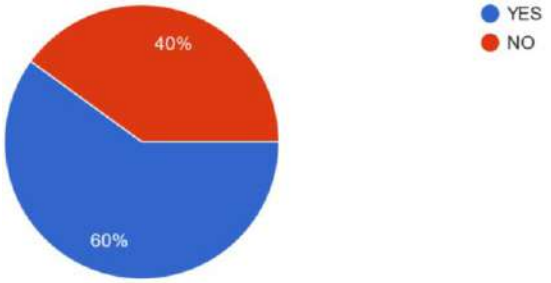
If No, Kindly suggest new tools needed for laboratory courses

- Tools doesn't matter the knowledge transfer is important as industries may use different tools
- CFD lab may be included in the curriculum.

8. Whether the curriculum encourages the life-long learning?



9. Whether the courses like audit courses, mandatory courses, inter-disciplinary, trans-disciplinary courses may be evaluated without the end semester examination?



10. Kindly suggest any existing courses in R-2019 curriculum that can be found obsolete
    - Add Computational Fluid Dynamics in the core as it is the application-oriented course.
    - Quality in welding process is focused much why? please check
    - Power plant engineering
    - NIL. SQC and OR courses should be of core courses.
    - All courses are relevant to the course of study.
    - It is possible to combine Refrigeration and Air Conditioning with Heating, Ventilation, and Air Conditioning. Alternatively, Refrigeration may be classified as one course and Air Conditioning as another, which includes ventilation and heating as well.
11. Kindly suggest some of the industry recognized global certification that would help for better employability
    - Artificial Intelligence is already listed in the electives
    - Programming skills
    - It depends on industry type
    - Some of ISHRAE Certified Programs (ICP) may help for employability
    - NAASCOM

- Renault Nissan, Hyundai
- ASME and ASTM
- Safety Management certificate, Lead Auditor certification
- Many leading industries are offering such certification on specific field which shall not be recommended to all students.
- Certification from some professional society

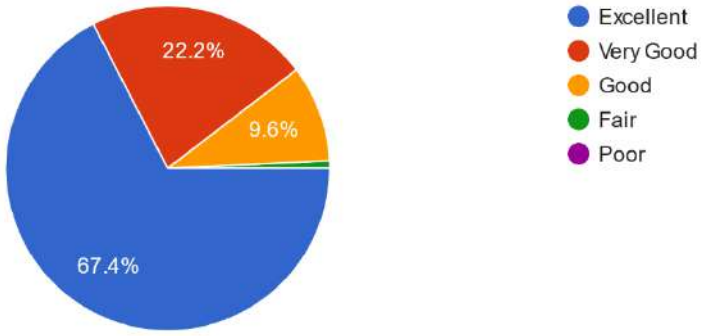
12. Suggest any innovative content delivery method for problem oriented courses
    - The problem can be solved using a simple computer code. There itself, the student must be taught to how to do parametric analysis.
    - Hands on experience
    - MOOC courses can be added
    - Collaboration with professional societies and industries to coin and solve industry problems for these course
    - Peer learning
    - Introducing appropriate NPTEL video lectures
    - Blended learning
    - PBL, Flipped classroom activities
13. Kindly give your suggestion for improving the Teaching-Learning Process to enhance the quality of the students
    - Live problems must be given as mini-projects and their report must be asked.
    - Demo based classes
    - Engage in developing innovative product ideas, Ideathon
    - learning by doing can be explored to the extent possible.
    - More activities-based courses and projects
    - Involving students in solving research problem
    - Ask them to set the question paper on their own
    - one third of class room activities should be of discussions on field experiences
    - The teaching method should promote more student participation
    - It may be beneficial to increase the number of industrial visits for each course

14. Suggest your views to impart graduate attributes (PO7 to PO12) apart from the curriculum
    - The students can visit any nearest small-scale industry to know about their initial investment, problem faced, govt support or subsidy, etc. and asked to submit the report which gives students to some confident to start their own startups,
    - Students can be given more exposure to solve real time industrial, social problems
    - By defining a proper rubric for project/mini projects these POs may be addressed. A separate course may be added to address environment and sustainability
    - Conduct some additional courses related to IPR and Entrepreneurship development
    - Behavioural based safety
    - Small group activities, Organizing class level colloquium
    - Ensure that all students are involved in the NSS, NCC, Sports and Professional Societies
15. Kindly suggest the verticals / specializations to be introduced in the curriculum for the award of B.E. / B.Tech. Honors / Minor degree
    - Computational Fluid Dynamics, Automotive mechanics
    - Industrial Engineering, Electrical Vehicle Transportation Engineering,
    - AI/ML, IoT, Cyber Physical systems, Mechatronics
    - Automotive/Energy/Robotics/Manufacturing/Electric Vehicles
    - Machine learning
    - Engineering Design in Mechanical Engineering
    - Data analytics
    - More advanced courses in Industry 4.0, Automation, Robotics shall be added for Honors. Minor shall be other allied branches
    - As an example of such a course, energy management system may be offered
16. Kindly suggest the verticals/specializations that can be found obsolete
    - Many Humanities courses are there in open elective , those courses can be removed
    - Production

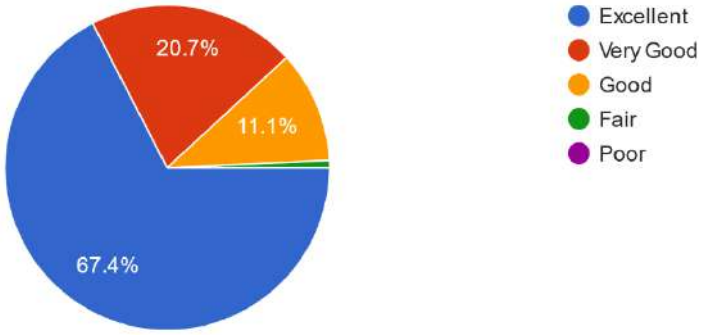
- Instrumentation and control engineering
- Mechatronics / Robotics
- Most of them are relevant

3.5 The following are the responses received from **STUDENTS** stake holder regarding the 2019 regulations and curriculum (135 Responses)

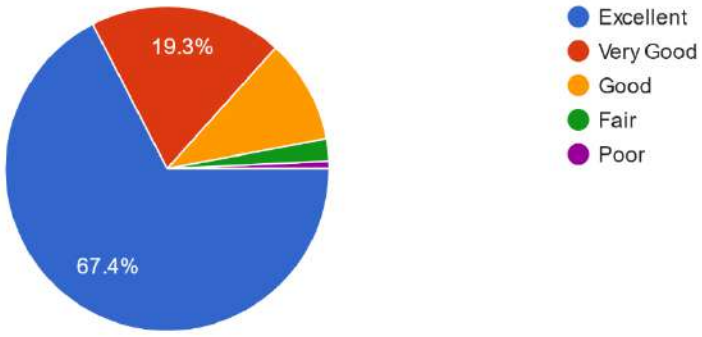
1. Rate how the curriculum and syllabi offered by the programme give opportunities to enhance your knowledge and skill



