

**SELF-ASSESSMENT REPORT (SAR)**  
**UNDERGRADUATE INFORMATION TECHNOLOGY PROGRAM**  
**(TIER-II)**

**Submitted to**



**NBCC PLACE, 4<sup>th</sup> FLOOR EAST TOWER, BHISHAM PITAMAH MARG,  
PRAGATI VIHAR, NEW DELHI-110003**

**BY**



**DEPARTMENT OF INFORMATION TECHNOLOGY**  
**RAJKIYA ENGINEERING COLLEGE AMBEDKAR NAGAR, UP INDIA**  
Akbarpur – Tanda Road, In Front of Hawaii Patti,  
Katariya Yakoobpur, Ambekar Nagar 224122

**(AICTE APPROVED GOVERNMENT ENGINEERING COLLEGE)**  
**APJAKTU CODE 737**

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## **PART A: Institute Information**

**1. Name and address of institute:**

RAJKIYA ENGINEERING COLLEGE AMBEDKAR NAGAR (REC AMBEDKAR NAGAR), UP INDIA 224122

**2. Name and address of affiliated university:**

DR. A.P.J. ABDUL KALAM TECHNICAL UNIVERSITY, LUCKNOW

**3. Year of establishment of Institution:**

2010-2011

**4. Type of institution:**

University

☐

Deemed University

☐

Government Aided

☐

Autonomous

☐

Affiliated

☒

**5. Ownership Status:**

Central Government

☐

State Government

☒

Government Aided

☐

Self-financing

☐

Trust

☐

Society

☐

Section 25 Company

☐

Any Other (Please Specify)

☐

**6. Other Academic Institutions of the Trust/Society/Company etc., if any:**

<b>Name of the Institution(s)</b>	<b>Year of Establishment</b>	<b>Programs of Study</b>	<b>Location</b>
-	-	-	-

**7. Details of all the programs being offered by the institution under consideration:**

S. No.	Program Name	Year of Start	Intake	Increase in intake if any	Year of increase	AICTE Approval	Accreditation Status*
1.	B. Tech in Civil Engineering	2010-11	60	No	NA	Approved	Not eligible for accreditation
2.	B. Tech in Electrical Engineering	2010-11	60	No	NA	Approved	Applying First Time
3	B. Tech in Information Technology	2010-11	60	No	NA	Approved	Applying First Time

**Table A.7**

**8. Programs to be considered for Accreditation vide this application:**

<b>S. No.</b>	<b>Program Name</b>
1	B. Tech (Electrical Engineering)
2	B. Tech (Information Technology)

**Table A.8**

**9. Total number of employees in the institution:**

**A. Regular\* Employees (Faculty and Staff):**

Items		CAY(2018-19)		CAYm1(2017-18)		CAYm2(2016-17)		CAYm3(2015-16)	
		Min	Max	Min	Max	Min	Max	Min	Max
Faculty in Engineering	M	30	30	29	29	16	16	22	22
	F	6	6	7	7	7	7	7	7
Faculty in Mathematics Science & Humanities	M	11	11	10	10	7	7	4	4
	F	0	0	1	1	1	1	3	3
Non-teaching staff	M	54	54	60	60	61	61	53	53
	F	6	6	07	07	06	06	04	04

**Table A.9A**

**\* Means –**

- Full time on roll with prescribed pay scale. An employee on contract for a period of not less than two years AND drawing consolidated salary not less than applicable gross salary shall only be counted as a regular employee.
- Prescribed pay scales means pay scales notified by the Regulatory Authority/ Central Government and implementation as prescribed by the Central/State Government as the case may be. In case State Government prescribes lesser consolidated salary for a particular cadre then same will be considered as reference while counting faculty as a regular faculty.

**CAY** – Current Academic Year

**CAYm1**- Current Academic Year minus1= Current Assessment Year

**CAYm2** - Current Academic Year minus2=Current Assessment Year minus 1

**B. Contractual Staff Employees (Faculty and Staff):** (Not covered in Table A):

Items		CAY(2018-19)		CAYm1(17-18)		CAYm2(16-17)		CAYm3(15-16)	
		Min	Max	Min	Max	Min	Max	Min	Max
Faculty in Engineering	<b>M</b>	0	0	0	0	6	6	1	1
	<b>F</b>	0	0	0	0	2	2	0	0
Faculty in Mathematics Science & Humanities	<b>M</b>	0	0	0	0	0	0	0	0
	<b>F</b>	0	0	0	0	0	0	0	0
Non-teaching staff	<b>M</b>	25	25	06	06	08	08	02	02
	<b>F</b>	05	05	1	1	0	0	02	02

**Table A.9b**

**10. Total number of Engineering Students:**

Item	CAY(18-19)	CAYm1(17-18)	CAYm2(16-17)	CAYm3(15-16)
Total no. of boys	625	612	575	565
Total no. of girls	141	128	112	122
Total no. of students	766	740	687	687

**Table A.10**

**11. Vision of the Institution:**

To attain the global level of excellence in scientific and technical education, fostering research, innovation, leadership qualities and entrepreneurial attitude, contributing to the advancement of the society and mankind.

## **12. Mission of the Institution:**

- To enhance knowledge and skills of students in science, technology and human behaviour that will serve the nation.
- To create an ambience for new idea, research, innovation and entrepreneurial attitude, with a high level of ethics, communication and leadership qualities.
- To develop ability and passion to work wisely, creatively, and effectively in each member of college for the betterment of the mankind and all living beings.

## **13. Contact Information of the Head of the Institution and NBA coordinator, if designated:**

### **Head of Institution:**

Name	Dr. Akhilesh Kumar Mishra
Designation	Director
Mobile No	+91-9454439590
Email id	director@recabn.ac.in

### **NBA coordinator, if designated:**

Name	Dr. Sudhakar Tripathi
Designation	Associate Professor
Mobile No	+91-8544401883
Email id	p.tripathi@gmail.com

### **NBA co-coordinator, if designated:**

Name	Shri Amit Kumar rai
Designation	Assistant Professor
Mobile No	+91-7503334676
Email id	amitraiit@gmail.com

## **PART B: Criteria Summary**

**Name of the program: B.TECH. (INFORMATION TECHNOLOGY)**

<b>Criteria No.</b>	<b>Criteria</b>	<b>Mark/ Weightage</b>
	<b>Program Level Criteria</b>	
1.	Vision, Mission and Program Educational Objectives	60
2.	Program Curriculum and Teaching – Learning Processes	120
3.	Course Outcomes and Program Outcomes	120
4.	Students’ Performance	150
5.	Faculty Information and Contributions	200
6.	Facilities and Technical Support	80
7.	Continuous Improvement	50
	<b>Institute Level Criteria</b>	
8.	First Year Academics	50
9.	Student Support Systems	50
10.	Governance, Institutional Support and Financial Resources	120
	<b>Total</b>	1000

**PART B: B. TECH. INFORMATION TECHNOLOGY PROGRAM LEVEL CRITERIA**

<b>CRITERION</b>	<b>VISION, MISSION AND PROGRAM EDUCATION</b>	<b>50</b>
<b>1</b>	<b>OBJECTIVES</b>	

**1.1 State vision and mission statement of the Department and Institute (5)**

**Vision of the College**

To attain the global level of excellence in scientific and technical education, fostering research, innovation, leadership qualities and entrepreneurial attitude, contributing to the advancement of the society and mankind.

**Mission of the College**

- To create an ambience for new idea, research, innovation and entrepreneurial attitude, with a high level of ethics, communication and leadership qualities.
- To enhance knowledge and skills of students in science, technology and human behaviour that will serve the nation.
- To develop ability and passion to work wisely, creatively, and effectively in each member of college for the betterment of the mankind and all living beings.

**Vision of the Department**

To be centre of excellence in the information technology which will produce globally competent engineers with the moral values and technical skills for the betterment of the society.

### **Mission of the Department**

- To create an environment for engineering knowledge and innovative research.
- To groom our students with the quality of leadership and communication skills by working on real life projects.

### **1.2. State the Program Educational Objectives (PEOs) (5)**

#### **Program Educational Objectives of Department**

##### **PEO-1:**

To identify, formulate and solve contemporary computing problems of multiple disciplines by applying their knowledge of mathematics, information technology, and emerging technologies.

##### **PEO-2:**

To apply the principles of software project management to develop innovative real world projects.

##### **PEO-3:**

To improve their technical and professional skills through value addition programs and self-learning to develop a long term productive career in industry, government or academia.

##### **PEO-4:**

To understand their professional, ethical, legal, and social responsibilities and contribute for the betterment of the society through active engagement with professional societies, schools, civic organizations or other community activities.

**1.3 Indicate where the Vision, Mission and PEOs are published and disseminated among stakeholders (10)**

**Stakeholders:** Table B.1.3a shows the list of stakeholders and their relevance

Stack holders and their relevance		
Sr. No	Name of Stake holder	Relevance
1	Students	<ul style="list-style-type: none"> <li>• Directly involved</li> <li>• Their placement will indicate the success of programme</li> <li>• Their feedback will help in improving the programme</li> </ul>
2	Faculty Members	<ul style="list-style-type: none"> <li>• They are responsible for quality delivery of programme</li> <li>• They are involved in designing the curriculum and establishment of program outcomes</li> <li>• They define the course outcomes and ensure their assessment.</li> </ul>
3	College Administration	<ul style="list-style-type: none"> <li>• It is responsible to provide basic infrastructure, administrative and financial support for successful running of programme.</li> </ul>
4	Parents	<ul style="list-style-type: none"> <li>• They have aspirations of good higher education and good placement for their wards.</li> </ul>

5	Employer	<ul style="list-style-type: none"> <li>• They provide industrial training and placement to the students and thus they are main users of the talent of the graduates</li> <li>• Their feedback helps in improving the contents of programme.</li> <li>• Their feedback fills the gap between expectation of industry and institutional curricula.</li> </ul>
7	Alumni	<ul style="list-style-type: none"> <li>• They are the ambassadors of the programme.</li> <li>• Their feedback helps in re-designing and improving the curricula and infrastructure in the institute</li> <li>• They are helpful in providing guidance and placement to their juniors</li> </ul>

**Table B.1.3a Stack holders and their relevance**

Publication and dissemination of vision, mission and PEOs are shown in Table B.1.3b

<b>Publication and dissemination of vision, mission and PEOs</b>			
<b>S.No.</b>	<b>Media type</b>	<b>Publishing Vision Mission</b>	<b>Stakeholders</b>
1	Electronic Media	College Website Online Departmental Magazine	Government Regulatory Bodies Students Faculty/staff

			Industry/ employers Public Alumni Parents
2	Display Media	Director's office All HOD's office College Library Departmental Library	Students Faculty/Staff Industry/ employers Parents
		Department Notice Boards	Students Faculty/staff
		Activity (conference, FDP, Seminar etc.)	Students Faculty/staff Industry Experts Public
		Selected Classrooms/Labs	Students Faculty/staff
3	Print Media	College Information Brochure  Placement Brochure	Students Faculty/staff Parents Industry Experts

		Departmental meetings	Faculty/ staff
		Faculty Course File	
		Lab manuals	Students
			Faculty/staff

**Table B.1.3b Publication and dissemination of vision, mission and PEOs**

### **Stakeholders are made aware of Mission & Vision/PEOs through**

- Interaction with employers through Training and Placement Office.
- Orientation programs for first year students and their parents.
- Through Alumni meets and convocation programs.
- Academic surveys
- Class room teaching
- Academic counselling
- Interaction with parents.
- Regular quizzes

Above mentioned awareness methods are reviewed from time to time.

### **1.3 1.4. State the process for defining the Vision and Mission of the department, and PEOs of the program (25)**

The department established the vision and mission through a consultative process involving the stakeholders, the future scope of the department and the societal requirements.

Department's Mission & Vision is in line with the Mission & Vision of the Institute. It is based on

the processes & practices followed in the department towards the achievement of Institute's Vision & Mission

**Steps implemented in defining the vision & mission of the department**

**Step 1:** Vision & Mission of the college is considered as the reference point.

**Step 2:** Consultation with all the faculty in the department and other departments is the starting point where suggestions & observations from faculty are recorded by the departmental advisory committee.

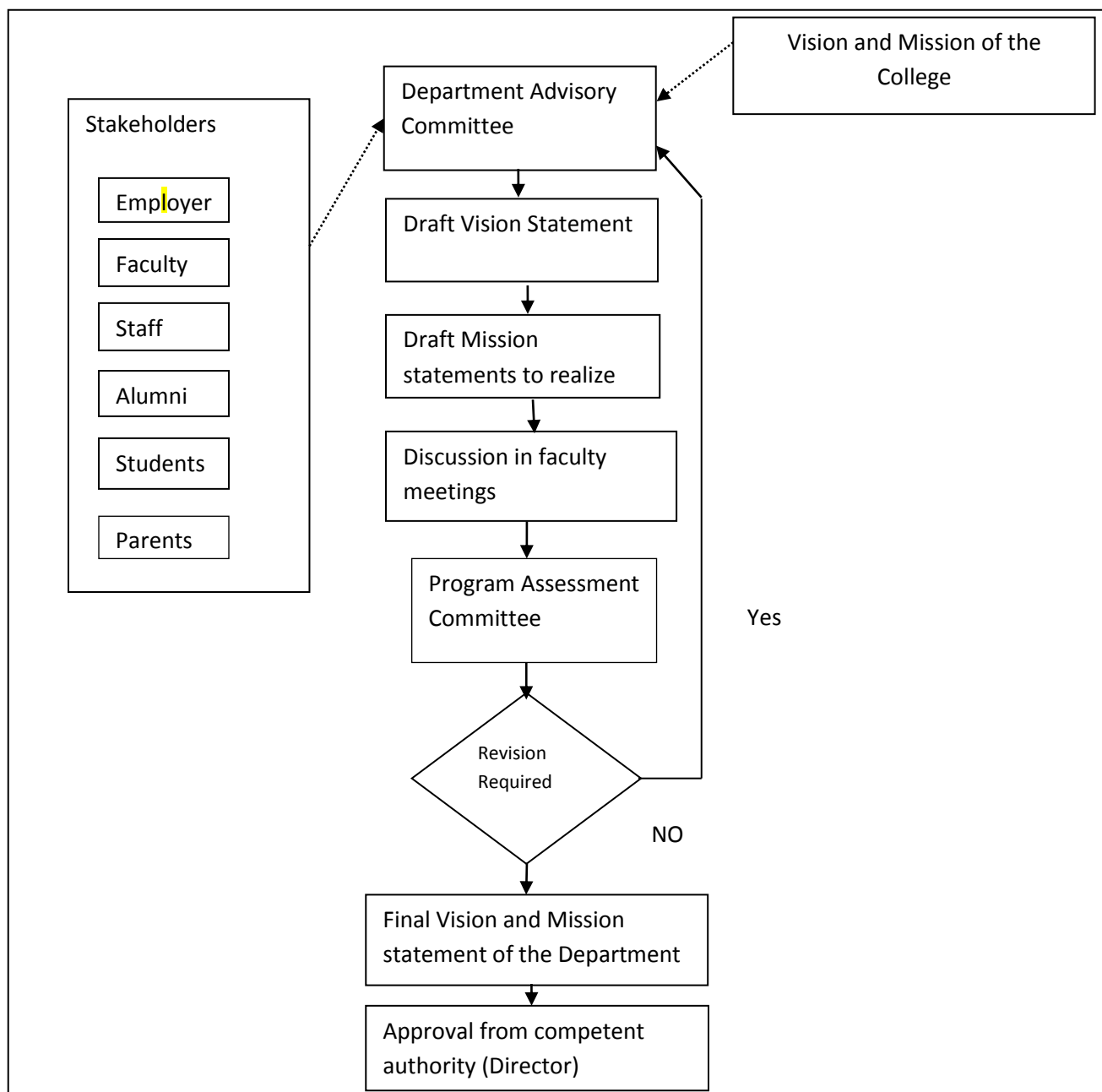
**Step 3:** Inputs from student and parent surveys, subject experts, Alumni are also considered. Inputs from the Training and Placement Office is also considered to get the employer's perspective.

**Step 4:** The first draft of vision and mission prepared by the departmental advisory committee is discussed in the faculty meeting and suggestions are incorporated.

**Step 5:** This updated draft of vision and mission is also discussed with program assessment committee and again revisions are incorporated.

**Step 8:** Finally the summarized views and observations are presented to the Director through Dean-Academics & HoD. And finally approved by the director.

Figure B.1.4a shows how the above steps are implemented.



**Figure B.1.4a Vision and Mission**

**Steps implemented in defining the PEOs of the department**

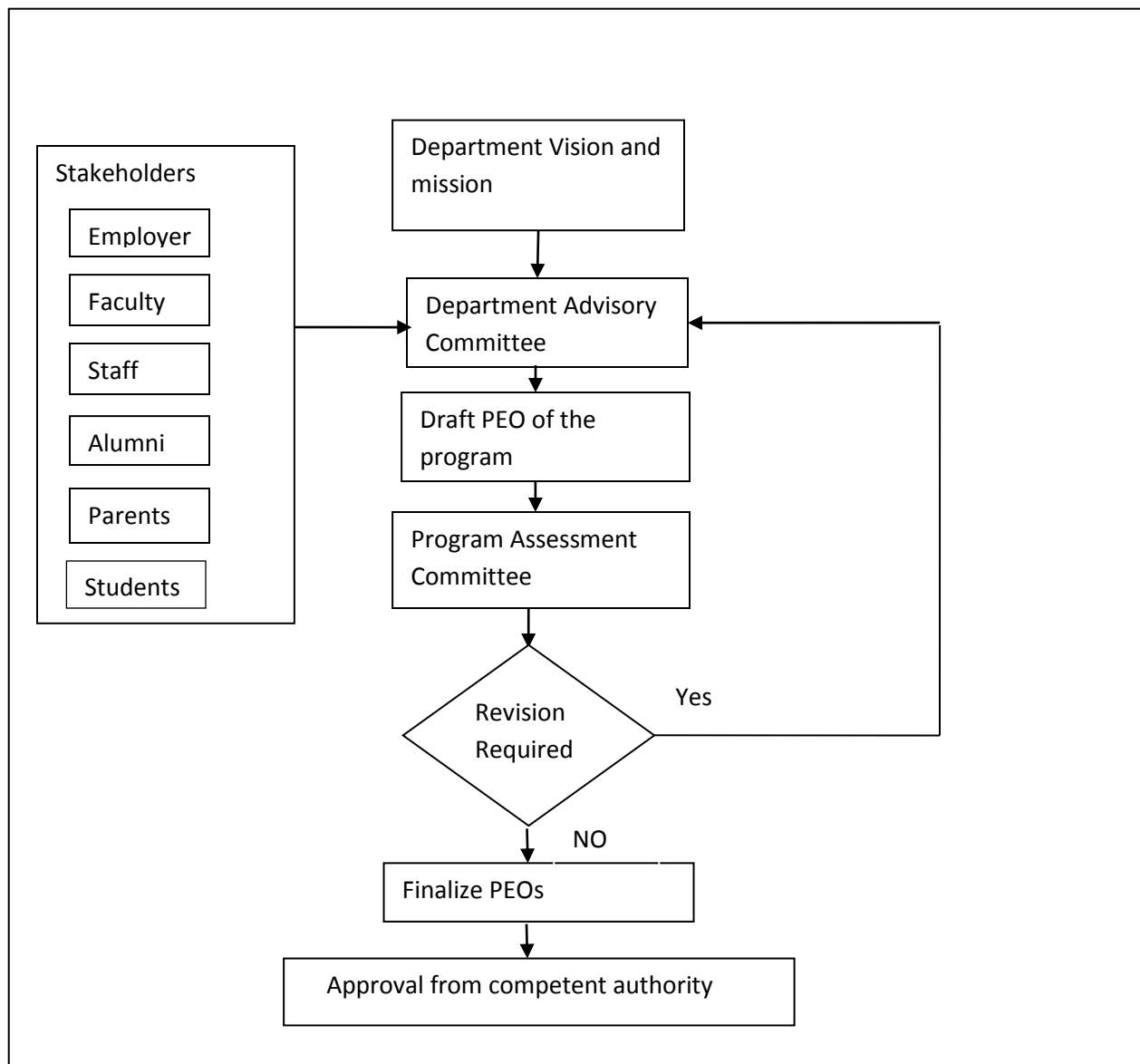
**Step 1:** PEOs are established in line with Vision and Mission of the Department & College.

**Step 2:** Department advisory committee establishes PEOs through a consultation process involving stakeholders. At department level PEOs are discussed with all faculty & staff members through department meetings & suggestions are invited.

**Step 3:** This updated draft is then discussed with the program assessment committee and revisions are incorporated.

**Step 4:** PEOs are finally presented to the Director through Dean-Academics & HoD. And finally approved by the director.

Figure B.1.4b shows how the above steps are implemented



**Figure B.1.4b PEOs**

**1.5. Establish consistency of PEOs with Mission of the department****(15)**

There are two mission statements of the department and four PEO's of B.Tech course in Information Technology. The consistency between PEOs and mission of the department was established by departmental committee in consultation with faculty members as follows in table B.1.5.

<b>PEO Statements</b>	<b>M1</b>	<b>M2</b>	<b>Justification and rationale</b>
<b>PEO-1:</b> Graduates of the program will be able to identify, formulate and solve contemporary computing problems of multiple disciplines by applying their knowledge of mathematics, information technology, and emerging technologies.	3	3	<ul style="list-style-type: none"><li>• Use of modern teaching aids</li><li>• Remedial &amp; extra classes</li><li>• Extra lab hours</li><li>• Tutorial sessions</li><li>• Organization of engineering activities</li><li>• Career oriented value addition programs</li><li>• Inclusion of humanities &amp; human values subjects</li><li>• Class room presentations</li></ul>
<b>PEO-2:</b> Graduates will be able to apply the principles of software project management to develop innovative real world projects.	3	2	<ul style="list-style-type: none"><li>• Use of real world examples, problems &amp; mini projects.</li><li>• Contests on programming , techfests, innovative projects</li><li>• Real world projects &amp; industry trainings</li></ul>

<p><b>PEO-3:</b> Graduates will continuously improve their technical and professional skills through value addition programs and self-learning to develop a long term productive career in industry, government or academia.</p>	2	3	<ul style="list-style-type: none"> <li>• Career based training programs like preparations for placements, mock interviews, aptitude sessions, group discussions etc.</li> <li>• International conferences, workshops, industrial trainings, industry visits, expert talks etc.</li> <li>• Personality development classes</li> <li>• Online certifications,</li> <li>• Activities through student technical clubs</li> </ul>
<p><b>PEO4:</b> Graduates will understand their professional, ethical, legal, and social responsibilities and contribute for the betterment of the society through active engagement with professional societies, schools, civic organizations or other community activities.</p>	3	3	<ul style="list-style-type: none"> <li>• Social activities by technical club</li> <li>• Participation in social programme.</li> <li>• Awareness through student articles in departmental e-magazine</li> <li>• Awareness through celebrations on important days of national interest</li> </ul>

**Table B.1.5 Mapping of PEOs with Mission of Department**

1. Slight (low)      2. Moderate (medium)      3. Substantial (high)

**Mission:**

**M1:** To groom our students with the quality of leadership and communication skills by working on real life projects.

**M2:** To create an environment for engineering knowledge and innovative research.

<b>CRITERION 2</b>	<b>PROGRAMME CURRICULUM AND TEACHING- LEARNING PROCESSES</b>	<b>120</b>
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### 2.1. Program Curriculum

(20)

As prescribed by Dr. APJ Abdul Kalam University, the Course Curriculum of B. Tech. (Information Technology) has been divided into 8 semesters (2016-17). Evaluation Schemes of university for 4 year degree program is mentioned in following tables. The curriculum has been updated by University from session 2016-17. The following tables show the evaluation scheme of all subjects from III to VIII semester.

