1.1.1 - Curricula developed and implemented have relevance to the local, national, regional and global developmental needs which are reflected in Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) of the various Programmes offered by the Institution.

Response

Sl. No.	Description	Web Link
1	Academic Rules & Regulations and Syllabus	https://sriindu.ac.in/syllabus/
2	Programs offered by the Institution	https://sriindu.ac.in/courses-offered/
3	COs, POs, PSOs	https://sriindu.ac.in/wp-content/uploads/2021/01/POs-PSOs-COs-ALL-UG-PG-PROGRAMS.pdf

An effective implementation of Outcomes Based Education (OBE) ensures that our graduating engineers have all the 12 POs defined by NBA, and hence can compete on a global platform, and have expected global attributes. Specific to every program, we have 3-5 Program Educational Objectives (PEOs) that are measured through the performance of the alumni. The PEOs, PSOs and POs of each department is also displayed in website.
https://sriindu.ac.in/wp-content/uploads/2021/01/POs-PSOs-COs-ALL-UG-PG-PROGRAMS.pdf

The Autonomy of the institute also provides the academic flexibility for introducing the new Courses like Data Science, Artificial Intelligence, Machine Learning, internet of Things is included for graduate courses of Computer Science and Information Technology. Intra disciplinary courses and advanced subjects like Mechatronics and Additive Manufacturing have been introduced to students of Mechanical Engineering. Advanced courses like Green Buildings and Repair & Rehabilitation of Structures are introduced for Civil Engineering students.

To assess the knowledge of students, question papers for the continuous assessment tests and end semester examinations are prepared with desired Bloom's Taxonomy levels. To showcase the practical knowledge gained, students are made to complete 2 projects as part of the curriculum. Further, to enhance the practical knowledge of the students, SAP Lab, Research Centre, E-Yantra, 3D Printing, Calibration lab, Civil Computer Aided Design lab, S-Hub, Startup/Innovata Club, Incubation Centre etc., are established. These centres empower students and faculty to develop

skills necessary for more advanced study or research. Such practical exposure in line with the current needs of the society is provided to the students by incorporating such new lab courses into the curriculum.

The UG and PG courses have been developed to provide required inputs to aspiring entrepreneurs and provide extra support. The Entrepreneurship Development Cell (EDC) extends the need based programs by organizing workshops / seminars in association with IPR Chennai, MSME DI, Hyderabad.

Apart from the basic courses Guest Lectures and Workshops are also conducted for the improvement of knowledge and skill expertise. In addition to the technical courses related to each of the specific programme, few courses having social relevance satisfying the local needs and also some courses are also framed to integrate the national movements like Haritha Haram, Swatch Bharat, START UP INDIA , UJWAL BHARAT , Fit India, etc.,

Courses on Value Education / Yoga and Values for Holistic Development and Professional Ethics and Human Values / Universal Human Values in the curriculum ensure value-based education. To enhance the multidisciplinary skills, 15% to 25% of the curriculums of various programmes consist of Professional Electives and 3 to 4 Open Elective courses and online courses on NPTEL, SWAYAM etc.

Curriculum Design and Development Process

The Institute follows a well-planned academic calendar given by SICET autonomous. The program curriculum is approved by the board of studies expert members and Institute academic council committee. It provides perfect balance between the academic and nonacademic activities, teaching and examination schedule as well as other activities like sports festivals, intercollegiate programs and spiritual festivals.

In general, Curriculum maintains the balance in the composition of Basic Science, Engineering Sciences, Humanities and Social Sciences, Program Core, Program Electives, Open Electives, Projects Work and Employability Enhancement. The feedback from the alumni members, faculty, students, recruiters and industry experts were taken and the short-comings were identified. Analysis is done for attaining the PO/PSOs through the curriculum. Then the curriculum and syllabus are presented to the Board of studies expert members for approval. The final approval of curriculum and syllabus is done by Institute academic council committee, as and when required.

CBCS Curriculum was designed considering inputs from the AICTE model curriculum and the UGC Scheme of Choice Based Credit System. The Department has designed its curriculum to be updated based on the current needs of the industry. The revised curriculum helps and leads to incorporate contemporary requirements which relevance to the Local, Regional, National and Global Developmental needs.

The process flow for Curriculum Design is as follows:

Step 1: The management formulates institution's vision, mission as well as department's vision, mission. Based on the mission and vision of the Department & Institute & AICTE guidelines, PEOs, POs and PSOs is formulated.

Step 2: The Department Advisory Committee (DAC) is framing the structure of the curriculum based on guidelines of AICTE, UGC, State & National Perspective Plan, affiliated University and referring to the curriculum of premier institutions like IITs, NITs, IIITs, state, and foreign universities, etc. Suggestions from stakeholders and Board of Studies (BOS) members are also considered during this process.

Step 3: The course outcomes of all the courses are planned according to the POs and PSOs. The courses are framed with well proportionated curriculum components and each and every components will be given importance as per the department POs and PSOs attainments.

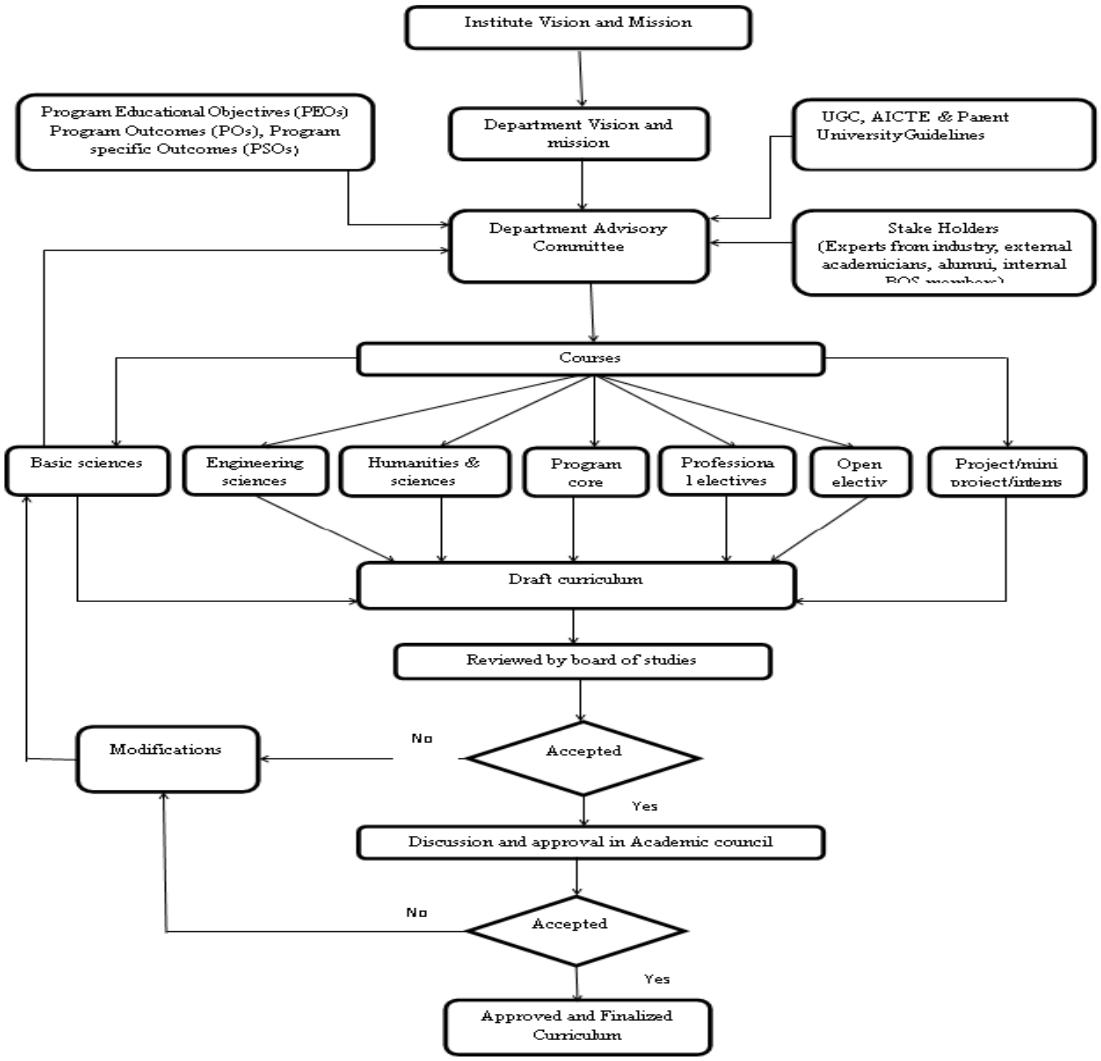
Step 4: The curriculum and syllabus are then submitted to the members of BOS in the BOS meeting. The recommendations and modifications suggested by BOS members are incorporated and forwarded to the Academic Council for ratification.

Step 5: After the approval from the Academic Council (AC), the curriculum and syllabus are finalized.

Step 6: The approved curriculum and syllabus are then submitted to the affiliated University through the Controller of Examinations office and is followed in the Department.

Step 7: If any suggestions given by the BOS, it has to be modified accordingly.

A similar procedure is followed for amendments in syllabi of various courses whenever required.



The process for designing the program curriculum(BOS)

Board of Studies Committee

The Board of Studies composition:

- Head of the Department as Chairperson
- A subject expert nominated by the JNTUH.
- Two Assistant Professors of the concerned Department.
- One subject expert appointed by the Principal.
- One expert from Industry.

Department of Computer Science and Engineering

BOS MEMBERS	NAME, DESIGNATION & INSTITUTE
Chairperson	Dr.S.R.Mugunthan, Professor / CSE, SICET
JNTUH Nominee	Dr.M.Arathi, JNTU Expert, JNTU HYDERABAD
Member	Dr.Sadasivam, Assistant Professor / CSE, SICET
Member	Dr.K.Sampath, Associate Professor / CSE, SICET
Subject expert	Dr.G.Narayana, Professor & HOD / CSE, SIIET
Industry expert	Mr.K.Sunil Kumar, Business & Integration Arch Associate Manager, ACCENTURE

Functions of the Board of Studies:

- Detailed syllabi of different courses of each department shall be prepared by the Board of Studies and submitted to the Academic Council for approval and subsequent publication.
- Contents of the syllabi shall be revised and updated by the Board or Studies from time to time and be submitted to the Academic Council for approval.
- To advise on all matters relating to their respective subjects referred to them by the faculty or by the council or Academic Council.
- To recommend books and reading materials for subjects concerned.
- The meetings of the Board of Studies shall be held at least once in a year.

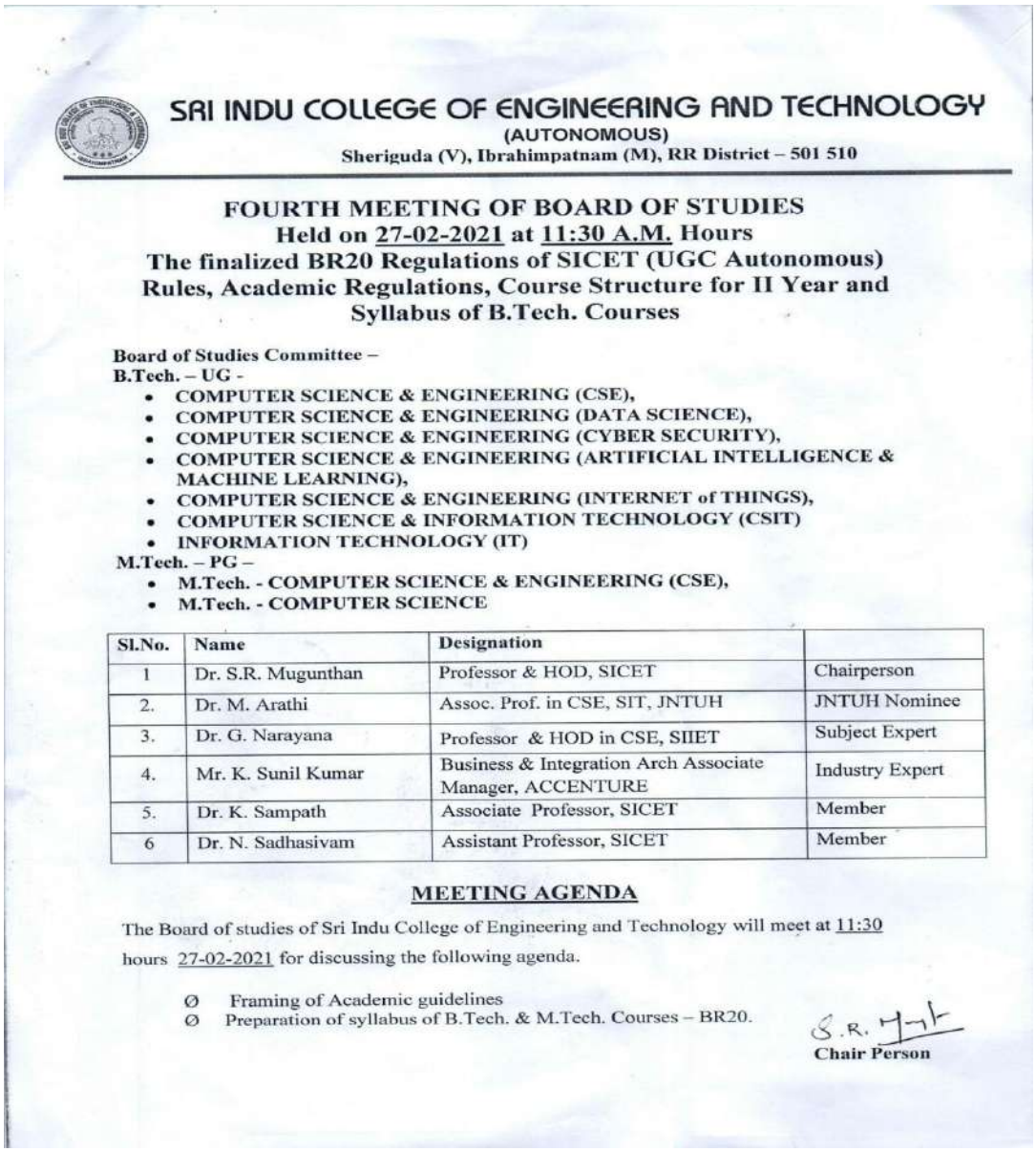
Procedure for framing the Syllabi:

- The AICTE model curriculum has been taken as base reference for framing the syllabi.
- The draft syllabi will be framed by senior faculty members in consultation with HOD of the concerned Department, with a maximum of 20% deviation from JNTUH syllabi.
- At some instances, the syllabi may be framed without any deviation from JNTUH syllabi.
- A Board of Studies (BOS) meeting will be arranged by the Principal for every two years.
- In the presence of all BOS members, the draft syllabus will be discussed. Necessary modifications in theory and labs as suggested by the BOS members will be implemented on consensus basis.

- After making modifications, the updated copy of the syllabi will be submitted to the Academic Council for the approval. Once the syllabus is approved, it will be sent for

the publication. The printed copies will be distributed to the students, parents and all stake holders.

- The College will upload the syllabus on the website.



