NEW HORIZON COLLEGE OF ENGINEERING

Autonomous College, Affiliated to VTU | Approved by AICTE New Delhi & UGC
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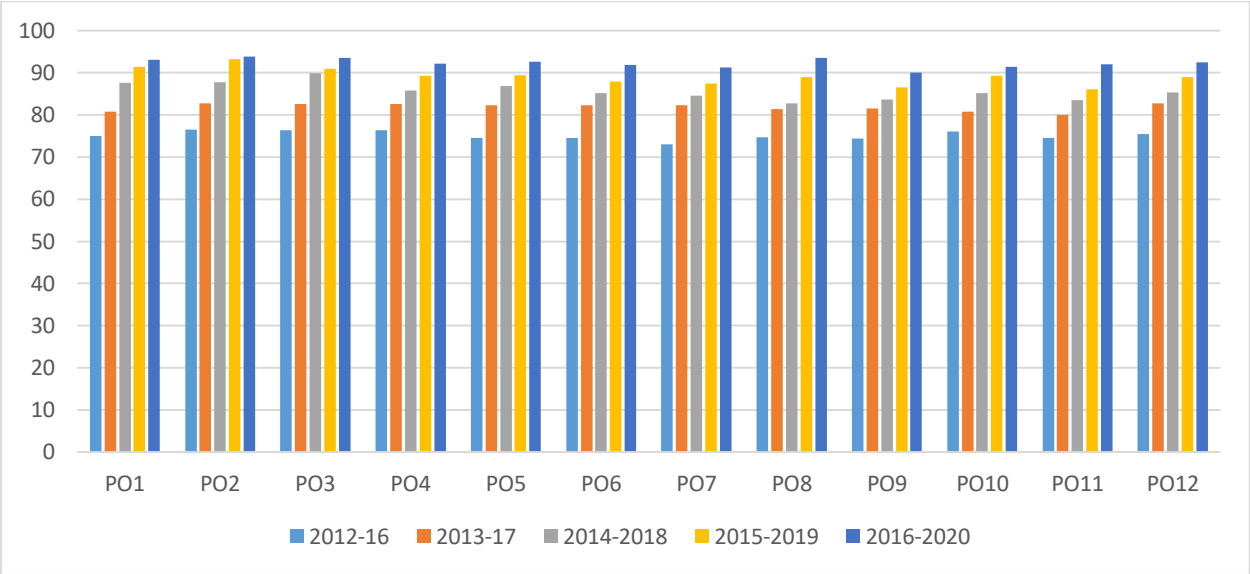
50 Golden Jubilee YEARS OF EXCELLENCE IN EDUCATION

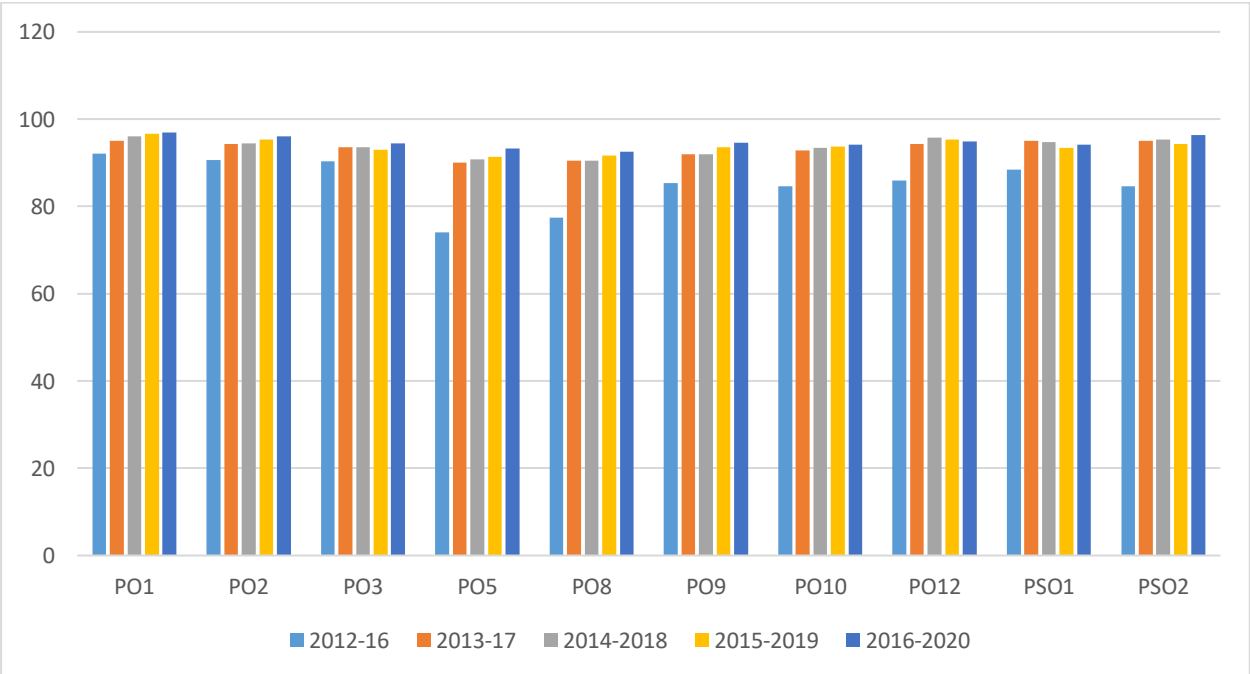
DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