S.NO.	Course Code	Course Title	Total Number of Lectures				Credit
			Lecture	Tutorial	Practical	Total Lectures	
THEORY COURSE							
1	RAS-103	Engineering Maths-I	3	1	0	4	4
2	RAS-101	Engineering Physics-I	3	1	0	4	4
3	REE-101	Basic Electrical Engg	3	1	0	4	4
4	RAS-104	Professional Communication	3	0	0	3	0
5	REC-101	Basic Electronics	3	1	0	4	4
PRACTICAL COURSE							
6	RAS-151	Engg. Physics Lab	0	0	2	2	1
7	REE-151	Basic Electrical Engg Lab	0	0	2	2	1
8	RAS-154	Professional Communication Lab	0	0	2	2	1

9	RME-152	Workshop Practice	0	0	3	3	2
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**Table 2.1(a) I Semester (Effective from the Session: 2016-17)**

S.NO.	Course Code	Course Title	Total Number of Lectures				Credit
			Lecture	Tutorial	Practical	Total Lectures	
THEORY COURSE							
1	RAS-203	Engineering Maths-II	3	1	0	4	4
2	RAS-201	Engineering Physicss-II	3	1	0	4	4
3	RME-201	Elements of Mechanical Engg	3	1	0	4	4
4	RCS-201	Computer System & Programming in C	3	0	0	3	0
5	RAS-202	Engineering Chemistry	3	1	0	4	4
PRACTICAL COURSE							
6	RAS-252	Engg. Chemistry Lab	0	0	2	2	1
7	RME-251	Elements of Mechanical Engg Lab	0	0	2	2	1
8	RCS-251	Computer Progm. Lab	0	0	2	2	1
9	RCE-251	Computer Aided Engg. Graphics	0	0	3	3	2

**Table 2.1(b) II Semester (Effective from the Session: 2016-17)**

S.NO.	Course Code	Course Title	Total Number of Lectures				Credit
			Lecture	Tutorial	Practical	Total Lectures	
THEORY COURSE							
1	NAS-301	Mathematics III	3	1	0	4	4
2	NEC-309	Digital Logic Design	3	1	0	4	4
3	NCS-301	Data Structures Using C	3	1	0	4	4

4	NCS-302	Discrete Structures And Graph Theory	3	1	0	4	4
5	NHU-301	Industrial psychology	3	1	0	4	4
6	NCS-303	Computer Based Numerical And Statistical Techniques	2	0	0	2	2
7	AUC-002	Cyber Security	2	0	0	2	-
<b>PRACTICAL COURSE</b>							
8	NEC-359	Digital Logic Design Lab	0	0	3	3	1
9	NCS 351	Data Structures Using C Lab	0	0	3	3	1
10	NCS 353	Numerical Techniques Lab	0	0	2	2	1
11	NCS 355	Advance Programming Lab	0	0	2	2	1

**Table 2.1(c) III Semester (Effective from the Session: 2014-15)**

S.NO.	Course Code	Course Title	Total Number of Lectures				Credit
			Lecture	Tutorial	Practical	Total Lectures	
THEORY COURSE							
1	NOE-043	Laser Systems and Applications	3	1	0	4	4
2	EHU-402	Industrial Sociology	2	0	0	2	2
3	NEC-408	Information Theory and Coding	3	1	0	4	4
4	NCS-401	Operating System	3	1	0	4	4
5	NCS-402	Theory Of Automata and Formal Launguage	3	1	0	4	4
6	NIT-401	Multimedia and Animation	2	1	0	3	3
7	AUC-001	Human Values & Professional Ethics	2	0	0	2	-
PRACTICAL COURSE							

8	NCS-451	Operating System Lab	0	0	3	3	1
9	NIT-451	Multimedia and Animation Lab	0	0	3	3	1
10	NCS-455	Functional and Logic Programming Lab	0	0	3	3	1
11	NIT-456	Colloquium	0	0	3	3	1

**Table 2.1(d) IV Semester (Effective from the Session: 2014-15)**

S.NO.	Course Code	Course Title	Total Number of Lectures				Credit
			Lecture	Tutorial	Practical	Total Lectures	
THEORY COURSE							
1	NCS-501	Design and Analysis of Algorithm	3	1	0	4	4
2	NCS-502	Database Management System	3	1	0	4	4
3	NCS-503	Principle of Programming Language	3	1	0	4	4
4	NCS-504	Web Technology	3	1	0	4	4
5	NIT-501	Management Information System	2	1	0	3	3
6	NHU-501	Engineering Economics	2	0	0	2	2
PRACTICAL COURSE							
7	NCS-551	Design and Analysis of Algorithm Lab	0	0	3	3	1
8	NCS 552	DBMS Lab	0	0	3	3	1
9	NCS 553	Principle of Programming Language Lab	0	0	2	2	1
10	NCS 554	Web Technology Lab	0	0	2	2	1

**Table 2.1(e) V Semester (Effective from Session 2015-2016)**

S.NO.	Course Code	Course Title	Total Number of Lectures				Credit
			Lecture	Tutorial	Practical	Total Lectures	
THEORY COURSE							
1	NCS-601	Computer Networks	3	1	0	4	4
2	NCS-602	Software Engineering	3	1	0	4	4
3	NCS-603	Compiler Design	3	1	0	4	4
4	NIT-064	Knowledge based & decision Support System	3	1	0	4	4
5	NCS-066	Data Warehousing & Data Mining	2	1	0	3	3
6	NHU-601	Industrial Management	2	0	0	2	2
PRACTICAL COURSE							
7	NCS-651	Computer Networks Lab	0	0	3	3	1
8	NCS 652	Software Engineering Lab	0	0	3	3	1
9	NCS 653	Compiler Design Lab	0	0	2	2	1
10	NIT 654	Seminar	0	0	2	2	1

**Table 2.1(f) VI Semester (Effective from Session 2015-2016)**

S.NO.	Course Code	Course Title	Total Number of Lectures				Credit
			Lecture	Tutorial	Practical	Total Lectures	
THEORY COURSE							
1	NOE-077	Software Project Management	3	1	0	4	4
2	NIT-701	Cryptography & Network Security	3	1	0	4	4
3	NCS-702	Artificial Intelligence	3	1	0	4	4
4	NCS-071	Software Testing and Audit	3	1	0	4	4
5	NCS-701	Distributed System	3	1	0	4	4

<b>PRACTICAL COURSE</b>							
6	NIT-751	Cryptography & Network Security Lab	0	0	2	2	1
7	NCS 752	Project	0	0	6	6	3
8	NCS 753	Industrial Training	0	0	2	2	1

**Table 2.1(g) VII Semester (Effective from the session: 2016-17)**

S.NO.	Course Code	Course Title	Total Number of Lectures				Credit
			Lecture	Tutorial	Practical	Total Lectures	
THEORY COURSE							
1	NOE-081	Non-Conventional Energy Resources	3	1	0	4	4
2	NIT-801	Mobile Computing	3	1	0	4	4
3	NCS-801	Digital Image Processing	3	1	0	4	4
4	NCS-085	Data Compression	3	1	0	4	4
PRACTICAL COURSE							
5	NIT 851	Seminar	0	0	3	3	2
6	NCS-852	Project	0	0	12	12	7

**Table 2.1(h) VIII Semester (Effective from the session: 2016-17)**

**2.1.1. State the process used to identify extent of compliance of the University curriculum for attaining the Program Outcomes and Program Specific Outcomes as mentioned in Annexure I. Also mention the identified curricular gaps, if any (10)**

The courses & its syllabi are defined by the affiliating university i.e. Dr. A.P.J. Abdul Kalam Technical University, Lucknow. Individual Subject teacher is responsible for the formation of course outcomes of teaching subject. For mapping with POs/PSOs, the correlation levels are defined as 1 (slight / low), 2 (Moderate / Medium) and 3 (Substantial / High). The affiliating university revises the curriculum from time to time

as required. Accordingly the course outcomes and its mapping are reviewed.

The programme has well defined POs and PSOs as given below:

**Program Outcomes (POs) of Department of Information Technology**

<b>PO</b>	<b>Engineering Graduates will be able to:</b>
<b>PO1</b>	<b>Engineering knowledge:</b> Apply the knowledge of mathematics, including discrete mathematics, probability, statistics and fundamentals of various engineering disciplines like computer science and engineering, electronic engineering and electrical engineering in the core information technologies.
<b>PO2</b>	<b>Problem analysis:</b> Analyze a problem and identify the computing requirements appropriate to its solution.
<b>PO3</b>	<b>Design/development of solutions:</b> Design and implement hardware and software systems, components, process or program to meet the desired needs within reasonable economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability constraints.
<b>PO4</b>	<b>Conduct investigations of complex problems:</b> Reassess literature and indulge in research to use research based knowledge and methods to design and conduct new experiments, as well as to organize, analyze and interpret data to produce draw valid conclusions and recommendations.
<b>PO5</b>	<b>Modern tool usage:</b> Use appropriate techniques, resources, and modern engineering and IT tools necessary for computer engineering practice.

<b>PO6</b>	<b>The engineer and society:</b> Show the understanding of local and global impact of computing on individuals, organizations and society.
<b>PO7</b>	<b>Environment and sustainability:</b> Integrate IT-based solutions in environmental contexts, and demonstrate the knowledge of need for sustainable development.
<b>PO8</b>	<b>Ethics:</b> Demonstrate the knowledge of professional and ethical responsibilities along with the norms of the engineering practice.
<b>PO9</b>	<b>Individual and team work:</b> Demonstrate leadership and an ability to work as a member with responsibility to function on multi-disciplinary teams to accomplish a common goal.
<b>PO10</b>	<b>Communication:</b> Demonstrate effective communicate skills in both oral and written form with a range of audiences.
<b>PO11</b>	<b>Project management and finance:</b> Apply the knowledge and understanding of engineering and management principles to design, plan, budget and propose IT project for an identified need within a specific scope.
<b>PO12</b>	<b>Life-long learning:</b> Develop confidence to acquire new knowledge in the computing discipline and to engage in life-long learning.

**Program Specific Outcomes (PSOs) of Department of Information Technology**

<b>PSO</b>	<b>Engineering Graduates will be able to:</b>
<b>PSO1</b>	Gain detailed Knowledge of various contemporary domains to identify research gaps and hence provide solutions by new ideas and innovations.
<b>PSO2</b>	Have strong skills in learning new programming environments as it is used to automate things and simplify real world problems and human efforts.

The curriculum satisfies the POs and PSOs in the following ways as represented by Table

B.2.1.1a:

<b>Subject Name</b>	<b>Subject Code</b>	<b>PO Mapping</b>	<b>PSO Mapping</b>
<b>III Semester</b>			
Mathematics-III	NAS 301	PO1,PO2,PO3,PO4,PO5,PO11, PO12	PSO1
Digital Logic Design	NEC 309	PO1,PO2,PO3,PO4,PO5,PO6,P O7,PO11, PO12	PSO1
Data Structures Using C	NCS 301	PO1,PO2,PO3,PO4,PO11,PO1 2	PSO1, PSO2
Discrete Structures And Graph Theory	NCS 302	PO1,PO2,PO3,PO4,PO5,PO11, PO12	PSO1,PSO2
Computer Based Numerical And Statistical Technique	NCS 303	PO1,PO2,PO3,PO4,PO5,PO11, PO12	PSO1,PSO2
Industrial Psychology	NHU 301	PO1,PO2,PO3,PO4,PO5,PO6,P O7,PO8,PO9,PO10,PO12	PSO1
Digital Logic Design Lab	NEC 359	PO1,PO2,PO3,PO4,PO5,PO6,P O7,PO11,PO12	PSO1, PSO2
Data Structures Using C Lab	NCS 351	PO1,PO2,PO3,PO4,PO5,PO11, PO12	PSO1, PSO2
Numerical Techniques Lab	NCS 353	PO1,PO2,PO3,PO4,PO5,PO11, PO12	PSO1 ,PSO2
Advance Programming Lab	NCS 355	PO1,PO2,PO3,PO4,PO5,PO11, PO12	PSO1, PSO2
<b>IV Semester</b>			

Polymer Science & Technology	NOE045	PO1,PO2,PO3,PO4,PO6,PO7,P O12	PSO1
Information Theory and Coding	NEC408	PO1,PO2,PO3,PO4,PO5,PO6,P O7,PO11, PO12	PSO1, PSO2
Operating System	NCS401	PO1,PO2,PO3,PO4,PO11,PO1 2	PSO1, PSO2
Theory of Automata and Formal Language	NCS402	PO1,PO2,PO3,PO4,PO5,PO11, PO12	PSO1, PSO2
Multimedia and Animation	NIT401	PO1,PO2,PO3,PO4,PO5,PO6,P O7,PO11, PO12	PSO1, PSO2
Industrial Sociology	NHU402	PO1,PO2,PO3,PO4,PO5,PO6,P O7,PO8,PO9,PO10,PO12	PSO1
Operating System Lab	NCS451	PO1,PO2,PO3,PO4,PO5,PO11, PO12	PSO1, PSO2
Multimedia and Animation Lab	NIT451	PO1,PO2,PO3,PO4,PO5,PO6,P O7,PO11, PO12	PSO1, PSO2
Functional and Logic Programming Lab	NCS455	PO1,PO2,PO3,PO4,PO5,PO11, PO12	PSO1,
Human Value & Professional Ethics	AUC001	PO1,PO2,PO3,PO4,PO5,PO6,P O7,PO8,PO9,PO10,PO12	PSO1 ,PSO2
<b>V Semester</b>			
Design and Analysis of Algorithm	NCS501	PO1,PO2,PO3,PO4,PO11,PO1 2	PSO1 ,PSO2
Database Management System	NCS502	PO1,PO2,PO3,PO4,PO11,PO1 2	PSO1, PSO2
Principle of Programming Language	NCS503	PO1,PO2,PO3,PO4,PO11,PO1 2	PSO1, PSO2
Web Technology	NCS504	PO1,PO2,PO3,PO4,PO11,PO1 2	PSO1, PSO2
Management Information System	NIT501	PO1,PO2,PO3,PO4,PO11,PO1 2	PSO1, PSO2
Engineering Economics	NHU501	PO1,PO2,PO3,PO4,PO6,PO9,P O11,PO12	PSO1
Design and Analysis of Algorithm Lab	NCS551	PO1,PO2,PO3,PO4,PO5,PO11, PO12	PSO1, PSO2
DBMS Lab	NCS552	PO1,PO2,PO3,PO4,PO5,PO11, PO12	PSO1, PSO2
Principle of Programming Language Lab	NCS553	PO1,PO2,PO3,PO4,PO5,PO11, PO12	PSO1, PSO2
Web Technology Lab	NCS554	PO1,PO2,PO3,PO4,PO5,PO11, PO12	PSO1, PSO2
<b>VI Semester</b>			
Computer Networks	NCS601	PO1,PO2,PO3,PO4,PO5,PO11, PO12	PSO1, PSO2

Software Engineering	NCS602	PO1,PO2,PO3,PO4,PO5,PO6,P O8,PO9,PO11,PO12	PSO1, PSO2
Compiler Design	NCS603	PO1,PO2,PO3,PO4,PO5,PO6,P O8,PO9,PO11,PO12	PSO1, PSO2
Knowledge based & decision Support System	NIT064	PO1,PO2,PO3,PO4,PO5,PO6,P O8,PO9,PO11,PO12	PSO1, PSO2
Data Warehousing & Data Mining	NCS066	PO1,PO2,PO3,PO4,PO5,PO6,P O8,PO9,PO11,PO12	PSO1, PSO2
Industrial Management	NHU60 1	PO1,PO2,PO3,PO4,PO6,PO9,P O11,PO12	PSO1
Computer Network Lab	NCS651	PO1,PO2,PO3,PO4,PO5,PO11, PO12	PSO1, PSO2
Software Engineering Lab	NCS652	PO1,PO2,PO3,PO4,PO5,PO11, PO12	PSO1, PSO2
Compiler Design Lab	NCS653	PO1,PO2,PO3,PO4,PO5,PO11, PO12	PSO1, PSO2
Seminar Practical	NIT654	PO1,PO2,PO3,PO4,PO5,PO11, PO12	PSO1, ,PSO2
<b>VII Semester</b>			
Software Project Management	NOE07 7	PO1,PO2,PO3,PO4,PO5,PO6,P O8,PO9,PO11,PO12	PSO1, PSO2
Cryptography & Network Security	NIT701	PO1,PO2,PO3,PO4,PO5,PO11, PO12	PSO1, PSO2
Artificial Intelligence	NCS702	PO1,PO2,PO3,PO4,PO5,PO11, PO12	PSO1 ,PSO2
Software Testing & Audit	NCS071	PO1,PO2,PO3,PO4,PO5,PO11, PO12	PSO1, PSO2
Distributed System	NCS701	PO1,PO2,PO3,PO4,PO5,PO11, PO12	PSO1, PSO2
Cryptography & Network Security Lab	NIT751	PO1,PO2,PO3,PO4,PO5,PO11, PO12	PSO1, PSO2
Project	NCS752	PO1,PO2,PO3,PO4,PO5,PO11, PO12	PSO1, PSO2
Industrial Training	NCS753	PO1,PO2,PO3,PO4,PO5,PO11, PO12	PSO1, PSO2
<b>VIII Semester</b>			
Non-Conventional Energy Resources	NOE08 1	PO1,PO2,PO3,PO4,PO5,PO6,P O7,PO11,PO12	PSO1
Digital Image Processing	NCS801	PO1,PO2,PO3,PO4,PO5,PO11, PO12	PSO1, PSO2
Data Compression	NCS085	PO1,PO2,PO3,PO4,PO5,PO11, PO12	PSO1, PSO2
Mobile Computing	NIT801	PO1,PO2,PO3,PO4,PO5,PO11, PO12	PSO1, PSO2

Seminar	NIT851	PO1,PO2,PO3,PO4,PO5,PO11, PO12	PSO1, PSO2
Project	NIT852	PO1,PO2,PO3,PO4,PO5,PO6,PO7,PO8,PO9,PO10,PO11,PO12	PSO1, PSO2

**Table B.2.1.1.a: Curriculum and POs, PSOs Mapping**

**The compliance of the University curriculum for attaining the Program Outcomes and Program Specific Outcomes**

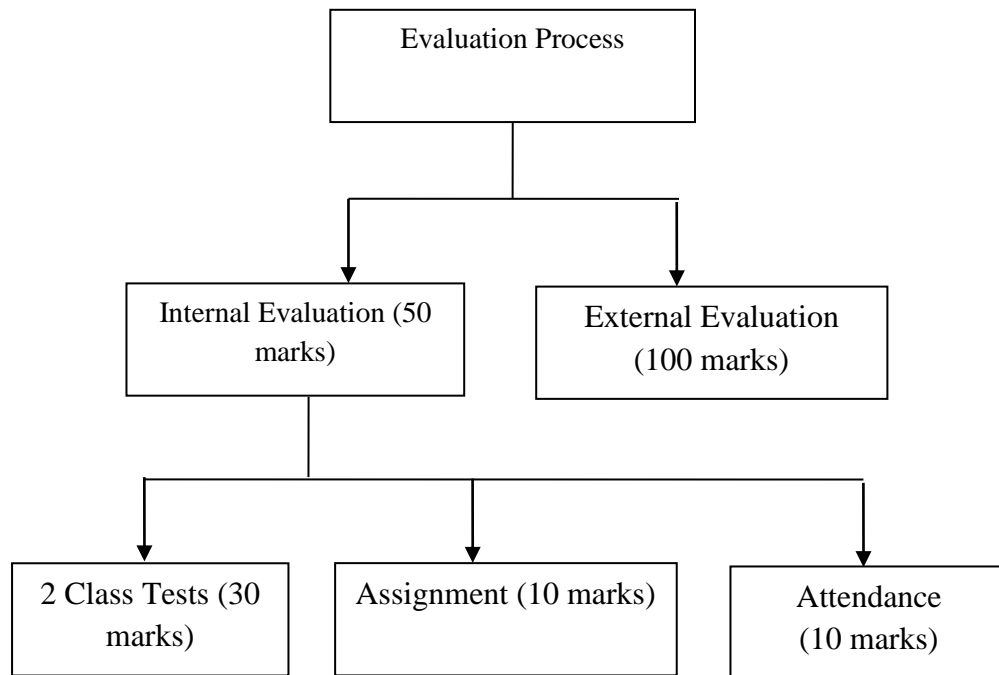
There is a well-defined and documented process in place to quantify the attainment of POs and PSOs through the curriculum. To ensure the attainment of the POs and PSOs, various direct and indirect assessment methods are followed. The Program Outcomes are achieved through curriculum that offers a number of mandatory courses as well as elective courses. Each course has defined Course Outcomes that are mapped to the Program Outcomes based on their mutual correlation. The process of measuring the attainment of POs through COs is demonstrated and properly documented the details of which are given in criteria 3.

**Various direct and indirect methods followed to attain the various POs and PSOs:**

**Direct Assessment Methods include the following:**

- **Internal Examination:** Internal sessional examination is conducted twice per semester. Each paper is of 30 marks. Apart from the two internal examinations, a third make up test is also conducted for those students who could not appear in the CTs due to any reason. Such students need to take prior permission from the HOD or the class coordinator. In addition to the average score obtained by the student, his weightage of assignment and attendance is also included while calculation his internal sessional marks. Each is of 10 marks. Total of 50 marks are considered for internal examination

- **External Examination:** External examination is conducted at the end of the semester by the university and is of 100 marks. Student is evaluated on the basis of 150 marks per subject which includes 100 marks of external examination and 50 marks of internal examination.