SRI INDU COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)
Sheriguda (V), Ibrahimpatnam (M), RR District – 501 510

FOURTH MEETING OF BOARD OF STUDIES
Held on 27-02-2021 at 11:30 A.M. Hours
The finalized BR20 Regulations of SICET (UGC Autonomous) Rules, Academic Regulations, Course Structure for II Year and Syllabus of B.Tech. Courses

Board of Studies Committee –
B.Tech. – UG -

- **COMPUTER SCIENCE & ENGINEERING (CSE),**
- **COMPUTER SCIENCE & ENGINEERING (DATA SCIENCE),**
- **COMPUTER SCIENCE & ENGINEERING (CYBER SECURITY),**
- **COMPUTER SCIENCE & ENGINEERING (ARTIFICIAL INTELLIGENCE & MACHINE LEARNING),**
- **COMPUTER SCIENCE & ENGINEERING (INTERNET of THINGS),**
- **COMPUTER SCIENCE & INFORMATION TECHNOLOGY (CSIT)**
- **INFORMATION TECHNOLOGY (IT)**

M.Tech. – PG –

- **M.Tech. - COMPUTER SCIENCE & ENGINEERING (CSE),**
- **M.Tech. - COMPUTER SCIENCE**

Sl.No.	Name	Designation	
1	Dr. S.R. Mugunthan	Professor & HOD, SICET	Chairperson
2.	Dr. M. Arathi	Assoc. Prof. in CSE, SIT, JNTUH	JNTUH Nominee
3.	Dr. G. Narayana	Professor & HOD in CSE, SIIET	Subject Expert
4.	Mr. K. Sunil Kumar	Business & Integration Arch Associate Manager, ACCENTURE	Industry Expert
5.	Dr. K. Sampath	Associate Professor, SICET	Member
6	Dr. N. Sadhasivam	Assistant Professor, SICET	Member

MEETING AGENDA

The Board of studies of Sri Indu College of Engineering and Technology will meet at 11:30 hours 27-02-2021 for discussing the following agenda.

Ø Framing of Academic guidelines
Ø Preparation of syllabus of B.Tech. & M.Tech. Courses – BR20.

S.R.
Chair Person

INTELLIGENCE & MACHINE LEARNING), CSE(INTERNET of THINGS), COMPUTER SCIENCE & INFORMATION TECHNOLOGY(CSIT) & INFORMATION TECHNOLOGY- PG – M.Tech. – CSE & CS He informed the members that due to the excellent performance of the college in the previous years, UGC conferred Autonomous status on this college from the academic year 2014-2015.

The Chair Person has explained that the fourth meeting of Board of Studies is convened to approve and finalize BR20 Regulations of SICET (UGC Autonomous) in which all the Rules, Academic Regulations, Course Structure for II Year of UG Courses (UG – B.Tech. - CSE, CSE(DATA SCIENCE),CSE(CYBER SECURITY), CSE(ARTIFICIAL INTELLIGENCE & MACHINE LEARNING), CSE(INTERNET of THINGS), COMPUTER SCIENCE & INFORMATION TECHNOLOGY & INFORMATION TECHNOLOGY) & PG Courses – (M.Tech. – CSE & CS) along with the Syllabus of B.Tech. Courses & BR20 Regulations - Rules, Academic Regulations, Course Structure & Syllabus - M.Tech. Courses. He said that the draft academic regulations, schemes of instruction and syllabi were prepared by the HODs in consultation with their senior staff members, as per the guidelines set out by JNTUH for consideration of the members of the BOS. He urged the members to deliberate on these draft proposals and approve them with corrections, modifications and also placed these documents before the members..

As per the suggestions after detailed disscusion of BOS Committee Members, necessary corrections were incorporated and the same was approved by the Committee Members.

The Chair Person, BOS, thanked all the members for being present, and for their co-operation in approving all the items of the Agenda.

CHAIR PERSON
(Dr. S.R. Mugunthan)

JNTUH NOMINEE
(Dr. M. Arathi)

SUBJECT EXPERT
(Dr. G. Narayana)

INDUSTRY EXPERT
(Mr. K. Sunil Kumar)

MEMBER
(Dr. K. Sampath)

MEMBER
(Dr. N. Sadhasivam)

Sample Vision, Mission, PEOs, PSOs statements of CSE Department

VISION of the Department
To be a technologically adaptive centre for computing by grooming the students as top notch professionals.

MISSION of the Department
DM_1: To offer quality education in computing.
DM_2: To provide an environment that enables overall development of all the stakeholders.
DM_3: To impart training on emerging technologies.
DM_4: To encourage participation of stakeholders in research and development.

Program Educational Objectives (PEOs)
PEO1: Higher Studies: Graduate with an ability to pursue higher studies and get employment in reputed institutions and organizations.
PEO2: Domain Knowledge: Graduate with an ability to design and develop a product.
PEO3: Professional Career: Graduate with excellence by multidisciplinary approach to achieve successful professional career.
PEO4: Life Long Learning: Graduate with an ability to learn advanced skills to face professional competence through lifelong learning.

Consistency of PEOs with Mission of the Department

PEO Statements	M1	M2	M3	M4
PEO1: Graduate with an ability to pursue higher studies and get employment in reputed institutions and organizations.	3	3	2	2
PEO2: Graduate with an ability to design and develop a product	3	3	3	2
PEO3: Graduate with excellence by multidisciplinary approach to achieve successful professional career.	3	2	3	3
PEO4: Graduate with an ability to learn advanced skills to face professional competence through lifelong learning.	3	2	3	2

Program Outcomes (POs):

PO1	**Engineering Knowledge:** To acquire firm knowledge of Mathematics, Science, Engineering & Computer Science.
PO2	**Problem Analysis:** To identify, formulate & analyze requirements of IT Applications.
PO3	**Design & Development Solutions:** To effectively apply engineering principles to the design of computer & IT based Systems.
PO4	**Investigation of complex problems:** To synthesize research based Knowledge in the design of programming and analysis of data for providing valid conclusions to complex problems.
PO5	**Modern Tool Usage:** To posses skills for creating and selecting modern software development tools.
PO6	**Engineering & Society:** To apply conceptual knowledge relevant to professional engineering practices in societal, health, safety, legal and cultural issues and their consequences.
PO7	**Environment & Sustainability:** To understand the impact of engineering solutions in social and economic environments and work towards sustainable development.
PO8	**Ethics:** To understand contemporary legal, social & ethical issues in computing.
PO9	**Individual & Team work:** To effectively work as individual and adapt to a team environment.
PO10	**Communication:** To communicate precisely and effectively both in oral and written in all engineering activities.
PO11	**Project management & finance:** To apply engineering and management principles for managing and leading economically feasible projects in multidisciplinary environments as an individual and team member.
PO12	**Life Long Learning:** To develop confidence to engage in independent & lifelong learning in the context of Technological changes.

Program Specific Outcomes (PSOs):

PSO1	To develop software projects using standard practices and suitable programming environment.
PSO2	To identify, formulate and solve the real life problems faced in the society, industry and other areas by applying the skills of the programming languages, networks and databases learned.
PSO3	To apply computer science knowledge in exploring and adopting latest technologies in various inter-disciplinary research activities.

(PEOs and PSOs Mapping Table)

POs	PEO1	PEO2	PEO3	PEO4
PO1: **Engineering Knowledge**	✓	✓	✓	
PO2: **Problem Analysis**		✓		
PO3: **Design / development of Solutions**	✓	✓		✓
PO4: **Conduct investigations of complexproblems**		✓		
PO5: **Modern tool usage**	✓	✓		✓
PO6: **The engineer and Society**			✓	
PO7: **Environment and sustainability**			✓	✓
PO8: **Ethics**		✓		
PO9: **Individual and team work**		✓		
PO10: **Communication**			✓	✓
PO11: **Project management and finance**	✓			✓
PO12: **Life-long learning**	✓		✓	✓
PSO1: **Technical and research domains**		✓		
PSO2: **Design and develop a prototype system**	✓	✓		
PSO3: **industry ready engineers**	✓	✓	✓	✓

PEOs / **POs**	**PEO1**	**PEO2**	**PEO3**	**PEO4**
PO1	73.0	73.0	73.0	-
PO2	-	66.7	-	-
PO3	65.7	65.7	-	65.7
PO4	-	61.3	-	-
PO5	68.0	68.0	-	68.0
PO6	-	-	25.3	-
PO7	-	-	29.7	29.7
PO8	-	88.7	-	-
PO9	-	32.0	-	-
PO10	-	-	29.0	29.0
PO11	29.7	-	-	29.7
PO12	27.0	-	27.0	27.0
PSO1	-	33.3	-	-
PSO2	35.7	35.7	-	-
PSO3	23.3	23.3	23.3	23.3
AVG	46.05	60.85	26.86	38.91
AVG (PEOs) (%)	**43.16**			

Mapping of Program Outcomes (POs) of the concerned PEOs by using average of directattainments of POs obtained for all Courses (2017-2021)

% AVERAGE ACHIEVEMENT OF PEOs = 43.16%

	PEO1	PEO2	PEO3	PEO4
Program Outcomes of the concerned PEO (%)	**46.05**	**60.85**	**26.86**	**38.91**

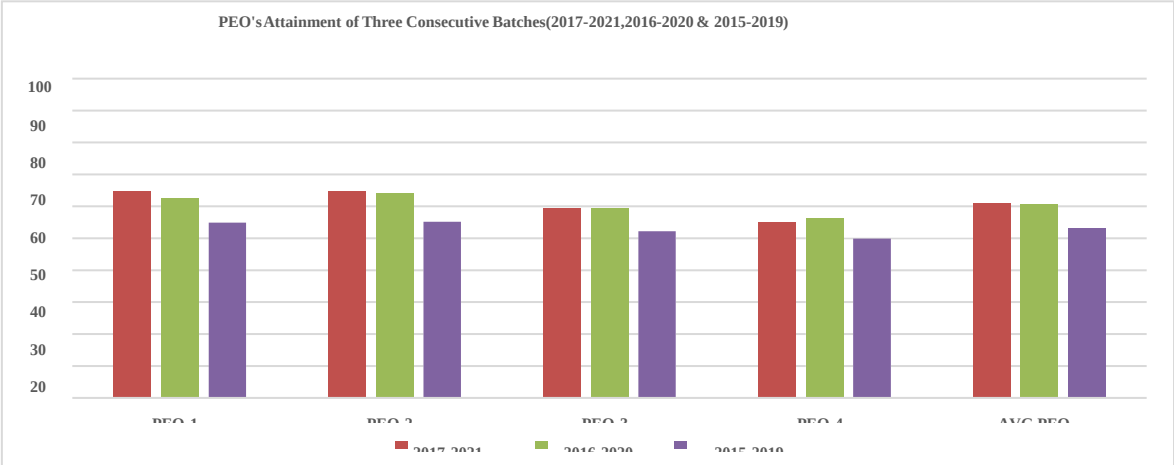
S. No	Name of the Evaluation Criterion	PEO-1	PEO-2	PEO-3	PEO-4
1.	Program Outcomes of the Concerned PEO (55%)	26.22	27.83	22.33	20.05
2.	Placements/ Higher Studies (25%)	22.05	22.05	22.05	22.05
3.	Graduate Exit Survey (10%)	7.30	8.10	7.78	6.10
4.	Alumni Survey (10%)	9.16	6.83	7.33	6.83
Total		**64.73**	**64.81**	**59.49**	**55.03**
Whether Expected level of PEO is Achieved?		**Yes**	**Yes**	**Yes**	**Yes**
AVG PEO		**61.02**			
Achievement (as per rubric set)		**Very Good**			

Attainment of PEO's for 2017-21 Batch

The comparison of PEOs attainment values with previous three-year Graduation batches is shown in below

Graduation Batch	PEO-1	PEO-2	PEO-3	PEO-4	AVG PEO	Whether Expected level of PEO is Achieved?
2017-2021	**64.73**	**64.81**	**59.49**	**55.03**	**61.02**	**Yes**
2016-2020	**62.46**	**64.06**	**59.24**	**56.12**	**60.47**	**Yes**
2015-2019	**54.93**	**55.17**	**52.21**	**49.87**	**53**	**Yes**

Last Three Years PEO's Attainments



SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

(An Autonomous Institution under UGC, New Delhi)

B.Tech. - II Year – I Semester

L	T	P	C
3	0	0	3

(R20CSE2102) Computer Organization & Architecture

Course Objectives:

- The purpose of the course is to introduce principles of computer organization and the basic architectural concepts.
- It begins with basic organization, design, and programming of a simple digital computer and introduces simple register transfer language to specify various computer operations.
- Topics include computer arithmetic, instruction set design, microprogrammed control unit, pipelining and vector processing, memory organization and I/O systems, and multiprocessors

UNIT - I

Digital Computers: Introduction, Block diagram of Digital Computer, Definition of Computer Organization, Computer Design and Computer Architecture.

Register Transfer Language and Micro operations: Register Transfer language, Register Transfer, Bus and memory transfers, Arithmetic Micro operations, logic micro operations, shift micro operations, Arithmetic logic shift unit.

Basic Computer Organization and Design: Instruction codes, Computer Registers Computer instructions, Timing and Control, Instruction cycle, Memory Reference Instructions, Input – Output and Interrupt.

UNIT - II

Microprogrammed Control: Control memory, Address sequencing, micro program example, design of control unit.

Central Processing Unit: General Register Organization, Instruction Formats, Addressing modes, Data Transfer and Manipulation, Program Control.

UNIT - III

Data Representation: Data types, Complements, Fixed Point Representation, Floating Point Representation.

Computer Arithmetic: Addition and subtraction, multiplication Algorithms, Division Algorithms, Floating – point Arithmetic operations. Decimal Arithmetic unit, Decimal Arithmetic operations.

UNIT - IV

Input-Output Organization: Input-Output Interface, Asynchronous data transfer, Modes of Transfer, Priority Interrupt Direct memory Access.

Memory Organization: Memory Hierarchy, Main Memory, Auxiliary memory, Associate Memory, Cache Memory.

UNIT - V

Reduced Instruction Set Computer: CISC Characteristics, RISC Characteristics.

Pipeline and Vector Processing: Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction

Pipeline, RISC Pipeline, Vector Processing, Array Processor.

Multi Processors: Characteristics of Multiprocessors, Interconnection Structures, Interprocessor arbitration, Interprocessor communication and synchronization, Cache Coherence.

TEXT BOOK:

1. Computer System Architecture – M. Moris Mano, Third Edition, Pearson/PHI.

REFERENCE BOOKS:

1. Computer Organization – Car Hamacher, Zvonks Vranesic, Safea Zaky, Vth Edition, McGraw Hill.
2. Computer Organization and Architecture – William Stallings Sixth Edition, Pearson/PHI.
3. Structured Computer Organization – Andrew S. Tanenbaum, 4th Edition, PHI/Pearson.

Mapping Table:

Upon Completion of the course, the students will be able to:

Course Name	Course outcomes
C214.1	Describe the basics of instructions sets and their impact on processor design. (K3-Apply)
C214.2	Demonstrate an understanding of the design of the functional units of a digital computer system. (K3-Apply)
C214.3	Evaluate cost performance and design trade-offs in designing and constructing a computer processor Including memory. (K5-Evaluate)
C214.4	Design a pipeline for consistent execution of instructions with minimum hazards. (K6-Create)
C214.5	Recognize and manipulate representations of numbers stored in digital computers.(K4-Analyze)
C214.6	Demonstrate the Characteristics of Multiprocessors.(K3-Apply)

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
C214.1	3	-	1	-	2	-	-	-	1	-	-	-	2	-	-
C214.2	3	-	2	-	3	-	-	1	-	-	-	-	-	1	2
C214.3	1	1	-	3	3	-	-	-	-	1	-	-	1	1	-
C214.4	-	-	1	-	2	-	-	-	2	-	-	-	-	3	-
C214.5	1	3	3	1	-	-	-	-	-	-	1	-	2	1	-
C214.6	3	-	-	1	3	-	-	1	-	-	-	-	-	-	2
C214	2.2	2	1.75	1.67	2.6	-	-	1	1.5	1	1	-	1.67	1.5	2

Process of Program Curriculum

Department of Computer Science and Engineering follows a Systematic process in the design and development of the curriculum, which involves high level of participation, discussion involving all the stake holders contributing to the introduction, innovation and revision of the syllabus. As advised by the committee, review meetings were conducted frequently in terms of Program Assessment Committee (PAC), Department Advisory Committee(DAC), BOS, Academic Council and Governing Body. The composition of various committees are with the participation of industry experts and eminent persons from the institutes of national importance.