Stakeholders Feedback Analysis

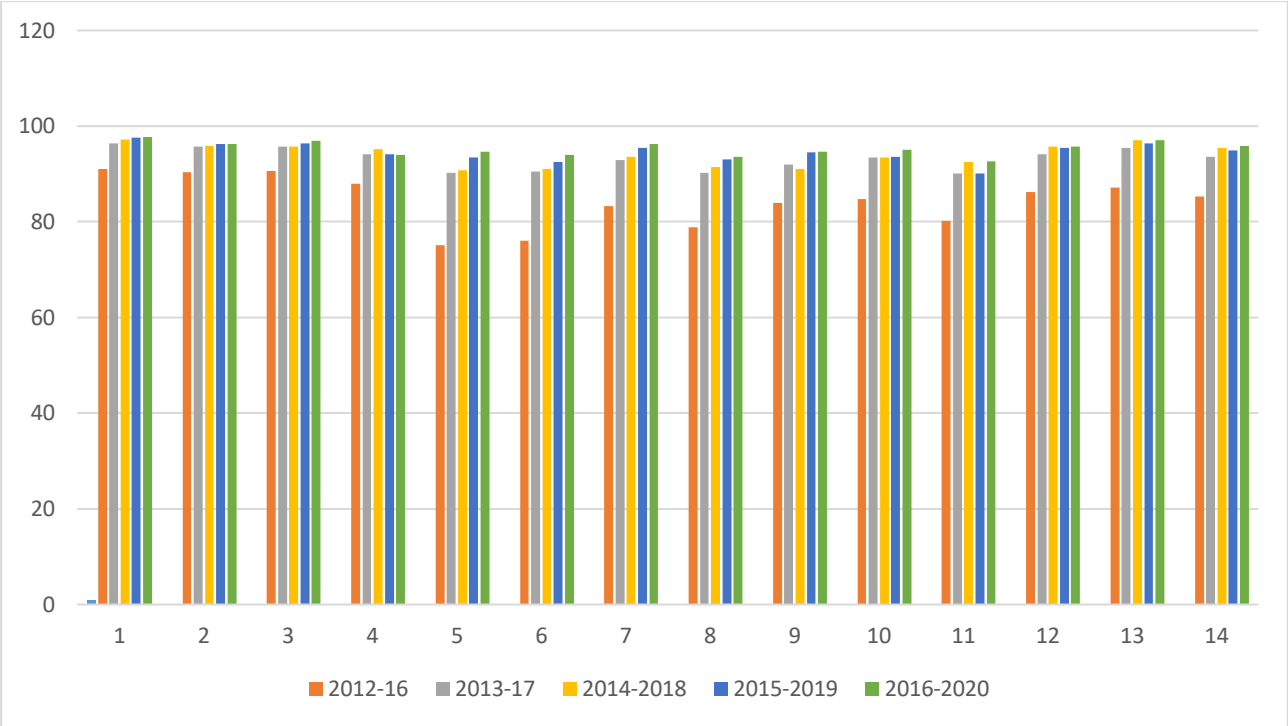
EMPLOYER FEEDBACK



ALUMNI FEEDBACK



GRADUATE FEEDBACK



Stakeholders Feedback for the AY -2016-2017

Alumni feedback

Based on the alumni feedback taken during the alumni meet and also whenever they visit the college, the following are the key takeaways consolidated

- More industrial visits can be conducted, which helps in the development of student's awareness on job functions in the industries, attitude to adapt industrial environment, proper practical and relevant knowledge, skills and competencies etc.
- To accommodate syllabus with project based learning.
- To conduct expert talk on latest updates in cloud computing, Software development skills, Basic vSPhere Networking based.
- To motivation the students to work more on lab experimentations, innovation and research, concept of paper writing and patenting.
- To enhance students' technical expertise in phase with the curriculum.

Employer feedback

Seminars are the most proficient method to get ready for placements, personality development, investigating abilities, employability skills, and technical skills to be coordinated for students to improve the degree of performance

- The curriculum can bridge the gap between industry and academic
- The Syllabus can include courses on Project based learning
- Students can be more exposure to open source tools
- More opportunity should be given to students to active participation in technical events and expose the student ability to industry experts.
- The curriculum can help in building entrepreneurial motives, which helps the students for starting their ventures
- Buddies from college can provide inputs to current students on recent advances in research, Industry needs and area of expertise on courses like Data Structures, Algorithms, programming paradigm, useful resources in the web for self-learning in coding, Tips for cracking the technical / coding round test and many more.

Course Coordinators (Faculty) Feedback

To enhance the curriculum and edify knowledge of the students on current modern prerequisites, the course coordinators proposed to fuse the gaps identified in the syllabus endorsed for the third, fourth, fifth, and sixth semester

- The COs and POs should be mapped accordingly and also included in the syllabus and lesson plan for the better understanding
- A uniform format to represent the name of the textbook and reference books and also changed it as per IEEE standard format.
- The contents should maintain Career based tracks, the student must be empowered with basic knowledge by including the very in-depth fundamental knowledge into the syllabus of respective subjects

Student Feedback

- After receiving feedback from students, various expert talks can be provided insights on the recent advancements Data Science and Machine Learning , IoT, and Transactions Management in Database, etc. to gain more knowledge about the trending technologies
- As per the recommendations of the students, guest talk on entrepreneur can be conducted.
- Selection of electives by students based on their career path.
- Students was given good opportunities, awareness about best practices and practical working environment through frequent industrial visits.
- Increase in the number of industrial visits can help students to identify their prospective area of work like software development, testing, design and automation and many more.
- For Gate and competitive exams, students suggested courses like FAFL to be included in the curriculum during their initial $5^{th}/6^{th}$ semesters.
- Self study topics beyond syllabus can be listed and circulated with students.

Action plan 2017-2018 based on 2016-2017 Feedback Summary

Based on the Alumni feedback:

- To improve students' learning in a more interactive, topic-specific way, workshops on the latest updates in Data Science & Machine Learning and IoT can be conducted.
- The industry readiness with recent software projects and application advancement is required to students to expertise in different programming like C, C++, C#, JavaScript, VB, NET, R, PHP, Java, and python.
- To accommodate syllabus with project based learning.
- Expert talk on the latest updates in cloud computing, Software development skills, Basic vSPhere Networking based on alumni suggestions.
- Many seminars and symposium with technical and non-technical student engagement activities were conducted to enhance students' technical expertise.