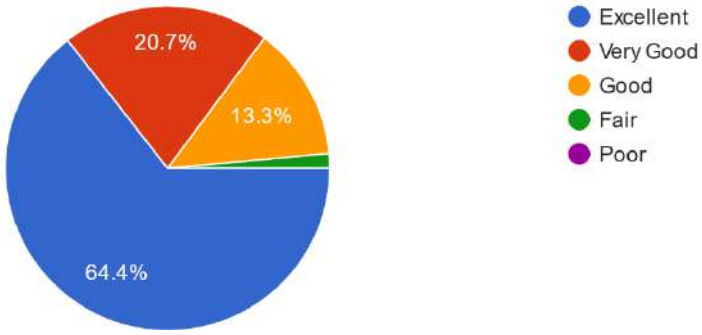
2. Rate the appropriateness of the sequence of the courses provided by the curriculum



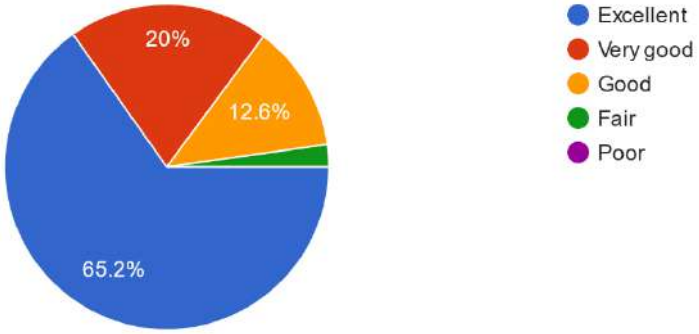
3. Rate the course content providing opportunities towards your participation of various events such as Hackathons, internships, field visits, etc.



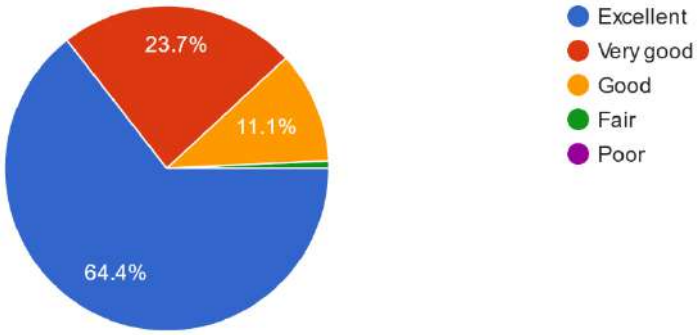
4. Rate the flexibility in choosing the program elective courses towards your technology advancement.



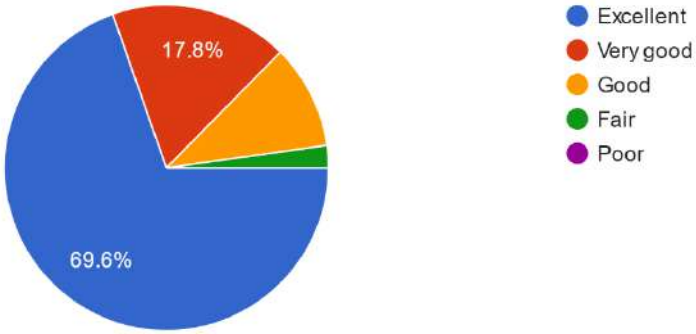
5. Rate the balance between the theory and practical courses in the curriculum



6. Rate the quality of the teaching learning process



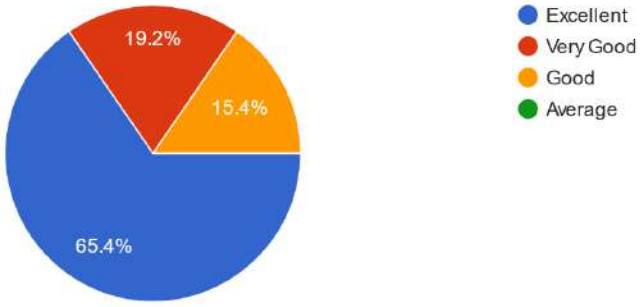
7. Rate the employment opportunity gained through your curriculum



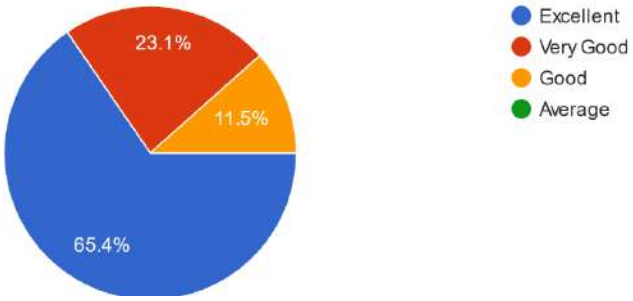
8. Any other Suggestions to improve further for the design and development of curriculum
    - Excellent
    - Practical experience should be provided and continuous training also should be provided
    - From my point of view... there are no degrades in curriculum. All are excellent and worthy
    - Need to be improve for today's advanced programs
    - Give some practical knowledge to students
    - Make advanced technology a constant in courses offered Curriculum Development and Planning — request a demo.
    - We would like to have more practical and field visits to improve applied skills
    - Must have specific subject rather than general

3.6 The following are the responses received from **PARENTS** stake holder regarding the 2019 regulations and curriculum

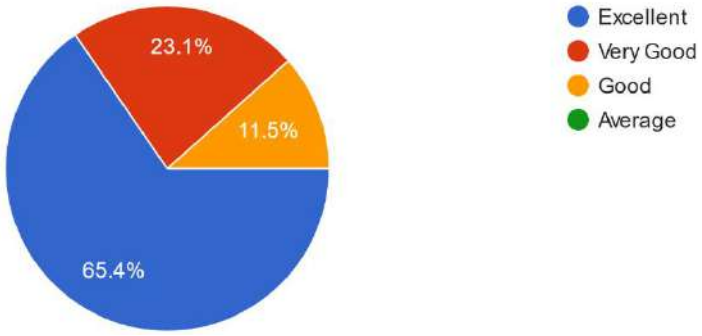
1. The teaching learning process of NEC imparts the value-based learning in terms of knowledge, skill and critical thinking of the students



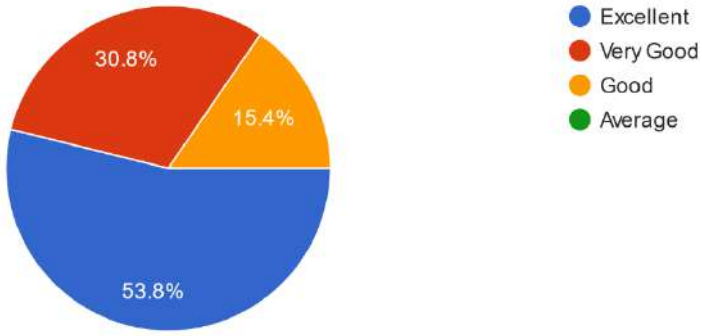
2. How do you rate the faculty-students interaction in terms of teaching learning process?