Program Curriculum Committees and frequencies

Academic Year	S.No	Committees	Frequencies occurred
2022 – 23	1	Governing Body	1
	2	Academic Council	1
	3	Board of Studies	1
	4	Department Advisory Committee	1
	5	Program Assessment Committee	2
	6	Research & Development Advisory Board	2
2021 – 22	1	Governing Body	1
	2	Academic Council	1
	3	Board of Studies	1
	4	Department Advisory Committee	1
	5	Program Assessment Committee	2
	6	Research & Development Advisory Board	2
2020 – 21	1	Governing Body	1
	2	Academic Council	1
	3	Board of Studies	1
	4	Department Advisory Committee	1
	5	Program Assessment Committee	2
	6	Research & Development Advisory Board	1
2019 – 20	1	Governing Body	1
	2	Academic Council	1
	3	Board of Studies	1
	4	Department Advisory Committee	1
	5	Program Assessment Committee	2
	6	Research & Development Advisory Board	1

Involvement of External Members and Industry Experts

S. No	Type of Meeting	Name of the Resource Person	Role
1	Governing Body	Dr. R. Dhansekaran PhD, Gurunanak Institute of Technology, Hyderabad.	Member / Academician
2	Academic Council	Dr. A. Govardhan, Professor, JNTUH – CEH.	Rector, JNTUH
		Dr. Vijayakumar Reddy, Professor / JNTUH – CEH.	JNTUH Nominee
		Dr. Markandeya, Professor / JNTUH-CEM	JNTUH Nominee
		Dr. Dashrath Ram Yadav, Scientist – G, DRDO, Hyderabad	Industry Expert
3	Board of Studies	Dr. G. Vijaya Kumari, Professor / JNTUHCEH	JNTUH Nominee
		Dr.M. Arathi, JNTU Expert, JNTU Hyderabad	JNTUH Nominee
		Dr.G.Narayana,Professor & HOD/CSE, SIIET	Member / Academician
		Mr.K.Sunil Kumar, Business & Integration Arch Associate Manager, Accenture	Member / Industry
		Dr.K.V.G.Rao, Professor / CSE, GNITSW	Member / Academician
		Mr.Venkat Reddy, Associate Manager , Microsoft	Member / Industry
4	Department Advisory Committee	Dr. R. Dhansekaran PhD, Gurunanak Institute of Technology, Hyderabad.	Member / Academician
		Mr. M.Bhaskaran, Team Lead, Wipro Technologies Ltd.,Bengaluru.	Member / Industry
		Mr.M. Dhandapani, Vice President (Finance), Wells-Fargo India Ltd., Bengaluru.	Member / Industry
		Mr. Pavan Kumar, Softfware Engineer, Tata Consultancy Services, Hyderabad	Member / Industry & Alumni
5	Program Assessment Committee	Dr.S.R.Mugunthan	Professor & Head
		Dr.T.Kumaresan	Professor
		Dr.N.Sadhasivam	NBA Coordinator
		Dr.N.C.Senthilkumar	IQAC Coordinator
		Dr.T.Charan Singh	Associate Professor
		Dr.P.Subramanian	Professor
		Dr.K.Gunasekaran	Associate Professor
		Dr.K.Sampath	Associate Professor
		Dr.S.Vijayarangam	Associate Professor
		Mr.K.Anjanayalu	Associate Professor
		Dr.G.V.N.Prasad	Professor & Head
		Dr.K.Sadasiva Rao	Professor
		Dr.T.Parameswaran	Professor
6	Research & Development Advisory Board	Dr.S.R.Mugunthan	Professor & Head
		Dr. Dashrath Ram Yadav, Scientist – G,DRDO, Hyd.	Industry Expert
		Dr.T.Kumaresan	Professor
		Dr.N.Sadhasivam	Professor
		Dr.T.Charan Singh	Associate Professor
		Dr.K.Gunasekaran	Associate Professor
		Dr.K.Sampath	Associate Professor
		Dr.S.Vijayarangam	Associate Professor

The circulars and minutes of meetings are attached below.

SRIINDU COLLEGE OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Date: 21.03.2022

PROGRAM ASSESSMENT COMMITTEE CIRCULAR

The following faculty members are deputed as review committee for assessing and reforming the PEOs, PSOs based on the attainments and monitoring periodical review of POs & PSOs.

S.No	Faculty Name	Designation	Signature
1	Dr.S.R.Mugunthan	Professor& Head	
2	Dr.S.Vijayarangam	Professor	
3	Dr.K.Sampath	Associate Professor	
4	Dr.N.C.Senthilkumar	IQAC Coordinator	
5	Dr.C.Kotteswaran	Associate professor	

Those faculty members are requested to have a meeting on 25.03.22 for deciding curriculum and syllabus of III-I and III-II for BR-20 regulations and evaluating the PEOs and PSOs for PO attainment and periodical review for the current academic year 2021-22 and the same should be reviewed during the advisory committee meeting for further refinement then will be presented to principal for final approval.

HOD/CSE

SRI INDU COLLEGE OF ENGG. & TECH. Sheriguda (V) Ibrahimpatnam (M) R. R. Dist.-501510

PRINCIPAL

SRIINDU COLLEGE OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Date: 08.11.2021.

PROGRAM ASSESSMENT COMMITTEE CIRCULAR

The following faculty members are deputed as Assessment Committee members to derive department vision & mission for assessing and forming the PEOs, PSOs and to review how the evolution of program curriculum considering about POs and PSOsbased on the process and progress of the depart.

S.No	Faculty Name	Designation	Signature
1	Dr.S.R.Mugunthan	Prof.&Head	
2	Dr.N.Sadhasivam	NBA Coordinator	
3	Dr.L.Kartheesan	Professor	
4	Dr.K.Gunasekaran	Associate Professor	
5	Dr.J.S.AdelineJohnsana	Associate Professor	
6	Dr.N.C.Sendhilkumar	IQAC Coordinator	

These faculty members are requested to have a meeting on 15.11.2021.The Agenda for the meeting is given below:

(i) Evaluating the PEOs and PSOs for PO attainment for the current academic year 2020-21.

(ii) Derive PEOs and PSOs of the department that can be in lined with the institutionalvision and mission and also this could be reviewed during the advisory committee meeting for further refinement then will be presented to the Principal for final approval.

HOD/CSE

SRIINDU COLLEGE OF ENGG. & TECH. Sheriguda (V), Ibrahimpatnam (M), R. R. Dist. 501510

PRINCIPAL

SRI INDU COLLEGE OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Date: 14.08.2021

PROGRAM ASSESSMENT COMMITTEE CIRCULAR

The following faculty members are deputed as review committee for assessing and reforming the PEOs, PSOs based on the attainments and monitoring periodical review of POs & PSOs.

S.No	Faculty Name	Designation	Signature
1	Dr.S.R.Mugunthan	Professor & Head	
2	Dr.T.Kumaresan	Professor	
3	Dr.N.Sadhasivam	NBA Coordinator	
4	Dr.N.C.Senthilkumar	IQAC Coordinator	
5	Dr.T.Charan Singh	Associate professor	

Those faculty members are requested to have a meeting on 23.08.21 for evaluating the PEOs and PSOs for PO attainment and periodical review for the current academic year 2020-21 and the same should be reviewed during the advisory committee meeting for further refinement then will be presented to principal for final approval.

HOD/CSE

PRINCIPAL

SRI INDU COLLEGE OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

PROGRAM ASSESSMENT COMMITTEE - MINUTES OF MEETING

Date: 30.03.2020

1. Warmly, welcomed the Review committee members mutually each other.
2. As per the comments from NBA Team, the department mission (DM: 3) has been changed from **"To impart training on emerging technologies like Data Analytics, Artificial Intelligence and Internet of Things"** to **"To impart training on Cloud Computing and Data Science".**
3. It has been discussed about the conduction of classes in online shortly and decided to use Zoom as the online platform for conduction of classes over other platforms.
4. Review of previous semester progress has been discussed in detailed and the overall pass percentage need to be improved for that give more assignments, Seminar practices and test.
5. The result of Mid-I has to be given more importance like university examination. Internal Mark system is also discussed.
6. Failures in the individual subjects are need to be monitored continuously and proper guidance should be given by the respective subject handlers and submit proper corrective measures to HOD.
7. Program outcomes, Program Specific Outcomes of previous semester and program objective of current semester is discussed.
    a. Evaluated based on results
    b. Evaluated based on Course Feedback
    c. Collected Feedback from various stake holders for review.
8. After reviewing the progress of the department, the committee has framed PEOs and PSOs with the measurable parameters. The tentative PEOs & PSOs copy has been forwarded to the advisory committee for further evaluation.
9. And the same was accepted by the advisory committee and it has been forwarded to the principal for final approval.
10. After the detailed study made by the principal that he has suggested to incorporate action plan for the department vision and mission statements for achieving POs.
11. Immediately, the faculty committee has taken necessary steps to formulate the action plan. Finally, reformed copy was forwarded to principal for approval and got verified for further progress.

HOD / CSE

PRINCIPAL

SRI INDU COLLEGE OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Date: 26.03.2020

PROGRAM ASSESSMENT COMMITTEE CIRCULAR

The following faculty members are deputed as Assessment committee to derive department vision & mission for assessing and forming the PEOs, PSOs based on the process and progress of the depart.

S.No	Faculty Name	Designation	Signature
1	Dr.G.V.N.Prasad	Prof. & Head	
2	Dr.N.Sadhasivam	NBA Coordinator	
3	Dr.S.R.Mugunthan	Professor	
4	Dr.K.Sadasiva Rao	Professor	
5	Dr.T.Parameswaran	Associate Professor	
6	Dr.N.C.Sendhilkumar	IQAC Coordinator	

Those faculty members are requested to have a meeting on 30.03.2020. The Agenda for the meeting is given below:

- To discuss about conducting online classes and using proper online Tools.
- To make changes in the Department Mission Statements for evaluating the PEOs and PSOs for PO attainment for the current academic year 2019- 2020.
- To derive PEOs and PSOs of the department that can be in lined with the institutional vision and mission and also this could be reviewed during the advisory committee meeting for further refinement then will be presented to principal for final approval.

HOD/CSE

PRINCIPAL

SRIINDU COLLEGE OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Date:02 .11.2020.

PROGRAM ASSESSMENT COMMITTEE CIRCULAR

The following faculty members are deputed as Assessment committee members to derive department vision & mission for assessing and forming the PEOs, PSOs and POs based on the process and progress of the depart.

S.No	Faculty Name	Designation	Signature
1	Dr.S.R.Mugunthan	Prof.&Head	
2	Dr.N.Sadhasivam	NBA Coordinator	
3	Dr.P.Subramanan	Professor	
4	Dr.S.Vijayarangam	Associate Professor	
5	Mr.K.Anjanayalu	Associate Professor	
6	Dr.N.C.Sendhilkumar	IQAC Coordinator	

These faculty members are requested to have a meeting on 07.11.2020.The Agenda for the meeting is given below:

- To discuss about utilization of newly established labs of CSE Department for evaluating the PEOs and PSOs for PO attainment for the current academic year 2020- 2021.
- To derive PEOs and PSOs of the department that can be in lined with the institutional vision and mission and also this could be reviewed during the advisory committee meeting for further refinement then will be presented to principal for final approval.

HOD/CSE 2/11/20

SRI INDU COLLEGE OF ENGG. & TECH.

PRINCIPAL

SRI INDU COLLEGE OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

PROGRAM ASSESSMENT COMMITTEE -MINUTES OF MEETING

Date: 23.08.2021

1. Dr.S.R.Mugunthan welcomed to the Review committee members.
2. Review of previous semester progress has been discussed in detail and Dr.N.Sadhasivam suggested that the overall pass percentage needs to be improved for which more assignments, seminar practices and test may be encouraged.
3. The result of Mid I for II and III Year students and also Mid-I & Mid-II for IV Year students were discussed.
4. Failures in the individual subjects are need to be monitored continuously and proper guidance should be given by the respective subject handlers and proper corrective actions to be submitted to the HOD.
5. Program outcomes, Program Specific Outcomes of previous semester and program objective of current semester were discussed. The points were as follows.
    a. Evaluated based on results
    b. Evaluated based on Course Feedback
    c. Collected Feedback from various stake holders for review.
6. After reviewing the progress of PO attainments in all aspects, the committee decided to forward the PEOs, PSOs for the next immediate academic year to the advisory committee.
7. And the same was accepted by the advisory committee and got approval from the Principal for display and follow up actions.

HOD / CSE

PRINCIPAL

SRI INDU COLLEGE OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

PROGRAM ASSESSMENT COMMITTEE - MINUTES OF MEETING

Date: 07.11.2020

1. Warmly, welcomed the Review committee members mutually each other.
2. Dr.S.R.Mugunthan, Prof. and Head was discussing about the utilization of newly established laboratories and insisted to establish the Centre of Excellence like Redhat, CISCO and AWS for effective utilization of laboratories.
3. Review of previous semester progress has been discussed in detailed and the overall pass percentage need to be improved for that give more assignments, Seminar practices and test.
4. The result of Mid-I, Mid-II has to be given more importance like university examination. Internal Mark system is also discussed.
5. Failures in the individual subjects are need to be monitored continuously and proper guidance should be given by the respective subject handlers and submit proper corrective measures to HOD.
6. Program outcomes, Program Specific Outcomes of previous semester and program objective of current semester is discussed.
    a. Evaluated based on results
    b. Evaluated based on Course Feedback
    c. Collected Feedback from various stake holders for review.
7. After reviewing the progress of the department, the committee has framed PEOs and PSOs with the measurable parameters. The tentative PEOs & PSOs copy has been forwarded to the advisory committee for further evaluation.
8. And the same was accepted by the advisory committee and it has been forwarded to the principal for final approval.
9. After the detailed study made by the principal that he has suggested to incorporate action plan for the department vision and mission statements for achieving POs.
10. Immediately, the faculty committee has taken necessary steps to formulate the action plan.
11. Finally, reformed copy was forwarded to principal for approval and got verified for further progress.

HOD / CSE

SRI INDU COLLEGE OF ENG & TECH.

PRINCIPAL

SRIINDU COLLEGE OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

MINUTES OF THIRD MEETING OF ADVISORY COMMITTEE

Date	16.01.2021	No:02
Academic Year	2019-2020	

The third meeting of Advisory committee of Srilndu College of Engineering and Technology, Department of Computer Science and Engineering was held on 16.01.2021at 10.30AMthroughZoom Online mode. Dr. G.Suresh, Principal was the Chairperson who presided over the meeting.

The following members were present and had discussed below mentioned agenda points:

Sl.No	Executive Members	Designation &Address
1	Dr.G.Suresh,Ph.D.,	Principal Sri Indu College of Engineering and Technology.
2	Dr.S.R.Mugunthan,Ph.D.,	Professor andHead, Department of CSE, Sri Indu College of Engineering and Technology.
3	Dr.R.Dhanasekaran,Ph.D.,	Dean / R & D, Gurunanak Institute of Technology, Hyderabad-501510. (Academician from Other Institute)
4	Mr.M.Bhaskaran,	Team Lead,Wipro Technologies Ltd., Bengaluru. (Industry Member)
5	Mr.M.Dhandapani	Vice President (Finance), Wells-Fargo India Ltd., Bengaluru. (Industry Member)
5	Mr.Pavan Kumar	Software Engineer, TCS,Hyderabad. (Alumni and Industry Member)
6	Senior Faculty members of the department	

SRI INDU COLLEGE OF ENGINEERING AND TECHNOLOGY, HYDERABAD
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ADVISORY COMMITTEE MEETING

Name of the Department : CSE
Academic Year : 2020-21 **Date and Time: 16-01-2021, 10.30AM**
Venue : Zoom Online

Agenda:

1. Review of previous AY: 2019-2020 progress
2. Redefining Of Existing Mission.
3. Aligning of PEO's to the Mission Statements.
4. Defining Program Specific Outcomes and Review of POs and PSOs.
5. Deriving Strategies to improveacademic Performance for the AY: 2020-2021
6. Analysis and Identification of curriculum gap
7. Nature of technical eventsand other activities required to bridge the gap
8. Placement Activities
9. Quality Improvement & Enhancing the Relevance of Final Year Projects.
10. Standard Practices & Administrative Systems for Attainment of ProgramEducational Objectives.
11. Laboratory Tie-Ups with Industries.
12. Status of Online class Activities.
13. Corrective Measures

Name and Address of the Member :

1. **Dr.R.Dhanasekaran,Ph.D.,** **Academician**
   Dean / R & D,
   Gurunanak Institute of Technology,
   Hyderabad-501510

2. **Mr.M.Bhaskaran** **Industry Member**
   Team Lead,
   Wipro Technologies Ltd.,
   Bengaluru.