**Figure B.2.1.1 Evaluation Process**

- **Project Evaluation:** To fulfil the PO11 and meet PSO2, where the students can work as an individual/ team member with positive attitude and ethics in order to apply all the engineering knowledge they have gained till 7<sup>th</sup> semester, they have to work on projects in their 8<sup>th</sup> semester. The students work on these projects under the mentorship of the teachers in the respective domains. To ensure the quality assessment of the projects, two internal progress reports are submitted by the students and after that a formal presentations in front of the examiners and at the end of the semester is done.

To further strengthen the above said PO and PSO, the students undergo 6 months of industrial training in their 7<sup>th</sup> semester.

- **Seminars:** To inculcate in them the soft skills and to overall improve their confidence to speak in front of the large audience where they are made to present in front of the whole class, seminars are conducted. Also, they are made to present on the latest techniques and technologies of the relevant discipline. They are evaluated on the basis of the presentation, thorough knowledge of the topic and their command to answer the questions posed by the audience.

**Indirect Assessment Methods include:**

- **Feedback from Campus Recruiters:** A lot of companies are visiting the campus for the recruitment and training of the final year students. They have also been providing the assessment of the students and the measures which can be taken to improve the quality.

**FEEDBACK PERFORMA FROM CAMPUS RECRUITERS**

**Scoring**

Please give the candidates a numerical rating The numerical rating system is based on the following:

5 – Exceptional 4 – Above Average 3 – Average 2 – Satisfactory 1 – Unsatisfactory

Write specific job related comments in the space provided.

**Q.1. Technical Qualifications** – Do the candidates have the technical skills necessary for this position?

Rating: 1 2 3 4 5

Comments:

**Q.2. Leadership Ability** – Did the candidates demonstrate the leadership skills

necessary for this position?

Rating: 1 2 3 4 5

Comments:

**Q.3. Customer Service Skills** – Did the candidates demonstrate the knowledge and skills to create a positive customer experience/interaction necessary for this position?

Rating: 1 2 3 4 5

Comments:

**Q.4. Communication Skills** – How were the candidate's communication skills during the interview?

Rating: 1 2 3 4 5

Comments:

**Q.5. Enthusiasm** – How much interest did the candidates show in the position?

Rating: 1 2 3 4 5

Comments:

**Overall Impression and Recommendation –**

Rating: 1 2 3 4 5

Comments:

Company Name: \_\_\_\_\_ Date: \_\_\_\_\_

- **Feedback from Training Supervisors:** The students of the Information Technology department go for summer training at the end of their 6<sup>th</sup> Semester. In the 7<sup>th</sup> semester they have to give presentations of the skills they acquire during their summer training before the faculty members of the department. The department receives feedback from the

industry mentors of the students. The feedback received from them is quite vital for assessing the quality of the product which the college is producing.

- **Alumni Assessment:** The College has Alumni Association Cell. Most of these Alumni are having their own industry or working at very high positions in the industry. These Alumni are helping the college in training and placement of the students and they are in continuous touch with our students. They are also providing an overview assessment of the students which involves the identification of the grey areas. They have been imparting the advice related to new labs, workshops and the new subjects to be included in the curriculum.
- **Performance of the students in various competitive and public sector examinations** like IAS, IES, UPSC, GATE, CAT, Toeffel etc.

**Gaps identified from University course curriculum with POs and PSOs.**

Based on the evaluation & further analysis of above mentioned components, following curricular gaps are identified as shown in table 2.1.1.b.

S. N	Identified curricular gaps
1	<b>Presentation and Communication skills</b>
2	<b>Additional Programming Skills</b> (.NET, Matlab, Python, PhP, Scilab, R language etc.)
3	<b>Industry specific skills:</b> (Android, big data, software testing, network security, e-commerce, Cyber security, Cloud Computing, iOS, Oracle DBA, web based tools etc)

4	<b>Competitive Skills</b> : Aptitude & Reasoning, Group discussions and Mock Interviews, technical subjects like C,OOPS, Data structure, OS, DBMS, Networks
5	<b>Confidence building &amp; Career Based Counseling</b>
6	<b>Project Development &amp; report writing</b>  (real time/research based projects)

**Table 2.1.1 b: List of identified curricular gaps (2016-17)**

**2.1.2. State the delivery details of the content beyond the syllabus for the attainment of POs and PSOs (10)**

Table 2.1.2 (a), (b), (c) lists the details of content beyond syllabus delivery for the attainment of POs and PSOs

S.N	Gap	Action Taken	Date- Month-Year	Resource Person with designation	% of students	Relevance to POs, PSOs
1	Professional skills on C	Expert Lecture	5 May 18	Dr. Akshay Deepak, NIT Patna	30%	PO: 1,2,3,12 PSO: 1,2
2	Value Addition	Python Programming	5 May 18	Dr. J.P.Singh, NIT Patna	30%	PO: 6,8,12 PSO: 1,2
3	Research based projects	Expert Lecture on Machine	6 May 18	Dr. Arvind Kumar Tiwari, KNIT Sultanpur	10-15%	PO: 1, 2,3,4,12 PSO: 1,2

		Learning				
4	Engineering Events by Student Chapters & student clubs	Value addition	All round the semester	FACULTY MEMBERS	50- 60%	PO:5,6,7,9 PSO: 1,2
5	Industrial Training & Visits	Industry interaction	Summers, winters	IT INDUSTRIES	100%	PO: 2,5,10 PSO: 2,3,4
6	Placement preparation Modules	Preparation Classes	All round the semester	Faculty	35- 40%	PO: 1,6,8,10 PSO: 1,2
7	Group Discussions	Confidence building classes	During Saturdays	GROUP OF FACULTY MEMBERS	35- 40%	PO: 9,10,12 PSO: 1,2
8	Class room presentations	Confidence building classes	Continuou s Process	BY ALL FACULTY	100%	PO: 2,9,10 PSO: 1,2
9	Additional Course Coverage	Extra Classes	Continuou s Process	For specific courses		

**Table 2.1.2 (a) Delivery details of the contents beyond the syllabus (2017-18)**

<b>S. No</b>	<b>Gap</b>	<b>Action  Taken</b>	<b>Date-  Month-  Year</b>	<b>Resource Person  with designation</b>	<b>% of  students</b>	<b>Relevance  to  POs, PSOs</b>
1	Value Addition	Engineering Events by Student Chapters & student clubs	All round the Semester	Faculty members of department	40-50%	PO: 3,5,9,10 PSO: 1,2
2	Industry training	Industrial Training & Visits	Summer/ winter breaks/ during semester	Industrial visits	40-50%	PO: 7,10,11 PSO: 1,2
3	Career Development	Classes for Placement preparation on technical subjects	All round the Semester	Faculty Members	30-35%	PO: 1,2,10 PSO: 1,2
4	Group Discussions	Confidence building classes	During Saturdays	Group of faculty members	30-35%	PO: 6,8,9,10 PSO: 1,2
5	Potential	Remedial Classes	Continuo	By all faculty	5-10%	PO: 1,2,3

	Students		us Process			PSO: 1,2
6	Confidence building classes	Classroom presentations	Continuo us Process	By all faculty	30- 35%	PO: 2,3,9 PSO: 1,2
7	Additional Course Coverage	Course topics/lab experiments beyond syllabus	Continuo us Process	for all subjects & labs	30- 35%	PO: 1,2,3,4 PSO:1,2
8	Additional Course Coverage	Extra Classes	Continuo us Process	For specific courses	50- 60%	PO: 1,2,5, 12 PSO: 1,2
9	Department activities	Workshops, conferences, technical fests, Expert talks etc	Continuo us Process	Organization by department	20- 30%	PO: 2,3,4,5, PSO: 1,2

**Table 2.1.2 (b) Delivery details of the contents beyond the syllabus (2016-17)**

<b>S. No</b>	<b>Gap</b>	<b>Action Taken</b>	<b>Date</b>	<b>Resource Person with Designation</b>	<b>% of students</b>	<b>Relevance to PO, PSO</b>
1	Confidence building classes	Group Discussions	During Saturdays	Group of faculty members	30-40%	PO: 2,3,9 PSO: 1,2
2	Potential	Remedial Classes	Continuous	By all faculty	5-10%	PO: 1,2,3

	Students		Process			PSO: 1,2
3	Confidence building classes	Classroom presentations	Continuous Process	By all faculty	100%	PO: 2,3,9,12 PSO: 1,2
4	Additional Course Coverage	Course topics/lab experiments beyond syllabus	Continuous Process	for all subjects & labs	100%	PO: 3,4,5, 11, PSO:1,2
5	Additional Course Coverage	Extra Classes	Continuous Process	For specific courses	40-50%	PO: 1,2,3,5 PSO: 1,2
6	Department activities	Workshops, Technical Fests, Expert talks etc.	Continuous Process	Organization by department	100%	PO: 5, 9,12 PSO: 1,2

**Table 2.2 (c) Delivery details of the contents beyond the syllabus (2015-16)**

- Regular feedback & suggestions regarding the curricular gaps are passed on to the Director from departments.
- The suggestions are then shared with the university through Director.
- University has occasionally invited the suggestions on course curriculum from Head of the departments through mails.
- Gaps & inconsistencies in the university question papers are also shared with the university through Director.

## **2.2. Teaching - Learning Processes (100)**

### **2.2.1 Describe Processes followed to improve quality of Teaching & Learning (25)**

Teaching learning is well defined and documented. Following Teaching - Learning Processes is employed in the department to improve the quality of Teaching Learning:

#### **PLANNING**

- **Subject allocation:** Allocation of subjects to faculty after the end of semester. Subjects are allocated based on the choices filled by faculty.
- **Academic calendar:** Academic calendar is defined in line with university calendar at the beginning of the semester. Administrative system including director, dean academics, HoDs, important committees ensures the adherence of academic calendar.
- **Department Action Plan & review of previous semester:** Action plan for next semester is prepared & discussed in faculty meeting. Academic responsibilities are allocated & process of its implementation is discussed. Discussion & finalization of course file contents & important reports for academic monitoring. New value addition programs are decided & planned. Review of previous semester activities & outcomes is also a part of discussion.
- **Review of Course file contents**

#### **IMPLEMENTATION**

- Effective content delivery in class- Use of teaching aids, sharing of quality support material through faculty profile pages

- Effective delivery in lab sessions- use of Lab Manuals, regular viva voce, experiments beyond syllabus.

### **MONITORING**

- Effective Academic Monitoring system-Director, HoD, Class Coordinator
- Attendance monitoring by class coordinators, individual faculty, HoD
- Monitoring the overall student discipline, conduct, punctuality
- Monitoring the course coverage
- Meeting of Class Representatives with HoD & Director
- Monitoring the quality of contents delivered in class by HoD
- Monitoring of assignment allocation /marking
- Monitoring of assignment quality by individual faculty
- Monitoring through individual counseling

### **EVALUATION & ANALAYIS**

- Analysis of performance in sessional exams at HoD & Director level
- Analysis of student feedbacks
- Analysis of external university results
- Analysis of class attendance
- Analysis of course coverage
- Student performance analysis through individual faculty counselors
- Rubric based analysis
- Comparative analysis of student performance

**To ensure quality in teaching learning process various measures are taken by the department which include:**

- **Student Feedback system:** Academic feedback of students is done each semester where the complete details of the current academic performance of a graduate are sent via post to parents.
- **Academic surveys:** Graduate Exit surveys, Alumni Survey, Feedback from parents, Course End survey, and feedback of students by faculty.
- **Academic audits:** regular audits of course files, lab records, assignments, results, engineering events etc.
- **Regular Conduct of Faculty Development Programmes:** The faculty members are encouraged to undergo internal as well as external faculty development Programmes in order to improve their pedagogical skills from time to time.
- **Encouraging Bright Students and Assisting Weak Students:** The department adopts the mechanism wherein the students are identified as slow learners (C Category) and advanced learners (A Category) from the scores in the examinations.
  - ✓ The slow learners are then given special attention by the subject teachers. The remedial classes are also conducted by the respective teachers for slow learners. Generally, these remedial classes are conducted by the individual subject teachers according to the availability of slots in their respective time-tables as well as the availability of the students.
  - ✓ If required, slow learners are also provided with the study material by the subject teachers. Those who have special needs, like physically handicapped students, are provided special care by the subject teachers for their queries.

B.Tech Third Year (IT) NCS -603 First Sessional Marks				
S.No	ROLL No	Name of Student	CT1 Marks	Category
1	1473713006	AMAR KUMAR	2	A  C a t e g o r y
2	1473713009	ARUN KUMAR VERMA	3	
3	1573713021	PAPPU KUMAR	3	
4	1673713801	SURAJ	4	
5	1473713018	KUSHAGRA RAY	5	
6	1673713906	RIZWAN AHMAD	6	
7	1673713902	ABHISHEK KUMAR GAUTAM	8	
8	1573713022	PRAGATI PATHAK	9	
9	1673713903	AFROZ AMEEN	9	
10	1573713008	ARUN KUMAR	10	
11	1573713034	SURENDRA KUMAR	10	
12	1573713006	ANUSHKA SINGH	11	
13	1573713024	PRASHANT SHEKHAR	12	
14	1573713032	SHUBHAM VERMA	12	
15	1573713007	ARNAV SINGH	14	B  C a t e g o r y
16	1573713004	ANAND KUMAR GUPTA	15	
17	1573713033	SUNIL KUMAR PRASAD	15	
18	1573713037	VINAY KUMAR	15	
19	1573713001	ABHISHEK PRAJAPATI	16	
20	1573713003	AMIT KUMAR	16	
21	1573713019	NITIN KUMAR	16	
22	1573713020	NITIN KUMAR MAURYA	16	
23	1573713011	JYOTI BHARTI	17	
24	1573713013	KANCHAN	17	
25	1573713026	PRAVEEN KUMAR	17	
26	1573713038	VIVEK KUMAR	17	
27	1673713904	AMRITA GUPTA	17	
28	1573713009	ARVIND KUMAR SHUKLA	18	
29	1573713015	MAHIMA CHAUDHARY	18	
30	1573713025	PRASHANT SINGH	18	C  C a t e g o r y
31	1573713029	RAJNEESH KUMAR YADAV	18	
32	1573713005	ANITA KUMARI	20	
33	1573713010	DEEPTI PANKAJ	20	
34	1573713017	MOHIT JAISWAL	20	
35	1573713018	MOHIT KUMAR	20	
36	1573713016	MANIND SINGH CHAUHAN	21	
37	1673713901	AASHIF AZA	22	
38	1573713002	ADARSH KUMAR YADAV	25	
39	1573713031	SHREESH GUPTA	25	
40	1573713012	KAMAL KRISHN GUPTA	26	
41	1673713905	DEEPIKA KUMARI	26	
42	1573713035	VIJETA SHARMA	27	
43	1573713023	PRASHANT KUMAR	28	
44	1573713030	ROHIT KUMAR	29	
45	1573713014	KRISHNA KANT VERMA	ABSENT	
46	1573713027	RAHUL KUMAR	ABSENT	

## Notice

This is to inform to the students of B.Tech IT 3rd year that remedial classes of Compiler Design (NCS-603) are being arranged from 11/03/2018 to 16/03/2018 in the department from 05:00 pm to 6:00 pm. Following students are instructed to attend these classes regularly.

S.No	ROLL No	Name of Student
1	1473713006	AMAR KUMAR
2	1473713009	ARUN KUMAR VERMA
3	1573713021	PAPPU KUMAR
4	1673713801	SURAJ
5	1473713018	KUSHAGRA RAY
6	1673713906	RIZWAN AHMAD
7	1673713902	ABHISHEK KUMAR GAUTAM
8	1573713022	PRAGATI PATHAK
9	1673713903	AFROZ AMEEN
10	1573713008	ARUN KUMAR
11	1573713034	SURENDRA KUMAR
12	1573713006	ANUSHKA SINGH
13	1573713024	PRASHANT SHEKHAR
14	1573713032	SHUBHAM VERMA

**Note: Attendance is mandatory for the same.**

Class Coordinator IT-3rd Year

Copy to:

1. Head of the Department
2. Notice Board
3. Guard File

- **Use of ICT:** Various Information and Communication Technology (ICT) technologies have been adopted by students and faculty like Wi-Fi Campus, Video lectures, NPTEL, assignments & tutorials are uploaded on the individual faculty webpage, e-journals, e-books etc.
- **Skill Development Workshops:** The department of Information Technology conducts skill development workshops from time to time for students of the department. The students learn and practice fundamentals of various fields in these workshops.
- **Enhancing Learning through Labs and Workshops:** Practical experiments in labs and skill enhancement through workshop practice occupies a significant part of the curriculum. To stay in pace with the ever changing technology, the department continuously strives to update its labs. There is continuous assessment of the students in these labs and workshops through job performance and viva-voce.
- **Academic Audit:** An academic audit is conducted at the end of each semester by the head of the department. In this audit, quality of mid-term question papers and assignments prepared by the faculty members are evaluated and suggestions for improvements (if any) are given.
- **Counselling of Students:** Each student of the department has a faculty member as mentor, who keeps all the records of the students and counsel the students for any professional/personal matters. In addition, a special Career Counselling Cell is also formulated in the University which contributes to increase the quality of teaching and learning. It helps to create awareness among the students about emerging professional trends and entrepreneurship and market needs etc. It also helps the students in the development of their strengths and sharpening their interests.

Ref.No: REC/ITD/CC3/001/18

Date:

08/03/2018

### **Notice**

All the students of B.Tech IT Third year are hereby informed that the following mentor list will be followed for the even semester 2017-18 session. Students have to meet their mentor every week on Saturdays.

<b>Department of Information Technology</b>			
<b><u>Mentor List of Students 3rd Year IT (EVEN Sem) 2017-18</u></b>			
	<b>Roll No.</b>	<b>Student Name</b>	<b>Mentor Name</b>
1	1473713006	AMAR KUMAR	Mr.Sharad Verma
2	1473713009	ARUN KUMAR VERMA	
3	1473713018	KUSHAGRA RAY	
4	1573713001	ABHISHEK PRAJAPATI	
5	1573713002	ADARSH KUMAR YADAV	
6	1573713003	AMIT KUMAR	
7	1573713004	ANAND KUMAR GUPTA	
8	1573713005	ANITA KUMARI	
9	1573713006	ANUSHKA SINGH	
10	1573713007	ARNAV SINGH	Mr. Ashish Kumar Mishra
11	1573713008	ARUN KUMAR	
12	1573713009	ARVIND KUMAR SHUKLA	
13	1573713010	DEEPTI PANKAJ	

14	1573713011	JYOTI BHARTI	
15	1573713012	KAMAL KRISHN GUPTA	
16	1573713013	KANCHAN	
17	1573713014	KRISHNA KANT VERMA	
18	1573713015	MAHIMA CHAUDHARY	
19	1573713016	MANIND SINGH CHAUHAN	Mr. Amit Kumar
20	1573713017	MOHIT JAISWAL	
21	1573713018	MOHIT KUMAR	
22	1573713019	NITIN KUMAR	
23	1573713020	NITIN KUMAR MAURYA	
24	1573713021	PAPPU KUMAR	
25	1573713022	PRAGATI PATHAK	
26	1573713023	PRASHANT KUMAR	
27	1573713024	PRASHANT SHEKHAR	
28	1573713025	PRASHANT SINGH	Dr. Sudhakar Tripathi
29	1573713026	PRAVEEN KUMAR	
30	1573713027	RAHUL KUMAR	
31	1573713029	RAJNEESH KUMAR YADAV	
32	1573713030	ROHIT KUMAR	
33	1573713031	SHREESH GUPTA	
34	1573713032	SHUBHAM VERMA	
35	1573713033	SUNIL KUMAR PRASAD	
36	1573713034	SURENDRA KUMAR	

37	1573713035	VIJETA SHARMA	Ms. Deepa Verma
38	1573713037	VINAY KUMAR	
39	1573713038	VIVEK KUMAR	
40	1673713801	SURAJ	
41	1673713901	AASHIF AZA	
42	1673713902	ABHISHEK KUMAR GAUTAM	
43	1673713903	AFROZ AMEEN	
44	1673713904	AMRITA GUPTA	
45	1673713905	DEEPIKA KUMARI	
46	1673713906	RIZWAN AHMAD	

Class Coordinator IT-3rd Year

Copy to:

1. Head of the Department
2. Notice Board
3. Guard File

- **Impact Analysis/ Exit Survey:** The final year students at the end of B.Tech course are required to fill a feedback form regarding various aspects of teaching learning process and infrastructure of the department. The details of which are given in criterion 7. The necessary actions are taken by the authorities based on this feedback to improve teaching learning process. The exit survey results for POs and PSOs for B.Tech IT, 2017 are given below:

PO/PSO No.	Description	Exit survey question	Ratings			Weighted Average	% Attainment
			1	2	3		
PO1	Apply the knowledge of mathematics, including discrete mathematics, probability, statistics and fundamentals of various engineering disciplines like computer science and engineering, electronic engineering and electrical engineering	To what level are you able to apply the engineering concept to solve the problem?	1	3	40	2.8	96.21%

	in the core information technologies.						
PO2	Analyze a problem and identify the computing requirements appropriate to its solution.	To what extent are you able to analyze and formulate the problems?	4	5	35	2.70	90.15%
PO3	<b>Design and implement hardware and software systems, components, process or program to meet the desired needs within reasonable economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability constraints</b>	To what level are you able to design and implement software solutions to problems?	4	4	36	2.72	90.90%
PO4	Reassess literature and indulge in research to	To what level are you able to	5	5	34	2.65	88.63%

	use research based knowledge and methods to design and conduct new experiments, as well as to organize, analyze and interpret data to produce draw valid conclusions and recommendations.	analyze and interpret the data?					
PO5	Use appropriate techniques, resources, and modern engineering and IT tools necessary for computer engineering practice.	To what level are you able to use state of art IT tools?	3	4	37	2.77	92.42%
PO6	Show the understanding of local and global impact of computing on individuals,	To what level are you able to analyze societal health, legal and cultural issues related to	3	6	35	2.72	90.90%

	organizations and society.	computing practices?					
PO7	<b>Integrate</b> IT-based solutions in environmental contexts, and demonstrate the knowledge of need for sustainable development	To what level are you able to understand environmental context and need for sustainable development?	2	2	40	2.86	95.45%
PO8	Demonstrate the knowledge of professional and ethical responsibilities along with the norms of the engineering practice.	To what level are you able to understand ethical principles and responsibilities?	0	6	38	2.86	95.45%
PO9	Demonstrate leadership and an ability to work as a member with responsibility to function on multi-	To what extent are you able to understand the functions effectively as an individuals and	0	4	40	2.90	96.96%

	disciplinary teams to accomplish a common goal	leader of diverse team?					
PO10	Demonstrate effective communicate skills in both oral and written form with a range of audiences	To what level are you able to communicate the complex engineering problems?	4	1	39	2.79	93.18%
PO11	Apply the knowledge and understanding of engineering and management principles to design, plan, budget and propose IT project for an identified need within a specific scope.	To what level are you able to demonstrate knowledge and the project management principles?	5	2	37	2.72	90.90
PO12	Develop confidence to acquire new knowledge in the computing discipline and to engage in life-long learning	To what extent are you are able to analyze the lifelong learning technique related	7	3	34	2.61	87.12%

		to Information Technology?					
PSO1	Gain detailed Knowledge of various contemporary domains to identify research gaps and hence provide solutions by new ideas and innovations.	To what extent are you able to identify contemporary research gaps?	2	2	40	2.86	95.45%
PSO 2	Have strong skills in learning new programming environments as it is used to automate things and simplify real world problems and human efforts.	To what level are you able to develop software solution/program to solve real life problems?	0	3	41	2.93	97.72%

**Table B.2.2.1.a: Performa of Exit Survey for POs and PSOs for B.Tech Information Technology, 2018**

**Note: Total Number of Participants=44**

### **2.2.2. Quality of internal semester Question papers, Assignments and Evaluation (20)**

Question papers for University Semester Exams are prepared by the university itself. We are required to prepare question papers, assignments for all other internal assessments including Sessional exams (two exams in a semester), internal viva-voce for laboratories etc.