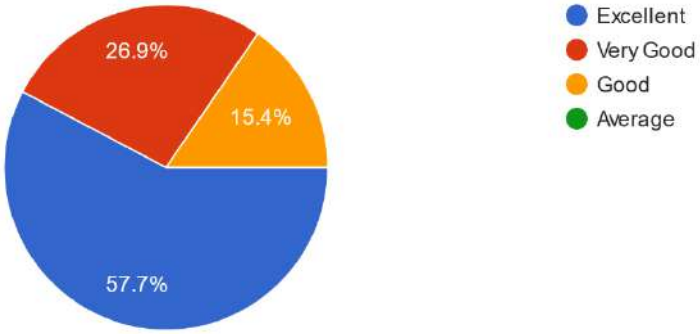
3. How do you rate the outcomes that your son/daughter has achieved from the programme of study leading to placement or higher studies or entrepreneur?



4. Rate the Co-curricular (Add-on Courses / Seminar / Guest lecture etc.) & extra-curricular (Sports/Cultural/NSS) activities organized by the institute.



5. How do you feel that the courses have inculcated social and ethical values to your son/daughter?



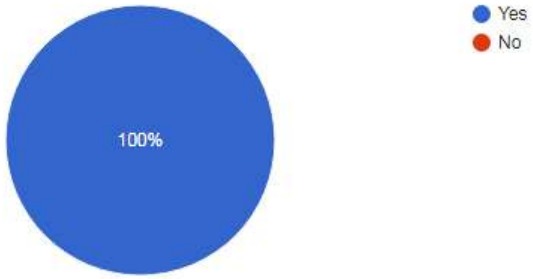
4. Department of Electronics and Communication Engineering

4.1 The number of responses received from the department is as follows.

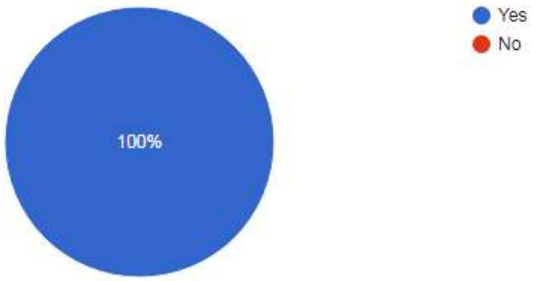
Stake holder	Feedback Form Sent	Responses Received
Alumni	150	10
Employer		
Academic Expert	10	5
Student	360	228
Parent	100	44

4.2 The following are the responses received from **ALUMNI** stake holder regarding the 2019 regulations and curriculum

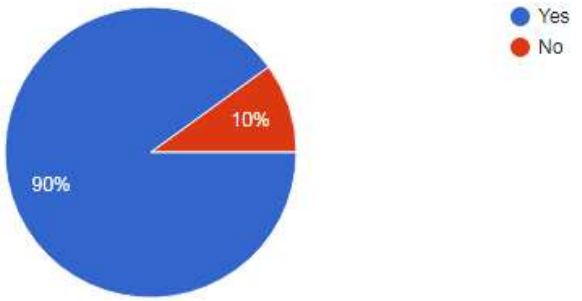
1. Does the Regulation-2019 curriculum map with the emerging industry trends?



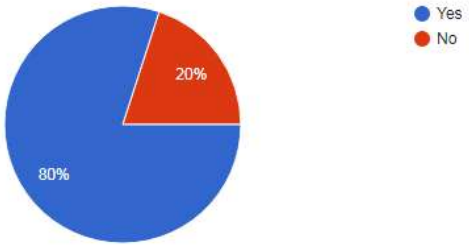
2. Whether you are exposed to the latest technologies in your field during the period of study at NEC?



3. Does the curriculum have enough courses for developing innovation?



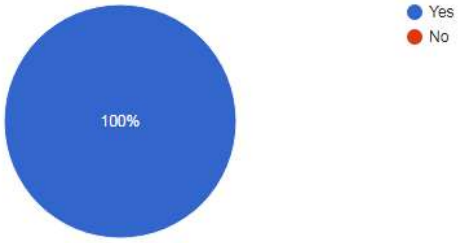
4. Do the tools used to teach experiments in the laboratory courses match the current industrial needs?



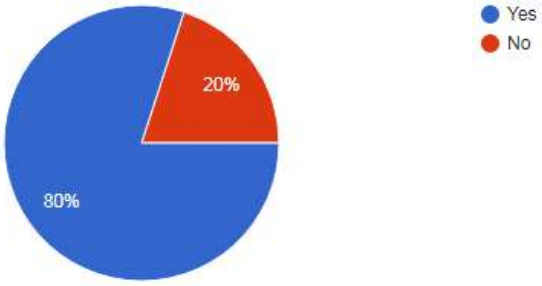
If No, Kindly suggest new tools needed for laboratory courses

- Verilog and System Verilog usage in the laboratory experiments
- Need to use a high efficient DMM

5. Whether the curriculum encourages the life-long learning?



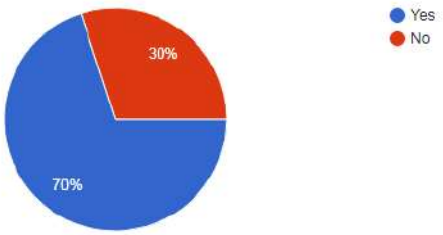
6. Can we include experiential-based learning in our curriculum for better employability? (Experiential Learning allows the learners to apply concepts learned in the classroom in simulated and real work situations.)



If yes, how many hours per week can we allot for experiential-based learningper course?

- Per day 4 hours lab, 4 hours theory
- 4 hrs/ 2 days

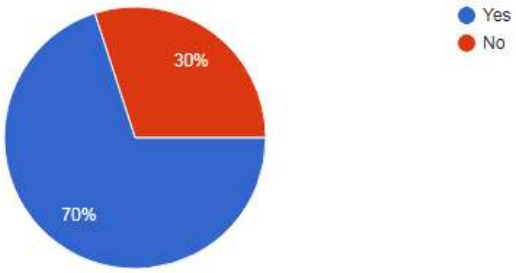
7. Can we include project-based learning in our curriculum for better employability?



If yes, how many hours per week can we allot for project-based learning percourse?

- 4 hrs/ week

8. Whether the courses like audit courses, mandatory courses, inter-disciplinary, trans-disciplinary courses may be evaluated without the end semester examination?