3. **Mr.M.Dhandapani,** **Industry Member**
   Vice President (Finance),
   Wells-Fargo India Ltd.,
   Bengaluru.

4. **Mr.Pavan Kumar** **Alumni &Industry Member**
   Software Engineer,
   TCS,Hyderabad.

All the Executive members are cordially invited for advisory committee meeting.

Signature of HOD

Signature of Principal

Copy to:
1. Chairman,
2. IQAC
3. Notice Board

Agenda

1. Review of previous AY: 2019-2020 progress.
2. Redefining of Existing Mission.
3. Aligning of PEO's to the Mission Statements.
4. Defining Program Specific Outcomes and Review of POs and PSOs.
5. Deriving Strategies to improve academic Performance for the AY: 2020-2021
6. Analysis and Identification of curriculum gap
7. Nature of technical events and other activities required to bridge the gap
8. Placement Activities
9. Quality Improvement & Enhancing the Relevance of Final Year Projects.
10. Standard Practices & Administrative Systems for Attainment of ProgramEducational Objectives.
11. Laboratory Tie-Ups with Industries.
12. Status of Online class Activities.
13. Corrective Measures.

Advisory committee Meeting began with welcome address by Dr.G.Suresh/Principal,SICET. Dr.S.R.Mugunthan, Professor & Head/CSE, presented the 2019-2020 academic year report followed by agenda points were taken one by one.

S.No	Agenda Points	Discussion
1	Review of AY:2019-2020 Progress	Committee members were asked us to have a presentation on department activities and academics. They were suggested us to set strong short term and long term goals, that should be achievable and measurable.
2	Redefining of Existing Mission	Members were explained about the previous NBA visit comments about the Vision and Mission of the Department and decided to change DM3,**"To impart training on emerging Technologies like Data Analytics, Artificial Intelligence and Internet of Things"**to **"To impart training on Cloud Computing and Data Science".**
3	Aligning of PEO's to the Mission Statements, Defining PSOs and	It was discussed among the members of the committee about the comments suggested by the

	Review of POs and PSOs	previous NBA expert committee followed by reviews on POs and PSOs were noted.
4	Deriving strategies to improve academic performance for the AY:2021– 2022 and Standard Practices & Administrative Systems for Attainment of Program Educational Objectives	On their perception they were worried about the past performance during 2019-2020& 2020-2021. Academic performance was not attained the set goal and outside exposure, industrial visit, placement activities were not good count. More attraction modes need to be imparted to students
5	Analysis and Identification of curriculum gap	Verified yester year activities, visits and additional training programmes arranged for the students. They have commented on number of activities and visits and suggested us to arrange more guest lectures, workshops by collaborating with nearby industries. Discussion summary of core committee meeting was presented to all the members for their suggestions. They were said us to organize in few specific domains. Asked us to cover in AI, Machine learning, Computer Vision and Mobile App Development at par with industry standards.
5	Nature of technical events and other activities required to bridge the gap	Suggestions: Workshops-2/semester Guest Lecture-4/semester Project Expos-1/semester
6	Staff and Student Promotional Schemes	Faculty members must work beyond the regular working hours, they should cultivate a culture of stay at college after 4.30 to extend their research activities. Faculty members must plan for publishing minimum two research articles per annum and research proposal submissions must be from every individual faculty members. Also their qualities of publication are in scopus, SCI indexed journals. All must attend FDPs on various specializations, minimum two weeks programmes will be acceptable. Incentive based appraisal will motivate the faculty members.
7	Skill set development of students	More technical trainings required to be arranged.

		Incentive based appraisal will motivate the faculty members.
7	Skill set development of students and Quality Improvement & Enhancing the Relevance of Final Year Projects	More technical trainings required to be arranged. Industry related quality projects need to be done. Demonstration day also can be celebrated like, open house day. Lecture series/ industry talk should be arranged. Initiatives on MOOC courses and forming students cluster based on their field of interest under faculty group will enhance the student's skillsets.
8	Placement activities	It was detailed that, due to lack of confidence, motivational factors, branding factors and knowledge based learnings, impacts more on failures in interviews. That should be concentrated by arranging HR meet, Mock interviews/ Tests and more interactive sessions with industry representatives.
9	Laboratory tie-ups with industries	It has been decided to have a tie-up with leading industries. Attempts will be made utilize the strength of Alumnus for this tie-up.

HoD, thanked the members of the committee who had assembled for reviewing the Programme Outcome for the CSE department and forum disbursed.

HOD/CSE

PRINCIPAL

SRI INDU COLLEGE OF ENGG. & TECH.

Sri Indu College of Engineering & Technology

(An Autonomous Institution under UGC, New Delhi)

Academic Council Meeting

Minutes of the **Academic Council Meeting** held at 3:30 pm on 6th October, 2021 in the Chambers of the Chairman, Sri Indu College of Engineering & Technology

Members Present:

Sri R Venkat Rao, Chairman, Sri Indu College of Engineering & Technology – Patron

Sl. No.	Name of the Member & Designation	
1	Dr. G. Suresh, Principal, SICET	Chair Person
2	Dr. A. Govardhan, Prof. of CSE,JNTUH CEH	JNTUH Nominee
3	Dr. K. Vijaya Kumar Reddy, Prof. of ME, JNTUH CEH	JNTUH Nominee
4	Dr. R. Markandeya, Prof. of Metallurgical Engg., JNTUH, CEM	JNTUH Nominee
5	Dr. A. Ramakrishna Rao, DAE, SICET	Member
6	Dr. P. Mallesham, HOD, ME, SICET	Member
7	Dr. A. Nagamalleshwara Rao, HOD, EEE, SICET	Member
8	Prof. K. Ashok Babu, HOD, ECE, SICET	Member
9	Dr. S.R. Mugunthan, Professor,CSE, SICET	Member
10	Prof. D. Rajendra Babu, HOD, Civil, SICET	Member
11	Dr. P. Balasubrahmanyam, CE,HOD, Physics, SICET	Member
12	Prof. A. Laxmikanth, ACE, IT, SICET	Member
13	Dr. Dashrath Ram Yadav, Scientist G, DRDO, Hyd.	Member
14	Mr. B.S.S. Prasad, Advocate, Hyderabad	Member

Credit Distribution

Programme	R18	R20	R22
B.Tech.	160	160	160
M.Tech.	88	88	68
MBA	88	88	68

Credits:

Mode of Curriculum	Semester	
	Periods/week	Credits
Theory	03/04	03/04
Practical	03	02
Drawing	03/04	03/04
Mini Project	02	02
Comprehensive Viva Voce	-	02
Seminar	06	02
Main Project	15	09

Weightage of marks:

Theory / practical	Internal 1	Assignment1	Internal 2	Assignment2	External	Total
Theory	25M	5M	25M	5M	70M	100M
Practical	25M	-	25M	-	50M	75M

Course Structure (R22) :

Department of CSE - (R22) :

Course Code	Course Title	Total Number of Contact hours			
		Lecture (L)	Tutorial (T)	Practical (P)	Credits
R22MTH1111	Matrices and Calculus	3	1	0	4
R22CHE1112	Engineering Chemistry	3	1	0	4
R22CSE1113	Programming for Problem Solving	3	0	0	3
R22EEE1114	Basic Electrical Engineering	2	0	0	2
R22MED1125	Computer Aided Engineering Graphics	1	0	4	3
R22CSE1126	Elements of Computer Science & Engineering	0	0	2	1
R22CHE1127	Engineering Chemistry Laboratory	0	0	2	1
R22CSE1128	Programming for Problem Solving Laboratory	0	0	2	1
R22EEE1227	Basic Electrical Engineering Laboratory	0	0	2	1
R22MTH1211	Ordinary Differential Equations and Vector Calculus	3	1	0	4
R22APH1112	Applied Physics	3	1	0	4
R22MED1124	Engineering Workshop	0	1	3	2.5
R22HAS1115	English for Skill Enhancement	2	0	0	2
R22ECE1215	Electronic Devices and Circuits	2	0	0	2
R22APH1127	Applied Physics Laboratory	0	0	3	1.5
R22CSE1227	Python Programming Laboratory	0	1	2	2
R22HAS1128	English Language and Communication Skills Lab.	0	0	2	1
R22INF1229	IT Workshop	0	0	2	1
R22ECE2112	Digital Electronics	3	0	0	3
R22CSE2112	Data Structures	3	0	0	3
R22MTH2114	Computer Oriented Statistical Methods	3	1	0	4
R22CSE2114	Computer Organization and Architecture	3	0	0	3
R22CSE2115	Object Oriented Programming through Java	3	0	0	3
R22CSE2126	Data Structures Lab	0	0	3	1.5
R22CSE2127	Object Oriented Programming through Java Lab	0	0	3	1.5
R22MAC2120	Gender Sensitization Lab	0	0	2	0
R22CSE2129	Skill Development Course (Data visualization- R Programming/ Power BI)	0	0	2	1
R22CSE2111	Discrete Mathematics	3	0	0	3
R22HMS1212	Business Economics & Financial Analysis	3	0	0	3
R22CSE2213	Operating Systems	3	0	0	3
R22CSE2214	Database Management Systems	3	0	0	3
R22CSE2215	Software Engineering	3	0	0	3
R22CSE2226	Operating Systems Lab	0	0	2	1
R22CSE2227	Database Management Systems Lab	0	0	2	1
R22CSE2268	Real-time Research Project/ Societal Related Project	0	0	4	2
R22MAC2110	Constitution of India	3	0	0	0
R22CSE2221	Skill Development Course (Node JS/ React JS/Django)	0	0	2	1
R22CSE3111	Design and Analysis of Algorithms	3	1	0	4
R22CSE3112	Computer Networks	3	0	0	3
R22CSE3113	DevOps	3	0	0	3

Professional Elective-I		3	0	0	3
R22EEE4144	Quantum Computing				
R22INF3144	Advanced Computer Architecture				
R22CSE3141	Data Analytics				
R22ECE3142	Image Processing				
R22CSE3143	Principles of Programming Languages				
Professional Elective -II		3	0	0	3
R22CSE3144	Computer Graphics				
R22CSD3143	Data Warehousing and Data Mining				
R22CSE3149	Information Retrieval Systems				
R22CSE3146	Distributed Databases				
R22CSM3213	Natural Language Processing				
R22CSE3126	Computer Networks Lab	0	0	2	1
R22CSE3127	DevOps Lab	0	0	2	1
R22HAS3128	Advanced Communication Skills Lab	0	0	2	1
R22MAC3110	Intellectual Property Rights	3	0	0	0
R22CSE3121	Skill Development Course (UI design- Flutter)	0	0	2	1
R22CSM3112	Machine Learning	3	0	0	3
R22CSE3212	Formal Languages and Automata Theory	3	0	0	3
R22CSM4143	Artificial Intelligence	3	0	0	3
Professional Elective – III					
R22CSE3246	Web Technologies	3	0	0	3
R22CSO4143	Internet of Things				
R22CSE3248	Scripting Languages				
R22CSE3247	Mobile Application Development				
R22CSE3244	Software Testing Methodologies				
Open Elective-I		3	0	0	3
R22CSM3126	Machine Learning Lab	0	0	2	1
Professional Elective-III Lab		0	0	2	1
R22CSE3252	Scripting Languages Lab				
R22CSE3253	Software Testing Methodologies Lab				
R22CSE3257	Web Technologies Lab				
R22CSE3258	Mobile Application Development Lab				
R22CSO2128	Internet Of Things Lab				
R22CSE3268	Industrial Oriented Mini Project/ Internship/ Skill Development Course (Big data-Spark)	0	0	4	2
R22MAC1110	Environmental Science	3	0	0	0
R22CSE4111	Cryptography and Network Security	3	0	0	3
R22CSE4112	Compiler Design	3	0	0	3
Professional Elective -IV		3	0	0	3
R22CSE3145	Graph Theory				
R22CSE4145	Advanced Operating Systems				
R22CSE4142	Soft Computing				
R22CSE4143	Cloud Computing				
R22CSE4141	Ad hoc & Sensor Networks				

Professional Elective -V		3	0	0	3
R22CSE4146	Advanced Algorithms				
R22CSE4147	Agile Methodology				
R22EEE4242	Robotic Process Automation				
R22CSE4244	Blockchain Technology				
R22CSE4144	Software Process & Project Management				
Open Elective – II		3	0	0	3
R22CSE4126	Cryptography and Network Security Lab	0	0	2	1
R22CSE4127	Compiler Design Lab	0	0	2	1
R22CSE4168	Project Stage - I	0	0	6	3
R22HMS4211	Organizational Behaviour	3	0	0	3
Professional Elective – VI		3	0	0	3
R22CSE4245	Computational Complexity				
R22CSE4242	Distributed Systems				
R22CSM4111	Deep Learning				
R22INF4142	Human Computer Interaction				
R22CSC4241	Cyber Forensics				
Open Elective – III					
R22CSE4264	Project Stage – II including Seminar	0	0	22	9+2

LIST OF OPEN ELECTIVES

Open Electives - I

S. No.	Course Code	Course Title	L	T	P	Credits
1	R22CIV3235	Disaster Management & Mitigation	3	0	0	3
2	R22CSE3235	Database Concepts				
3	R22ECE3235	Consumer Electronics				
4	R22EEE3235	Electrical Estimation & Costing				
5	R22INF3235	Information Technology Essentials				
6	R22MED3235	Introduction to Robotics				
7	R22HMS3233	Fundamentals of Entrepreneurship				
8	R22HMS3235	Day to Day Biology				

Open Elective –II

S. No.	Course Code	Course Title	L	T	P	Credits
1	R22CIV4136	Green Building Engineering	3	0	0	3
2	R22CSC3235	Cyber Security Fundamentals				
3	R22ECE4134	Principles of Modern Communication Systems				
4	R22EEE3234	Illumination Engineering				
5	R22INF3234	E-Commerce				
6	R22MED3236	Industrial Design & Ergonomics				
7	R22HMS3234	Creative Writing				
8	R22HMS3236	Design Thinking				

Open Elective –III

S. No.	Course Code	Course Title	L	T	P	Credits
1	R22CIV4233	Remote Sensing Concepts	3	0	0	3
2	R22CSE4233	Fundamentals of Soft Computing				
3	R22ECE4233	Audio & Video Engineering				
4	R22EEE4233	Non Conventional Energy Resources				
5	R22INF4233	Information Security Fundamentals				
6	R22MED4233	Total Engineering Quality Management				
7	R22HMS4233	Human Values & Professional Ethics for Engineers				
8	R22HAS4233	Science Fiction				

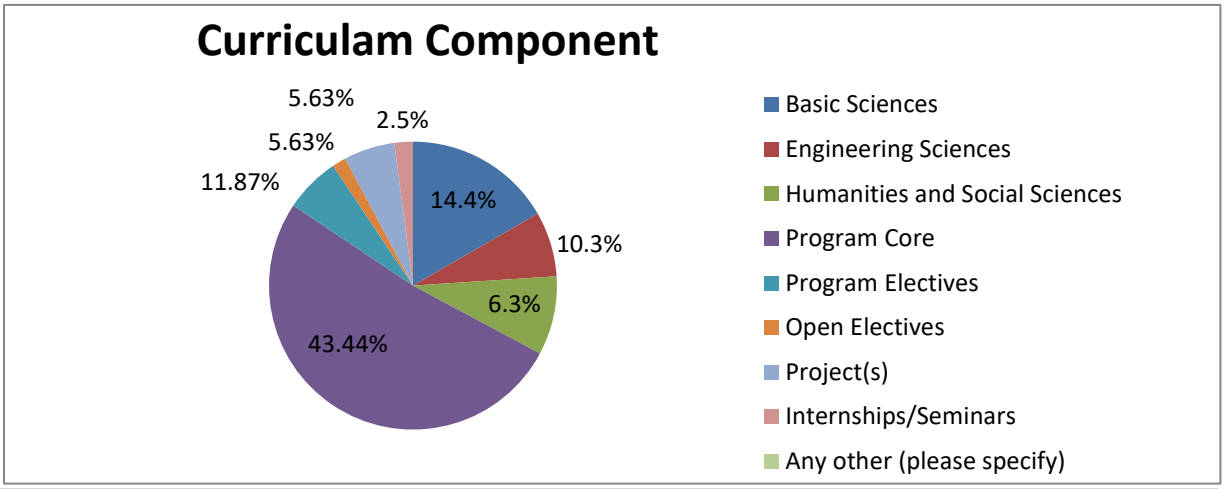
Curriculum Components :