#### **A. Initiatives:**

Following initiatives have been devised at department level to prepare quality assignments for all internal assessments

- A department advisory committee is formed at the start of each semester to take care of the quality of assignments & question papers. This committee includes, class coordinators & HoD.
- Discussions on few sample assignments/ question papers/Lab Assignments types are done to help the faculty members to understand what kind of assignments should be given.
- Assignments/ Lab Assignments are prepared & evaluated at the beginning of the semester itself.
- Weekly assignments/ Lab Assignments are provided against each subject.
- Assignments/ Lab Assignments provided are from the contents taught during that week.
- The assignments/ question papers/Lab Assignments are prepared by the individual subject teachers in consultation with coordinators
- Faculty members are also encouraged to include case studies and standard questions that

are important from examination viewpoint.

- Students are encouraged to use standard contents /references on internet & follow standard books while writing their assignments.
- Subject assignments also include few questions on ‘contents beyond the syllabus.

## **B. Implementation Details**

### **Student assignments**

- Students must do the assignments on a separate copy/file for each subject.
- Assignments are checked /graded by the faculty on a regular basis.
- The solutions to given assignments are discussed in tutorial classes/other problem solving classes.
- Solutions of best student assignments are also discussed in classes.

### **Question papers (Sessional/Class tests):**

- Individual question papers are prepared by each faculty.
- References from standard books, old university question papers and case studies.
- The standard & quality of questions is strictly maintained.
- Questions papers are prepared strictly as per the format of the university.
- Quality of question papers are checked by department advisory committee.
- The solutions, common mistakes & the best answer sheets are discussed in the classes.

### **Laboratory Assignments**

- A list of experiments is prepared at the beginning of the semester.
- The reference for preparing the list is obviously the university syllabus.
- We also include few assignments as additional experiments beyond the syllabus.

- Concepts learnt during theory classes are practically implemented during Lab hours.

### **C. Evaluation & Analysis**

#### **Student assignments**

- Sample copies of checked assignments are analyzed by the department advisory committee.
- Student class coordinators provide useful inputs to Class coordinators/HoD on the entire process of assignment.
- Assignments are also evaluated by HoD during the evaluation of course files on regular basis.
- The checked assignment accounts for 10 marks allocation to students which are one of the components of his internal assessment for each subject as per the affiliating university norms.
- Students not submitting their assignments are further counseled and if required his/her feedback may be shared to his/her parents. Doing assignments is a compulsory academic activity.

#### **Question papers (Sessional/Class tests):**

- A comparative evaluation of student's performance is carried out after each test.
- We try to follow a common scheme while evaluation of papers.
- Students are required to check their answer sheets after evaluations.

### Laboratory Assignments

- Each lab experiment is well documented as per a common format including heads like Objectives, Introduction, Algorithms/model, implementation, applications, analysis, conclusion
- Faculty is encouraged to include implementation of one mini project in the labs.
- Monthly evaluation method including Viva-Voce is employed to evaluate the performance of students in labs.

**Note:** The setting of internal examination papers as well as the assignments is strictly as per the COs defined for the subject. In order to maintain the quality of internal semester question papers and assignments they are reviewed during the final academic audit at the end of each semester.

A sample for the internal examination and Assignment along with the CO mapping for the course of Compiler Design (NCS-603) is given below:

Course		Statement
NCS-603	CO1	Identify and explain different phases and passes of compilation process.
	CO2	Write lexical rules and grammars for a programming language.
	CO3	Compare different types of parsers and test semantic rules into a parser that performs attribution while parsing
	CO4	Describe the concepts of storage administration for different programming environments.
	CO5	Design different representations of intermediate code and produce the optimum machine code from the same.

Max Marks: 30

Max time: 90 Minutes

Roll No:

--	--	--	--	--	--	--	--	--	--

All Question carry equal marks.

1. Attempt **All** Questions.  
(1\*6=6)

- What is the role of left recursion?
- Explain the term token, lexeme and pattern.
- Differentiate between dynamic loaders and linkers.
- Design a DFA to accept strings with 0's and 1's so that number of 0's should be even and number of 1's is divisible by 3.
- Consider the CFG with {S,A,B} as the non-terminal alphabet, {a,b} as the terminal alphabet, S as the start symbol and the following set of production rules

$S \rightarrow aB/bA$

$B \rightarrow b/bS/aBB$

$A \rightarrow As/a/bAA$

Derive the string "aabbab" from the given grammar. Is this grammar ambiguous?

- Explain with the help of an example how left factoring can be avoided?
2. Attempt **any three** Questions. All Question carry equal marks. (3\*3=9)
- Discuss merits and demerits of single pass compiler and multi pass compiler.
  - Differentiate between compilers and interpreters.
  - Explain how LEX tool can be used to create lexical analyser?
  - What is a cross compiler? How is bootstrapping of a compiler done to a second machine?
3. Attempt **any three** Questions. All Question carry equal marks. (5\*3=15)
- Get minimum DFA for regular expression  $(11)^* + (111)^*$  by using Thompson's Algorithm.
  - Explain the phases of compiler in detail. Write down the output of each phase for the expression  $a=b*c+50$ . Standard precedence for operators may be used.
  - What is the role of lexical analyser? Enumerate the issues handled by lexical analyser.
  - Consider the following grammar:

$S' \rightarrow S\#$

$S \rightarrow ABC$

$A \rightarrow a/bbD$

$B \rightarrow a/\epsilon$

$C \rightarrow b/\epsilon$

$D \rightarrow c/\epsilon$

Construct the first and follow sets for the grammar also design a LL (1) parsing table for the grammar. Using the string bbcab# demonstrate the parsing steps.

CO	Mapping with Questions
CO1	Q1(b), (c), (d) Q2(a), (b), (d) Q3(a), (b)
CO2	Q1(a), (e), (f), Q3 (c)
CO3	Q2 (c), Q3 (d)
CO4	-
CO5	-

RAJKIYA ENGINEERING COLLEGE (737), AMBEDKAR NAGAR-224122  
B.Tech 3rd Year Information Technology  
Compiler Design (NCS 603) Assignment 1

1. What is the number of tokens in the following C statement:
  - i. `int array [7][8][9];`
  - ii. `i >= j ? i : j ;`
2. Give a DFA for  $\Sigma = \{0, 1\}$  that Accepts the set of strings that
  - i. Start with 0 and end with 0.
  - ii. Contains at least two 0's or at most two 1's.
3. Convert the following regular expression to a minimum state DFA using the Thompson Algorithm.

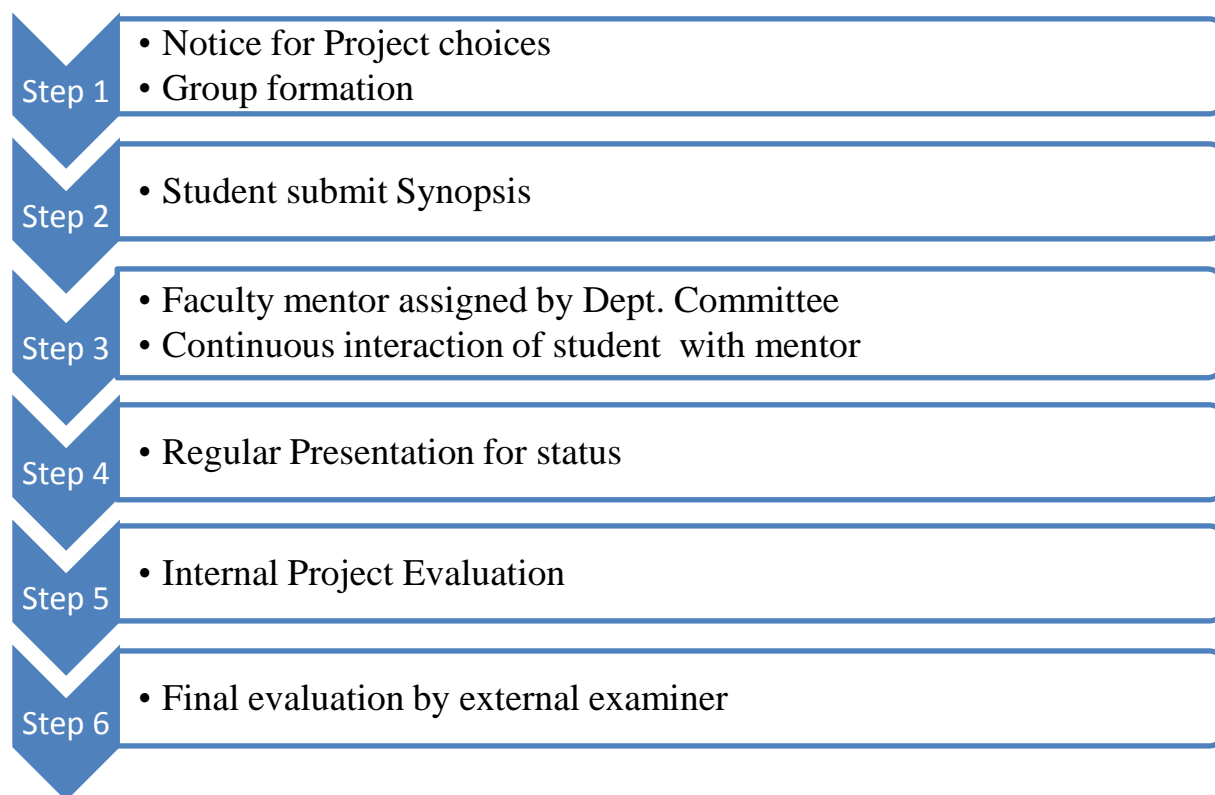
**R.E. =  $1(00+01)^*0$**

4. What is the language described by the following regular expressions over the alphabet  $\{0, 1\}$ ?
  - i.  $(0+1)^*0(0+1)^*0(0+1)^*$
  - ii.  $(1+011)^*$
5. Find a regular expression which represents the set of strings over  $\{0, 1\}$  which contains
  - i. The two substrings 00 and 11
  - ii. Alternating zeroes and ones
6. Give a CFG for the following languages
  - i. Corresponding to the RE  $00^*11^*$
  - ii. All binary strings with both an even number of zeroes and an even number of ones.
7. Remove the ambiguity from the following grammar:  
 $P \rightarrow P \vee P / P \wedge P / \sim P / (P) / id$   
 $id = p/q/r$   
 Give the derivation of  $\sim(p \wedge q)$

CO	Mapping with Questions
CO1	Q1
CO2	Q2,Q3,Q4,Q5,Q6
CO3	Q7
CO4	-
CO5	-

### 2.2.3. Quality of Student Projects (25)

The department of Information Technology follows the below procedure for the student project assignment and evaluation.



#### **Project identification & allotment**

- Technical project proposals are first invited from the faculty members.
- Proposals are discussed along with project committee involving project coordinators to discuss its relevance from implementation & availability of resources view point.
- Good projects are also invited from the self-motivated student members.
- Each class is assigned a dedicated project coordinator to monitor the progress of all

the projects of that class.

- Once the projects are finalized, students groups are formed with similar interests. Maximum of 3-4 students are allowed in a group.
- Finally the projects are assigned to various student groups.
- Students then consult with their assigned project guides to understand the overall idea.
- Project allocation for final year is generally done in the VI semester of their course itself.
- Students are now asked to submit & present a project synopsis after 10-15 days.

### **Continuous Monitoring & evaluation**

- Student members are required to meet their faculty supervisors on weekly basis.
- This weekly assessment report duly signed by the faculty supervisors, needs to be submitted to the project coordinator.
- At least 3-4 presentations are scheduled during the semester.
- Students are also encouraged to take useful inputs/help from their seniors/industry personals that they know.
- The cumulative performance of students in these presentations is properly documented and forms the basis for award of final marks.
- Few students have also published their work.
- It is ensured that student completes all the phases of the project development by his own to so as to learn to apply the concepts and gain enough confidence for real projects.

### **Awards & recognition**

- Best projects are recognized by giving best project certificates
- Students who have developed good projects on their self are also recognized & awarded on public platforms.

### **Parameters to analyze quality of student projects and award of marks:**

- Ability of the students to demonstrate the overall idea & objectives.
- Ability of the students to demonstrate innovation, unique features and use of project in real world.
- Student's ability to write & present the work effectively during the project presentations.
- The ability to use design methodologies to prepare a model/design of the overall project.
- Ability to apply the concepts of software engineering & project management concepts for designing, implementation, documentation etc.
- Ability to present the results & outcomes in appropriate manner.
- Ability to document the project as per the given instructions. His ability to write & represent the contents.

**List of potential projects developed by Final Year Students (2015-16, 2016-17, 2017-18 session).**

Projects are evaluated and rated on the following parameters

- % of Completion,
- Innovation/Uniqueness, Research Significance
- Application in real world
- Methodology & use of Advance Computational Techniques

<b>Roll No.</b>	<b>Name</b>	<b>Guide Name (Final Year Project)</b>	<b>Project Topic (Final Year Project)</b>	<b>POs addressed</b>	<b>PSOs addressed</b>
1473713001	KM.AADITYA	PRINCE RAJPOOT	Optimized H.LEACH algorithm for clustering to improve lifetime of WSN	1,2,3,4,5,6,8,9,10,11,12	1,2
1473713002	Abhishek Singh Bhadauria	Mr. Ashish Kumar Mishra	Trust Management in multi cloud environment	1,2,3,4,5,6,8,9,10,11,12	1,2
1473713003	ADARSH KAROSIA	Amit Kumar	Whale optimization algorithm	1,2,3,4,5,6,8,9,10,11,12	1,2
1473713004	Adarsh kumar singh	Dr. Sudhakar Tripathi	Artificial neural networking	1,2,3,4,5,6,8,9,10,11,12	1,2
1473713005	Aditya kumar	Shivendu mishra	VANET	1,2,3,4,5,6,8,9,10,11,12	1,2
1473713007	amit kumar sharma	akhilesh kumar	blackhole attack in manet	1,2,3,4,5,6,8,9,10,11,12	1,2
1473713008	Amit Kumar Singh	Dr. Sudhakar Tripathi	Artificial Neural Network	1,2,3,4,5,6,8,9,10,11,12	1,2
1473713011	DHANANJAY KUMAR PAL	Mr. Sharad verma	Aspect extraction	1,2,3,4,5,6,8,9,10,11,12	1,2
1473713012	Gaurav Singh	Sharad Verma	Aspect extraction	1,2,3,4,5,6,8,9,10,11,12	1,2

1473713013	Km Swarnlata	Mr. Shivendu Mishra	C programming android application	1,2,3,4,5,6,8,9,10,11,12	1,2
1473713015	Km. Rashmi Verma	Mr. Prince Rajpoot	Partition Based Strategic Node Placement and Efficient Communication Method for WSN	1,2,3,4,5,6,8,9,10,11,12	1,2
1473713016	Ruby sagar	Mr. Shivendra Kumar pandey	Energy efficient unequal clustering	1,2,3,4,5,6,8,9,10,11,12	1,2
1473713017	KUNVAR KANHAIYA	Mr. Shobhit Kumar	Licence plate recognition system using neural network	1,2,3,4,5,6,8,9,10,11,12	1,2
1473713019	Manish sonker	Akhilesh kumar maurya	MPLS traffic Engineering	1,2,3,4,5,6,8,9,10,11,12	1,2
1473713020	MAYANK TYAGI	Mr.Shobhit Kumar	A survey on Security in MANET.	1,2,3,4,5,6,8,9,10,11,12	1,2
1473713021	Mohit bhaskar	Mr.Ramesh Chandra Panday	Passive Forgery Technique for Image Tempering	1,2,3,4,5,6,8,9,10,11,12	1,2
1473713022	Mohit Verma	Amit Kumar	Solving TSP Using Whale Optimization Algorithm	1,2,3,4,5,6,8,9,10,11,12	1,2
1473713023	Mukesh Kumar	Ramesh Chandra Panday	Passive Forgery Technique for Image Tempering	1,2,3,4,5,6,8,9,10,11,12	1,2
1473713024	Neetu Verma	Prince Rajpoot	Energy Efficient Protocol to Supervise Overground Pipeline using WSN	1,2,3,4,5,6,8,9,10,11,12	1,2
1473713025	Preeti	Shivendra Kumar Pandey	Energy Efficient Unequal Clustering	1,2,3,4,5,6,8,9,10,11,12	1,2

1473713026	Priyanka kumari	Mr. Shivendra kumar panday	Multi objective energy - distance clustering in wsn	1,2,3,4,5,6,8,9,10,11,12	1,2
1473713027	Rachit Kumar	Mrs.Deepa Verma	Evolution of AI through games	1,2,3,4,5,6,8,9,10,11,12	1,2
1473713029	Renuka Raj	Mr. Sohit Shukla	Clustering techniques used in cloud computing for reducing environmental harm.	1,2,3,4,5,6,8,9,10,11,12	1,2
1473713030	ROBIN KUMAR	PRINCE RAJPOOT	Optimized H-LEACH algorithm for clustering to improve lifetime of WSN	1,2,3,4,5,6,8,9,10,11,12	1,2
1473713031	Rohit Kumar Yadav	Shobhit Kumar	License plate Recognition using Neural Network	1,2,3,4,5,6,8,9,10,11,12	1,2
1473713032	Rohit Ranjan	Akhilesh Kumar	MPLS traffic engineer	1,2,3,4,5,6,8,9,10,11,12	1,2
1473713034	Saurabh Kumar	Amit kumar	Lion optimization algorithm	1,2,3,4,5,6,8,9,10,11,12	1,2
1473713035	Shalikram	Mr. Shivendra Panday	Multi objective energy-distance clustering	1,2,3,4,5,6,8,9,10,11,12	1,2
1473713036	Shivalika Dev	Sudhakar Tripathi	Clustering and Classification	1,2,3,4,5,6,8,9,10,11,12	1,2
1473713037	Shivam Varshney	Dr. Sudhakar Tripathi	Classification on protein	1,2,3,4,5,6,8,9,10,11,12	1,2
1473713039	Shubham Harsh Singh	Mr. Prince Rajpoot	Partition Based Strategic Node Placement and Efficient Communication Method for WSN	1,2,3,4,5,6,8,9,10,11,12	1,2
1473713040	Sumit kumar	Amit kumar	Ant lion optimization algorithm	1,2,3,4,5,6,8,9,10,11,12	1,2
1473713041	Vaibhav	Akhilesh Kumar Maurya	Black Hole Attack In MANET	1,2,3,4,5,6,8,9,10,11,12	1,2

1473713042	Vivek kumar Chaudhary	Shivendu mishra	Vanet	1,2,3,4,5,6,8,9,10,11,12	1,2
1473713043	Vivek Kumar Gautam	Mrs Deepa Verma	Evolution of Artificial Intelligence through Computer Games	1,2,3,4,5,6,8,9,10,11,12	1,2
1473713044	Vivekanand	Shohit Shukla	Clustering Techniques Used In Cloud Computing	1,2,3,4,5,6,8,9,10,11,12	1,2
1573713901	Abhishek Kumar Pandey	Sharad Verma	Sentiment Analysis	1,2,3,4,5,6,8,9,10,11,12	1,2
1573713902	Deepak Kumar Maurya	Aashish Kumar Mishra	A cloud based black box solar predictor for smart home	1,2,3,4,5,6,8,9,10,11,12	1,2
1573713903	GAURAV GANGWAR	Ramesh Chand Pandey	Passive forgery technique for image tempering	1,2,3,4,5,6,8,9,10,11,12	1,2
1573713904	Kumari Pallavi	Mr. Shivendu Mishra	C program web applications	1,2,3,4,5,6,8,9,10,11,12	1,2
1573713905	Manjeet Singh	Mr Sharad Verma	Sentiment Analysis	1,2,3,4,5,6,8,9,10,11,12	1,2
1573713906	Neha Pandey	Prince Rajpoot	Energy Efficient Protocol to Supervise Overground Pipeline using WSN	1,2,3,4,5,6,8,9,10,11,12	1,2
1573713907	Ruchi tiwari	Ramesh chand pandey	Passive forgery technique for image tempering	1,2,3,4,5,6,8,9,10,11,12	1,2
1573713909	Vidish mishra	Mr ashish kumar mishra	A cloud based black box solar predictor for smart homes	1,2,3,4,5,6,8,9,10,11,12	1,2

**Table 2.6(a): Selected Projects for CAY (2017-18)**

Group no	NAME	Guide	Project Topic	POs addressed	PSOs addressed	Justification Parameters	RATING (Out of 5)
1	Swati Jaiswal	Ms. Supriya Mishra	Mobile Healthcare Emergency	1,2,3,4,5,6,8,9,10,11,12	1,2	Innovative idea, Usefulness in real world, Use of Latest Technology, Application of Concepts	4
	Gita Dwivedi						
	Vasudha						
2	Amit Kumar	Mr. Shobhit Kumar	Secure Intranet	1,2,3,4,5,6,8,9,10,11,12	1,2	Usefulness in real world, Use of Latest Technology, Application of Concepts	4
	Abhay Kumar Katyar						
	Vicky Vikrant						
3	Anuj Kumar	Mr. Rakesh Kumar	Agriculture Information System	1,2,3,4,5,6,8,9,10,11,12	1,2	Usefulness in real world, Use of Latest Technology, Application of Concepts	3
	Aman Kumar						
	Munnilal						
4	Satish	Mrs. Deepa Verma	Civil Registry System	1,2,3,4,5,6,8,9,10,11,12	1,2	Usefulness in real world, Use of Latest Technology, Application of Concepts	3
	Diksha Rawat						
	Kahakahas						
5	Preeti Rana	Ms. Ritu Verma	Online Shopping System	1,2,3,4,5,6,8,9,10,11,12	1,2	Innovative idea, Usefulness in real world, Use of Latest Technology, Application of Concepts	4
	Kavita Kumari						

**Table 2.6(b): Selected Projects for CAYm1 (2016-17)**

Group no	NAME	Guide	Project Topic	POs addressed	PSOs addressed	Justification Parameters	RATING (Out of 5)
1	Kranti Gaurav	Mr. Ashish Kumar Srivastava	Online Voting System	1,2,3,4,5,6,8,9,10,11,12	1,2	Innovative idea, Usefulness in real world, Use of Latest Technology, Application of Concepts	4
	Nisha Singh Chauhan						
	Pankaj Singh						
2	Pankaj Kumar	Mr. Shobhit Kumar	Office Automation	1,2,3,4,5,6,8,9,10,11,12	1,2	Usefulness in real world, Use of Latest Technology, Application of Concepts	4
	Pooja Singh						
	Arti						
3	Vineet Kumar	Ms Monica Maurya	Share Trading	1,2,3,4,5,6,8,9,10,11,12	1,2	Usefulness in real world, Use of Latest Technology, Application of Concepts	3
	Vikas Yadav						
	Amaresh Kumar pandey						
4	Ashish Kumar	Mr. Kakesh Kumar	Online exam portal	1,2,3,4,5,6,8,9,10,11,12	1,2	Usefulness in real world, Use of Latest Technology, Application of Concepts	3
	Rishi Kumar						
	Ashutosh rai						
5	Shivani Shakya	Ms. Supriya Mishra	Online Education	1,2,3,4,5,6,8,9,10,11,12	1,2	Innovative idea, Usefulness in real world, Use of Latest Technology, Application of Concepts	4
	Neeta Kumari						

**Table 2.6(c): Selected Projects for CAYm2 (2015-16)**

**Note:** Projects above are rated using the following scheme:

Rating	
5	Excellent
4	Very Good
3	Good
2	Average
1	Poor

Few students also develop additional projects pertaining to college requirements, collaborative project from some industry as a part of the in-house development cell in guidance of faculty members.