Based on the Employer feedback:

- In all courses, the fifth chapter – 20% of syllabus every semester is handled by Industry experts. All labs have minimum 3 experiments beyond syllabus to incorporate more curiosity and hands-on with the subject.
- Very good exposure to open source tools.
- Buddy talks were organized to help current students on recent advances in research, Industry needs and area of expertise on courses like Data Structures, Algorithms, programming paradigm, useful resources in the web for self-learning in coding, Tips for cracking the technical / coding round test and many more.

Based on the Student Feedback:

- Mini project contact hours were increased as per the requirement of the semester.
- Various technical event were organized to help current students to increase the problem solving ability and which indeed reframed and refined the Lab program questionnaires statements
- As we maintain Career based tracks, the student were empowered with basic knowledge by including the very in-depth fundamental knowledge into the syllabus of respective subjects

Based on the Course Coordinator (Faculty) Feedback:

- As per the need of the Coordinator, the COs and POs is mapped accordingly and also included in the syllabus and lesson plan for the better understanding
- To have a uniform format to represent the name of the textbook and reference books and also changed it as per IEEE standard format.

- Advanced concepts relevant to industry readiness and expectations are incorporated in the syllabus. Thereby Finite Automate and Formal Language course with JFLAP were included.

- Mapping of PO-12 also addressed in the syllabus as per the needs

- The syllabus should contain an integrated course were included in every semester.

- To have a balance with the Theory and Lab courses per semester, accordingly the subject were swapped from and to as needed, here in specific Computer network from 5^{th} semester was pushed to sixth and JAVA and J2EE was moved to early semester.
- They should be consistence with name of the subject and the syllabus in it.
- Lastly , also recommended to refined and reframe few of the syllabus in the curriculum:
    - Software Engineering and Best Practices
    - Database Management Systems
    - Operating Systems
    - Design and Analysis of Algorithm
    - Computer networks
    - Web and internet programming
    - JAVA and J2EE
    - Dataware Housing and Data Mining
    - File Structures
    - Cryptography and Network Security
    - Software Testing and Automation

Stakeholders Feedback for the AY -2017-2018

Alumni feedback:

Based on the alumni feedback taken during the alumni meet and also whenever they visit the college, the following are the key take away consolidated

- To include trending subjects like Machine learning, Data Science, Mobile application development to be included in early semesters to provide the fundamentals of statistical knowledge, practical applications and related components.
- To provide useful resources from the web for self learning in coding, tips for cracking the technical / coding round test, programming paradigm and many more.
- To increase the number of workshops that can provide knowledge beyond syllabus. Hands-on workshops on recent trends like cyber security and block chain, Internet of Things, Machine Learning, Cloud computing, Mobile application development, Devops, data analytics and many more can collaborate their ideas, deliver, share recent trends, advancements and research in an open forum.
- To accommodate syllabus with project based learning.
- To insist on self study component that can help students to improve their communication skills as well as they can stimulate lifelong learning activities.
- To offer MOOC Courses, NPTEL, Coursera, Harappa, along with Open Source courses to students for self learning the content beyond syllabus.
- To focus more on lab experimentations, innovation and research, concept of paper writing and patenting.
- To include mainly open source tools usage in labs like VMware, NS2, Anaconda, Java etc to help students come out of proprietary software's. Open source tools are widely used in core companies.
- To invite guest lectures on latest updates in the fields of Data Science & Machine Learning, cloud computing, Software development skills, block chain, Software Testing Tools and Applications.

Employer feedback:

- Career based tracks for technical creativity and analytical thinking skills can be provided to students to solve various software related issues.
- Wide choice of electives can be incorporated in the curriculum based on emerging technologies. Labs associated with these electives can enrich technical knowledge of the students.

- The industry readiness with innovative software programs and application development are required, hence students must specialize in multiple programming languages like C, C++, C#, java, python etc.

- Introduce domain specific teaching, learning curriculum from 3rd semester onwards for technical excellence in trending technologies

- Domain specific industrial visits can help students to create curiosity and exposure for industry readiness.

- Project based learning

- Exposure to open source tools

- Active participation in technical events and expose the student ability to industry experts.

- Courses like Computer organization and operating systems can be included in third and fourth semesters respectively to provide the fundamental knowledge regarding the architectures and related components.

- Buddies from college can provide inputs to current students on recent advances in research, Industry needs and area of expertise on courses like Data Structures, Algorithms, programming paradigm, useful resources in the web for self learning in coding, Tips for cracking the technical / coding round test and many more.

- Recommendations to include subjects like Essential English, Ethics and life skills for students.

- Seminars/ workshops on "How to prepare for placements, coding tips, debugging skills, technical concepts on programming" can be organised for students for smart performance.

- Students must be focused on projects/technical seminars on recent emerging trends to adhere to industry standards rather than reading core subjects during their 8th semesters.

Student Feedback

- Selection of electives by students based on their career path.

- Frequent industrial visits can help students with good opportunities, awareness about best practices and practical working environment.

- Increase in the number of industrial visits can help students to identify their prospective area of work like software development, testing, design and automation and many more.

- For Gate and competitive exams, students suggested courses like FAFL to be included in the curriculum during their initial 5th/6th semesters.

- Students requested to organize industrial visits with core companies like VMware, SAP, IBM, Wipro, Werner, and many more to know the advanced research and developments, core programming techniques and practical working environments to

meet the needs.

- Self study topics beyond syllabus can be listed and circulated with students.
- Motivational talks on Stress management, Conflict handling, Team work, Team building and Study skills on research and developments, patenting, Entrepreneurship can strengthen ideas and provide initiative paths to students.
- With increase in number of workshops on "trending technologies and technical jobs for the next 5 years" may help students to downstream their career paths
- Quiz based on aptitude, pattern matching, hackathon can be conducted to improvise student's attention.