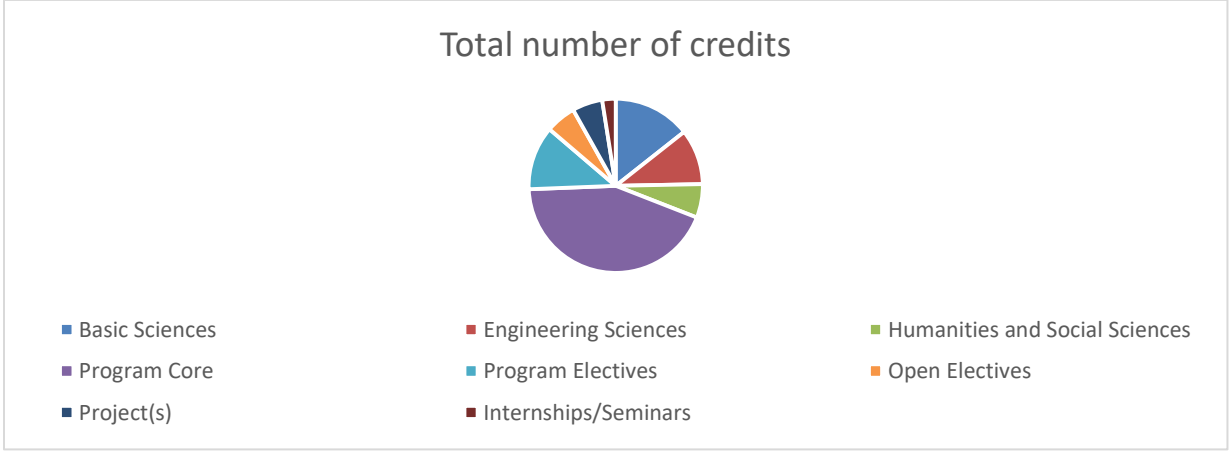
Program curriculum grouping based on course components

As per the AICTE model curriculum structure, percentage of components are well balanced and appropriately maintained in line with the JNTUH curriculum structure composition. In addition to that conduction of Value Added Courses were also discussed in Program Assessment Committee and Department Advisory Committee meeting. The detailed well balanced curriculum components are as shown below.

Program curriculum for R20

Course Component	Curriculum Component (% of total number of credits of the program)	Total number of credits
Basic Sciences	14.375	23
Engineering Sciences	10.3125	16.5
Humanities and Social Sciences	6.25	10
Program Core	43.4375	69.5
Program Electives	11.875	19
Open Electives	5.625	9
Project(s)	5.625	9
Internships/Seminars	2.5	4
Any other (please specify)	-	-
Total	100	160





Course Component – Category wise subject details – R20

Basic Sciences	R20MTH1101- Mathematics – I (Linear Algebra and Calculus
	R20ECH1101-Chemistry
	R20ECH11L1 -Engineering Chemistry Lab
	R20MTH1201 -Mathematics – II (Advanced Calculus)
	R20EAP1201 -Applied Physics
	R20EAP12L1 -Applied Physics Lab
	R20MTH2102 -Computer Oriented Statistical Methods
Humanities and Social Sciences	R20HAS1101 -English
	R20HAS11L2 -English Language and Communication Skills lab
	R20HAS1102 -Environmental Science
	R20MBA2201 -Business Economics & Financial Analysis
	R20HAS31L1 -Advanced Communication Skills Lab
	R20HAS4201 -Organizational Behavior
Engineering Sciences	R20MED1102 -Engineering Graphics
	R20ECE2105 -Analog Electronics
	R20ECE21L4 -Analog Electronics Lab
	R20ECE2102 -Digital Logic Design
	R20EEE1101 -Basic Electrical Engineering
	R20EEE11L3 -Basic Electrical Engineering Lab
	R20MED1101 -Engineering Workshop
Core Subjects	R20CSE1101 -Programming for Problem Solving
	R20CSE11L2 -Programming for Problem Solving Lab
	R20CSE2101 -Data Structures
	R20CSE2102- Computer Organization & Architecture
	R20CSE2103 -Object Oriented Programming using C++
	R20CSE21L1 -Data Structures Lab
	R20CSE21L2 -IT Workshop Lab
	R20CSE21L3 -C++ Programming Lab
	R20CSE2201 -Discrete Mathematics
	R20CSE2202 -Operating Systems
	R20CSE2203 -Database Management Systems
	R20CSE2204- Java Programming
	R20CSE22L1 -Operating Systems Lab
	R20CSE22L2 -Database Management Systems Lab
	R20CSE22L3 -Java Programming Lab
	R20CSE3102 -Software Engineering
	R20CSE3103 -Computer Networks
	R20CSE3104 -Web Technologies
	R20CSE3113 -Principles of Programming Languages
	R20CSE3123 -Distributed Databases
	R20CSE31L1 -Software Engineering Lab
	R20CSE31L2 -Computer Networks & Web Technologies Lab
	R20CSE3201 -Machine Learning
	R20CSE3202 Compiler Design
	R20CSE3203 -Design and Analysis of Algorithms
	R20CSE3231 -Software Testing Methodologies
	R20CSE32L1 -Machine Learning Lab
	R20CSE32L2 -Compiler Design Lab
	R20CSE32L3 -Software Testing Methodologies lab
	R20CSE4101 -Cryptography & Network Security
	R20CSE4102 -Data Mining
	R20CSE4143 -Cloud Computing
	R20CSE4152 -Internet of Things
	R20CSE41L1 -Cryptography & Network Security Lab
	R20CSE41L2 -Technical Seminar
	R20CSE41P1 -Comprehensive Viva-voce
	R20CSE41P2 -Industrial Oriented Mini Project/ Summer Internship
	R20CSE4261 -Distributed Systems
	R20INF4295 -Information Security Fundamentals
	R20CSE42P1- Project Work

Course component mapping – Program Articulation Matrix

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PSO2	PSO3
I – I Semester															
C111	-	-	2.8	3	3	2.8	3	3	3	2.3	-	2.7	-	-	-
C112	2.33	2	2	1.83	2	1.5	-	-	-	-	-	2	2.33	2	2.5
C113	3	2.3	1.2	1.8	1.7	-	-	-	-	-	-	1.3	-	1.7	2
C114	2	2.33	2.33	1.17	2	1	-	-	-	-	-	1.5	1	1.4	1
C115	3	2	3	-	3	-	-	-	-	-	-	3	3	3	2
C116	1	3	2	2	-	2	2	2	2.3	2.8	2	2.8	2	2	2
C117	2.16	1.83	2	1.6	2.5	-	-	-	-	-	-	-	1	1.4	1
C118	3	1.33	1.33	1	1.2	-	-	1.2	-	-	2	-	3	-	3
I – II Semester															
C121	2.33	2.17	1.83	1.83	1.5	0.83	-	-	-	-	1	1.5	2.5	2	2.5
C122	2.5	2.17	2	1.67	2.5	1	-	-	-	-	0.33	1.83	2.33	1.83	2.17
C123	3	2.5	2.2	2	2.3	-	1.5	-	-	-	-	2	-	2	2.3
C124	2.67	1.83	2	1.5	2.33	-	-	-	-	-	-	-	1	1.6	1
C125	1.6	1.8	2.1	-	-	-	1.5	-	-	-	-	-	1.3	1.1	-
C126	2.17	1.83	2	1.8	2.5	-	-	-	-	-	1.33	-	1	1.33	1
C127	1.8	1.8	-	-	-	1.5	1.6	-	1.6	-	-	1.5	1.3	1.8	-
II – I Semester															
C211	2.5	2.2	2.17	2.5	3	-	-	-	-	-	-	1.67	-	1	1
C212	2	2.25	2.5	2.33	2.2	-	-	-	-	-	-	-	1	-	1
C213	2.17	1.8	2.25	3	2.8	-	-	-	-	-	1.25	-	1.33	1.5	1
C214	2.2	2	1.83	1.8	2.67	-	-	-	1.33	1	-	-	1	1	1.2
C215	2.17	2	3	1.67	2	-	-	-	1	1	1	-	1.5	2	1.4
C216	2.5	2.8	3	1.5	2	-	-	-	-	1	-	-	2	2	1.25
C21L7	2	2.5	2.5	2	2.75	-	-	-	-	-	-	-	2	1.6	2
C21L8	2.33	1.33	1.67	2	2.83	-	-	-	-	-	1.33	-	1.83	2	1.67
II – II Semester															
C221	2.4	2	2.5	2	2.6	-	-	-	-	-	1.33	1	1	1.5	1.5
C222	1.8	2.33	2.2	2.5	3	-	-	-	2	1.75	2	2	2	2.33	1.83
C223	2.5	2	2	2	3	-	-	-	2	1.5	1.75	2	1.33	1.25	2.2
C224	2.5	2.4	3	2.33	2.25	2	2	-	-	1.67	1.5	2	1.67	1.6	3
C225	2.4	2.5	3	2	2	-	-	-	1.67	2	2	2	1.67	2	1
C226	2.4	2.5	3	2.67	3	-	-	-	-	-	-	2	1.33	1.33	1.75
C227	2.4	1.67	2	2.17	2.5	-	-	-	2	1.75	2	2	1.67	1.8	1.5
C228	2.33	2	2	2	2	-	-	-	2	1.4	1.6	1.5	1.6	1.67	1.8
III – I Semester															
C311	2.6	1.8	2	2.5	2.8	-	-	-	-	-	-	-	-	1	-
C312	2.6	2.25	3	2	1	2	2	1.75	1	2	-	-	-	-	-
C313	2	2.4	2.16	3	2.8	-	-	-	1.3	1.5	1	1	-	1	1.33
C314	2.5	2.6	2.6	3	1.5	-	-	-	-	1	1	-	1	-	-
C315	2.4	2.5	2.6	-	2.5	-	-	-	1	1	-	-	1	-	1.5
C316	2.5	2	2	3	2.6	-	-	-	-	-	-	-	-	1	1.3
C31L7	2.3	1.6	1.8	1.4	2.3	-	-	-	-	-	-	-	1.5	-	2
C31L8	2.3	1.6	1.8	1.6	2.8	-	-	-	2.0	-	-	1	1	-	-
III – II Semester															
C321	2.6	2.3	2	2.3	2.25	-	-	-	-	2	-	-	1	-	-
C322	1.6	2.3	2.75	2	2.5	1	-	1	-	1	1	1.5	2	1	1
C323	2.5	2	2	3	2.6	-	-	-	-	-	-	-	-	1	-
C324	2.5	2	2	3	2.75	-	-	-	2	2	2	-	-	1	-
C325	2.3	2.1	2.5	3	-	-	-	-	-	2	-	-	-	-	-
C326	2.8	2.1	2.5	3	3	-	-	-	2	2	2	-	1	-	1.3
C32L7	2.5	2.1	2.5	3	2.8	-	-	-	2	2	2	2	2	-	2
C32L8	2.5	2.3	2.3	-	-	-	-	-	2	2	1.5	1.6	-	-	-

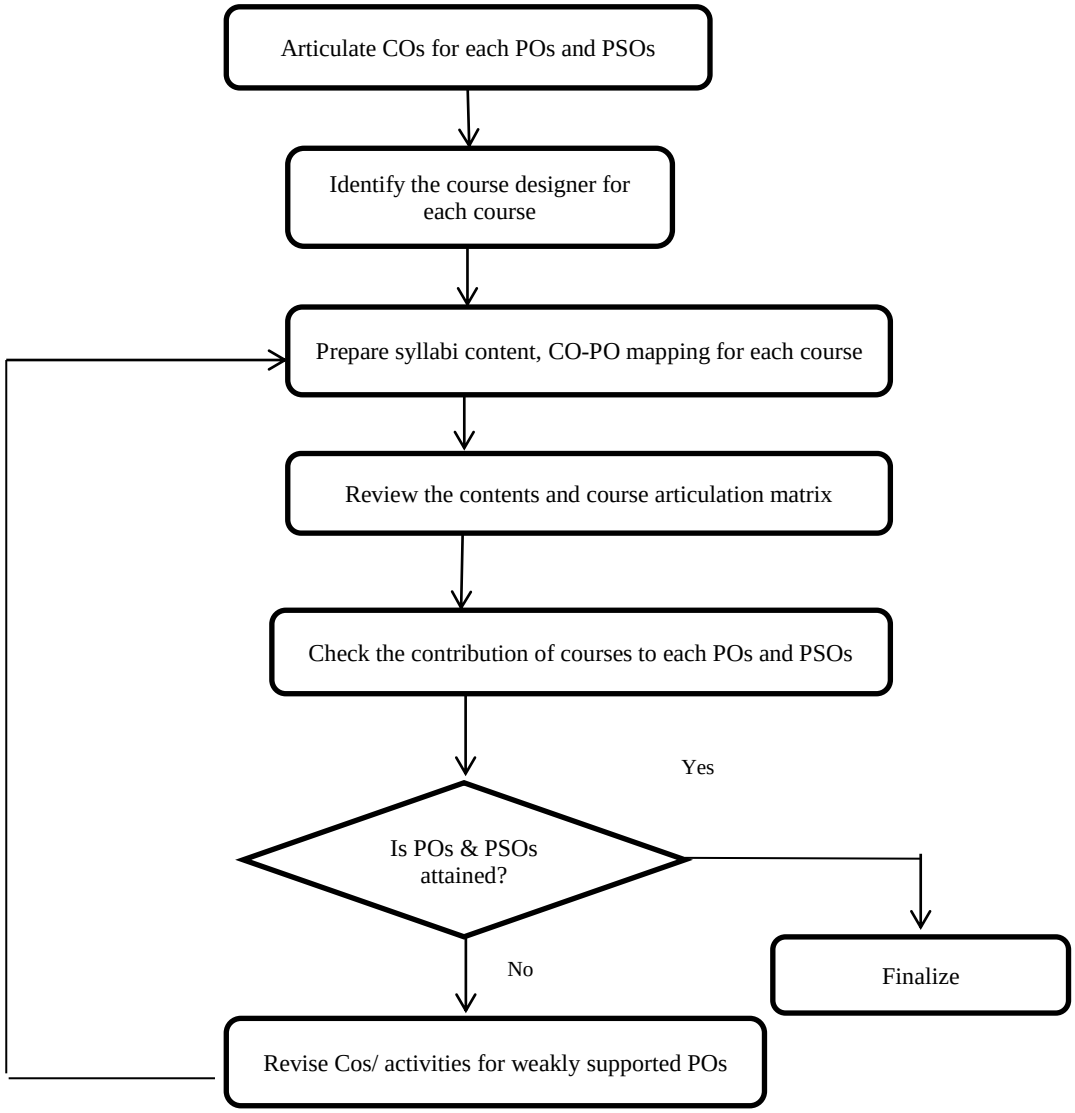
IV – I Semester															
C411	2.67	2.33	2.33	1.8	2	-	-	-	-	-	1	-	1.67	1.4	-
C412	2.6	2	2	2	2.67	-	-	-	-	-	1	-	1	1.67	1.33
C413	3	2.17	2	2.33	2.33	-	-	-	-	-	1	1	1.33	1.33	1
C414	2.2	2	2.67	2.5	1.83	-	-	-	-	1	-	1	1.5	1.4	1.75
C415	2.25	2.5	2.4	2.75	2.17	1	-	-	-	1	-	1	1.75	2	1.33
C416	2.6	2.4	2.33	2	2.5	1.75	-	-	-	-	-	-	1.66	1.66	1.8
C41L7	1.5	1.75	1.33	1.6	1.8	-	-	-	-	-	1.8	1.25	1.5	1.6	1.66
C41L8	1.83	2.25	2.2	2.5	1.6	-	-	-	-	-	-	1.67	1.25	2	2
IV – II Semester															
C421	-	2	1.8	1.8	-	1.25	-	-	-	-	-	-	-	-	1
C422	1.8	2.6	2.4	2	2.75	-	-	-	-	1.5	-	-	1	1.4	1
C423	2.2	1.8	2.25	1.75	2	-	-	-	-	-	-	1	-	1.66	1