#### **2.2.4. Initiatives related to Industry Interaction**

**(15)**

A strong Academia-Industry Interaction is the major focus of the department as well as the College. Higher education is not only synonym with the world class facilities, faculty and students but also with the involvement of industry in academia. Whatever we do and facilitate our students with, it remains incomplete without the involvement of the industry where this knowledge is actually gets implemented.

The College has created an **Industrial Relations cell** which work towards opening the various avenues where we can collaborate with the industry. They include:

- To create an ‘Industry Lecture Series’ by setting up a pool of distinguished guest lectures from industry experts.
- To set up relevant Centers of Excellence (CoE) in REC Ambedkar Nagar with industry /corporate players.
- Organize ‘Short-term Training’ opportunities (4-8 weeks) for students.

- Attract 'Industry Projects' to the College for execution by students/departments
- To arrange for Industry sponsored conferences.
- Make latest tools/technologies available from leading companies to provide practical exposure for faculty.
- Help setup Faculty Development Programs, Workshop & Seminar delivered by Industry Personnel. They could range from one day to 15 days.
- Enable faculty to modify the curriculum that suits evolving industry needs and promote industry participation in curriculum planning & development.
- Facilitate research and development projects.

**The Department quality assurance with industry interaction is ensured by multipronged approach which is outlined below:**

- Regular meetings with prominent industry experts as its members ensure industry focused & application oriented curricula, besides their periodic review.
- Regular lectures of industrial experts as per the needs of the students.
- In seventh semester project training is mandatory for all the students.
- Inputs offered by Industry experts are adequately accommodated in the value added programs run by the department.
- Industrial experts are also invited as expert lectures.

### **2.2.5 Initiatives related to industry internship/summer training**

**(15)**

#### **Initiatives, Implementation**

- Students are counseled by Sr. faculty members on the need & suggestion on summer training programs. As per university syllabus, there is a course namely Industrial Training & Viva-Voce in VII semester.
- Students are encouraged to provide the list of programs or type of industry they wish to opt for.
- Based on the inputs by students, few industries are identified by the Training and Placement office of the institute. A proper communication is carried out with the concerned industry. A request letter is sent to the industry. Students are allowed to work as interns in the industry for a maximum duration of 2 months (as per the university norms).
- Many students prefer to do some industry specific training from organizations nearby their home. Such students are advised on the kind of training programs they should prefer.
- All the students are required to complete one project that should be the application of the contents covered during his/her training.
- Few students wish to do industrial training within the campus. For such students, special summer training programs in collaborations with some industry is organized.
- In campus training programs is completely designed & monitored at department level. Students are given real time projects as a part of the training. Each such student is required to present their implemented projects after summers.
- Students are also provided with project development certificates.

- All the students are required to present their projects reports in spiral with certificate from the concerned industry. This is also a requirement as per the syllabus.
- Students are allocated marks on the following parameters
  - ✓ Usefulness or utility of the project
  - ✓ His individual design & implementation efforts
  - ✓ His ability to apply the learnt concepts
  - ✓ His efforts in presentation & documentation

### Impact analysis

- Students gain the basic needed skills for the development of real world projects.
- These training programs have also helped them in development of good projects in their final year.
- Most of the students' undergone training has got placed through campus recruitments.
- This helps the Student to understand & apply the various development phases in projects.

This motivates them to develop better projects

### Industry Internship (2015-16, 2016-17, 2017-18)

S. N	Roll No.	Name	Industry Name (Summer Training)	Project Title (Summer Training)	Start Date (Summer Training)	End Date (Summer Training)
1	1473713001	KM.AADITY A	SBIT Lucknow	Online book shopping	08-07-2017	28-07-2017
2	1473713002	Abhishek Singh Bhadauria	HP Computer, Kanpur	Forums Website	01-06-2018	01-07-2018

3	147371300 3	ADARSH KAROSIA	CEBS NOIDA	Hashchat	01-06- 2017	15-07- 2017
4	147371300 4	Adarsh kumar singh	Azeosoft	Android	07-06- 2017	07-07- 2017
5	147371300 5	Aditya kumar	Ducat	Quickmailer	20-06- 2017	03-08- 2017
6	147371300 7	amit kumar sharma	niit , gurgaon	employees infomation management system	30-06- 2017	27-09- 2017
7	147371300 8	Amit Kumar Singh	Azeosoft Web Technologies Private Limited	Android	07-06- 2017	07-07- 2017
8	147371301 1	DHANANJA Y KUMAR PAL	IITH VARANASI	Grocery store management system	09-06- 2017	09-07- 2017
9	147371301 2	Gaurav Singh	Aezosoft webtechnologies private limited	Online banking system	07-06- 2018	07-07- 2018
10	147371301 3	Km Swarnlata	Microsoft Training Association, Ghaiziabad	Currency Converter	16-06- 2017	30-07- 2017
11	147371301 5	Km. Rashmi Verma	DRDO, New Delhi	Publication Management System	06-06- 2017	14-07- 2017
12	147371301 6	Ruby sagar	C&S electric limited	Facebook	10-06- 2017	10-06- 2017
13	147371301 7	KUNVAR KANHAIYA	Shri Balaji Infotech Lucknow	Licence Plate recognition system using neural network	07-06- 2017	28-07- 2017
14	147371301 9	Manish sonker	Quick mailer	Intranet mailing system	20-06- 2017	03-08- 2017
15	147371302 0	MAYANK TYAGI	SUNRISE TECHNOLOGI ES partner of Microsoft.	Pharmacy shop	09-07- 2017	20-08- 2017
16	147371302 1	Mohit bhaskar	Adept cebs	Naukari.com	03-07- 2017	10-08- 2017
17	147371302 2	Mohit Verma	Azeosoft pvt. Lmt. Lucknow	Android	07-06- 2017	07-07- 2017
18	147371302 3	Mukesh Kumar	SRI BALAJI INFOTECH LUCKNOW	E BOOK SHOPPING	08-06- 2017	28-07- 2017

19	147371302 4	Neetu Verma	SBIT Lucknow	Online book shopping	08-06-2017	28-07-2017
20	147371302 5	Preeti	Hightech solution	Friendbook	20-06-2017	30-08-2017
21	147371302 6	Priyanka kumari	M/S Shri Balaji Info Tech	Disscussion Portal	07-06-2017	28-07-2017
22	147371302 7	Rachit Kumar	CEBS	Hash Chat	30-06-2018	07-08-2018
23	147371302 9	Renuka Raj	Microsoft Technology Associate	Currency Converter (Android Application)	16-06-2017	31-07-2017
24	147371303 0	ROBIN KUMAR	SBIET	ONLINE E-BOOK SHOP	07-06-2017	28-07-2017
25	147371303 1	Rohit Kumar Yadav	Softpro India Pvt LTD Lucknow	Customer Relationship Management	15-06-2017	31-07-2017
26	147371303 2	Rohit Ranjan	Ducat noida	Quick mailer	20-06-2017	03-08-2017
27	147371303 4	Saurabh Kumar	Nil	Nil	N/A	N/A
28	147371303 5	Shalikram	SBIT Lucknow	My Facebook(social networking)	07-06-2017	28-07-2017
29	147371303 6	Shivalika Dev	Shri Balaji Infotech Lucknow	Online book shopping	09-06-2017	29-07-2017
30	147371303 7	Shivam Varshney	Ducat	Multi-Client chat server	11-06-2017	11-11-2017
31	147371303 9	Shubham Harsh Singh	DRDO, New Delhi	Publication Management System	06-06-2017	14-07-2017
32	147371304 0	Sumit kumar	Tech mentro	Brickano	06-06-2017	06-07-2018
33	147371304 1	Vaibhav	Apron Solutions Pvt Ltd, Noida	Networking Model	15-06-2017	27-07-2017
34	147371304 2	Vivek kumar Chaudhary	BTPS	QUICK MAILER	26-06-2017	07-08-2018
35	147371304 3	Vivek Kumar Gautam	NIIT	Developing web application using PHP	26-06-2017	26-07-2018
36	147371304 4	Vivekanand	CEBS	Hashchat	10-05-2017	22-07-2017

37	157371390 1	Abhishek Kumar Pandey	Soft Pro India Computer Technologies (P) Limited	E-Study Zone	15-06- 2017	31-07- 2017
38	157371390 2	Deepak Kumar Maurya	SoftPro India	Doctor Helpline	15-06- 2017	31-07- 2018
39	157371390 3	GAURAV GANGWAR	Softpro India	E study zone	15-06- 2017	31-07- 2017
40	157371390 4	Kumari Pallavi	TCS Varansi	Library Management	17-06- 2017	31-07- 2017
41	157371390 5	Manjeet Singh	Softpro India Lucknow	E-procurement System for Green Gas Limited	15-06- 2017	31-07- 2017
42	157371390 6	Neha Pandey	S. B. I. T lucknow	Online book shoping	08-06- 2017	28-07- 2017
43	157371390 7	Ruchi tiwari	Niit kanpur	Hospitality management	15-06- 2017	29-07- 2017
44	157371390 9	Vidish mishra	Netcamp private limited kolkata	Network management	12-06- 2017	12-07- 2017

**Table 2.8(b): Industry Internship details (2017-18)**

S.N	Roll Number	Name	Project	Industry Name	Duration
1	1473713001	AADITYA	Sports Complex Management System	HP India Sales Pvt.Ltd.	05 June-20 July 2016
2	1473713002	ABHISHEK SINGH BHADAURIA	Global System for Mobile	Reliance Communication Ltd.	21 June-31 July 2016
3	1473713003	ADARSH KAROSIA	Splitter and Merger Software	HCL	16 June-20 July 2016
4	1473713004	ADARSH KR SINGH	Data Centric Application Development using WinForms	NIIT	102 hours
5	1473713005	ADITYA KUMAR	Book Store Automation System	NIC, Delhi	13 June-23 July 2016
6	1473713007	AMIT KR SHARMA	Online Recruitment System	D-MAX Infotech System	09 June-20 July 2016
7	1473713008	AMIT KUMAR SINGH	Computer Science Department Portal	HP India Sales Pvt.Ltd.	05 June-20 July 2016

8	1473713011	DHANANJAY KR PAL	Trinity Aromatics Website	Pyramid IT Consulting Pvt.Ltd.	15 June-31 July 2016
9	1473713012	GAURAV SINGH	Net-Banking	HCL InfoSystem	15 June-15 July 2016
10	1473713013	KM SWARNLATA	Library Management	BHEL	11 June-25 July 2016
11	1473713014	KSHITIZ SAXENA	Net-Banking	Sanskriti IT Solutions Pvt.Ltd.	10 June-31 July 2016
12	1473713015	KM. RASHMI VERMA	GSM Architecture	Aircel	18 June-17 July 2016
13	1473713016	KM. RUBY SAGAR	Energy Billing System	Pyramid IT Consulting Pvt.Ltd.	15 June-31 July 2016
14	1473713017	KUNVAR KANHAIYA	Net-Banking	Sanskriti IT Solutions Pvt.Ltd.	10 June-31 July 2016
15	1473713019	MANISH SONKER	Online Exam Fever	HCL InfoSystem	18 July-07 August 2016
16	1473713020	MAYANK TYAGI	Canteen Management	BHEL	23 June-21 July 2016
17	1473713021	MOHIT BHASKAR	Data Warehousing	Syscom Corp. Ltd.	15 June-15 July 2016
18	1473713022	MOHIT VERMA	Information Technology Infrastructure	Videocon	20 June-16 July 2016
19	1473713023	MUKESH KUMAR	J2EE Struts with Hibernate	HP India Sales Pvt.Ltd.	05 June-20 July 2016
20	1473713024	NEETU VERMA	Sports Complex Management System	HP India Sales Pvt.Ltd.	05 June-20 July 2016
22	1473713025	PREETI	Social Networking Website	High Technology Soln.Pvt.Ltd.	08 June-15 July 2016
21	1473713026	PRIYANKA KUMARI	Hostel Management	Ducat India	11 June-20 July 2016
23	1473713027	RACHIT KUMAR	Airline Reservation	Ducat India	07 June-20 July 2016
24	1473713029	RENUKA RAJ	Daily Activity Module	BHEL	13 June-20 July 2016
25	1473713030	ROBIN KUMAR	Clock Synchronization using NTP	BHEL	02 July-11 August 2016
26	1473713031	ROHIT KR YADAV	Clock Synchronization using NTP	BHEL	25 June-04 August 2016
27	1473713032	ROHIT RANJAN	Radio Frequency Identification	IIIT Delhi	20 June-20 July 2016

28	1473713034	SAURABH KUMAR	Airline Reservation System	HP India Sales Pvt.Ltd.	05 June-20 July 2016
29	1473713035	SHALIKRAM	Knowledge Management Portal	Solid State Physical Laboratory	18 June-7 July 2016
30	1473713036	SHIVALIKA DEV	Agile Jobs	Agile Softech Pvt.Ltd.	10 June-25 July 2016
31	1473713037	SHIVAM VARSHNEY	GSM Architecture	BSNL	29 June-26 July 2016
32	1473713038	SHOAIB ABBASI	Off Line Mail Server	Volksgesh Technologies LLP	16 June-31 July 2016
33	1473713039	SHUBHAM HARSH SINGH	Discussion Forum	Vigyan Prasar	11 June-10 July 2016
34	1473713040	SUMIT KUMAR	On Line Job Portal	Ducat India	19 June-17 August 2016
35	1473713041	VAIBHAV	Network Management	Nettech	08 July-31 July 2016
36	1473713042	VIVEK KR CHAUDHARY	Gift Distribution System	Indian Oil	04 July-31 July 2016
37	1473713043	VIVEK KR GAUTAM	Airline Reservatin System	Valid Page	11 june-20 July 2016
38	1473713044	VIVEKANAND	Online Shopping	Saffron Services	11 june-20 July 2016
39	1573713901	ABHISHEK KR PANDEY	Online Complaint Query System	HCL InfoSystem	12 June-12 August 2016
40	1573713902	DEEPAK KR MAURYA	Network Technology and Devices	HCL InfoSystem	80 Hours
41	1573713903	GAURAV GANGWAR	Web Authentication Server	HP India Sales Pvt.Ltd.	05 June-20 July 2016
42	1573713904	KM PALLAVI	OnLine Job Portal	HP Training Center	05 June-20 July 2016
43	1573713905	MANJEET SINGH	Installation of Campus Wide Network	BEL	o9 Julyl-18 August 2016
44	1573713906	NEHA PANDEY	Virtual Lan	BEL	02 July-11 August 2016
45	1573713907	RUCHI TIWARI	Computer Networking	BSNL	18 June-18 July 2016
46	1573713908	SANJEEV KR SHAH	Secured Website Hosting	HP India Sales Pvt.Ltd.	05 June-20 July 2016
47	1573713909	VIDISH MISHRA	Courier Mangagement System	Rapid Educatin Pvt.Ltd.	Two months

**Table 2.8(c): Industry Internship details (2016-17)**

S. No.	Roll Number	Name	Title of Project	Industry	Duration
1	12737641	Pramod Sahai	Linux Adminstartion Servers	HP, Noida	15/6/15 - 15/7/15
2	12373655	Vikas Kumar Gautam	Ethical Hacking	Tech Bharat Consulting Pvt. Ltd., Delhi	25/6/15-24/7/15
3	1573715001	Abhay Kumar Katiyar	Linux Adminstartion Servers	HP, Noida	15/6/15 - 15/7/15
4	1573715003	Ajay Kumar	Shopping Cart	HP, Noida	15/6 /15 - 27/7/15
5	1573715004	Akshit Gautam	Hospital Management System	ATS Infotech Pvt. Ltd., Noida	1/6/15 -31/7/15
6	1573715005	AmanKumar Bharti	Console based banking System	HP, Noida	15/7/15 - 16/8/15
7	1573715007	Amit Kumar	Hospital Management System	HCL Career Development Centre, Ghaziabad	20/6/15 - 24/ 7/15
8	1573715008	Amit Kumar	Library Management System	Rapid Education, Ghaziabad	3 Month
9	1573715009	Anjali Pal	Local Area Network	BHEL, JagdishPur	24/6/15 - 23/7/15
10	1573715010	Anuj Kumar	Pharmacy Automation System	Valid Page, Gr. Noida	17/6/15 - 26/7/15
11	1573715011	Anupam Singh	Human Resource Management Sytem	CMC Ltd. NewDelhi	6 weeks
12	1573715012	Babita	FIR OnLine Crime Report	HCL Career Development Centre, Ghaziabad	80 hours
15	1573715015	Deeksha	Banking System	Valid Page, Gr. Noida	17/6/15 - 26/7/15
14	1573715014	Diksha Rawat	Local Area Network	ALIMCO , Kanpur	4 weeks
15	1573715015	Gita Dwivedi	Hospital Management System	Microsoft IT Academy, Ghaizbad	1/6/15 - 31/7/15
16	1573715016	Inderjeet Singh	Demonstration of Android Vulnerability in Paladions Insecure Bank App	Paladiom, Navi Mumbai	6 weeks
17	1573715018	Kavita Kumari	Computer Science Department Portal	HP, Noida	15/6/15 - 27/7/15
18	1573715019	Krishna Singh	Online Music Store	CMC Ltd. Ghaziabad	17/6/15 - 27/7/15
19	1573715020	Manjeet Singh	Hospital Management System	NIIT Ltd. Ghaziabad	17/6/15 - 19/7/15
20	1573715021	Munnilal	Sales Order Processing System	DOEACC, Shahjahan pur	20/6/15 - 31/7/15

22	1573715022	Naveen Kumar Singh	Online Examination System	HP, Noida	20/6/15 - 5/8/15
21	1573715023	Poonam	Flight Information System	Airport Authority of India, Delhi	19/6/15- 29/7/15
23	1573715025	Preeti Rana	Hostel Management System	CETPA Infotech Pvt. Ltd., Dehradun	27/6/15- 24/7/15
24	1573715026	Preeti Verma	Shopping Cart	HP, Noida	15/6 /15 - 27/7/15
25	157371527	Rahul Saroj	Job Portal	NIIT Ltd. , Aligarh	16/6/15 - 30/8/15
26	1573715028	Rajoo Kumar	Car Sales System	HCL Carrer Development Centre, Allahabad	17/6/15 - 30/7/15
27	1573715029	Ram Prakash Singh	Online Music Store	CMC Ltd. Ghaziabad	17/6/15 - 27/7/15
28	1573715030	Ravendra	Library Management System	Valid Page, Gr. Noida	1/6/15 - 15/7/15
29	1573715034	Satish Kumar Singh	Shopping Cart	HP, Noida	15/6 /15 - 27/7/15
30	1573715035	Shubham Choudhary	ATM System	NIIT, Newdelhi	23/6/15 - 23/7/15
31	1573715036	Sujit Kumar	Customer Care System for Vehicle Service Station	Wizard Info Solution Pvt. Ltd. Ghaziabad	30/5/15- 30/6/15
32	1573715037	Suryakant Singh	E- Manager	HP, Noida	15/6/15- 27/7/15
33	1573715038	Swati Jaiswal	Chat Server	NIIT, New delhi	1/7/15 - 29/7/15
34	1573715039	Vasudha	Console based billing System	HP, Noida	15/6/15 - 15/7/15
35	1573715040	Vicky Vikrant	Linux Adminstartion Servers	HP, Noida	15/6/15 - 15/7/15
36	1573715041	Vineet Kumar Sonkar	Hotel Management System	Microsoft IT Academy, Ghaizbad	
37	1473715901	ABHISHIK SHUKLA	Hospital Management System	ATS Infotech Pvt. Ltd., Noida	1/6/15 - 31/7/15
38	1473715902	AKCHHAYA KUMAR	Hospital Management System	ATS Infotech Pvt. Ltd., Noida	1/6/15 - 31/7/15
39	1473715903	DINESH SAINEE	Hospital Management System	ATS Infotech Pvt. Ltd., Noida	1/6/15 - 31/7/15
40	1473715904	JEETU KUMAR	Hospital Management System	ATS Infotech Pvt. Ltd., Noida	1/6/15 - 31/7/15
41	1473715905	KAHAKASHAN PARVEEN	Linux Adminstartion Servers	HP, Noida	15/6/15 - 15/7/15
42	1473715906	KM.SAPNA	Expert System Based on MY CIN	HAL, Lucknow	25/6/15 - 24/7/15

43	1473715907	SHAHEEN GHAZALA	Hospital Management System	HCL Career Development Centre, Ghaziabad	20/6/15 - 24/ 7/15
44	1473715908	VAISHALI GUPTA	College Website	HCL Career Development Centre, Allahabad	15/6/15 - 29/7/15

**Table 2.8(c): Industry Internship details (2015-16)**

- Industrial Training Feedback by students**

Feedback given by the 8<sup>th</sup> semester students after one semester industrial training in 7<sup>th</sup> semester is analyzed through a feedback Performa. Most of the students were found satisfied with the industry and recommends for coming up batches for training. The industries prepared a schedule for industrial training and followed it. The Impact Analysis of this Industrial Training is shown in Criterion 7.