Course Coordinators (Faculty) Feedback:

To enrich the curriculum and expose the students to the current industrial requirements, the course coordinators suggested incorporating the following in the syllabus prescribed for forth coming semesters.

- Track wise curriculum with various courses must be framed from the initial semesters.
- Computer organization and operating systems must be included in third and fourth semesters respectively to provide the fundamental knowledge regarding the architectures and related components.
- Course contents of subjects like data structures with C, object oriented programming, machine learning, advanced java, design and analysis of algorithms, software engineering and project management must be revised for contents and reframed.
- Appropriate mathematical/statistical concepts must to be included in the syllabus for Machine Learning.
- Recommendations to introduce discrete mathematics and graph theory and Java & J2EE in the 4^{th} semester to build strong analytical background.
- No programming language to be enforced on students.
- Software testing subject can have lab associated for better understanding.
- Courses like mobile application development, NoSQL, Internet of Things, UNIX system programming, automata theory and formal languages, file structures, User interface design, virtual reality, C# and .net, computer graphics with OpenGL and soft computing can be included as new courses in the curriculum.
- Advanced concepts in C# & .net can to be included in the syllabus.
- The courses like machine learning and data science has overlapping content, recommendation to give more importance to statistics in data science.
- The reference books of latest edition can be recommended as text books.

Action Plan for 2018-19 based on 2017-18

Based on the Alumni feedback:

- Students study subjects like Computer organization, Operating systems, Mobile application development, python, data Science, Machine Learning at their initial semesters to strengthen their technical skills.

- Buddy talks were organized to help current students on recent advances in research, Industry needs and area of expertise on courses like Data Structures, Algorithms, programming paradigm, useful resources in the web for self learning in coding, Tips for cracking the technical / coding round test and many more.

- Seminars/ workshops on How to prepare for placements, Data Structures and its Applications, Object Oriented Programming, Design Patterns, Python Programming, Mobile application development, IoT Challenge 2019, Devops and many more are organized.

- 8th semester curriculum are reframed with project based learning and no core subjects. This would enable students to concentrate better and excel in exhibiting their skills according to industry standards.

- Self study Report is a continuous internal evaluation (CIE) component for one subject at least every semester. This evaluates them to do extra referencing based on their area of interest. Students will also give a presentation for evaluation purpose. This improves their presentation skills there by stimulates lifelong learning as a team. Self study topics beyond syllabus are encouraged. Self study topics beyond syllabus are listed in the lesson plan and circulated with students.

- Many MOOC Courses, NPTEL, Coursera, Harappa, Open Source courses are complied for students to deliver content beyond syllabus. MOOC/NPTEL courses are made mandatory for 5th semester students and 3rd semester students are also motivated to actively participate.

- Much innovative teaching pedagogy is incorporated to improve the capability of the students. Few initiatives are
    - Originality and Creativity
    - The change is brought by using various innovations
    - Constancy in their work
    - Knowledge used and developed in academics, research and patenting

- Open sources workshop are organized to enable students to come out of proprietary software's. Open source tools used in lab like VMWare, NS2, Anaconda, Java etc

Based on the Employer feedback:

- Courses like essential English, life skills for engineers, introduction to economics are introduced for students in the syllabus.
- Wide choices of electives are incorporated in the curriculum based on emerging technologies. Electives offered for students are VMware, Big Data Analytics, HP Vertica, Cisco Networking Academy, Schneider Electric, SAP next-Gen, Quest Global Engineer, and Automation Anywhere (IIoT). Labs associated with these electives enrich technical knowledge of the students.
- The industry readiness with innovative software programs and application development skills are incorporated among students. Hence students are specialized in multiple programming languages like C, C++, C#, java, python etc.
- Students have the choice to program in any programming language. No restrictions enforced on students.
- Advanced concepts relevant to industry readiness and expectations are incorporated in the syllabus. Courses like mobile application development, NoSQL, Internet of Things, UNIX system programming, automata theory and formal languages, file structures, User interface design, virtual reality, C# and dot net, computer graphics with OpenGL and soft computing
- Domain specific teaching - learning curriculum is introduced from 3rd semester onwards for technical excellence in trending technologies
- Very good exposure to open source tools.
- Active participation in technical events and expose the student ability to industry experts. Many activities like Hackathons, KSCST and KSTA project proposals, Toycathon idea submissions, External Competitions, QuBytes 19 - State Level Inter collegiate Tech Fest are structured for students to participate and stimulate their learning.
- In all courses, the fifth chapter – 20% of syllabus every semester is handled by Industry experts. All labs have minimum 3 experiments beyond syllabus to incorporate more curiosity and hands-on with the subject.
- Many technical events/hackatons were organized like T-ZEST, Cryptoathon, Koders and many more for students to actively participate and exhibit their talents.

Based on the Student Feedback:

- Frequent industrial visits are organized with core companies like VMware, SAP, IBM, Wipro, Werner, and many more to provide good opportunities and understand the advanced research and development activities, core programming techniques, awareness about best practices and practical working environment. Domain specific industrial visits help students to create curiosity and exposure for industry readiness.
- Quiz based on aptitude, pattern matching, hackathon, Brain Teaser is conducted to improvise student attention.
- For Gate and competitive exams, students suggested courses like FAFL are included in the curriculum during their initial $5^{th}/6^{th}$ semesters.

- Self study topics beyond syllabus are listed and circulated with students.
- Students can selection their electives based on their career path.