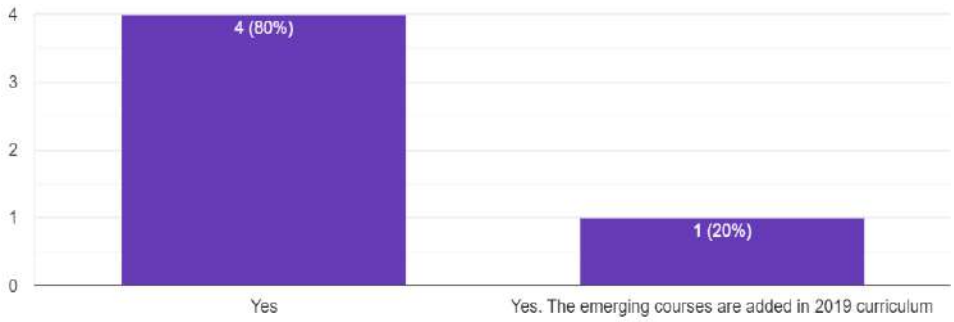


9. Recommend the obsolete courses which can be removed from the existing curriculum
    - Obsolete projects in final semesters need to be removed. It would be great they start building project early than doing in last semester alone.
10. Kindly suggest some of the industry-recognized global certifications that would help for better employability
    - Industry certification from Cisco, Cadence etc.,
    - PCB Board Designing
    - Certifications on Stack Development
11. Kindly suggest the skill sets/courses/training needed for getting placement in the dream and super dream companies
    - Data Structures like Hackerrank regular practices
    - Software tools such as HFSS, ADS
    - VLSI related practical knowledge
    - Good communication skill and technical knowledge

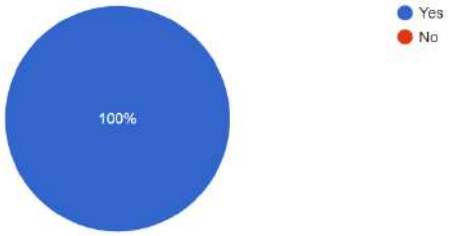
12. To promote start-ups, suggest courses that can build their entrepreneurial skills
    - To practice the communication and management skills related course
13. Kindly give your suggestion for improving the Teaching-Learning Process to enhance the quality of the students
    - Hands on training is very useful
    - Periodical revision is required for enhancing the learning process.

4.3 The following are the responses received from **ACADEMIC** stake holder regarding the 2019 regulations and curriculum

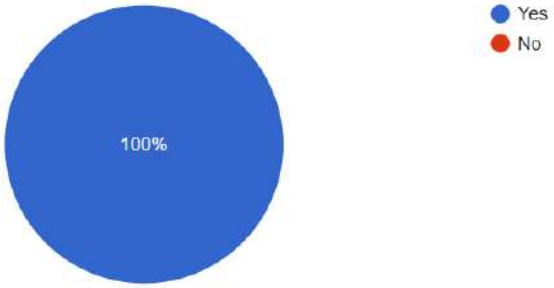
1. Does the Regulation-2019 curriculum incorporate technical advancements in the relevant field of study?



2. Does the Choice Based Credit System (CBCS) adapted in the Curriculum improve the academic flexibility?



3. Does the curriculum focus the employability of the students?

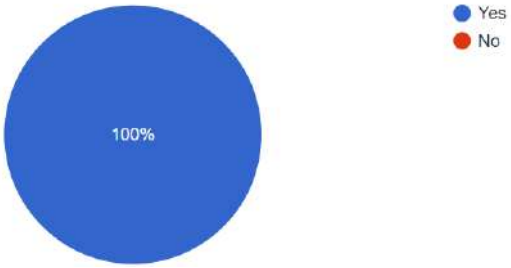


4. Can we include experiential-based learning in our curriculum for better employability? (Experiential Learning allows the learners to apply concepts learned in the classroom in simulated and real work situations).

If yes, how many hours per week can we allot for experiential-based learning per course?

- 6 hrs per week
- 2 hours
- 2 hours
- 6 hours
- Introduce Integrated Courses during the working hours

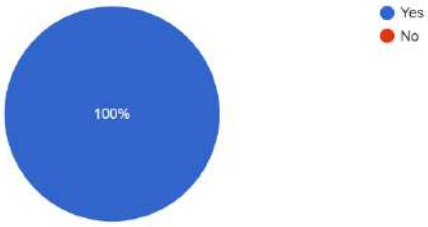
5. Can we include project-based learning in our curriculum for better employability?



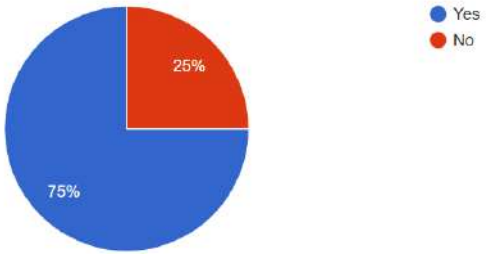
If yes, how many hours per week can we allot for project-based learning per course?

- 6 hrs per week
- 2 hours
- 6 hours
- Three hours per week

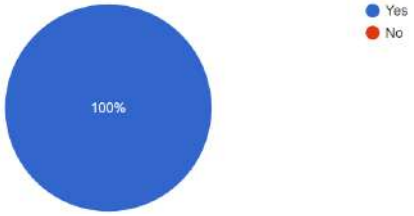
6. Does the curriculum have the theory and practical courses in good proportionate?



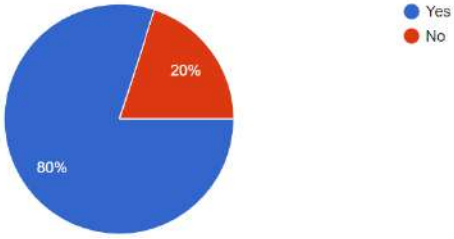
7. Do the tools used to teach experiments in the laboratory courses match with the current industrial needs?



8. Whether the curriculum encourages the life-long learning?



9. Whether the courses like audit courses, mandatory courses, inter-disciplinary, trans-disciplinarycourses may be evaluated without the end semester examination?



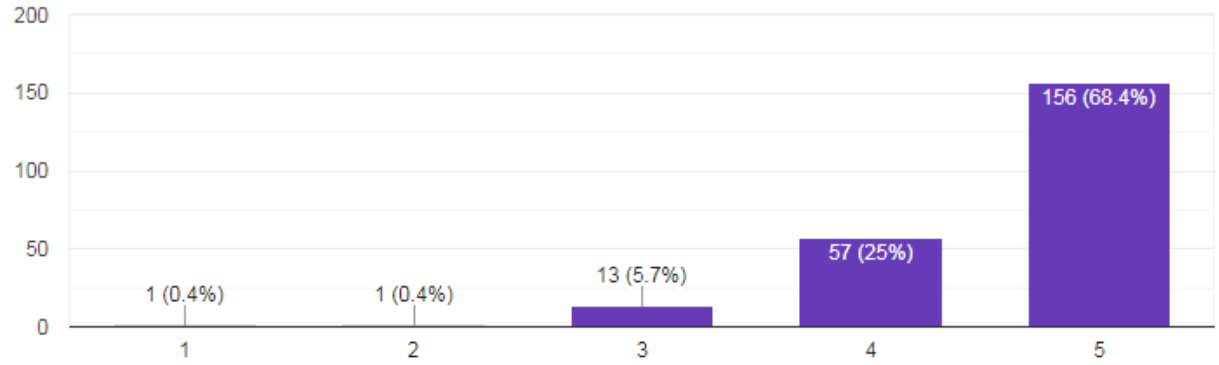
10. Kindly suggest some of the industry recognized global certification that would help for better employability