<b>Training Feedback Performa</b>					
Name of Industry (with Address)					
Kindly mark $\sqrt{\phantom{x}}$ on the following ( 0- Low and 4-high)					
1. Training facilities available in the industry.	4	3	2	1	0
2. Working environment of the industry.	4	3	2	1	0
3. Accessibility of training facilities.	4	3	2	1	0
4. Training schedule and its implementation	4	3	2	1	0
5. Overall rating of company for the training	4	3	2	1	0
Whether you recommend this industry for training of coming batches. (Yes/No)					
Signature:		Name of student: Roll No.:			

<b>CRITERION 3</b>	<b>COURSE OUTCOMES AND PROGRAM OUTCOMES</b>	<b>120</b>
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### 3.1. Establish the correlation between the courses and the Program Outcomes (POs) and Program Specific Outcomes (PSOs) (20)

The following Program Outcome (PO) and Program Specific Outcome (PSO) statements are considered to set up correlation with individual Courses Outcomes (CO).

<b>PO</b>	<b>Engineering Graduates will be able to:</b>
<b>PO1</b>	<b>Engineering knowledge:</b> Apply the knowledge of mathematics, including discrete mathematics, probability, statistics and fundamentals of various engineering disciplines like computer science and engineering, electronic engineering and electrical engineering in the core information technologies.
<b>PO2</b>	<b>Problem analysis:</b> Analyze a problem and identify the computing requirements appropriate to its solution.
<b>PO3</b>	<b>Design/development of solutions:</b> Design and implement hardware and software systems, components, process or program to meet the desired needs within reasonable economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability constraints.
<b>PO4</b>	<b>Conduct investigations of complex problems:</b> Reassess literature and indulge in

	research to use research based knowledge and methods to design and conduct new experiments, as well as to organize, analyze and interpret data to produce draw valid conclusions and recommendations.
<b>PO5</b>	<b>Modern tool usage:</b> Use appropriate techniques, resources, and modern engineering and IT tools necessary for computer engineering practice.
<b>PO6</b>	<b>The engineer and society:</b> Show the understanding of local and global impact of computing on individuals, organizations and society.
<b>PO7</b>	<b>Environment and sustainability:</b> Integrate IT-based solutions in environmental contexts, and demonstrate the knowledge of need for sustainable development.
<b>PO8</b>	<b>Ethics:</b> Demonstrate the knowledge of professional and ethical responsibilities along with the norms of the engineering practice.
<b>PO9</b>	<b>Individual and team work:</b> Demonstrate leadership and an ability to work as a member with responsibility to function on multi-disciplinary teams to accomplish a common goal.
<b>PO10</b>	<b>Communication:</b> Demonstrate effective communicate skills in both oral and written form with a range of audiences.
<b>PO11</b>	<b>Project management and finance:</b> Apply the knowledge and understanding of engineering and management principles to design, plan, budget and propose IT project for an identified need within a specific scope.

<b>PO12</b>	<b>Life-long learning:</b> Develop confidence to acquire new knowledge in the computing discipline and to engage in life-long learning.
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**Program Specific Outcomes (PSOs) of Information Technology Department**

<b>PSO</b>	<b>Engineering Graduates will be able to:</b>
<b>PSO1</b>	Gain detailed Knowledge of various contemporary domains to identify research gaps and hence provide solutions by new ideas and innovations.
<b>PSO2</b>	Have strong skills in learning new programming environments as it is used to automate things and simplify real world problems and human efforts.

**3.1.1 Course Outcomes (Cos) of one course from each semester of study (05)**

**Session 2016-17**

**3<sup>rd</sup> Semester**

**NCS-301: Data Structure using C**

**Course Outcomes:** On completion of this course, the successful students should be able to:

<b>CO</b>	<b>Statement</b>
<b>CO1</b>	Develop knowledge of basic data structures for storage and retrieval of ordered or unordered data. Data structures include: arrays, linked lists, binary trees, heaps, and hash tables.

CO2	Develop knowledge of applications of data structures including the ability to implement algorithms for the creation, insertion, deletion, searching, and sorting of each data structure.
CO3	Learn to analyze and compare algorithms for efficiency using Big-O notation.
CO4	Implement projects requiring the implementation of the above data structures.

#### 4th Semester

#### NCS-402: Theory of Automata and Formal Language

**Course Outcomes:** On completion of this course, the successful students should be able to:

CO	Statement
CO1	Classify formal languages, grammars, automata and their relationships with the equivalence of DFA, NFA, Regular Language and minimum states Finite Automata.
CO2	Describe regular language (by constructing an automaton or with the Pumping Lemma or by Myhill-Nerode Theorem) and classify finite automata with output.
CO3	Describe CFG, CNF, GNF, transformation of CFG into a normal form and simplification of CFG.
CO4	Design PDA and describe equivalence of PDA and CFG

CO5	Describe the construction and working of Turing machine for given language, the concept of recursive and recursively enumerable languages and concept of Undecidability
-----	---

## 5<sup>th</sup> Semester

### NCS-504: Web Technology

**Course Outcomes:** On completion of this course, the successful students should be able to:

CO	Statement
CO1	Employ the elementary concepts of internet and java to conceptualize the development of web pages.
CO2	Apply mark-up languages (HTML & XML) for processing, identifying, and representing of web page information.
CO3	Employ scripting languages constructs and web services to transfer data and add interactive components to web pages.
CO4	Use server side scripting to develop dynamic web pages.
CO5	Estimate the time and cost required for the software project. Develop a website using PHP constructs.

## 6<sup>th</sup> Semester

### NCS-603: Compiler Design

**Course Outcomes:** On completion of this course, the successful students should be able to:

CO	Statement
CO1	Identify and explain different phases and passes of compilation process.
CO2	Write lexical rules and grammars for a programming language.
CO3	Compare different types of parsers and test semantic rules into a parser that performs attribution while parsing
CO4	Describe the concepts of storage administration for different programming environments.
CO5	Design different representations of intermediate code and produce the optimum machine code from the same.

## 7<sup>th</sup> Semester

### NCS-702: Artificial Intelligence

**Course Outcomes:** On completion of this course, the successful students should be able to:

CO	Statement
CO1	Know about the basic concept of AI and also some advanced topics of AI such as learning, natural language processing, computer vision, robotics and expert systems.
CO2	Identify the basic issues of knowledge representation and search for solution of any particular problem.

CO3	Identify problems that are having the solution by AI methods, and also find which AI methods may be suited to solving a given problem.
CO4	Know the state-of –art in AI.

## 8<sup>th</sup> Semester

### NIT-801: Mobile Computing

**Course Outcomes:** On completion of this course, the successful students should be able to:

CO	Statement
CO1	Learn about wireless communication and networking principles that support connectivity to cellular networks, wireless internet and sensor devices.
CO2	Identify the use of transaction and e-commerce principles over these devices to support mobile business concepts.
CO3	Interpret the characteristics and limitations of mobile hardware devices including their user-interface modalities.
CO4	Develop applications that are mobile-device specific and exhibit the current practice in mobile computing environment.
CO5	Design and development of context-aware solutions for mobile devices and its components.

**3.1.2 CO-PO and CO-PSO matrices of courses selected in 3.1.1**
**(05)**

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
NCS-301.1	2	3	3	2									3	2
NCS-301.2			3	2	2								3	2
NCS-301.3		2		3	2								2	2
NCS-301.4			3			1							2	2

**Table 3.1.2 (a)**

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
NCS-402.1	3	2	2	1	-	-	1	-	-	-	-	2	2	3
NCS-402.2	3	3	3	1	-	-	1	-	-	-	-	2	2	
NCS-402.3	3	3	3	2	1	-	1	-	-	-	-	2	2	
NCS-402.4	3	3	3	2	-	-	1	-	-	-	-	3	2	3
NCS-402.5	3	3	3	2	-	-	1	-	-	-	-	2	2	3

**Table 3.1.2 (b)**

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
NCS-504.1	2	1	2	2	-	-	-	-	-	-	-	3	2	1
NCS-504.2	3	3	3	1	1	-	-	-	-	-	-	3	1	3
NCS-504.3	3	3	3	2	2	-	-	-	-	-	-	3	2	3
NCS-504.4	3	3	3	3	2	-	-	-	-	-	-	3	2	3
NCS-504.5	3	3	3	3	3	-	-	-	-	-	-	3	3	3

**Table 3.1.2 (c)**

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
NCS-603.1	3	1	2	1	-	-	-	-	-	-	-	3	1	1
NCS-603.2	3	3	2	-	1	-	-	-	-	-	-	2	2	3
NCS-603.3	3	3	3	2	1	-	-	-	-	-	-	2	2	3
NCS-603.4	3	2	1	2	-	-	-	-	-	-	-	3	1	3
NCS-603.5	3	3	2	2	-	-	-	-	-	-	-	2	1	2

**Table 3.1.2 (d)**

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
TIT-702.1	3	2	2	1	2	1	-	-	-	-	2	3	2	2
TIT-702.2	3	3	2	3	1	1	-	-	-	-	-	2	3	2
TIT-702.3	3	3	3	2	1	-	-	-	-	-	-	2	3	3
TIT-702.4	3	2	2	2	-	2	-	-	-	-	2	3	3	2

**Table 3.1.2 (e)**

COs\POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
NIT-801.1	3	3	1	2	2	2	-	-	-	-	2	3	3	2
NIT-801.2	3	2	2	3	1	2	-	-	-	-	-	3	2	3
NIT-801.3	3	3	3	2	1	2	-	-	-	-	-	3	3	3
NIT-801.4	3	3	3	2	-	2	-	-	2	2	2	3	3	3

<b>NIT-801.5</b>	3	3	3	2	-	2	2	-	2	-	2	3	3	3

**Table 3.1.2 (f)**

**Note:**

Enter correlation levels 1, 2 or 3 as defined below:

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

*It there is no correlation, put “-”*

### **3.1.3 Program level Course-PO matrix of all courses including first year courses (10)**

<b>COURSE</b>	<b>Program Outcomes (POs)</b>											
	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>	<b>PO12</b>
<b>First Semester</b>												
<b>RAS-103</b>	2.6	2	2.2	1.6	2.2	2.2	-	-	-	-	1	1
<b>RAS-101</b>	2.6	2	2	1.8	2.2	1.8	1.4	-	-	2	2	2
<b>RME-101</b>	2.8	2.6	2	2.4	1.4	1.75	1.75	-	-	-	1.6	2
<b>RCS-101</b>	2.6	2	2.2	1.6	2.3		-	-	-	-	2.6	2
<b>RAS-102</b>	2.4	2.6	2.2	1.8	2.2	1.8	1.5	2	2	-	-	1
<b>Second Semester</b>												
<b>RAS-203</b>	2.6	2	2.2	1.6	2.2	2.2	1.4	-	-	-	1	1
<b>RAS-201</b>	2.6	2	2.2	1.6	2.2	2.2	1.4	-	-	1	1	2
<b>REE-201</b>	3	2.8	2.8	2	1.4	2.3	1.2	1	1		1.4	2.4
<b>RAS-204</b>	2.6	2	2.2	1.6	2.2	2.2	1.4	-	-	1	1	2
<b>REC-201</b>	2.6	2	2.2	1.6	2.2	2.2	1.4	-	-	1	1	2.6

**Table 3.1.3 (a) Mapping (average scores) of 1<sup>st</sup> year courses with POs**

Mapping of Course Outcomes with Program Outcomes													
Year	Subject Code	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
<b>Second Year</b>													
<b>Second Year</b>	NAS-301	2.20	1.40	1.40	2.40	2.25	-	-	-	-	-	1.00	2.00
	NEC – 309	2.00	1.83	2.83	2.00	1.00	1.00	-	-	-	-	1.00	2.17
	NCS -301	1.86	1.86	2.71	2.00	1.00	1.00	-	-	-	-	1.00	2.57
	NCS -302	2.00	1.00	3.00	1.00	-	1.00	-	-	-	-	-	3.00
	NCS- 303	3.00	2.00	2.00	2.00	1.00	-	-	-	1.00	-	-	2.00
	NHU-301	-	1.00	1.00	1.00	-	1.00	1.75	1.25	1.00	1.50	1.00	1.75
	NOE-045	3	3	3	2	2	2	1	1.6	2.4	-	-	-
	NEC – 408	3	3	3	1	2.5	-	-	-	-	-	1	1
	NCS-401	1.80	1.80	2.40	1.50	1.00	1.00	-	-	-	-	1.00	2.20
	NCS-402	1.83	1.83	2.00	1.20	-	-	-	-	-	-	-	1.67
	NIT-401	1	2	2.5	2	2.6	-	2	-	-	-	-	1.5
	NHU-402	-	1.33	1.00	1.00	-	1.20	1.80	1.00	-	1.00	1.00	1.80
	AUC001	-	1.00	1.00	1.50	1.00	1.00	2.00	1.20	0.00	1.75	-	2.80
<b>Third Year</b>													
<b>Third Year</b>	NHU-501	1.00	1.80	1.83	2.50	1.67	1.00	2.00	1.00	1.33	-	1.33	2.00
	NCS-501	1.80	1.80	2.40	1.50	1.00	1.00	-	-	-	-	1.00	2.20
	NCS-502	1.83	2.17	2.33	1.50	1.00	1.00	-	-	-	-	1.00	2.33
	NCS-503	1.60	2.00	3.00	2.00	1.20	1.00	-	1.00	-	-	1.00	2.60
	NCS-504	1.80	1.80	2.40	1.00	1.00	1.00	-	-	-	-	-	1.80
	NIT-501	3	2.25	2	1.6	1	-	-	-	-	-	-	2.5
	NHU-601	-	1.00	1.00	1.00	1.67	1.20	1.40	1.00	1.40	1.20	2.25	2.40
	NCS-601	2.17	2.00	2.33	1.60	1.20	1.00	1.50	2.00	-	-	1.00	2.33
	NCS-602	2.20	2.20	2.40	1.60	1.25	1.00	-	-	-	-	1.60	2.80
	NCS-603	1.67	1.83	2.50	2.00	1.60	1.00	-	-	-	-	1.00	2.50
	NIT-064	3	2.4	2	1.75	1							2.4
	NCS-066	1.00	1.20	1.00	1.00	1.00	2.00	2.00	2.60	-	-	-	2.80
<b>Forth Year</b>													
<b>Fourth Year</b>	NCS-701	1.86	2.29	2.43	1.86	2.20	1.00	-	-	-	-	-	1.86
	NCS-702	2.00	2.33	2.50	2.00	1.80	1.00	-	-	-	-	-	2.83
	NOE-077	2.20	2.20	2.40	1.60	1.25	1.00	-	-	-	-	1.60	2.80
	NIT-701	3	2.6	2.6	2.2	1.3	2.2	2	2.2	2	2	2	2.6
	NCS-071	2.20	2.20	2.40	1.60	1.25	1.00	-	-	-	-	1.60	2.80

<b>NOE-081</b>	1.86	1.57	1.86	1.33	1.17	1.00	1.00	-	-	-	1.60	2.29
<b>NCS-085</b>	1.60	1.60	2.20	1.25	1.00	1.00	-	-	-	-	-	2.20
<b>NCS-801</b>	2.00	1.80	2.40	1.80	1.00	1.00	1.00	-	-	-	1.00	2.40
<b>NIT-801</b>	3	2.8	2.4	2.2	1.3	2	2		2	2	2	3

**Table 3.1.3 (b): Averages obtained for Mapping of University Syllabus with POs (2<sup>nd</sup> Yr, 3<sup>rd</sup> Yr & 4<sup>th</sup> Yr)**

<b>Year</b>	<b>Subject Code</b>	<b>PSO1</b>	<b>PSO2</b>
<b>SECOND YEAR</b>	<b>NAS-301</b>	3.00	1.00
	<b>NEC – 309</b>	2.20	1.80
	<b>NCS -301</b>	1.60	1.67
	<b>NCS -302</b>	1.33	3.00
	<b>NCS- 303</b>	1.25	1.00
	<b>NHU-301</b>	1.00	1.00
	<b>NOE-045</b>	3.00	2.00
	<b>NEC – 408</b>	1.00	1.25
	<b>NCS-401</b>	3.00	3.00
	<b>NCS-402</b>	3.00	3.00
	<b>NIT-401</b>	2.67	1.67
	<b>NHU-402</b>	3.00	2.00
	<b>AUC001</b>	3.00	2.00
<b>THIRD YEAR</b>	<b>NHU-501</b>	2.40	1.60
	<b>NCS-501</b>	1.50	2.00
	<b>NCS-502</b>	2.40	2.20
	<b>NCS-503</b>	2.20	2.00
	<b>NCS-504</b>	2.60	2.00
	<b>NIT-501</b>	2.00	3.00
	<b>NHU-601</b>	2.20	2.40
	<b>NCS-601</b>	2.25	3.00
	<b>NCS-602</b>	1.50	2.13
	<b>NCS-603</b>	1.00	1.80
	<b>NIT-064</b>	2.20	2.00
	<b>NCS-066</b>	1.25	2.00
<b>FINAL YEAR</b>	<b>NCS-701</b>	2.29	2.29
	<b>NCS-702</b>	2.17	2.67
	<b>NOE-077</b>	1.40	1.80
	<b>NIT-701</b>	2.40	1.80

	<b>NCS-071</b>	3.00	1.00
	<b>NOE-081</b>	2.00	2.00
	<b>NCS-085</b>	1.20	2.80
	<b>NCS-801</b>	1.83	2.33
	<b>NIT-801</b>	2.33	2.25

**Table 3.1.3 (c): Averages obtained for Mapping of University Syllabus with PSOs (2<sup>nd</sup> Yr, 3<sup>rd</sup> Yr & 4<sup>th</sup> Yr)**

**Note:**

Enter correlation levels 1, 2 or 3 as defined below:

1: Slight (Low)

2: Moderate (Medium)

3: Substantial (High)

If there is no correlation, put “-”

### **3.2. Attainment of Course Outcomes**

**(50)**

#### **3.2.1 Describe the assessment processes used to gather the data upon which the evaluation of Course Outcome is based**

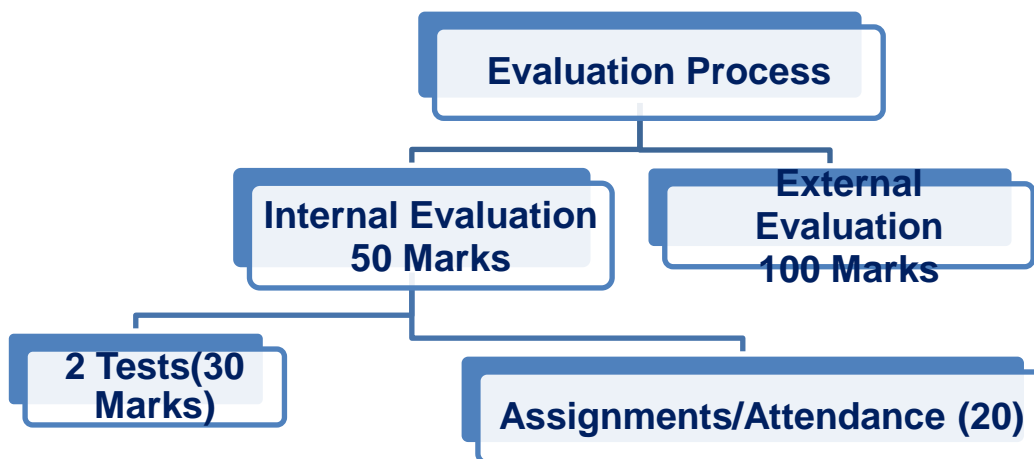
**10)**

- Assessment Tools**

There are many direct assessment methods through which the evaluation of course outcomes of individual subject has been done. These methods include:

**Internal Examination:** Internal sessional examination is conducted twice per semester. Each paper is of 30 marks. Apart from the two internal examinations, a third make-up test is also conducted. In addition to the average score obtained by the student in the class tests, attendance weightage is also included in his internal sessional marks. Total of 50 marks are considered for internal examination.

**External Examination:** External examination is conducted at the end of the semester by the university and is of 100 marks. Student is evaluated on the basis of 150 marks per subject which includes 100 marks of external examination and 50 marks of internal examination.



**Assignments:** There is also concept of assignments in all courses, which are being given to all students during the semester by concerned faculty member. The assignments are also set by considering the subject specific course outcomes. The students submit those assignments in stipulated time and same is evaluated by the faculty member. The scores obtained by students is also considered in internal assessment. Normally 4 to 6 assignments are given by the faculty members to cover all the course outcomes of the subject.

**Processes:** Following processes are used to obtain attainment level of course outcome

- Student performance in internal assessments/ end semester examination with respect to the Course Outcomes is tabulated.
- Assignment score of every student is also recorded with above mentioned performance.

- External examiner is assigned to conduct practical examination at end of the semester.
- End semester examination paper is set by the subject expert from the university
- After evaluation of internal exams, result is displayed on notice board and answer sheet of each examination is shown to students.
- Academic audit of all faculty members is carried out at the end of every semester through different parameters (i.e Syllabus coverage, test conducted, assignments given etc.) which are related to course outcomes directly or indirectly.