Course Component - PO Mapping

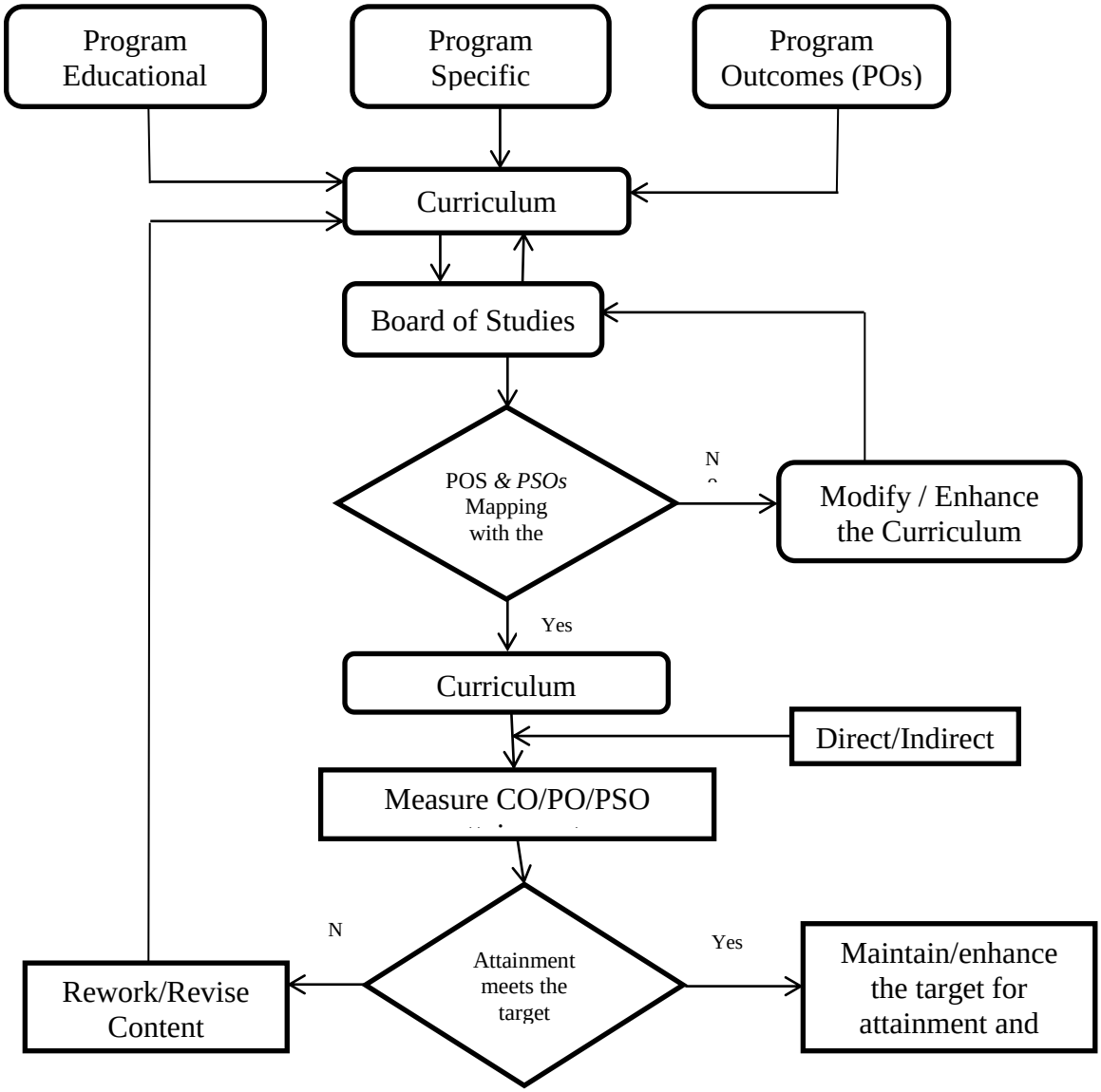
Component	No. of courses	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	P09	PO10	PO 11	PO 12
Basic Sciences	9	Y		Y						Y	Y		
Engineering Sciences	6	Y	Y	Y	Y	Y		Y		Y	Y		Y
Humanities and Social Sciences	6	Y			Y			Y	Y	Y	Y	Y	Y
Program Core	33	Y	Y	Y	Y	Y				Y	Y	Y	Y
Program Electives	4	Y	Y	Y	Y				Y		Y		
Open Electives	1	Y	Y	Y	Y				Y		Y		
Project(s)	3	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y
Internships/Seminars	1	Y	Y	Y	Y	Y	Y			Y	Y	Y	

State the process used to identify extent of compliance of the curriculum for attaining the Program Outcomes (POs) and Program Specific Outcomes (PSOs)

Program curriculum and syllabus is approved by Board of Studies and the assessment of the curriculum and syllabus is done by internal and external members.
Feedback from Students, Parents, Recruiters, Industry, and Alumni are taken for indirect assessment.
Mapping is performed for each assessment with POs and PSOs. From the direct and indirect assessment POs and PSOs are calculated.



The process of identifying extent of compliance of the curriculum



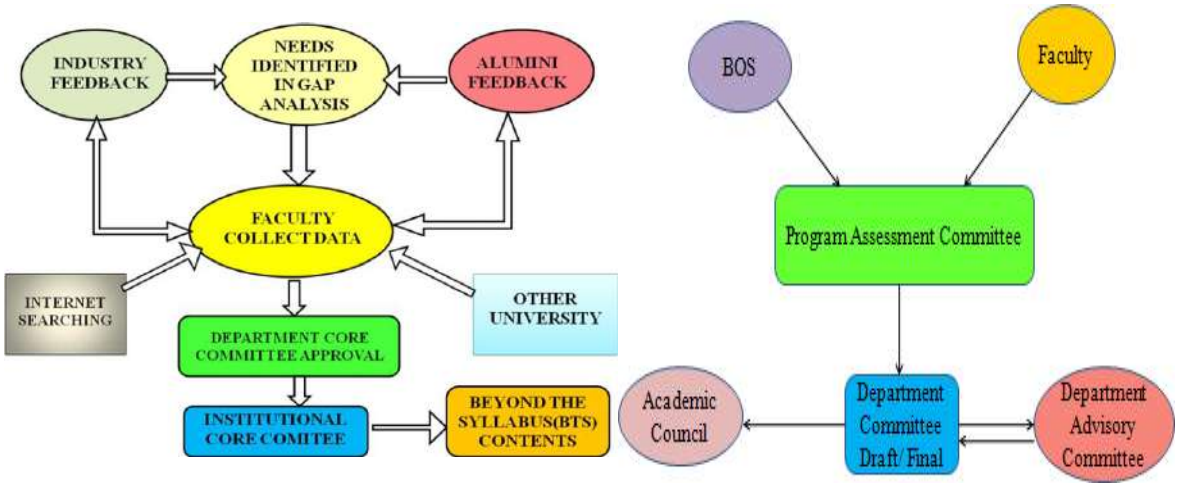
Process to ensure the compliance and attainment of POs & PSOs

The process to identify extent of compliance of the Curriculum for attaining the Program Outcomes & Program Specific Outcomes (PSOs) were measured through gaps identified based on the attainment of POs & PSOs and its contributions towards imparting skill requirements. Further, based on the various assessment committee's recommendations the identified gaps were bridged as 'Content Beyond Syllabus' approved by Program Assessment Committee (PAC) and Department Advisory Committee (DAC). Furthermore, stakeholder's feedback was considered for curriculum enrichment and the periodical stable review systems were also contributed to strengthen the teaching-learning process for the continuous improvements in attaining COs, POs & PSOs.

The subject handlers identify the curriculum gaps in the syllabus with the consideration of Previous Batch attainment, stakeholders' feedback on subject. The faculties will help the students to enrich their knowledge by learning the advanced concepts in the course which were not covered in the syllabus of each theory and practical courses for improving the attainment as well as for making students industry readiness.

The proper identification of gap in the program is assessed by reviewing and analyzing the attained POs & PSOs during course of study in frequent intervals for batch wise. The necessary actions were taken for the identified parameters and on the needy basis by the content beyond, value added courses, bridge courses, Refresher, skill development courses with various modes.

The following procedure is adapted to identify the curriculum gap and after getting the PO & PSO attainments the least contributing and uncovered key components are identified and those grey areas are addressed as a program gaps. Then top down process is initiated to identify the narrow downed, more specific topics and COs were recommended to bridge the gaps by PAC & DAC during brainstorming sessions.



POs & PSOs Attainment Summary Table of Three Consecutive Batches (2015-19, 2016-20, 2017-21)

Batches	PO	PO1	PO2	PO3	P04	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
2017 - 2021	Target	1.62	1.50	1.54	1.38	1.75	0.88	0.85	1.08	1.13	0.88	0.88	0.93	1.00	1.13	0.88
	Revised Target	2.22	2.16	2.05	1.80	2.10	1.71	1.38	1.43	1.23	1.16	1.11	1.27	1.37	1.46	1.18
	Attained	2.21	2.1	2.05	1.87	2.11	1.07	1.24	2.66	1.22	1.11	1.21	1.16	1.32	1.37	1.06
2016 - 2020	Target	2.12	2.00	1.95	1.75	2.00	1.00	1.15	1.50	1.50	1.00	1.00	1.10	1.25	1.35	1.00
	Attained	2.06	1.95	1.9	1.67	1.94	1.58	1.28	1.32	1.14	1.07	1.03	1.18	1.27	1.35	1.09
2015-2019	Target	1.12	1	1.12	1	1. 5	0.75	0.55	0.65	0.75	0.75	0.75	0.75	0.75	0.9	0.75
	Attained	1.44	1.39	1.37	1.22	1.34	1.5	1.17	1.03	0.96	0.88	0.92	1.02	1.09	1.25	1.07

PO & PSO Direct Attainment (2017-21)

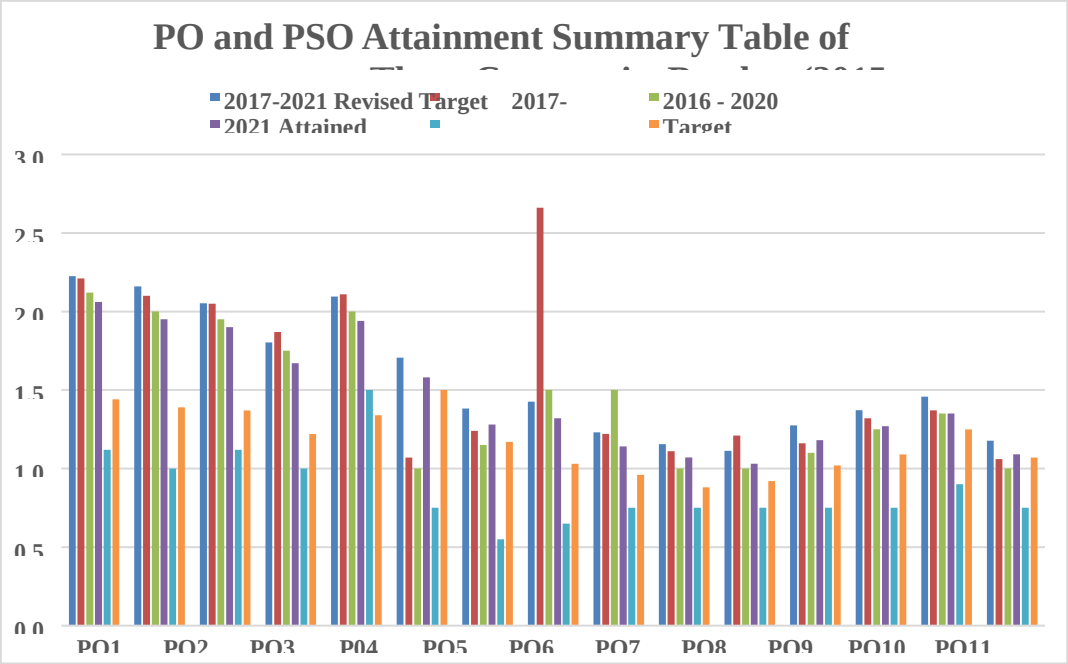
Y/S	Subject Code & Subject Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
I - I	R16HAS1101 – English	-	-	1.97	1.18	1.18	1.97	1.18	1.18	1.18	1.97	-	1.97	-	-	-
	R16MTH1101 – Mathematics - I	1.9	2.3	2.3	2.3	1.15	1.15	-	-	-	-	-	0.76	2.3	0.76	2.3
	R16EPH1101 – Engineering Physics - I	1.13	2.27	1.09	2.23	2.25	-	-	-	-	-	-	1.4	-	2.2	0.75
	R16CSE1101 – Computer Programming	2.76	2.77	2.77	1.39	1.84	0.45	-	-	-	-	-	1.39	0.46	1.38	0.46
	R16MED1144 – Engineering Drawing	2.07	0.44	0.44	0.44	0.44	0.44	-	1.34	0.44	0.44	-	-	0.44	-	-
	R16HAS1201 – Engineering Language & Communication Skills Lab	2.51	0.84	2.51	0.42	2.51	0.42	-	0.42	0.42	0.42	0.42	0.42	2.09	1.76	1.26
	R16CSE1201 – Computer Programming Lab	3	3	-	1.5	3	-	-	-	-	-	-	-	0.5	1.5	0.5
	R16MED1201 – Workshop Practice	1.15	1.15	1.15	0.38	1.15	-	-	1.15	-	-	0.77	-	1.15	-	1.15
I - II	R16MTH1102 – Mathematics - II	2.09	2.59	2.59	2.59	2.59	0.41	-	-	-	-	0.41	1.25	2.09	0.83	2.09
	R16MTH1103 – Numerical Methods	1.81	2.26	2.72	2.72	1.36	0.45	-	-	-	-	0.45	1.36	2.72	2.72	2.72
	R16EPH1102 – Engineering Physics - II	1.22	2.03	2.44	2.44	2.03	-	1.22	-	-	-	-	2.44	-	2.44	2.03
	R16CSE1102 – Data Structures through 'C'	2.09	2.51	2.51	1.25	1.67	-	-	-	-	-	-	1.25	0.41	1.25	0.41
	R16ECH1101 – Engineering Chemistry	2.44	2.44	2.03	-	-	-	1.4	-	-	-	-	-	1.22	1.22	-
	R16CSE1202 – Data Structures through 'C' Lab	3	3	3	1.5	3	-	-	-	-	-	1.5	-	0.5	1.5	0.5
	R16ECH1201 – Engineering Chemistry Lab	2.37	1.58	-	-	-	9.48	1.19	-	1.19	-	-	1.19	1.19	1.19	-
	R16EPH1201 – Engineering Physics II Lab	0.83	0.8	1.64	0.55	1.61	-	0.9	-	-	-	-	0.55	1.39	1.73	-
II - I	R16MTH1105 – Probability and Statistics	2.13	2.6	2.59	2.19	1.28	-	-	-	-	-	-	1.28	-	0.42	0.42
	R16CSE1103 – Mathematical Foundations of Computer Science	2.26	1.7	1.84	1.42	2.23	-	-	-	-	-	-	-	0.38	-	0.38
	R16CSE1104 – Data Structures through C++	2.44	2.44	2.44	1.22	2.03	-	-	-	-	-	1.22	-	1.22	0.4	0.4
	R16ECE1136 – Digital Logic Design	2.05	1.98	1.99	2.05	1.68	-	-	-	1.03	0.33	-	-	0.33	0.33	1.04
	R16ECE1102 – Electronic Devices and Circuits	2.16	2.56	1.28	1.3	2.57	-	-	-	0.42	0.42	0.43	-	1.3	0.87	1.28
	R16EEE1130 – Basic Electrical Engineering	2.02	2.12	1.24	1.27	2.49	-	-	-	-	0.41	-	-	0.81	0.81	1.29
	R16EEE1212 – Electrical and Electronics Lab	2.49	1.49	1.5	2.98	2.48	-	-	-	-	-	1.49	-	2.98	2.97	0.99
	R16CSE1203 – Data Structures through C++ Lab	3	2.5	2.5	1	2.5	-	-	-	-	-	-	-	1	1.5	0.33
II - II	R16CSE1105 – Computer Organization	2.58	2.57	2.13	1.72	1.71	-	-	-	-	-	1.27	0.42	0.43	0.42	0.42
	R16CSE1106 – Database Management Systems	2.91	2.44	2.42	2.39	1.43	-	-	-	0.96	1.45	0.95	0.96	0.96	2.42	0.87
	R16CSE1107 – Java Programming	2.15	0.86	0.86	2.58	1.29	-	-	-	0.86	1.29	1.29	0.86	1.29	1.29	1.72
	R16HAS1102 – Environmental Studies	2.07	2.13	1.31	2.16	2.58	0.85	0.83	-	-	1.27	1.27	0.84	1.24	1.28	0
	R16CSE1108 – Formal Languages and Automata Theory	2.5	2.08	1.26	2.52	2.56	-	-	-	1.26	0.83	0.83	0.85	1.26	1.25	0.42
	R16CSE1109 – Design and Analysis of Algorithms	1.37	1.31	1.31	0.88	-	-	-	-	-	-	-	0.88	1.34	0.87	0.77
	R16CSE1204 – Java Programming Lab	0.99	0.99	-	1.99	0.99	-	-	-	-	1	-	-	1	0.49	0.99
	R16CSE1205 – Database Management Systems Lab	2	1.5	1.5	-	2.5	-	-	-	-	1	0.5	0.5	2.5	2	2
III - I	R16CSE1110 - Principles of Programming Languages	1.95	2.35	2.35	1.92	1.94	-	-	-	-	-	-	-	-	0.39	-
	R16HAS1105 - Human Values and Professional Ethics	2.16	2.7	1.29	0.93	0.44	0.95	0.95	2.66	0.47	0.95	-	-	-	-	-
	R16CSE1113 - Software Engineering	2.48	2.16	2.59	1.31	2.16	-	-	-	1.32	1.31	0.43	0.43	-	0.43	1.21
	R16CSE1118 - Compiler Design	2.22	2.16	2.16	1.33	1.35	-	-	-	-	0.46	0.46	-	0.46	-	-
	R16CSE1114 - Operating Systems	2.24	1.86	1.8	-	1.83	-	-	-	0.38	0.38	-	-	0.38	-	0.38
	R16CSE1139 - Computer Networks	2.09	2.52	2.52	1.3	2.12	-	-	-	-	-	-	-	-	0.44	0.4
	R16CSE1206 - Operating systems Lab	2.15	1.29	1.29	1.29	2.58	-	-	-	-	-	-	-	1.29	-	0.86
	R16CSE1207- Compiler Design Lab	2.5	1.5	1.5	3	2.5	-	-	-	1	-	-	0.5	0.5	-	-
III - II	(R16CSE1143) - Distributed Systems	2.25	2.29	2.79	1.75	2.79	-	-	-	-	0.79	-	-	0.46	-	-
	(R16CSE1117) - Information Security	1.81	1.36	2.26	-	1.36	0.45	-	-	-	-	-	0.9	0.9	-	-
	(R16CSE1116) -Object Oriented Analysis and Design	2.17	0.87	0.87	1.32	2.18	-	-	-	-	-	-	-	-	0.44	-
	(R16CSE1121) - Software Testing Methodologies	2.18	0.87	0.86	1.36	2.22	-	-	-	0.9	0.9	0.9	-	-	0.41	-
	(R16CSE1103) - Managerial Economics Financial Analysis	2.26	2.33	2.38	1.3	-	-	-	-	-	0.9	-	-	-	-	-
	R16CSE1119) - Web Technologies	2.3	2.31	2.32	1.38	1.38	-	-	-	0.92	0.92	0.93	-	0.46	-	0.45