    Constitution of India

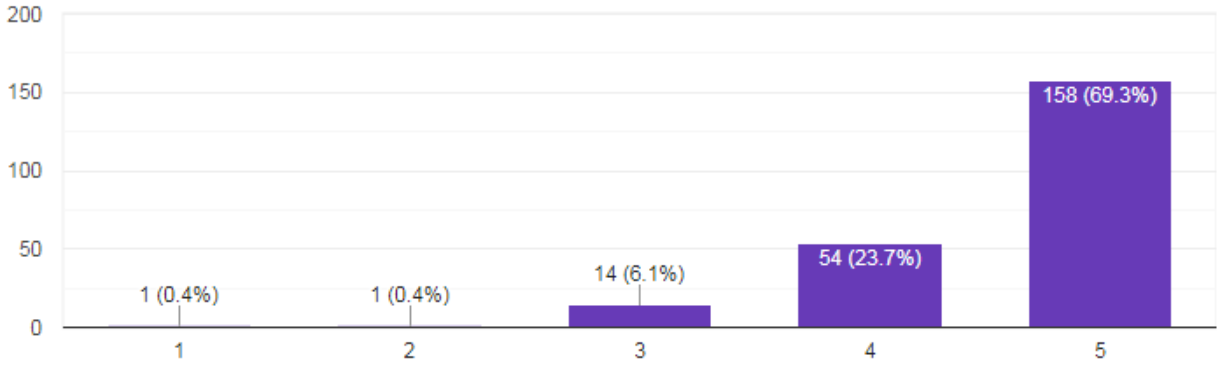
11. Kindly suggest some of the industry recognized global certification that would help for better employability
    - CISCO training
    - Google Courses
    - NPTEL online Certification
12. Suggest any innovative content delivery method for problem-oriented courses
    - Some expert videos can be uploaded to get depth knowledge on problematic courses.
    - Classroom tutorial sessions
    - Allot problems teamwise among students and ask the students to solve those in board so that every student will get motivated to more problems
13. Kindly give your suggestion for improving the Teaching-Learning Process to enhance the quality of the students
    - Assignment quality to be improved and self-learning methods should be stimulated among the students.
    - Share some videos related to the contents delivered during the class hours
    - Include Integrated mode of Teaching (Practical + Theory)
14. Suggest your views to impart graduate attributes (PO7 to PO12) apart from the curriculum
    - The students should be encouraged to take specific mooc courses
    - Develop Self learning among students. Give more seminar to students and evaluate them.
15. Kindly suggest the verticals / specializations to be introduced in the curriculum for the award of B.E. / B.Tech. Honors / Minor degree
    - Image processing
    - Communication domain
    - Embedded

4.4 The following are the responses received from **STUDENTS** stake holder regarding the 2019 regulations and curriculum

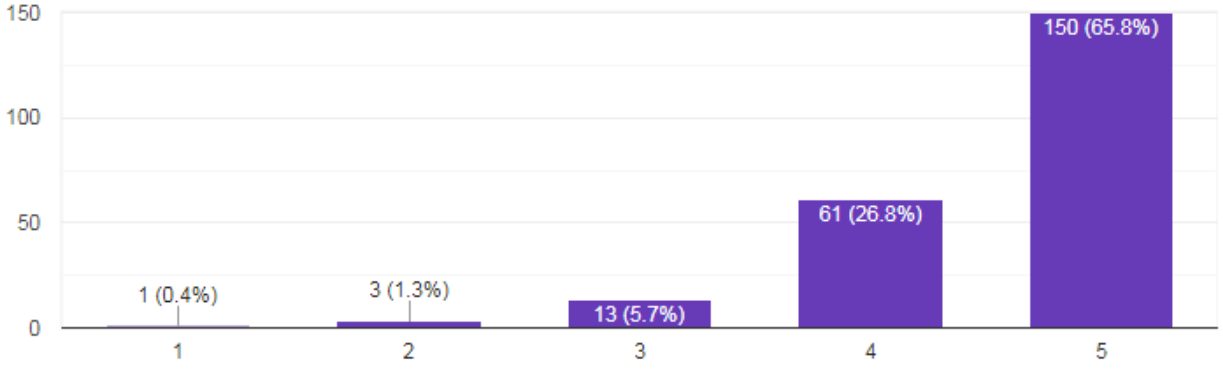
1. Rate how the curriculum and syllabi offered by the programme give opportunities to enhance the knowledge and skill



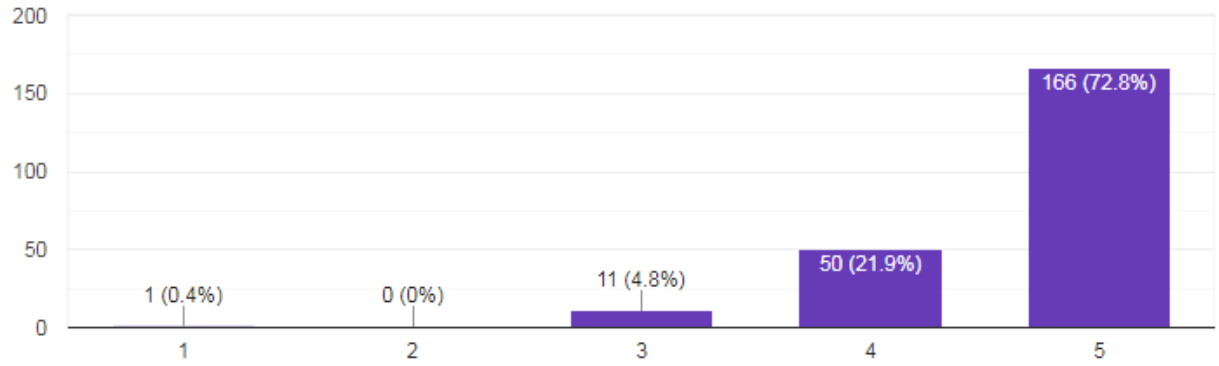
2. Rate the appropriateness of the sequence of the courses provided by the curriculum.