Based on the Course Coordinator (Faculty) Feedback:

- Career based tracks for technical creativity and analytical thinking skills are provided to students to solve various software related issues. The sequence of core subjects learnt by the students are as follows
    - Third semester- Python, Data structures with C, Computer Organization
    - Fourth semester- OOP with Java, DBMS, Operating systems
    - Fifth semester- Data Science, Web internet programming, Design and analysis of algorithms, Mobile Application Development
    - Sixth semester- Advanced Java, Machine learning
- Project Quality is improved and indicated by following metrics
    - Regular Internal Assessments
    - External Examiner Evaluation
    - Plagiarism check
    - Student publications
    - Patents
    - VTU awards
    - Vishwakarma Award
    - Techorizon
- Motivational talks on Stress management, Conflict handling, Team work, Team building and Study skills on research and developments, Patenting, Entrepreneurship and Management are organized for students to strengthen their ideas and provide initiative paths.
- Workshops on trending technologies and technical jobs for the next 5 years according to industry requirements are delivered to students to downstream their career paths
- The reference books of latest edition as text books are included in the syllabus.
- Computer organization and operating systems are included in third and fourth semesters respectively to provide the fundamental knowledge regarding the architectures and related components.
- Course contents of subjects like data structures with C, object oriented programming, machine learning, advanced java, design and analysis of algorithms, software engineering and project management are revised for contents and reframed.
- Appropriate mathematical/statistical concepts are included in the syllabus for Machine Learning.
- Discrete mathematics and graph theory and Java & J2EE are introduced in the 4th semester to build strong analytical background.
- Software testing subject is associated with lab for better understanding.

- Courses like mobile application development, NoSQL, Internet of Things, UNIX system programming, automata theory and formal languages, file structures, User interface design, virtual reality, C# and .net, computer graphics with OpenGL and soft computing are included as new courses in the curriculum.
- Advanced concepts in C# & .net are included in the syllabus.
- Mini project component and technical seminar components are incorporated in the syllabus.
- Mandatory to all the students to undergo at least 6 week of internship in their curriculum. Many final year projects are done in government agencies like DRDO, LRDE, HAL etc or in reputed IT companies like IBM, SAP, HCL etc.

Stakeholders Feedback for the AY -2018-2019

Alumni feedback:

Based on the alumni feedback taken during the alumni meet and also whenever they visit the college, the following are the key take away consolidated

- Placement buddy talk can be conducted, which helps the students get the placement related information directly from the experienced seniors, placement buddies, and they can interact and discuss the transformational event's placement readiness strategies.
- The industry readiness with recent software projects and application advancement is required to students to expertise in different programming like C, C++, C#, JavaScript, VB, NET, R, PHP, Java, and python.
- To learn new information or new skills in various domains, online courses like NPTEL, Coursera, and open source courses can be offered to students for self-learning. These courses will assist students in delivering content beyond the syllabus.
- To explore new technical advancements and enhance students' technical prowess, seminars, events, or symposium with technical and non-technical student engagement activities can be conducted.
- To improve students' learning in a more interactive, topic-specific way, guest lectures on the latest updates in Data Science & Machine Learning, cloud computing, Software development skills, blockchain, and Web-based applications can be conducted.
- To focus more on innovation and research, students should improve their paper writing skills and patenting, which helps them have a detailed analysis.
- To learn more about the latest technologies, recent software and tools like blockchain, distributed cloud, VMware, network simulators, IoT, Anaconda, etc. can be included in the curriculum.

Employer feedback:

- To gain expertise in various domains, employers suggested conducting workshops/seminars on the various domains like Data Science, Cyber Security, Global Education, etc.
- To provide students with an insight into the corporate sector, domain-specific industrial visits are recommended. These visits can help students to know things practically through interaction, working methods, and employment practices.
- seminars are the most proficient method to get ready for placements, personality development, investigating abilities, employability skills, technical skills to be coordinated for students to improve the degree of performance
- The curriculum can bridge the gap between industry and academic

- The curriculum can help in building entrepreneurial motives, which helps the students for starting their ventures

Course Coordinators (Faculty) Feedback:

To enhance the curriculum and edify knowledge of the students on current modern prerequisites, the course coordinators proposed to fuse the gaps identified in the syllabus endorsed for the third, fourth, fifth, and sixth semester

- The syllabus of the data structures with C can be refined as per the student placement's basic requirement.
- Trending technologies-based courses are included in the curriculum, thereby OOPS with C++ and replaced with OOPS with Java, and it can be moved from the fourth semester to the third semester.
- The new edition of textbooks can be introduced to the students as suggested by the BoS members to absorb more knowledge.
- Data analytics can be included as a professional elective to understand the technological advancements in the last couple of years that transformed the process of usage of data
- Self-study and technical reports can be incorporated into the syllabus
- Courses like essential English, life skills for engineers, introduction to economics can be introduced for students in the syllabus.

Student Feedback:

- After receiving feedback from students, various expert talks can be provided insights on the recent advancements like blockchain, Redundant Robot arms, Machine learning, Transactions Management in Database, etc. to gain more knowledge about the trending technologies
- To expose their practical and technical knowledge, student projects can be sent to Git-hubs
- As per the recommendations of the students, guest talk on entrepreneur can be conducted.
- To participate actively and exhibit their talents, many technical events/hackathons, cryptoathons can be organized.
- Students requested to schedule industrial visits with various companies to know the advanced research and developments, core programming techniques, and practical working environments to meet the industrial needs
- To broaden the students' thinking level, self-study report preparation, seminars on the topics beyond the syllabus can be encouraged.