	(R16CSE1215) - Case Tools & Web Technologies Lab	2.48	2.48	2.5	1.5	2.47	-	-	-	1	1	1	1	1	-	0.66
	(R16HAS1202) Advanced English language Communication Skills Lab	2.5	2.41	2.41	-	-	-	-	-	0.98	1	1.5	1.5	-	-	-
IV - I	(R16CSE1120) - Linux Programming	1.68	1.68	1.68	1.34	2.02	-	-	-	-	-	0.33	-	1.01	1.01	-
	(R16CSE1128) - Design Patterns	1.72	2.62	2.61	0.85	1.73	-	-	-	-	-	0.44	-	0.42	1.32	0.44
	(R16CSE1122) - Data Warehousing and Data Mining	1.45	2.39	2.88	2.44	2.9	-	-	-	-	-	0.48	0.48	1.43	1.45	0.48
	(R16CSE1125) - Cloud Computing	2.43	0.96	2.44	2.43	1.46	-	-	-	-	0.48	-	0.48	1.46	1.46	0.81
	(R16CSE1127) - Mobile Computing	2.15	2.15	2.15	2.15	2.58	0.43	-	-	-	0.43	-	0.43	1.29	0.86	0.43
	(R16CSE1112) - COMPUTER FORENSICS	0.93	1.39	2.31	1.85	0.93	0.46	-	-	-	-	-	-	0.92	1.38	0.46
	(R16CSE1208) - Linux Programming lab	1.29	1.29	1.29	2.58	1.72	-	-	-	-	-	1.29	1.29	1.29	1.29	0.86
	(R16CSE1216) - Data Warehousing and Mining LAB	3	2.5	2.5	2.5	3	-	-	-	-	-	-	1.5	1.5	1	0.33
IV - II	(R16HAS1104) - Management Science	-	2.86	1.43	2.86	-	1.43	-	-	-	-	-	-	-	-	0.47
	(R16CSE1135) - Multimedia & Rich Internet Applications	2.93	2.44	2.93	0.97	2.44	-	-	-	-	1.46	-	-	0.48	1.46	0.48
	(R16CSE1136) - AD hoc and Sensor Networks	2.51	2.51	2.09	1.25	2.51	-	-	-	-	-	-	0.41	-	1.25	0.41
PO	Curriculum attainment average	2.13	1.99	1.99	1.69	1.98	1.38	1.10	1.35	0.87	0.87	0.86	0.98	1.11	1.22	0.85
	No. of courses mapped	57	58	57	54	53	14	7	5	17	25	24	31	46	45	44
	Curriculum average mapping	2.31	2.12	2.21	2.14	2.36	1.47	1.81	1.8	1.82	1.59	1.45	1.66	1.55	1.59	1.58

Indirect PO and PSO Attainment (2017 - 2021)															
Indirect	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Alumni Survey	2.7	2.49	2.34	2.37	2.17	1	2.49	2.5	2.35	2.35	2.6	2.19	2.44	2.68	2.54
Exit Survey	2.21	2.19	2.24	2.01	2.6	1	1.84	2.5	2.27	2.19	2.6	1.82	2.09	2.37	2.25
Employer Survey	2.7	2.8	2.2	2.7	2.7	1	1.2	2.5	2.7	1.57	2.6	1.5	2	1.2	1
Parent Feedback Survey	2.28	2.88	2.05	2.4	2.7	1	1.2	2.5	2.7	1.88	2.6	1.5	1.9	1.2	1.1
Professional Society Member	2.3	2.2	2.3	2.2	2.7	1	2.2	2.5	2	2.2	2.6	2.5	2.3	2.2	2.5
Overall Indirect Attainment	2.44	2.51	2.23	2.34	2.57	1.00	1.79	2.50	2.40	2.04	2.60	1.90	2.15	1.93	1.88

Sample of Indirect PO and PSO Attainment of Batch (2017-2021)

PO Overall Attainment (2017 - 2021)															
POS/PSOS	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
2017-2021 DIRECT ATTAINMENTS	**2.13**	**1.99**	**1.99**	**1.69**	**1.98**	**1.38**	**1.1**	**1.35**	**0.87**	**0.87**	**0.86**	**0.98**	**1.11**	**1.22**	**0.85**
80% OF DIRECT ATTAINMENT	**1.70**	**1.59**	**1.59**	**1.35**	**1.58**	**1.10**	**0.88**	**1.08**	**0.70**	**0.70**	**0.69**	**0.78**	**0.89**	**0.98**	**0.68**
2017-2021 INDIRECT ATTAINMENTS	**2.52**	**2.54**	**2.27**	**2.58**	**2.62**	**1.00**	**1.79**	**2.50**	**2.60**	**2.06**	**2.60**	**1.90**	**2.15**	**1.95**	**1.88**
20% OF INDIRECT ATTAINMENTS	**0.50**	**0.51**	**0.45**	**0.52**	**0.52**	**0.20**	**0.36**	**0.50**	**0.52**	**0.41**	**0.52**	**0.38**	**0.43**	**0.39**	**0.38**
2017-2021 TOTAL PO ATTAINMENTS(80% OF DIRECT ATTAINMENTS+20% OF INDIRECT ATTAINMENTS	**2.21**	**2.10**	**2.05**	**1.87**	**2.11**	**1.07**	**1.24**	**2.66**	**1.22**	**1.11**	**1.21**	**1.16**	**1.32**	**1.37**	**1.06**



Sample of Overall PO Attainment of Batch (2017-2021)

SL. No.	Course Code	Course Name	Linkages with Local, Regional, National & Global Societal Needs / Government of India initiatives	Objectives	Course Outcomes
1	R22MAC1110	Environmental Science	National River Conservation Plan Environmental Sustainability	• Understanding the importance of ecological balance for sustainable development. • Understanding the impacts of developmental activities and mitigation measures. • Understanding the environmental policies and regulations	• Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development
2	R22MAC2110	Constitution of India	Social Welfare & Constitutional Responsibilities of Government	• To realize the significance of constitution of India to students from all walks of life and help them to understand the basic concepts of Indian constitution. • To identify the importance of fundamental rights as well as fundamental duties. • To understand the functioning of Union, State and Local Governments in Indian federal system. • To learn procedure and effects of emergency, composition and activities of election commission and amendment procedure	• Understand and explain the significance of Indian Constitution as the fundamental law of the land. • Exercise his fundamental rights in proper sense at the same time identifies his responsibilities in national building. • Analyze the Indian political system, the powers and functions of the Union, State and Local Governments in detail • Understand Electoral Process, Emergency provisions and Amendment procedure.
3	R22MAC2120	Gender Sensitization	Develops mutual respect and empathy towards the opposite gender	• To develop students' sensibility with regard to issues of gender in contemporary India. • To provide a critical perspective on the socialization of men and women. • To introduce students to information about some key biological aspects of genders. • To expose the students to debates on the politics and economics of work. • To help students reflect critically on gender violence. • To expose students to more egalitarian interactions between men and women.	• Students will have developed a better understanding of important issues related to gender in contemporary India. • Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film. • Students will attain a finer grasp of how gender discrimination works in our society and how to counter it. • Students will acquire insight into the gendered division of labor and its

					relation to politics and economics. • Men and women students and professionals will be better equipped to work and live together as equals. • Students will develop a sense of appreciation of women in all walks of life. • Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.
4	R22MAC3110	Intellectual Property Rights	diametrically opposite to the human rights	• To recognize the importance of IP and to educate the pupils on basic concepts of Intellectual Property Rights. • To identify the significance of practice and procedure of Patents. • To make the students to understand the statutory provisions of different forms of IPRs in simple forms. • To learn the procedure of obtaining Patents, Copyrights, Trade Marks &Industrial Design • To enable the students to keep their IP rights alive.	• Distinguish and Explain various forms of IPRs. • Identify criterias to fit one's own intellectual work in particular form of IPRs. • Apply statutory provisions to protect particular form of IPRs. • Analyze rights and responsibilities of holder of Patent, Copyright, Trademark, Industrial Design etc., • Identify procedure to protect different forms of IPRs national and international level. • Develop skill of making search using modern tools and technics.
5	R22HAS4143	Biomedical Instrumentation	helps physicians to diagnose the problem and provide treatment	• Identify significant biological variables at cellular level and ways to acquire different bio-signals. • Elucidate the methods to monitor the activity of the heart,brain, eyes and muscles. • Introduce therapeutic equipment for intensive and critical care. • Outline medical imaging techniques and equipment for certain diagnosis and therapies.	• Understand biosystems and medical systems from an engineering perspective. • Identify the techniques to acquire record and primarily understand physiological activity of the human body through cell potential, ECG, EEG, BP and blood flow measurement and EMG.

					• Understand the working of various medical instruments and critical care equipment. • Know the imaging techniques including CT,PET, SPECT and MRI used in diagnosis of various medical conditions.
6	R22HAS4126	Professional Practice, Law & Ethics	Social Work Core Values and Code of Ethics	• To know the different moral and ethical issues through various prominent theories. • To educate the code of ethics as well as the industrial standards and how they can be used for ensuring safety and reducing the risk. • To vocalize the Rights and Responsibilities of individuals. • To enable the students to imbibe and internalize the Values and Ethical Behavior in the personal and Professional lives.	• The students will understand the importance of Values and Ethics in their personal lives and professional careers. The students will learn the rights and responsibilities as an employee, team member and a global citizen
7	R22ECE4143	Satellite Communications	signal around the curve of the Earth allowing communication between widely separated geographical points.	• To prepare students to excel in basic knowledge of satellite communication principles • To provide students with solid foundation in orbital **mechanics** and launches for the satellite communication • To train the students with a basic knowledge of link design of satellite with a design examples. • To provide better understanding of multiple access systems and earth station technology • To prepare students with knowledge in satellite navigation and GPS and satellite packet communications	• Describe the history, frequency allocations, applications and orbit concepts and Placement of a Satellite in a Geo-Stationary orbit • Demonstrate satellite Subsystems like Attitude and Orbit Control system, Telemetry, Tracking, Command Satellite Antenna Equipment. • Apply the system Noise Temperature and G/T ratio, Link and Interference Analysis, and design of satellite Links for a specified C/N, Link Budget • explain the different attenuations and classify the multiple access systems • Describe the earth station technology, Power Test Methods, Lower Orbit Considerations. Navigation and GPS • Compare the different satellite packet communications
8	R22EEE1114	Basic Electrical Engineering	Make in India	• To understand DC and Single & Three phase AC circuits • To study and understand the different types of DC, AC machines and Transformers.	• Understand and analyze basic Electrical circuits • Study the working principles of Electrical Machines and Transformers

				• To import the knowledge of various electrical installations and the concept of power, power factor and its improvement.	• Introduce components of Low Voltage Electrical Installations.
9	R22CSE1227	Python Programming	Skill India	• To install and run the Python interpreter • To learn control structures. • To Understand Lists, Dictionaries in python • To Handle Strings and Files in Python	• Develop the application specific codes using python. • Understand Strings, Lists, Tuples and Dictionaries in Python • Verify programs using modular approach, file I/O, Python standard library • Implement Digital Systems using Python
10	R22CSE2221	Skill Development Course (Node JS/ React JS/Django)	Skill India	• To implement the static web pages using HTML and do client side validation using JavaScript. • To design and work with databases using Java • To develop an end to end application using java full stack. • To introduce Node JS implementation for server side programming. • To experiment with single page application development using React.	• Build a custom website with HTML, CSS, and Bootstrap and little JavaScript. • Demonstrate Advanced features of JavaScript and learn about JDBC • Develop Server – side implementation using Java technologies like • Develop the server – side implementation using Node JS. • Design a Single Page Application using React.
11	R22CSM2221	Skill Development Course (Prolog/ Lisp/ Pyswip)	Skill India		
12	R22CSE3121	Skill Development Course (UI design-Flutter)	Skill India	• Learn to set up a new Material App using Android Studio. • Understand the Widget tree and learn to use pre-made Flutter Widgets for user interface design	• Learn to incorporate Image and Text Widgets to create simple user interfaces. • Learn to customize pre-built Flutter widgets. • Add App Icons for Android builds. • Learn to run Flutter apps on Android Emulator and Android devices. • An introduction to the Widget build method. • Learn to use layout widgets such as Columns, Rows, Containers and