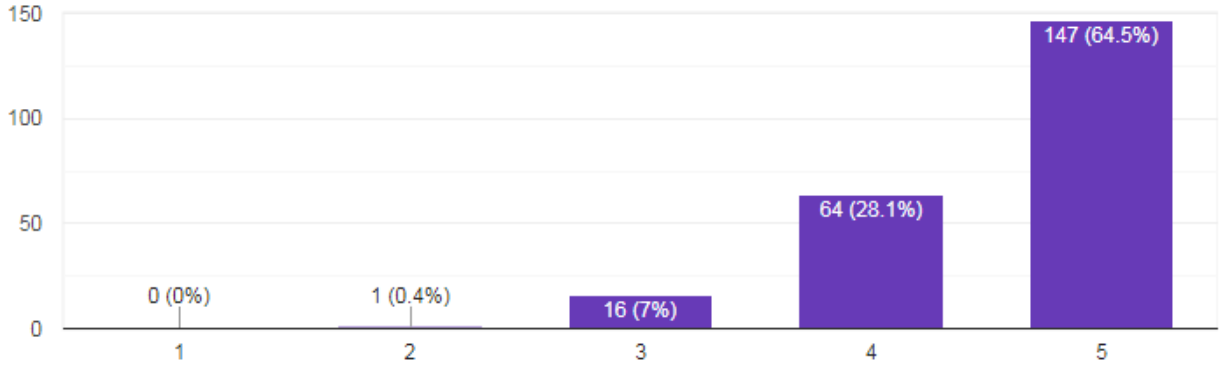
3. Rate the course content providing opportunities towards participation of various events such as Hackathons, internships, field visits, etc.



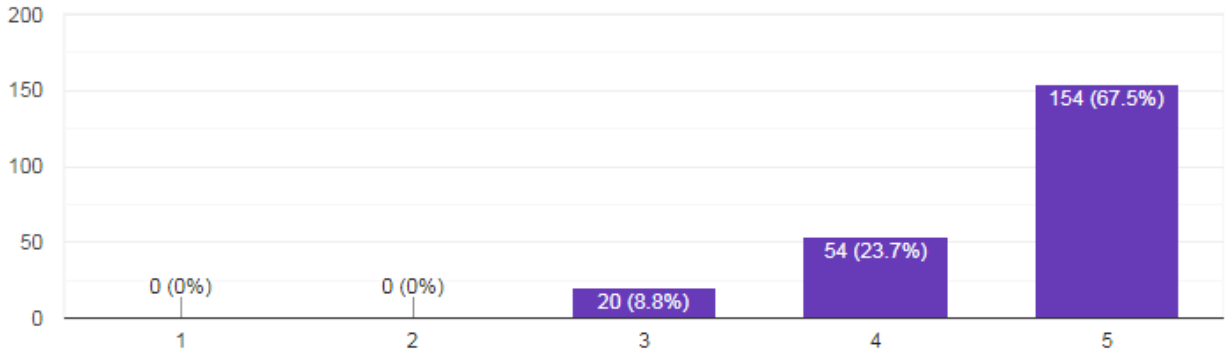
4. Rate the flexibility in choosing the electives concerning technology advancement.



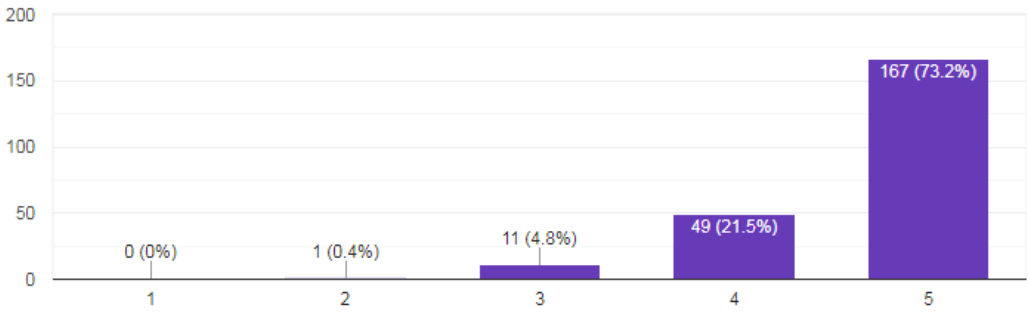
5. Rate the distribution of theory and practical courses in the curriculum.