Action Plan 2019-20 based on 2018-19 feedback summary

Based on the Alumni feedback:

- Placement buddy talk was conducted, which helps the students get the placement-related information directly from the experienced seniors, placement buddies and interact and discuss the transformational event's placement readiness strategies.
- Many technical events/hackathons were organized like T-ZEST, Cryptoathon, Koders, and many more for students to participate and exhibit their talents actively.
- To learn new information or new skills in various domains, online courses like NPTEL, Coursera, open Source courses were offered to students for self-learning. These courses will assist students in delivering content beyond the syllabus.
- Training on recent software projects, basic programming languages, and application advancement was provided to illuminate the student's industry readiness
- Fest **QUBYTES** with technical and non-technical student engagement activities was conducted in 2019 on the Alumni recommendations. This fest was aimed at exploring new technical advancements to enhance students' technical prowess
- Guest lectures on the latest updates in cloud computing, Software development skills, blockchain, and web-based applications based on alumni suggestions.
- Sessions on paper writing skills were conducted to focus more on innovation and research and develop a student's comprehensive analysis.

Based on Employer feedback:

- To gain expertise in various domains, various workshops conducted Below are a few of the workshops conducted "workshop on Data Science with Python", "workshop on Cyber Security and Consumer Awareness", "Workshop on Global Education Programme", "T-ZEST Technical event", "Koder's contest".
- Industrial visits were held as per the student requests to observe and learn the real-time working environment in various organizations like Mindtree, Wipro, etc.
- Seminars on personality development, investigating abilities, employability skills, technical skills were conducted to improve the degree of performance in placements.
- As NHCE engineering college already has an industrial collaboration with Wipro, the students can interact with Wipro experts to edify their technical knowledge.
- The syllabus of the data structures with C was discussed with the course coordinator and the other faculties handling the subject to refine the syllabus as per the basic requirement of the student placement.
- A guest lecture talk on "Entrepreneurship Motivation" was conducted by NHCE alumni Mr. Nirmal, as per the entrepreneur's recommendations.

Based on Course Coordinator (Faculty) feedback:

- The syllabus of the data structures with C was discussed with the course coordinator and the other faculties handling the subject to refine the syllabus as per the basic requirement of the student placement.
- Trending technologies-based courses are included in the curriculum, thereby OOPS with C++ and replaced with OOPS with Java, which has been moved from the fourth semester to the third semester.
- Data analytics is incorporated as a professional elective to gain problem-solving skills in a real-time environment and to understand the technological advancements in the last couple of years that transformed the process of usage of data
- A New edition of textbooks has been introduced to the students to absorb more knowledge of the subject
- Courses like essential English, life skills for engineers, introduction to economics are introduced for students.

Based on Student feedback:

- Various expert talks have been held to provide insights on recent advancements like blockchain, Redundant Robot arms, Machine learning, Transactions Management in databases, Data Structures, and Applications. Technology Trends, and Industry in Future, object-oriented programming, etc. to gain more knowledge about the trending technologies
- Student projects were sent to Git-hubs to expose their practical and technical knowledge.
- Students have participated in various technical symposiums like National level SAP Semicolon Hackathon, BITSMUN 2020, InQuizitive, Semicolon Hackathon 2019 on alumni recommendation
- Scheduled the industrial visits with various companies like Mindtree, IBM, Wipro, Werner, SAP and many more to know the advanced research and developments, core programming techniques, and practical working environments to meet the industrial needs
- Seminars on the self-study report were scheduled to develop a good work ethic and broaden the thinking level of the students

Stakeholders Feedback for the AY -2019-2020

Alumni feedback:

Based on the alumni feedback taken during the alumni meet and also whenever they visit the college, the following are the key take away consolidated

- To provide useful resources from the web for self learning in coding, tips for cracking the technical / coding round test, programming paradigm and many more.
- To recommend project based learning is each semesters based on emerging technologies are beneficial to students while attending placements.
- To increase the number of workshops that can provide content beyond syllabus. Workshops on recent trends like cyber security and block chain, Internet of Things, Machine Learning, Cloud computing, Mobile application development, Devops, data analytics and many more can collaborate their ideas, deliver, share recent trends, advancements and research in an open forum.
- To insist self study component that can help students to improve their communication skills as well as they can stimulate lifelong learning activities.
- To offer MOOC Courses, NPTEL, Coursera, Harappa, along with Open Source courses to students for self learning content beyond syllabus.
- To focus more on lab experimentations, innovation and research, concept of paper writing and patenting.
- To include mainly open source tools usage in labs like VMware, NS2, Anaconda, Java etc can help students come out of proprietary software's. Open source tools are widely used in core companies.
- To invite guest lectures on latest updates in the field of Data Science & Machine Learning, cloud computing, Software development skills, block chain and Wed based applications.

Employer feedback:

- Suggest encouraging students to take-up emerging technologies oriented mini projects every semester.
- Career based tracks for technical creativity and analytical thinking skills are to be provided to students to solve various software related issues.
- Wide choice of electives can be incorporated in the curriculum based on emerging technologies. Labs associated with these electives can enrich technical knowledge of the students.
- Encourage the students to participate in various Hackathon, Project exhibitions, Technical contests and other academic related events and the same can be considered during assessment.

- The industry readiness with innovative software programs and application development are required, hence students must specialize in multiple programming languages like C, C++, C#, java, python etc.
- Introduce domain specific teaching, learning curriculum from 4rd semester onwards for technical excellence in trending technologies.
- Domain specific industrial visits help students to create curiosity and exposure for industry readiness.
- Project based learning
- Exposure to open source tools
- Active participation in technical events and expose the student ability to industry experts.
- Courses like Mobile Application Development can to be considered as core subject to meet the industry requirements for placement activities.
- Buddies from college can provide inputs to current students on recent advances in research, Industry needs and area of expertise on courses like Data Structures, Algorithms, programming paradigm, useful resources in the web for self learning in coding, Tips for cracking the technical / coding round test and many more.
- Recommendations to include subjects like Essential English, Ethics and life skills for students.
- Seminars/ workshops on "How to prepare for placements, coding tips, debugging skills, technical concepts on programming" can be organised for students for smart performance.
- Latest/essential programming languages can be incorporated and better choice of programming languages for subjects like AI (R tool/Python).
- Core subjects must be opted during the initial semesters to have strong background knowledge.