					Cards.
13	R22CSE1113	Programming for Problem Solving	Skill India	• To learn the fundamentals of computers. • To understand the various steps in program development. • To learn the syntax and semantics of the C programming language. • To learn the usage of structured programming approaches in solving problems.	• To write algorithms and to draw flowcharts for solving problems. • To convert the algorithms/flowcharts to C programs. • To code and test a given logic in the C programming language. • To decompose a problem into functions and to develop modular reusable code. • To use arrays, pointers, strings and structures to write C programs. • Searching and sorting problems.
14	R22CIV2128	Computer Aided Engineering Graphics	CAD allows experts to create more accurate design representations.	• To develop the ability of visualization of different objects through technical drawings • To acquire computer drafting skill for communication of concepts, ideas in the design ofengineering products	• Apply computer aided drafting tools to create 2D and 3D objects • sketch conics and different types of solids • Appreciate the need of Sectional views of solids and Development of surfaces of solids • Read and interpret engineering drawings • Conversion of orthographic projection into isometric view and vice versa manually and by using computer aided drafting
15	R22CIV3116	Water Resources Engineering	flood control, hydroelectric power, recreation, irrigation, water supply, and enhancing the environment.		• Understand the different concepts and terms used in engineering hydrology • To identify and explain various formulae used in estimation of surface and Ground water hydrology components • Demonstrate their knowledge to connect hydrology to the field requirement • The basic requirements of irrigation and various irrigation techniques, requirements of the crops • Distribution systems for canal irrigation and the basics of design of unlined and lined irrigation canals design • Basic components of river Training works. Various components of hydrologic cycle that affect the • movement of water in the earth

16	R22CIV3112	Geotechnical Engineering	damage after an earthquake, slope stability shifting, ongoing settlement, or other effects	• To obtain index and engineering properties of locally available soils, and to understand the behaviour of these soil under various loads.	• **Carry out soil mechanics fundamental experiments according to IS standards** • **Collect, analyze and interpret experimental data** • **Design soil mechanics experiments and determine which test is needed in designing civil engineering projects** • **Use communication skills to transfer their findings in a formal report format**

17	R22CIV3211	Environmental Engineering	societal development and the use of water, land and air resources are sustainable	• This subject provides the knowledge of water sources, water treatment, design of distribution system waste water treatment, and safe disposal methods. The topics of characteristics of waste water, sludge digestion are also included.	• Assess characteristics of water and wastewater and their impacts • Estimate quantities of water and waste water and plan conveyance components • Design components of water and waste water treatment plants • Be conversant with issues of air pollution and control • Air quality, emissions and pollution control and Environmental health. • Water and wastewater quality and treatment ,Hazardous and solid waste engineering
18	R22CIV3213	Structural Engineering (Steel Structures)	joining different members of the structural steel framework	• Explain the mechanical properties of structural steel , plasticity ,yield . • Describe the salient features of Limit State Method of design of Steel structures. • Identify and explain the codal provisions given in IS. 800. • Analyze the behaviour of steel structures under tension, compression and flexure. • Design the tension, compression , flexural members andplate girder • Design the connectrion in steel structure,build -up member and (bolted and welded).	Analyze the tension members, compression members. • Design the tension members, compression members and column bases and joints and connections • Analyze and Design the beams including built-up sections and beam and connections. • Identify and Design the various components of welded plate girder including stiffeners • Students are able to design the connection of steel structure and students are able to design the tension and compression members • Students are able to design the beam and roof truss in steel structure and Students able to design the plate and gantry design
19	R22CIV3241	Transportation Engineering	allows people in those various places to trade and do business together.	This course aims at providing a comprehensive insight of various elements of Highway transportation engineering. Topics related to the highway development, characterisation of different materials needed for highway construction, structural and geometric design of highway pavements along with the challenges and possible solutions to the traffic related issues will be	• An ability to apply the knowledge of mathematics, science and engineering in the areas of traffic engineering, highway development and maintenance • An ability to design, conduct experiments to assess the suitability of the highway materials like soil, bitumen, aggregates and a

				covered as a part of this course.	variety of bituminous mixtures. Also the students will develop the ability to interpret the results and assess the suitability of these materials for construction of highways. • An ability to design flexible and rigid highway pavements for varying traffic compositions as well as soil sub grade and environmental conditions using the standards stipulated by Indian Roads Congress. • An ability to evaluate the structural and functional conditions of in-service highway pavements and provide solution in the form of routine maintenance measures order signed overlays using Indian Roads congress guidelines. • An ability to assess the issues related to road traffic and provide engineering solutions supported with an understanding of road user psychological and behavioural patterns. • Differentiate the working of various transport systems and their working in different scenarios
20	R22CSE2129	Skill Development Course (Data visualization- R Programming/ Power BI)	Skill India	• Effective use of Business Intelligence (BI) technology (Tableau) to apply data visualization • To discern patterns and relationships in the data. • To build Dashboard applications. • To communicate the results clearly and concisely. • To be able to work with different formats of data sets.	• Understand How to import data into Tableau. • Understand Tableau concepts of Dimensions and Measures. • Develop Programs and understand how to map Visual Layouts and Graphical Properties. • Create a Dashboard that links multiple visualizations. • Use graphical user interfaces to create Frames for providing solutions to real world problems.
21	R22CSE3127	DevOps	It changes the entire industry as we know it. Today, the "something big" is DevOps.	• Describe the agile relationship between development and IT operations. • Understand the skill sets and high-functioning teams involved in DevOps and related methods to reach a continuous delivery capability • Implement automated system update and DevOps lifecycle	• Identify components of Devops environment • Describe Software development models and architectures of DevOps • Apply different project management, integration, testing and code deployment tool • Investigate different DevOps Software development models • Assess various Devops practices • Collaborate and adopt Devops in real-time projects
22	R22CSM4143	Artificial Intelligence	improves the quality of everyday life	• To learn the distinction between optimal reasoning Vs. human like reasoning • To understand the concepts of state space	• Ability to formulate an efficient problem space for a problem expressed in natural language.

				representation, exhaustive search, heuristic search together with the time and space complexities. • To learn different knowledge representation techniques. • To understand the applications of AI, namely game playing, theorem proving, and machine learning.	• Select a search algorithm for a problem and estimate its time and space complexities. • Possess the skill for representing knowledge using the appropriate technique for a givenproblem. • Possess the ability to apply AI techniques to solve problems of game playing, and machinelearning.
23	R22CSE3247	Mobile Application Development	They allow to handle information instantly and in real-time.	• To demonstrate their understanding of the fundamentals of Android operating systems • To improves their skills of using Android software development tools • To demonstrate their ability to develop software with reasonable complexity on mobile platform • To demonstrate their ability to deploy software to mobile devices • To demonstrate their ability to debug programs running on mobile devices	• Student understands the working of Android OS Practically. • Student will be able to develop Android user interfaces • Student will be able to develop, deploy and maintain the Android Applications.
24	R20HAS1102	Environmental Science	National River Conservation Plan Environmental Sustainability	• Understanding the importance of ecological balance for sustainable development. • Understanding the impacts of developmental activities and mitigation measures. • Understanding the environmental policies and regulations	• Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development
25	R20CIV3271	Disaster Management & Mitigation	National Disaster Management system	• To understand basic concepts of disaster and hazards if India. • To study the various natural disasters. • To study the various manmade disasters. • To understand the disaster management principles.	
26	R20CIV3201	Hydrology &Water Resources Engineering	National Afforestation Programme	• This course provides the description of hydrological cycle and derive various formulas used in estimation of different basic components of surface and Ground water cycle. and its components. Further it will explain the water requirement for irrigation and connectivity of hydrology to the field requirement.	• Understand the different concepts and terms used in engineering hydrology • To identify and explain various formulae used in estimation of surface and Ground water hydrology components • Demonstrate their knowledge to connect hydrology to the field requirement • The basic requirements of irrigation and various irrigation techniques, requirements of the crops

					• Distribution systems for canal irrigation and the basics of design of unlined and lined irrigation canals design • Basic components of river Training works. Various components of hydrologic cycle that affect the movement of water in the earth
27	R20HMS4297	Human Values & Professional Ethics for Engineers	National Anti-Corruption Strategy / VIGIL	• To know the different moral and ethical issues through various prominent theories. • To educate the code of ethics as well as the industrial standards and how they can be used for ensuring safety and reducing the risk. • To vocalize the Rights and Responsibilities of individuals. • To enable the students to imbibe and internalize the Values and Ethical Behavior in the personal and Professional lives.	The students will understand the importance of Values and Ethics in their personal lives and professional careers. The students will learn the rights and responsibilities as an employee, team member and a global citizen.
28	R20EEE4294	Non Conventional Energy Resources (Renewable Energy Resources)	Ujwal Bharat	• To emphasis the current energy status and role of non-conventional and renewable energy sources. • To familiarize various aspects of Solar energy and utilization • To familiarize various aspects of Wind energy and utilization • To familiarize various aspects of Biomass energy and utilization • To emphasize the significance of Green Energy Technologies.	

29	R20CSE2104	Python Programming	Skill India	• To install and run the Python interpreter • To learn control structures. • To Understand Lists, Dictionaries in python • To Handle Strings and Files in Python	• Develop the application specific codes using python. • Understand Strings, Lists, Tuples and Dictionaries in Python • Verify programs using modular approach, file I/O, Python standard library • Implement Digital Systems using Python

30	R20ECE2102	Digital Logic Design	Digital India	• To understand common forms of number representation in logic circuits. • To learn basic techniques for the design of digital circuits and fundamental concepts used in the design of digital systems. • To understand the concepts of combinational logic circuits and sequential circuits. • To understand the Realization of Logic Gates Using Diodes & Transistors.	• Acquire the knowledge on numerical information in different forms and Boolean Algebratheorems. • Define Postulates of Boolean algebra and to minimize combinational functions, and designthe combinational circuits. • Design and analyse sequential circuits for various cyclic functions. • Characterize logic families and analyze them for the purpose of AC and DC parameters.
31	R18CSE4152	Internet of Things (IOT)	Smart India, Smart Cities	• To introduce the terminology, technology and its applications • To introduce the concept of M2M (machine to machine) with necessary protocols • To introduce the Python Scripting Language which is used in many IoT devices • To introduce the Raspberry PI platform, that is widely used in IoT applications • To introduce the implementation of web based services on IoT devices	
32	R18CSE4143	Data Analytics	Digital India, National cyber security policy	• The purpose of this course is to provide the students with knowledge of Big data Analytics principles and techniques. • This course is also designed to give an exposure to the frontiers of Big data Analytics	• Ability to explain the foundations, definitions, and challenges of Big Data and various Analytical tools. • Ability to program using HADOOP and Map reduce, NOSQL • Ability to understand the importance of Big Data in social media and Mining. • Understand Supervised and unsupervised Learning. • Learn the basics of data serialization. • Learn about Mobile analytics.
33	R18CSE3124	Cyber Security	Digital India, National cyber security policy	• Understand the need for Cyber security and its related threats and attacks • Learn methods to become secure in the cyber world and securely communicate in the cyber world • Become knowledgeable about the best practices related to cyber security, regulations and laws associated with the same.	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context
34	R18CSE4101	Cryptography and Network Security	Digital India, National cyber security policy	• Explain the objectives of information security. • Explain the importance and application of each of confidentiality, integrity, authentication and availability. • Understand various cryptographic algorithms. • Understand the basic categories of threats to computers and networks.	• Student will be able to understand basic cryptographic algorithms, message and web authentication and security issues. • Ability to identify information system requirements for both of them such as client and server.

				• Describe public-key cryptosystem. • Describe the enhancements made to IPv4 by IPSec.	• Ability to understand the current legal issues towards information security.
35	R18MED4101	Refrigeration and Air Conditioning	Local Needs (COLD STORAGES) Agricultural Mechanization ; KISAN VIKAS	• The purpose of this course is to impart adequate knowledge in both practice and theory. • The course structures covers various types of Refrigeration Systems to familiarize the students with the fundamentals of Refrigeration and Air Conditioning Systems. • After the completion of this course the students will be acquainted with the operation and maintenance/repair of different components of Refrigeration Systems.	• Explain different types of Basic Refrigeration cycles and its applications in multi compressor and multi evaporator systems. • Describe the methods for low temperature refrigeration. • Propose the selection and design of different components of Refrigeration systems. • Describe functioning of different kind of heat energy operated vapour absorption systems. • Recommend the selection and application of suitable/eco-friendly refrigerants. • Classify Air conditioning systems and study of heat pump.
36	R18EEE2205	Basics of Electrical & Electronics Engineering	Make in India	• This course introduces the concepts of electrical DC and AC circuits, basic law's of electricity, instruments to measure the electrical quantities, different methods to solve the electrical networks, construction operational features of energy conversion devices i.e. DC and AC machines, transformers. It also emphasis on basics of electronics, semiconductor devices and their characteristics and operational features.	• Knowledge on basic electrical circuits, parameters, Solution of resistive circuits with independent sources and different types of instruments. • To explain the working principle, construction, applications of DC machines. • Highlight the importance of transformers in transmission and distribution of electric power. • To Gain the knowledge on working principle, construction , applications of AC machines • Operation of diodes, transistors, realization of various electronic circuits with the various semiconductor devices. • Cathode ray oscilloscope, with which he/she can able to apply the above conceptual things to real world electrical and electronics problems and applications.
37	R18CSE21L3	C++ Programming Lab	Skill India	• Introduces object-oriented programming concepts using the C++ language. • Introduces the principles of data abstraction, inheritance and polymorphism; • Introduces the principles of virtual functions and	• Ability to develop applications for a range of problems using object-oriented programming • Programs to demonstrate the implementation of constructors, destructors and operator overloading. • Apply virtual and pure virtual function &

				polymorphism • Introduces handling formatted I/O and unformatted I/O • Introduces exception handling	complex program situations • Apply fundamental algorithmic problems including type casting, inheritance, and polymorphism. • Understand generic programming, templates, file handling. • Handle exceptions in programming
38	R18INF3103	Data Communications and Computer Networks	Smart Cities Mission Programme	• To introduce the fundamental various types of computer networks. • To demonstrate the TCP/IP and OSI models with merits and demerits. • To explore the various layers of OSI Model. • To introduce UDP and TCP Models.	Describe the seven layers of OSI Protocol hierarchy Differentiate wireless communication satellite and cellular radio satellite Define cradles telephone , basic telephone procedures and standard telephone set Understand the terminology and concepts of the OSI reference model and the TCP-IP referencemodel. Describe various networking concepts. Understand various Internet Transport Protocols.
39	R18ECE4261	Wireless Communication & Networks	National Council for Science & Technology Communication	• To provide the students with the fundamental treatment about many practical and theoretical concepts that forms basic of wireless communications. • To equip the students with various kinds of wireless networks and its operations. • To prepare students to understand the concept of frequency reuse, and be able to apply it in the design of mobile cellular system. • To prepare students to understand various modulation schemes and multiple access techniques that are used in wireless communications, • To provide an analytical perspective on the design and analysis of the traditional and emerging wireless networks, and to discuss the nature of, and solution methods to, the fundamental problems in wireless networking.	• Define and explain the cellular concepts and all design fundamentals. • Demonstrate the Radio wave propagation indoor and outdoor propagation models.. • Illustrate the small scale fading and multipath measurements. • Analyze the various Equalization & Diversity techniques used in wireless communication. • Describe some of the existing and emerging wireless standards. (K2-understand) C422.6. Compare various wireless area networks and their specifications. (K5-Evaluate)

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