6. Rate the teaching learning process.

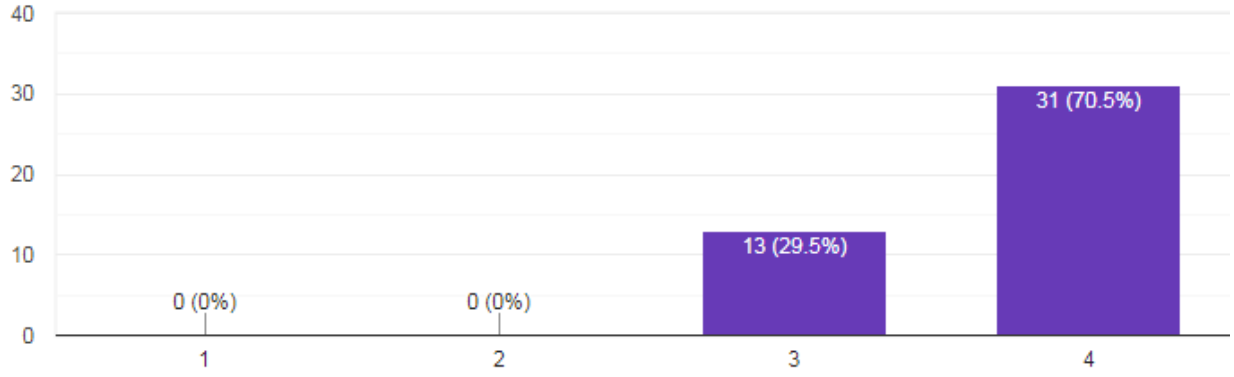


7. Rate the employment opportunity through curriculum.

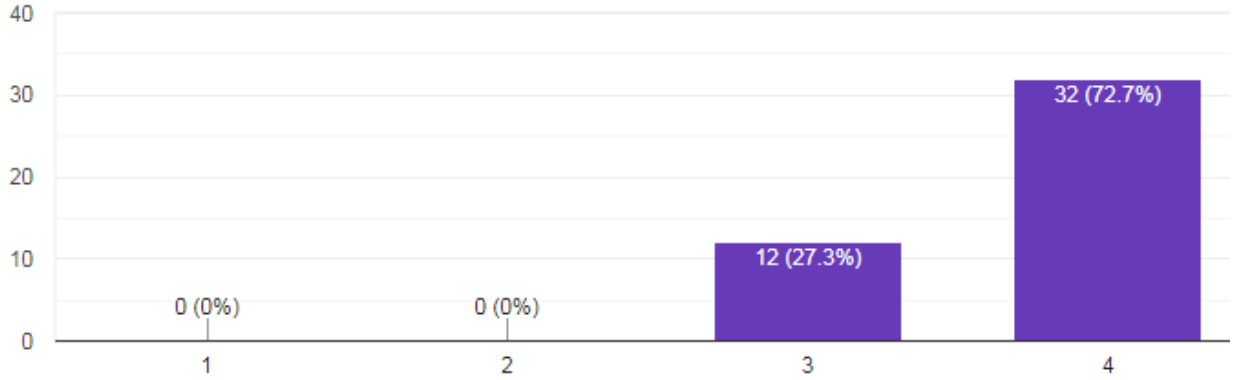


4.5 The following are the responses received from **PARENTS** stake holder regarding the 2019 regulations and curriculum

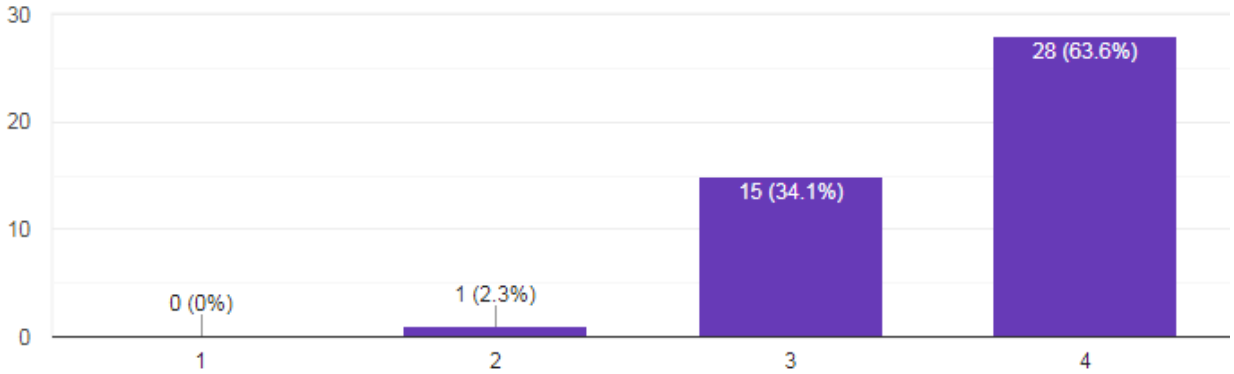
1. The teaching learning process of NEC imparts the value based learning in terms of knowledge, skill and critical thinking of the students.



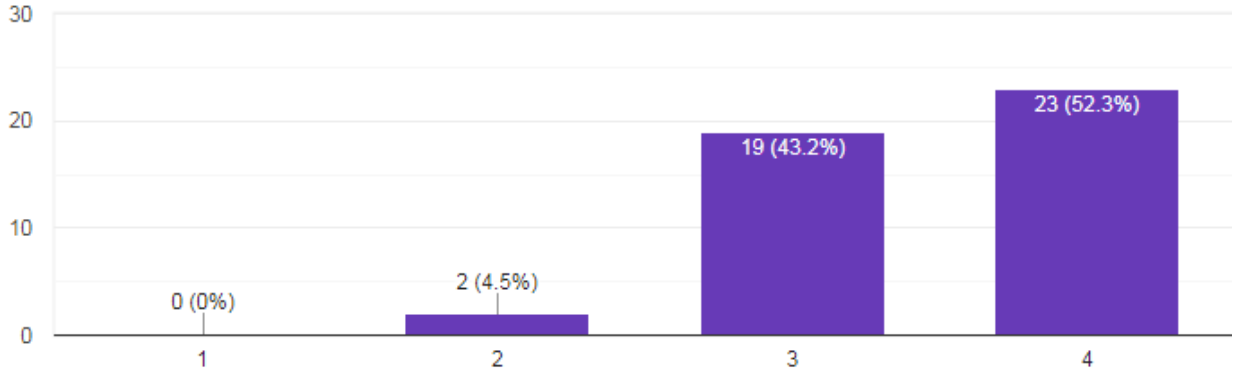
2. How do you rate the faculty-students relationship in terms of teaching learning process?



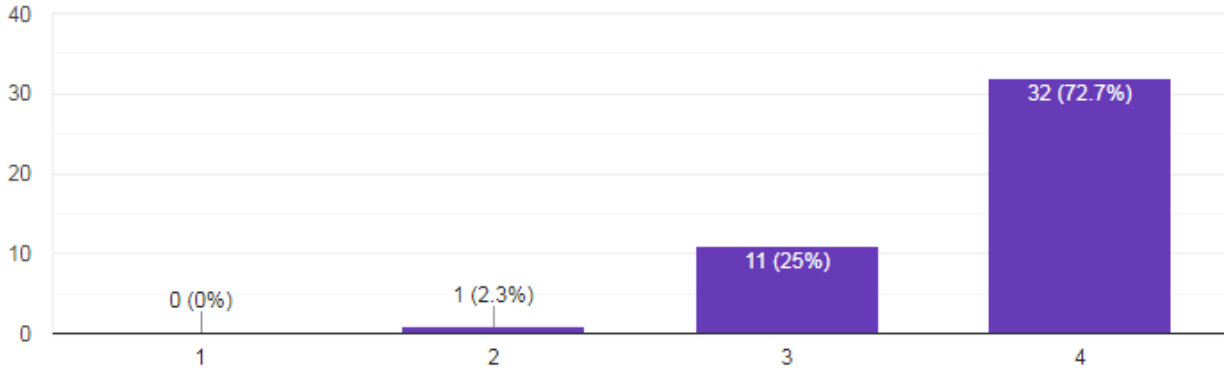
3. How do you rate the outcomes that your son/daughter has achieved from the programme of study leading to placement or higher studies or entrepreneur?



4. Rate the Co-curricular (Add-on Courses / Seminar / Guest lecture etc.) & extra-curricular (Sports/Cultural/NSS) activities organized by the institute.



5. How do you feel that the courses have inculcated social and ethical values to your son/daughter?



5. Department of Information Technology

5.1 The number of responses received from the department is as follows.

Stake holder	Feedback Form Sent	Responses Received
Alumni		
Employer		
Academic Expert		
Student		
Parent		

5.2 The following are the responses received from **ALUMNI** stake holder regarding the 2019 regulations and curriculum

1. Does the Regulation-2019 curriculum map with the emerging industry trends?

If no, kindly suggest new courses that meet the requirements of the industries.

- ERP
- Data Analytics, web3 nft block chain, industry 4.0,computing power, edge computing, quantum computing
- Cloud development - aws, azure, salesforce service and development
- Java technology- need any framework, design patterns
- Mobile technology - react native, flutter, Android Kotlin
- Ui - react js, angular
- Backend - advanced Java, python, node
- Mainframe development
- Deployment or devops - jenkins, cicd, cloud aws, azure
- Automation Testing - selenium, jmeter, postman
- Source code management - git lab, github, bitbucket, MEAN stack and Full stack development

2. Whether you are exposed to the latest technologies in your field during the period of study at NEC?

   If no, mention the gap need to be addressed in the curriculum

   - I am working in Mainframe technology for the past 16 years for which there wasn't any specific course available in any college I believe so.
   - Basic programming knowledge were given. Whereas the industry expected advanced level knowledge. There are many latest fields and we understand that not all can be taught at college. "Advanced DSA, Real time Projects
   - Students need to main source code repository for their project github Or git lab. It will helpful for interview. JavaScript should be taught deeply for the students

3. Does the curriculum have enough courses for developing innovation?

   If No, Kindly suggest new courses for developing innovation

   - Compiler design lab course may added.