Course Coordinators (Faculty) Feedback:

To enrich the curriculum and expose the students to the current industrial requirements, the course coordinators suggested incorporating the following in the syllabus prescribed for forth coming semesters.

- Track wise curriculum with various courses must be framed from the initial semesters.
- Placement department suggested the course 'Internet of Things' to be made as Professional Elective and 'Mobile Application Development' must be considered as core subject to meet the industry requirements for placement activities.

- Course contents of subjects like Machine Learning and Data Science are overlapping. The contents must be revised and reframed. 'Diversion and Reduction' topics can be included in Data Science. Deep Learning concepts like CNN can be included in Machine Learning subject.
- Recommendations to use 'Jupiter' notebooks and Lab for Data Science/Machine learning hands-on sessions. Recommendation to give more importance to statistics in data science and machine learning.
- Recommendations to have hands-on sessions/mini project with subject 'Mobile Application Development' than theory concept explanation. This will encourage students to develop applications based on their ideas and exhibit their innovations during placement activities.
- No programming language to be enforced on students.
- The courses like Environmental science and awareness, Aadalitha/vyavaharika kannada can be included in the curriculum.
- The reference books of latest edition can be recommended as text books.
- Mini project component, Self study component and technical seminars must be incorporated in the syllabus.
- Student projects can be uploaded to Git-hubs to exhibit their technical knowledge.
- Course contents of subjects like Software Engineering and Project Management, User interface design must be revised and re-framed.

Student Feedback:

- Selection of electives by students based on their career path.
- Frequent industrial visits can provide good opportunities, awareness about best practices and practical working environment.
- Increase in the number of industrial visits can help students to identify their prospective area of work like software development, testing, design and automation and many more.
- Students requested to organize industrial visits with core companies like VMware, SAP, IBM, Wipro, Werner, and many more to know the advanced research and developments, core programming techniques and practical working environments to meet the needs.
- Self study topics beyond syllabus can be listed and circulated with students.
- Motivational talks on stress management, Conflict handling, team work, team building and study skills on research and developments, patenting, Entrepreneurship can

strengthen ideas and provide initiative paths to students.

- With increase in number of workshops on “trending technologies and technical jobs for the next 5 years” may help students to downstream their career paths
- Quiz based on aptitude, pattern matching, hackathon can be conducted to improvise student’s attention.

Action Plan for 2020-21 based on 2019-20 feedback summary

Based on the Alumni feedback:

- Domain specific training, learning curriculum are introduced from 4rd semester onwards for technical excellence in trending technologies. Value-added courses like GP training are provided for students to excel in industry requirements.
- Project based learning – Every semester students undergo mini projects based on their areas of interest. Final year students are insisted to full fledge focus on projects with trending topics of research meeting industry standards.
- Workshops on "Crossing barriers in research, Internet of Things (IoT) A and its Applications, Cyber security and digital forensics" are delivered to students to downstream their career paths
- Expert talks on 'Latest updates in the field of Data Science & Machine Learning, Cloud Computing, Digital signature in web application, Supply Chain Digital Transformation Trends are organized for students.
- Self study Report is a continuous internal evaluation (CIE) component for one subject at least every semester. This evaluates them to do extra referencing based on their area of interest. Students will also give a presentation for evaluation purpose. This improves their presentation skills there by stimulates lifelong learning as a team. Self study topics beyond syllabus are encouraged. Self study topics beyond syllabus are listed in the lesson plan and circulated with students.
- Buddy talks were organized to help current students on recent advances in research, Industry needs and area of expertise on courses like Data Structures, Algorithms, programming paradigm, useful resources in the web for self learning in coding, Tips for cracking the technical / coding round test and many more.
- Open sources workshop are organized to enable students to come out of proprietary software's. Open source tools used in lab like VMWare, NS2, Anaconda, Java etc
- Many MOOC Courses, NPTEL, Coursera, Harappa, Open Source courses are complied for students to deliver content beyond syllabus. MOOC/NPTEL courses are made mandatory for 5th semester students and 3rd semester students are also motivated to actively participate.
- Much innovative teaching pedagogy is incorporated to improve the capability of the students. Few initiatives are
    - Originality and Creativity
    - The change is brought by using various innovations
    - Constancy in their work
    - Knowledge used and developed in academics, research and patenting

Based on the Employer feedback:

- Wide choices of electives are incorporated in the curriculum based on emerging technologies. Electives offered for students are VMware, Big Data Analytics, HP Vertica, Cisco Networking Academy, Schneider Electric, SAP next-Gen, Quest Global Engineer, and Automation Anywhere (IIoT). Labs associated with these electives enrich technical knowledge of the students.

- The industry readiness with innovative software programs and application development skills are incorporated among students. Hence students are specialized in multiple programming languages like C, C++, C#, java, python etc.

- Courses like essential English, life skills for engineers, introduction to economics are introduced for students in the syllabus.

- Students have the choice to program in any programming language. No restrictions enforced on students.

- Students study subjects like Computer organization, Operating systems, Mobile application development, python, data Science, Machine Learning at their initial semesters to strengthen their technical skills.

- Advanced concepts relevant to industry readiness and expectations are incorporated in the syllabus. Courses like mobile application development are included as core courses in the curriculum.

- Active participation in technical events and expose the student ability to industry experts. Many activities like Hackathons, KSCST and KSTA project proposals, Toycathon idea submissions, External Competitions, QuBytes 20 - State Level Inter collegiate Tech Fest are structured for students to participate and stimulate their learning.

- In all courses, the fifth chapter – 20% of syllabus every semester is handled by Industry experts. All labs have minimum 3 experiments beyond syllabus to incorporate more curiosity and hands-on with the subject.

- Many technical events/hackatons were organised like QUBYTES-2K20, VITA DAY 2020, Design Overflow, TECHNOWHIZZ, VZards 2020, KNOWBE4 and many more for students to actively participate and exhibit their talents.