**Details of academic components for internal assessment for attainment of course outcomes**

<b>Assessment Type</b>	<b>Assessment Process</b>	<b>Description</b>
<b>Internal Assessment</b>	Sessional/class Tests & its analysis	It accounts for 60% of the total internal marks awarded to students.
	Unit- wise Assignments & its evaluations	4 to 6 assignments per subject are allocated during a semester. Each assignment is of 2 marks and a total of maximum 10 marks are included in the final internal evaluation, thus accounting for 20% of the total evaluation.
	Tutorial & quizzes	Important questions are covered in tutorial sessions & Tutorial sheets are prepared for each course as a part of course file. Short answer questions are given to students in quizzes. This helps us to understand the problem solving ability of students.

	participation in various engineering events & student contests	GP marks are allocated for participation. Participation details are documented & marks criteria is decided by Dean student welfare through consultation.
	Class presentations	GP marks are allocated. Class presentations are done for each course.
	Project presentations	Students are required to give at least 2-3 presentations for final year project in front of faculty members & project supervisors. Major criteria for evaluation include completion of work, meeting with supervisor, originality of work, individual efforts etc. The evaluations are documented & final marks are based on the cumulative results.  Final year project accounts for 200 marks in external & 100 marks in internal evaluation.
	Industrial training viva-voce & mini project	Students are required to present their mini-project developed during Industrial training in VIIth semester. They also submit a project report for the mini project.
	Lab Assignments & Viva Voce	Lab assignments are given during each lab session. Viva-Voce of is conducted twice a semester. Viva voce is based on parameters like completion of file, viva, attendance, experiment execution.

**Table 3.2.1(a): Internal Assessment processes for Course Outcome**

**Methodology to calculate CO, PO& PSO Attainment:**

1. Define COs for a course and check their quality
2. Do mapping of CO with POs & PSOs (On a scale of 1,2 & 3)
3. Align COs with questions of class tests, and assignments.
4. Prepare CO alignment sheet and decide Grade scale as follows:

Grade scale	
Marks	Score
< 40%	1
$\geq 40\%$ and < 50%	2
>50%	3

5. Calculate CO's as per table below on the basis of tests, assignments and end semester exams. Total attainment for Course outcome is based on External & Internal Assessment as per the following rule:

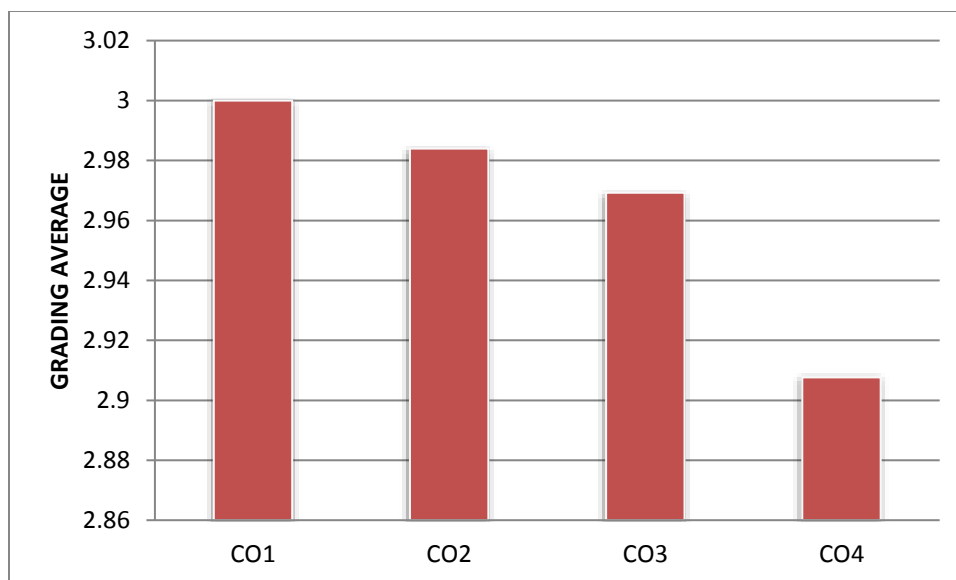
<b>Total Attainment: 30% of Internal Assessment + 70% of External Assessment</b>
--

S.N	University Roll No	CO1							CO2	CO...
		Total Marks Obtained	Total marks Attempted	CO1 Internal%	External %	Overall %	Score (3,2,1)	Y/N		
1	1473713001	27.5	35	78.57			3	Y		
2	1473713002	23	40	57.5			2	N		
3	1473713003	14	40	35			1	N		
			Average				2			

From above table, average of every CO is obtained and %age of students getting 3, 2 and 1 are tabulated and shown in Bar chart as:

T OTAL NO OF STUDENTS				65
CO	AVERAGE SCORE	DISTRIBUTION % AGE		
		3	2	1
CO1	3	65/65=100%	0/65=0.00%	0/65=0.00%
CO2	2.984	64/65=98.46%	1/65=1.53%	0/65=0.00%
CO3	2.9692	63/65=96.92%	2/65=3.07%	0/65=0.00%
CO4	2.9076	59/65=90.76%	6/65=9.23%	0/65=0.00%

**Table 3.2.1.a: Average Calculation of each COs**



**Fig. 3.2.1.a: Bar Chart between COs and Average Grading**

6. Each faculty prepares course assessment record (FCAR) of his/her allocated subject.
7. Align or distribute result of CO attainment (in %) over POs as per already done CO-PO mapping.
8. Prepare PO attainment sheet (in %) on the basis of weighted average of exit survey and employer survey.
9. Calculate the final PO attainment as per table below:

PO/ SO	Method of assessment	Direct assessment		Indirect assessment			PO attainment %
		PO Attainment	Weightage	Exit survey	Alumni Survey	Weightage	
			80%			20%	100%
	PO Description						

PO1	<b>Engineering knowledge:</b> Apply the knowledge of mathematics, including discrete mathematics, probability, statistics and fundamentals of various engineering disciplines like computer science and engineering, electronic engineering and electrical engineering in the core information technologies.						
PO2	<b>Problem analysis:</b> Analyze a problem and identify the computing requirements appropriate to its solution.						
PO3	<b>Design/development of solutions:</b> Design and implement hardware and software systems, components, process or program to meet the desired needs within reasonable economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability constraints						
PO4	<b>Conduct investigations of complex problems:</b> Reassess literature and indulge in research to use research based knowledge and methods to design and conduct new experiments, as well as to organize, analyze and interpret data to produce draw valid conclusions and						

	recommendations.						
PO5	<b>Modern tool usage:</b> Use appropriate techniques, resources, and modern engineering and IT tools necessary for computer engineering practice.						
PO6	<b>The engineer and society:</b> Show the understanding of local and global impact of computing on individuals, organizations and society.						
PO7	<b>Environment and sustainability:</b> Integrate IT-based solutions in environmental contexts, and demonstrate the knowledge of need for sustainable development.						
PO8	<b>Ethics:</b> Demonstrate the knowledge of professional and ethical responsibilities along with the norms of the engineering practice.						
PO9	<b>Individual and team work:</b> Demonstrate leadership and an ability to work as a member with responsibility to function on multi-disciplinary teams to accomplish a common goal.						

PO10	<b>Communication:</b> Demonstrate effective communicate skills in both oral and written form with a range of audiences.						
PO11	<b>Project management and finance:</b> Apply the knowledge and understanding of engineering and management principles to design, plan, budget and propose IT project for an identified need within a specific scope.						
PO12	<b>Life-long learning:</b> Develop confidence to acquire new knowledge in the computing discipline and to engage in life-long learning.						
PSO 1	Gain detailed Knowledge of various contemporary domains to identify research gaps and hence provide solutions by new ideas and innovations.						
PSO 2	Have strong skills in learning new programming environments as it is used to automate things and simplify real world problems and human efforts.						

**Example of how course outcomes of a subject is being calculated**

Mapping Table for Compiler Design :

	Sessional-I	Sessional-II
CO1	Q1(a), (b ) Q2(a) Q3(a), (b)	
CO2	Q1(c), (d ) Q2(b) Q3 (c ) (d)	
CO3	Q1 (e ), (f) Q2 (c ) (d)	Q1(a), (b) Q2(a), (b)
CO4		Q1 (c )(d) Q2 (c ),Q3 (a), (b)
CO5		Q1 (e )(f) Q2 (d),Q3 (c), (d)

NCS-603 COMPILER DESIGN ATTAINMENT (2016-17)															
CO1															
Questions			CT1					Assignment  A1	Total  Marks of attempted questions	Total  Marks	CO1  Internal  %	External  %	Overall  %	Score  (3,2,1)	Target Y/N
			Q1		Q2	Q3									
			(a)	(b)		(a)	(b)								
Marks			0.5	0.5	1.5	2.5	2.5	2		9.5					
S. No.	Roll Number	Name													
1	1473713001	AADITYA	0.5	0.5	0.5	1	1.5	2	6	9.5	63	46	51	3	Y
2	1473713002	ABHISHEK SINGH BHADAURIA	0.5	0.5		2.5	1.5	2	7	8	88	65	71	3	Y
3	1473713003	ADARSH KAROSIA	0.5	0.5	0.5		2.5	2	6	7.5	80	47	56	3	Y
4	1473713004	ADARSH KR SINGH	0.5	0.5	0.5		0	2	3	7.5	40	55	50	3	Y
5	1473713005	ADITYA KUMAR	0	0	0	1.5	0.5	2	2	9.5	21	48	39	1	N
6	1473713007	AMIT KR SHARMA	0.5	0	1		2.5	2	6	7.5	80	54	61	3	Y
7	1473713008	AMIT KUMAR SINGH	0.5	0.5	0	0	0	2	3	9.5	32	50	44	2	N
8	1473713011	DHANANJAY KR PAL	0.5	0.5	1.5	1.5	1	2	7	9.5	74	51	57	3	Y
9	1473713012	GAURAV SINGH	0.5	0.5	1	1.5	0.5	2	6	9.5	63	56	58	3	Y
10	1473713013	KM SWARNLATA	0.5	0.5	0.5	2	1.5	2	7	9.5	74	49	56	3	Y
11	1473713014	KSHITIZ SAXENA	0.5	0.5	0		0	1	2	7.5	27	63	52	3	Y
12	1473713015	KM. RASHMI VERMA	0.5	0.5	0.5	1.5	3	2	8	9.5	84	54	63	3	Y

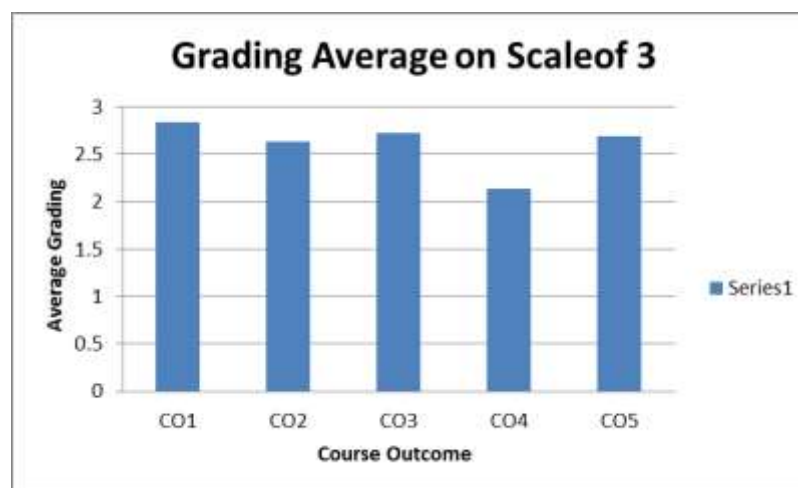
13	1473713016	KM. RUBY SAGAR	0.5	0	1.5	2	0	2	6	9.5	63	42	48	2	N
14	1473713017	KUNVAR KANHAIYA	0	0	0	0	0	2	2	9.5	21	40	34	1	N
15	1473713019	MANISH SONKER	0.5	0.5	1	0	0	2	4	9.5	42	43	42	2	N
16	1473713020	MAYANK TYAGI	0.5	0.5	0.5	1	1.5	2	6	9.5	63	67	65	3	Y
17	1473713021	MOHIT BHASKAR	0.5	0.5		1	2	2	6	8	75	62	65	3	Y
18	1473713022	MOHIT VERMA	0.5	0.5		2	3	2	8	8	100	32	52	3	Y
19	1473713023	MUKESH KUMAR	0.5	0.5	1.5	2.5	0	2	7	9.5	74	54	59	3	Y
20	1473713024	NEETU VERMA	0.5	0.5	0.5	2	1.5	2	7	9.5	74	35	46	2	N
22	1473713025	PREETI	0.5	0.5	1.5	2.5	1	2	8	9.5	84	59	66	3	Y
21	1473713026	PRIYANKA KUMARI	0.5	0.5	1	1	3	2	8	9.5	84	44	56	3	Y
23	1473713027	RACHIT KUMAR	0	0	0	0	0	2	2	9.5	21	44	37	1	N
24	1473713029	RENUKA RAJ	0.5	0.5	1	2.5	0.5	2	7	9.5	74	49	56	3	Y
25	1473713030	ROBIN KUMAR	0.5	0.5		2	1	2	6	8	75	51	58	3	Y
26	1473713031	ROHIT KR YADAV	0.5	0.5	1.5		2.5	2	7	7.5	93	63	72	3	Y
27	1473713032	ROHIT RANJAN	0.5	0.5	1.5	1.5	1	2	7	9.5	74	53	59	3	Y
28	1473713034	SAURABH KUMAR	0.5	0.5	0.5	2.5	1	2	7	9.5	74	53	59	3	Y
29	1473713035	SHALIKRAM	0.5	0.5	1.5	2	1.5	2	8	9.5	84	68	72	3	Y
30	1473713036	SHIVALIKA DEV	0.5	0.5	1		3	2	7	7.5	93	64	72	3	Y
31	1473713037	SHIVAM VARSHNEY	0.5	0.5	1.5		1.5	2	6	7.5	80	38	50	3	Y
32	1473713038	SHOAIB ABBASI	0.5	0.5	0	1.5	2.5	2	7	9.5	74	36	47	2	N
33	1473713039	SHUBHAM HARSH SINGH	0.5	0.5	1.5		2.5	2	7	7.5	93	70	77	3	Y
34	1473713040	SUMIT KUMAR	0.5	0.5	1		3	2	7	7.5	93	63	72	3	Y
35	1473713041	VAIBHAV	0.5	0.5	1	1.5	0.5	2	6	9.5	63	37	44	2	N

36	1473713042	VIVEK KR CHAUDHARY	0.5	0.5	0	0	0	2	3	9.5	32	49	43	2	N
37	1473713043	VIVEK KR GAUTAM	0	0.5	1.5		0	2	4	7.5	53	36	41	2	N
38	1473713044	VIVEKANAND	0.5	0.5	1	1	0	2	3	9.5	32	39	36	1	N
39	1573713901	ABHISHEK KR PANDEY	0.5	0.5	0.5	2.5	0	2	6	9.5	63	40	46	2	N
40	1573713902	DEEPAK KR MAURYA	0.5	0.5	1	1.5	1.5	2	7	9.5	74	61	64	3	Y
41	1573713903	GAURAV GANGWAR	0.5	0.5		2	3	2	8	8	100	63	74	3	Y
42	1573713904	KM PALLAVI	0.5	0.5	1.5	1	2.5	2	8	9.5	84	42	54	3	Y
43	1573713905	MANJEET SINGH	0.5	0.5	0.5	1.5	1	2	6	9.5	63	59	60	3	Y
44	1573713906	NEHA PANDEY	0.5	0.5	1	1.5	2.5	2	8	9.5	84	35	49	2	N
45	1573713907	RUCHI TIWARI	0.5	0.5	1.5	1.5	2	2	8	9.5	84	59	66	3	Y
46	1573713908	SANJEEV KR SHAH	0	0	0	0	0	0	0	9.5	0	0	0	1	N
47	1573713909	VIDISH MISHRA	0.5	0.5	1		3	2	7	7.5	93	59	69	3	Y
														2.5745	Y=32/47=68.08%

Similarly we can obtain attainment for CO2, CO3, CO4, and CO5.

Course Outcomes	Grading	Distribution		
	AVG on Scale of 3	3	2	1
CO1	2.57	32/47 = 68.08%	10/47 = 21.27%	5/47 = 10.63%

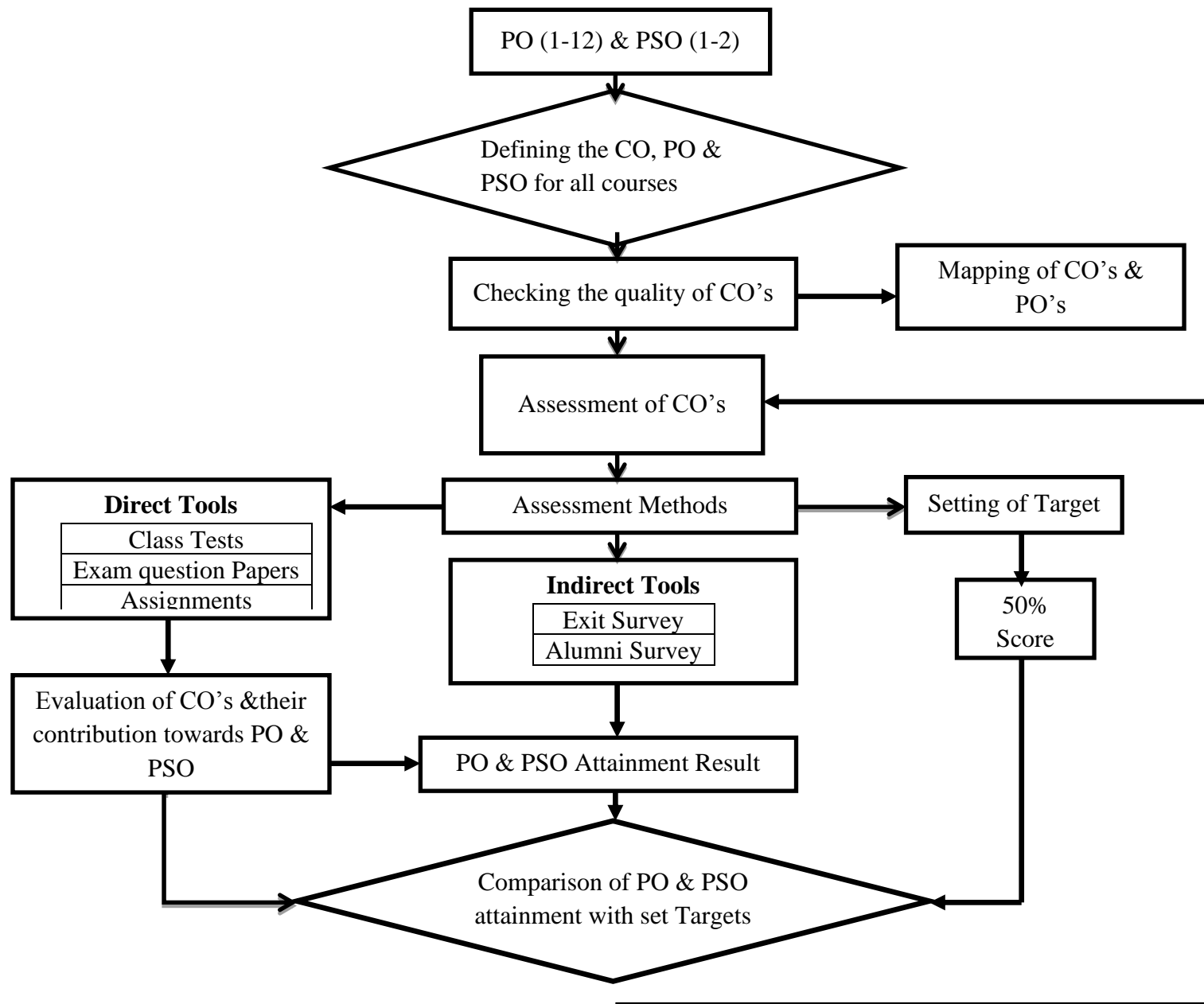
CO2	2.57	33/47= 70.21%	8/47= 17.02%	6/47= 12.76%
CO3	2.87	42/47= 89.36%	4/47= 8.51%	1/47= 2.12%
CO4	2.85	41/47= 87.23%	5/47= 10.63%	1/47= 2.12%
CO5	2.85	41/47= 87.23%	5/47= 10.63%	1/47= 2.12%



Total Number of Students=47

**No. of Students Scoring>=60%**

Course Outcomes	Final Attainment of Cos	CO Result
CO1	68.08%	Y
CO2	70.21%	Y
CO3	89.36%	Y
CO4	87.23%	Y
CO5	87.23%	Y



**CO Attainment Session 2016-17**

**B. Tech. (IT) III Semester**

Name of Subject	Sub. Code	Course Outcomes (CO)	Grading Average on Scale of 3	% age of students scoring 3,2,1			Result of CO Achieved
				3	2	1	
Mathematics-III	NAS 301	CO1	2.29	76.3	12.39	11.35	Y
		CO2	1.79	59.3	28.71	13.16	N
		CO3	2.07	69	18.71	13.16	Y
		CO4	2.2	73.3	21.65	5.91	Y
Digital Logic Design	NEC 309	CO1	2.87	89.36	8.5	2.12	Y
		CO2	2.87	89.36	8.5	2.12	Y
		CO3	2.87	89.36	8.5	2.12	Y
		CO4	2.87	89.36	8.5	2.12	Y
Discrete Structures And Graph Theory	NCS 302	CO1	1.86	62	18.20	19.78	Y
		CO2	1.93	64.3	16.99	19.00	Y
		CO3	1.79	59.6	18.39	21.88	N
		CO4	2	66.67	24.34	10.23	Y
Computer Based Numerical And Statistical Technique	NCS 303	CO1	2.95	82.97	12.76	4.25	Y
		CO2	2.95	95.74	2.12	2.12	Y
		CO3	2.95	82.97	14.89	2.12	Y
		CO4	2.91	95.74	2.12	2.12	Y
		CO1	1.97	65.96	18.45	15.59	Y

Industrial Psychology	NHU 301						
		CO2	2.68	89.36	7.43	3.21	Y
		CO3	1.72	57.45	39.13	3.42	N
		CO4	2.36	78.72	15.78	5.50	Y
Data Structures Using C	NCS 301	CO1	2.93	95.74	2.12	2.12	Y
		CO2	2.81	85.10	12.76	2.12	N
		CO3	2.93	95.74	2.12	2.12	Y
		CO4	2.84	87.23	10.63	2.12	Y