4. Do the tools used to teach experiments in the laboratory courses match the current industrial needs?

   If No, Kindly suggest new tools needed for laboratory courses

   - Apart from the laboratory component, use some advanced technologies for solving the problem
   - Most of the tools are outdated

- Web development - Postman

5. Whether the curriculum encourages the life-long learning?

   If No, Kindly give your comments

6. Can we include experiential-based learning in our curriculum for better employability? (Experiential Learning allows the learners to apply concepts learned in the classroom in simulated and real work situations.)

   If yes, how many hours per week can we allot for experiential-based learning per course?

   - 8
   - 6
   - 4 hours per week
   - 2 to 4 hours or Saturdays can be utilized for that purpose
   - 4 hours

7. Can we include project-based learning in our curriculum for better employability?

   If yes, how many hours per week can we allot for project-based learning per course?

   - 4
   - 6
   - 4 hours per week
   - 8
   - We only do group projects but individual contribution is expected in industry. Atleast students should be able to make small automations.
   - Students need to main source code repository for their project github Or git lab. It will helpful for interview

8. Whether the courses like audit courses, mandatory courses, inter-disciplinary, trans-disciplinary courses may be evaluated without the end semester examination?

9. Recommend the obsolete courses which can be removed from the existing curriculum
    - Content will be changed based on the current trends in data structures, software engineering, computer architecture, operating system, principles of communication, and computer networks.
    - E-waste management
    - PHYSICS - which i feel we never going to use it in career
    - Ethics, EVS, constitution of India, Finance and Accounting.
    - Environmental science
    - Biology for engineers, Object Oriented Programming could be changed to Types of Programming
10. Kindly suggest some of the industry-recognized global certifications that would help for better employability
    - Any cloud certification offered by AWS, Azure, GCP
    - CCNA, CCNP for networking domain, Oracle for database administrator
    - Data scientist
    - OCJP, CCNA, ITIL, SAP
    - Cloud certification, oracle courses
    - AWS, Oracle, Cisco
    - Microsoft certifications
    - Automation courses and cloud based
    - Oracle Java certification
    - IBM Cloud
    - AWS, azure cloud
    - Google free certification
    - Cloud Computing Certifications (AWS, Microsoft, Google), CISSP, CKAD, CKA

11. Kindly suggest the skill sets/courses/training needed for getting placement in the dream and super dream companies
    - Java or Python
    - knowing the in-depth knowledge of any technology
    - Well versed in Agile process and implementation of Proof of Concept with latest technology would help them shine.
    - JavaScript
    - Database and oops concepts and basic language
    - Better communication, knowledge on how to search for better jobs via LinkedIn and other job sites, Business communication knowledge like how to draft and email, MOM and many.
    - Cloud
    - Hands on experience in industry level software development
    - For developer roles, please have more lab/courses on Data Structures & Algorithms. Data Engineering roles, please focus on Probability, Statistics and Big Data. It is really important for the students to understand and develop a greater understanding of what's in the curriculum. It is important to train the students to ask more questions
12. To promote start-ups, suggest courses that can build their entrepreneurial skills
    - MIT offers a host of core and supplementary online entrepreneurship courses in finance, law, leadership, marketing/planning, operations and strategy disciplines at the graduate and the undergraduate level. (refer)
    - Make use of the innovation lab, discuss on problems and try to develop a solution for the problem.
    - DB cloud and ERP
    - Programming language
    - Digital marketing
    - Business thinking course

13. Kindly give your suggestion for improving the Teaching-Learning Process to enhance the quality of the students
    - Better to have more practical sessions and papers
    - Conduct engaging activities using visual tools, audio, documentaries, graphics, animations, etc.
    - Use material or props for explaining or demonstrating the concept in the class.
    - Give real-life examples or situations so that students can connect to the concept easily.
    - Promote learning through examples of everyday routine for a better understanding of the concepts.
    - Provide facility for the students to complete certifications during their college. Atleast 1 certification has to be completed per year. This can boost up their confidence while attending the interviews.
    - YouTube courses for free which can be learn
    - Give practical application examples for students to understand the reason and importance of the subject and concepts
    - Programming language
    - Student mentor can more focus to care about their student interest
    - It is important to relate the topics in the curriculum to real-world problems. For example, it would be beneficial for students to interpret better if we let them know that Math, Probability and Statistics is the core behind AI/ML with examples. How weather prediction happens today is an example they can relate to. How data structures like queue are implemented in real-world problems.

FACULTY FEEDBACK ON CURRICULUM DEVELOPMENT

Any other Suggestions to improve design and development of curriculum:

- Appropriate text books should be followed while framing the syllabus. Sequence of contents as per the CO's must be properly maintained.
- Industry oriented courses like nodejs,angular js and react js can be added to enhance their programming knowledge
- More department relavant basic subjects should be included in first year

- Appropriate text books may be given for electives also. Industry oriented courses may be added.
- For every course, it will be better to frame the content in the following ways such as basic level, then some advanced level and application level. If the curriculum will be framed like this, it will be helpful for the student community to learn all the concepts in a particular subjects
- Curriculum should cover both fundamentals and advanced industry based contents.

STUDENTS FEEDBACK ON CURRICULUM DEVELOPMENT

Any other Suggestions to improve design and development of curriculum:

- Introduce more technical relevant topics
- Need real life example classes.
- Must upgrade the all syllabus to current industry requirements and based on the upcoming technologies
- Need some more digital way of learning
- Examine course sequencing
- Additional trainings are required to improve ourself towards hackathon, conference etc.
- Provide opportunity to learn things through real life experience
- Current Trending technology topics as a subject will be highly appreciable
- Keep a track of student skills that are sought after.
- Make much more important to practicals than theory.
- To do some more exercise for better understanding
- Extra attention to one credit courses
- Provide more practice towards participating in technical codeathons and hackathons
- Want to learn about new technologies like advanced python and many more new languages to improve our skill.
- Adding current and trending technology like adding MERN stack for web development , Flutter or React Native for app development will surely helps us to learn and practice the technology used by the industries

- Need more new techniques in the way of teaching. Need some practical demo sessions based on the theories in the curriculum.
- More praticals session
- Kindly celebrate cultural
- Arrange some events for development.
- Give more real time example practically as possible

PARENTS FEEDBACK ON CURRICULUM DEVELOPMENT

- In view of enhancing the curriculum and syllabus, suggestions and feedback from the parents were invited. On account of that 25 parents responded positively about the curriculum. Most of the parents rated our curriculum as "Very Good" in many aspects.

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