- Very good exposure to open source tools.

Based on the Course Coordinator (Faculty) Feedback:

- Career based tracks for technical creativity and analytical thinking skills are provided to students to solve various software related issues. The sequence of core subjects learnt by the students are as follows
    - Third semester- Python, Data structures with C, Computer Organization
    - Fourth semester- OOP with Java, DBMS, Operating systems
    - Fifth semester- Data Science, Web internet programming, Design and analysis of algorithms, Mobile Application Development
    - Sixth semester- Advanced Java, Machine learning

- Mandatory to all the students to undergo at least 6 weeks of internship in their curriculum. Many final year projects are done in government agencies like DRDO, LRDE, HAL etc or in reputed IT companies like IBM, SAP, HCL etc.

- Project Quality is improved and indicated by following metrics

    - Regular Internal Assessments
    - External Examiner Evaluation
    - Plagiarism check
    - Student publications
    - Patents

- The course 'Internet of Things' is made as Professional Elective and 'Mobile Application Development' is considered as core subject to meet the industry requirements for placement activities.

- Course contents of subjects like Machine Learning and Data Science were overlapping. The contents are revised and reframed. 'Diversion and Reduction' topics are included in Data Science. Deep Learning concepts like CNN are included in Machine Learning subject.

- 'Jupiter' notebooks are used in Labs for Data Science/Machine learning hands-on sessions. More importance is given to statistics in data science and machine learning.

- Hands-on sessions/mini project are included for 'Mobile Application Development' than theory concept explanation. This will encourage students to develop applications based on their ideas and exhibit their innovations during placement activities.

- Student projects are uploaded to Git-hubs to exhibit their technical knowledge.

- Course contents of subjects like Software Engineering and Project Management, User interface design are revised and re-framed.

- Mini project component and technical seminar components are incorporated.

Based on the Student Feedback:

- Frequent industrial visits were organized with core companies like VMware, SAP, IBM, Wipro, Werner, and many more to provide good opportunities and understand the advanced research and development activities, core programming techniques, awareness about best practices and practical working environment. Domain specific industrial visits help students to create curiosity and exposure for industry readiness.

- Motivational talks on "Evolving as a healthy Engineer During Covid-19, Entrepreneurship and Management, How to Make your Career and Not Break it "are organized for students to strengthen their ideas and provide initiative paths.

- Seminars/ workshops on "How to prepare for placements, Crypto currencies and Smart contracts, VMware IT Forum 2019, Artificial Intelligence and Machine Learning Applications Using Python" and many more are organized.

- Quiz based on aptitude, pattern matching, hackathon, Brain Teaser is conducted to improvise student attention.

Stakeholders Feedback for the AY -2020-2021

Alumni feedback:

Based on the alumni feedback taken during the alumni meet and also whenever they visit the college, the following are the key takeaways consolidated

- More industrial visits can be conducted, which helps in the development of student's awareness on job functions in the industries, attitude to adapt industrial environment, proper practical and relevant knowledge, skills and competencies etc.
- To do more projects with respect to concepts taken from syllabus.
- To conduct workshop to know about Scopus, WoS, Citations.
- To conduct expert talk on latest technologies with respect to industries.
- To motivate the students to work more on lab experimentations, innovation and research, concept of paper writing and patenting.

Employer feedback:

- To improve the student skills more seminars to be conducted apart from project demonstration.
- Project based learning to be adopted not just in one subject.
- Encourage students to use more open source tools.
- More opportunity should be given to students to active participation in technical events and expose the student ability to industry experts.
- The curriculum can help in building entrepreneurial motives, which helps the students for starting their ventures.

Course Coordinators (Faculty) Feedback:

To enhance the curriculum and edify knowledge of the students on current modern prerequisites, the course coordinators proposed to fuse the gaps identified in the syllabus endorsed for the third, fourth, fifth, and sixth semester

- The COs and POs should be mapped accordingly and also included in the syllabus, lesson plan, assignments, question papers for the better understanding

- The contents should maintain Career based tracks, the student must be empowered with basic knowledge by including the very in-depth fundamental knowledge into the syllabus of respective subjects

Student Feedback:

- After receiving feedback from students, various expert talks can be provided insights on the recent advancements Artificial Intelligence, Neural Networks.
- As per the recommendations of the students, guest talk on entrepreneur can be conducted.
- Selection of electives by students based on their career path.
- Increase in the number of industrial visits can help students to identify their prospective area of work like software development, testing, design and automation and many more.
- Self study topics beyond syllabus can be listed and circulated with students.

Action Plan for 2021-22 based on 2020-21 feedback summary

Based on the Alumni feedback:

- Project based learning – Every semester students undergo mini projects based on their areas of interest. Final year students are insisted to full fledge focus on projects with trending topics of research meeting industry standards.
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- Quiz based on aptitude, pattern matching, hackathon, Brain Teaser is conducted to improvise student attention.
- Advanced concepts relevant to industry readiness and expectations are incorporated in the syllabus. Thereby Finite Automate and Formal Language course with JFLAP were included.
- Mapping of PO-12 also addressed in the syllabus as per the needs
- The syllabus should contain an integrated course were included in every semester.
- To have a balance with the Theory and Lab courses per semester, accordingly the subject were swapped from and to as needed, here in specific Computer network from 5th semester was pushed to sixth and JAVA and J2EE was moved to early semester.
- They should be consistence with name of the subject and the syllabus in it.
- Lastly, also recommended to refined and reframe few of the syllabus in the curriculum:

o Software Engineering and Best Practices

o Database Management Systems

o Operating Systems

o Design and Analysis of Algorithm

o Computer networks

o Web and internet programming

o JAVA and J2EE

o Dataware Housing and Data Mining

o File Structures

o Cryptography and Network Security

o Software Testing and Automation