**B.Tech. (IT) IV Semester**

Name of Subject	Sub. Code	Course Outcomes (CO)	Grading Average on Scale of 3	% age of students scoring 3,2,1			Result of CO Achieved
				3	2	1	
Polymer Science & Technology Theory	NOE045	CO1	CO1	2.46	54.79	34.24	N
		CO2	CO2	2.2	50.68	19.17	N
		CO3	CO3	2.42	63.01	16.43	Y
		CO4	CO4	2.37	49.31	38.35	N
		CO5	CO5	2.69	75.34	19.17	Y
Information Theory and Coding Theory	NEC408	CO1	2.89	91.48	6.38	2.12	Y
		CO2	2.87	89.36	8.51	2.12	Y
		CO3	2.93	91.48	6.38	2.12	Y
		CO4	2.89	91.48	6.38	2.12	Y
Operating System Theory	NCS401	CO1	2.89	91.45	6.38	2.12	Y
		CO2	2.93	95.74	2.12	2.12	Y
		CO3	2.95	97.87	0	2.12	Y
		CO4	2.89	91.45	6.38	2.12	Y
		CO5	2.95	97.87	0	2.12	Y
Theory of Automata and Formal Language	NCS402	CO1	2.74	76.60	21.28	2.13	Y
		CO2	2.34	51.06	31.91	17.02	Y
		CO3	2.80	82.98	14.89	2.13	Y
		CO4	2.68	72.34	23.40	2.13	Y

		CO5	2.53	55.32	42.55	2.13	Y
Multimedia and Animation Theory	NIT401	CO1	2.91	91.48	6.38	2.13	Y
		CO2	2.93	95.74	2.13	2.13	Y
		CO3	2.95	97.87	0	2.13	Y
		CO4	2.90	91.48	6.38	2.13	Y
Industrial Sociology Theory	NHU402	CO1	2.17	72.34	19.54	8.12	Y
		CO2	2.68	89.36	7.32	3.32	Y
		CO3	1.53	51.06	34.65	14.38	N
		CO4	2.43	80.85	12.34	6.81	Y

**B. Tech. (IT) V Semester**

Name of Subject	Sub. Code	Course Outcomes (CO)	Grading Average on Scale of 3	% age of students scoring 3,2,1			Result of CO Achieved
				3	2	1	
Design and Anaysis of Algorithm Theory	NCS501	CO1	2.55	19.69	57.57	21.21	N
		CO2	2.27	56.06	31.81	12.12	N
		CO3	2.39	57.57	34.84	7.57	N
		CO4	1.71	87.87	12.12	0	Y
Database Management System Theory	NCS502	CO1	2.74	78.72	17.02	4.25	Y
		CO2	2.87	89.36	8.51	2.12	Y
		CO3	2.78	80.85	17.02	2.12	Y
		CO4	2.87	89.36	8.51	2.12	Y
		CO5	2.97	97.87	2.12	0	Y
Principle of Programming Language Theory	NCS503	CO1	2.87	87.23	10.63	2.12	Y
		CO2	2.87	89.36	8.51	2.12	Y
		CO3	2.85	87.23	10.63	2.12	Y
		CO4	2.85	87.23	10.63	2.12	Y
Web Technology Theory	NCS504	CO1	2.78	80.85	17.02	2.13	Y
		CO2	2.91	93.62	4.25	2.13	Y
		CO3	2.91	93.62	4.25	2.13	Y
		CO4	2.91	93.62	4.25	2.13	Y
		CO5	3	100	0	0	Y
		CO1	2.70	91.48	6.38	2.12	Y

Management Information System Theory	NIT501	CO2	2.89	93.62	4.25	2.13	Y
		CO3	2.74	76.59	21.27	2.12	Y
		CO4	2.70	73.24	25.53	2.12	Y
Engineering Economics Theory	NHU501	CO1	2.16	70.21	23.98	5.81	Y
		CO2	2.87	95.74	2.13	2.13	Y
		CO3	1.59	53.19	32.76	14.05	N
		CO4	2.36	78.72	13.76	7.52	Y

**B. Tech. (IT) VI Semester**

Name of Subject	Sub. Code	Course Outcomes (CO)	Grading Average on Scale of 3	% age of students scoring 3,2,1			Result of CO Achieved
				3	2	1	
Computer Networks Theory	NCS601	CO1	2.80	85.10	10.64	4.25	Y
		CO2	2.85	87.23	10.64	2.12	Y
		CO3	2.82	85.10	12.76	2.12	Y
		CO4	2.85	87.23	10.64	2.12	Y
		CO5	2.97	97.87	2.12	0.00	Y
Software Engineering Theory	NCS602	CO1	2.74	76.59	21.28	2.13	Y
		CO2	2.74	76.59	21.28	2.13	Y
		CO3	2.74	76.59	21.28	2.13	Y
		CO4	2.76	78.72	19.14	2.13	Y
		CO5	2.68	70.21	27.66	2.13	Y
Compiler Design Theory	NCS603	CO1	2.57	68.08	21.27	10.63	Y
		CO2	2.57	70.21	17.02	12.76	Y
		CO3	2.87	89.36	8.51	2.12	Y
		CO4	2.85	87.23	10.63	2.12	Y
		CO5	2.85	87.23	10.63	12.12	Y
		CO1	2.85	87.23	10.63	2.12	Y

Knowledge based & decision Support System Theory	NIT064	CO2	2.78	80.85	17.02	2.12	Y
		CO3	2.8	82.97	14.89	2.12	Y
		CO4	2.89	91.48	6.38	2.12	Y
		CO5	2.97	97.87	2.12	0.00	Y
Data Warehousing & Data Mining Theory	NCS066	CO1	2.14	71.3	17.39	11.35	Y
		CO2	2.14	69.3	16.39	14.69	Y
		CO3	2.07	69	18.71	13.16	Y
		CO4	2.14	71.3	17.39	11.35	Y
		CO5	2.43	81	6.72	12.77	Y
		CO6	2.43	78.9	7.72	14.04	Y
Industrial Management Theory	NHU601	CO1	1.53	51.06	32.17	16.14	N
		CO2	2.68	89.36	7.54	3.10	Y
		CO3	2.48	82.98	5.65	11.37	Y
		CO4	2.04	68.09	21.78	10.13	Y

**B. Tech. (IT) VII Semester**

Name of Subject	Sub. Code	Course Outcomes (CO)	Grading Average on Scale of 3	% age of students scoring 3,2,1			Result of CO Achieved
				3	2	1	
SOFTWARE PROJECT MANAGEMENT Theory	NOE077	CO1	2.74	76.59	21.28	2.13	Y
		CO2	2.74	76.59	21.28	2.13	Y
		CO3	2.74	76.59	21.28	2.13	Y
		CO4	2.76	78.72	19.14	2.13	Y
		CO5	2.68	70.21	27.66	2.13	Y
CRYPTOGRAPHY & NETWORK SECURITY Theory	NIT701	CO1	2.89	75	20.16	4.54	Y
		CO2	2.84	88.63	6.81	4.54	Y
		CO3	2.89	93.18	2.27	4.54	Y
		CO4	2.84	88.63	6.81	4.54	Y
		CO5	2.91	94.45	0	4.54	Y
ARTIFICIAL INTELLIGENCE Theory	NCS702	CO1	2.70	77.27	15.9	6.81	Y
		CO2	2.90	95.45	0	4.54	Y
		CO3	2.90	95.45	0	4.54	Y
		CO4	2.90	95.45	0	4.54	Y
	NCS071	CO1	2.88	90.90	6.81	2.27	Y
		CO2	2.9	95.45	0	2.17	Y
		CO3	2.84	88.63	6.81	2.27	Y

SOFTWARE TESTING & AUDIT Theory		CO4	2.9	95.45	0	4.54	Y
		CO5	2.95	95.45	0	4.54	Y
DISTRIBUTED SYSTEM Theory	NCS701	CO1	2.14	71.3	17.39	11.35	Y
		CO2	2.14	69.3	16.39	14.69	Y
		CO3	2.07	69	18.71	13.16	Y
		CO4	2.14	71.3	17.39	11.35	Y
		CO5	2.43	81	6.72	12.77	Y

**B. Tech. (IT) VIII Semester**

Name of Subject	Sub. Code	Course Outcomes (CO)	Grading Average on Scale of 3	% age of students scoring 3,2,1			Result of CO Achieved
				3	2	1	
Non-Conventional Energy Resources Theory	NOE081	CO1	3	100	0	0	Y
		CO2	3	100	0	0	Y
		CO3	3	100	0	0	Y
		CO4	3	100	0	0	Y
Digital Image Processing Theory	NCS801	CO1	2.9	95.45	0	4.5	Y
		CO2	2.9	95.45	0	4.5	Y
		CO3	2.9	95.45	0	4.5	Y
		CO4	2.9	95.45	0	4.5	Y
Data Compression Theory	NCS085	CO1	3	100	0	0	Y
		CO2	2.9	90.90	9.09	0	Y
		CO3	3	100	0	0	Y
		CO4	2.93	93.18	6.81	0	Y
Mobile Computing Theory	NIT801	CO1	2.90	95.45	0	4.54	Y
		CO2	2.90	95.45	0	4.54	Y
		CO3	2.86	93.18	0	4.54	Y
		CO4	2.90	95.45	0	4.54	Y
		CO5	2.90	95.45	0	4.54	Y

### **3.3 Attainment of Program Outcomes and Program Specific Outcomes (75)**

#### **3.3.1. Describe assessment tools and processes used for measuring the attainment of each PO and PSO (10)**

##### **PO Assessment Tools**

Assessment tools are categorized into direct and indirect methods to assess the program Specific outcomes, program outcomes and course outcomes.

Direct method increase the student knowledge and skill for their performance in the continuous assessment tests, end–semester examinations, presentations, and classroom assignments etc.

Indirect methods such as surveys and interviews enquire the stakeholders to reflect on students learning. They assess opinions or thoughts about the graduates knowledge or skills and their valued by different stakeholders.

##### **Process used for PO and PSO attainment is as follows:**

1. Direct attainment level of a PO & PSO is determined by taking average of particular courses outcomes of the course.
2. Students getting  $\geq 50\%$  got 3 in CO's are only considered for PO attainment. % age of students getting  $\geq 50\%$  in evaluation are obtained.
3. CO-PO mapping is considered for PO attainment.

An example of how Direct PO attainment has been calculated for a subject is shown in the following page. :

Mapping of POs and PSOs with Course Outcomes:														
COs\POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO2
NCS-603.1	3	1	2	1	-	-	-	-	-	-	-	3	1	1
NCS-603.2	3	3	2	-	1	-	-	-	-	-	-	2	2	3
NCS-603.3	3	3	3	2	1	-	-	-	-	-	-	2	2	3
NCS-603.4	3	2	1	2	-	-	-	-	-	-	-	3	1	3
NCS-603.5	3	3	2	2	-	-	-	-	-	-	-	2	1	2

Course Name: Compiler Design (2016-17)																	
Course Code: NCS-603																	
Cou rse		Attai nmen t	Statement	PO 1	PO 2	PO 3	PO 4	PO 5	P O 6	P O 7	P O 8	P O 9	P O 10	P O 11	PO 12	PS O1	PS O2
NCS -603	C O 1	68.08 %	Identify and explain different phases and passes of compilation process.	68.0 8%	22.6 9%	45.3 9%	22.6 9%	-	-	-	-	-	-	-	68.0 8%	22.6 9%	22.6 9%
	C O 2	70.21 %	Write lexical rules and grammars for a programming language.	70.2 1%	70.2 1%	46.8 0%	-	23.4 0%	-	-	-	-	-	-	46.8 0%	46.8 0%	70.2 1%
	C O 3	89.36 %	Compare different types of parsers and test semantic rules into a parser that performs attribution while parsing	89.3 6%	89.3 6%	89.3 6%	59.5 7%	29.7 9%	-	-	-	-	-	-	59.5 7%	59.5 7%	62.3 3%
	C O 4	87.23 %	Describe the concepts of storage administration for different programming environments.	87.2 3%	58.1 5%	29.0 7%	58.1 5%	-	-	-	-	-	-	-	87.2 3%	29.0 7%	87.2 3%

	C	87.23	Design different representations of intermediate code and produce the optimum machine code from the same.	87.2	87.2	58.1	58.1	-	-	-	-	-	-	-	58.1	29.0	58.1
	O	%		3%	3%	5%	5%	-	-	-	-	-	-	-	5%	7%	5%
	5																
Average				80.4	65.5	53.7	49.6	26.5							63.9	37.4	60.1
				2%	3%	5%	4%	9%							7%	4%	2%

4. Indirect attainment level of PO & PSO is determined based on the student's exit survey, employer & alumni feedback.

- **Student's Exit Survey:** The students of the department are required to undergo for PO and PSO survey. This survey gives input for indirect assessment of PO/PSO.
- **Alumni & Employer Feedback:** The College has an Alumni Association. Most of these Alumni are having their own industry or working at very high positions in the industry. These Alumni are helping the university in training and placement of the students and they are in continuous touch with our students. They are also providing an overview assessment of the students which involves the identification of the grey areas.

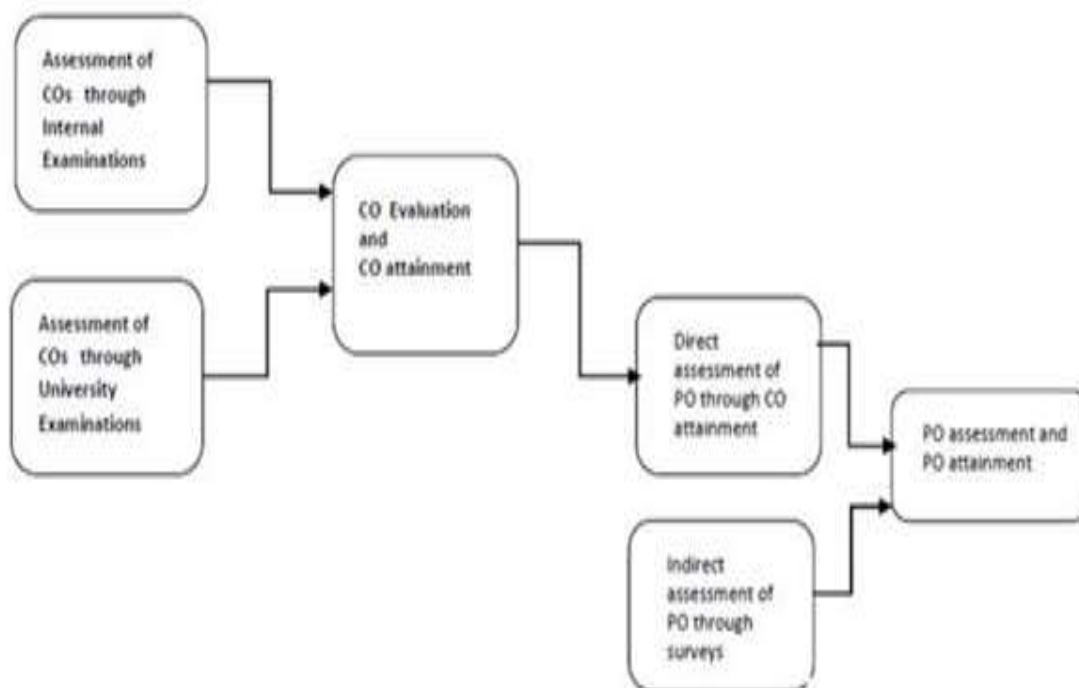
The steps involved in PO assessment process are as follows:

**Step1:** Course outcomes are assessed through internal examinations and University Examination. The analysis is done to find the level of attainment of COs.

**Step 2:** The average of results of CO attainment of all the courses in a semester mapping to a particular PO gives direct attainment of PO and is compared with pre-defined target of PO.

**Step 3:** For indirect assessments, survey questionnaire is circulated to students, alumni, and employer. The surveys are assessed and evaluated to determine the strength of attainment level of POs.

**Step 4:** Over all PO attainment is calculated as 80% of direct assessment + 20% of indirect assessment.



**Fig. 3.3.1.: PO Assessment and PO Attainment**

### **3.3.2. Provide results of evaluation of each PO & PSO**

**(40)**

- **The target level of attainment for each of the Program Outcomes;**

The target level for the attainment of each PO and PSO has been fixed as **60 %** considering both direct and indirect assessments.

The program outcomes are assessed with the help of course outcomes of the relevant Courses through direct and indirect methods.

- **The attainment level of each of the Program Outcomes & Program Specific Outcomes are listed in Table: B.3.3.2a.**

<b>Subject Code</b>	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
<b>NAS 301</b>	44%	22%	44%	44%	22%	44%	67%	44%	44%	67%	22%	44%	67%	67%
<b>NEC 309</b>	79.43%	48.75%	43.33%	27.09%	89.36%	-	-	-	-	-	-	-	79.43%	37.92%
<b>NCS 301</b>	53.90%	67.38%	78.94%	62.17%	52.84%	26.10%	-	-	-	-	-	-	66.15%	52.94%
<b>NCS 302</b>	45.15%	54.18%	54.18%	40.64%	81.26%	-	-	-	-	-	-	-	63.24%	40.64%
<b>NCS 303</b>	62.55%	52.12%	62.55%	20.85%	49.28%	-	-	-	-	-	-	20.85%	30.01%	41.54%
<b>NHU 301</b>	73.99%	-	68.00%	73.99%	-	36.76%	30.66%	73.99%	73.99%	-	-	73.99%	49.33%	49.33%
<b>NOE045</b>	83.33%	44.44%	83.33%	83.33%	100.00%	44.44%	75.00%	-	-	-	-	-	77.77%	50.00%
<b>NEC408</b>	70.47%	70.47%	70.47%	23.49%	58.70%	-	-	-	-	-	23.49%	23.49%	52.87%	52.81%
<b>NCS401</b>	76.11%	61.10%	55.88%	40.65%	35.52%	25.38%	50.79%	30.47%	45.74%	-	-	65.88%	40.61%	65.84%
<b>NCS402</b>	66.26%	61.66%	44.17%	35.49%	23.62%	-	22.09%	-	-	-	-	48.68%	44.17%	49.79%
<b>NIT401</b>	30.49%	63.82%	80.50%	63.82%	84.39%	-	60.99%	-	-	-	-	45.74%	78.90%	78.90%
<b>NHU402</b>	64.47%	-	57.59%	64.47%	-	28.65%	-	64.47%	-	-	-	64.47%	42.98%	64.47%

<b>NCS501</b>	53.90%	67.38%	78.94%	62.17%	52.84%	26.10%	-	-	-	-	-	-	66.15%	52.94%
<b>NCS502</b>	62.26%	71.99%	71.99%	67.09%	52.67%	24.46%	-	-	38.16%	43.19%	32.49%	71.99%	67.15%	57.82%
<b>NCS503</b>	45.15%	54.18%	54.18%	40.64%	81.26%	-	-	-	-	-	-	-	63.24%	40.64%
<b>NCS504</b>	80.30%	74.81%	80.30%	63.06%	57.93%	-	-	-	-	-	-	85.79%	57.32%	74.81%
<b>NIT501</b>	90.66%	67.81%	60.46%	49.60%	30.24%	-	-	-	-	-	-	75.54%	45.32%	53.46%
<b>NHU501</b>	40.21%	73.19%	80.43%	53.62%	80.43%	-	-	66.60%	-	40.64%	-	80.43%	67.45%	53.62%
<b>NCS601</b>	77.32%	51.59%	46.68%	45.29%	25.96%	-	-	-	-	-	-	61.75%	36.02%	46.42%
<b>NCS602</b>	80.81%	64.56%	53.83%	53.89%	44.40%	-	-	-	-	-	-	64.73%	48.60%	48.47%
<b>NCS603</b>	80.42%	65.53%	53.75%	49.64%	26.59%	-	-	-	-	-	-	63.97%	37.44%	60.12%
<b>NIT064</b>	71.99%	57.82%	47.74%	41.96%	23.83%	-	-	-	-	-	-	57.18%	28.94%	43.10%
<b>NCS066</b>	62.26%	71.99%	71.99%	67.09%	52.67%	24.46%	-	-	38.16%	43.19%	32.49%	71.99%	67.15%	57.82%
<b>NHU601</b>	79.95%	72.87%	66.76%	79.95%	73.83%	39.31%	39.84%	-	-	-	-	79.95%	53.30%	79.95%
<b>NOE077</b>	80.81%	64.56%	53.83%	53.89%	44.40%	-	-	-	-	-	-	64.73%	48.60%	48.47%

<b>NIT701</b>	71.99%	58.94%	50.51%	50.96%	35.60%	40.92%	35.54%	39.29%	35.93%	35.93%	35.93%	57.94%	28.94%	43.10%
<b>NCS702</b>	73.40%	65.79%	53.16%	63.05%	39.09%	48.08%	-	-	-	-	35.93%	69.19%	72.44%	61.17%
<b>NCS071</b>	93.18%	61.97%	71.21%	80.90%	87.27%	31.82%	31.82%	31.82%	63.63%	47.73%	63.63%	80.90%	86.81%	74.54%
<b>NCS701</b>	80.81%	64.56%	53.83%	53.89%	44.40%	-	-	-	-	-	-	64.73%	48.60%	48.47%
<b>NOE081</b>	83.33%	44.44%	83.33%	83.33%	100.00%	44.44%	75.00%	-	-	-	-	-	77.77%	50.00%
<b>NCS801</b>	87.51%	71.60%	63.67%	47.76%	63.67%	63.70%	55.69%	39.78%	55.73%	-	-	62.92%	63.70%	95.45%
<b>NCS085</b>	71.36%	84.54%	87.27%	58.18%	76.28%	28.40%	28.40%	29.09%	-	-	-	56.81%	57.38%	86.08%
<b>NIT801</b>	71.99%	71.81%	56.44%	65.28%	38.84%	47.40%	42.42%	-	35.93%	35.93%	35.93%	65.14%	72.63%	67.99%
<b>Average</b>	69%	62%	63%	55%	56%	37%	47%	47%	48%	45%	35%	62%	57%	57%

**Table: B.3.3.2a Attainment level of POs and PSOs of all subjects (2016-17)**

**PO Attainment:**

PO has been attained on the basis of assigning the 80 % weightage to direct assessment and 20 % weightage to indirect assessment as shown in table below:

**Table: B.3.3.2b**

PO/ SO	Method of assessment	Direct assessment		Indirect assessment		PO attainment %
	PO Description	PO Attainment	Weightage	Exit survey + Alumni Survey	Weightage	
			80%		20%	
PO1	<b>Engineering knowledge:</b> Apply the knowledge of mathematics, including discrete mathematics, probability, statistics and fundamentals of various engineering disciplines like computer science and engineering, electronic engineering and electrical engineering in the core information technologies.	69	55.2	96.21	19.24	74.44
PO2	<b>Problem analysis:</b> Analyze a problem and identify the computing requirements appropriate to its solution.	62	49.6	90.15	18.03	67.63
PO3	<b>Design/development of solutions:</b> Design and implement hardware and software systems, components, process or program to meet the desired needs within reasonable economic,	63	50.4	90.9	18.18	68.58

	environmental, social, political, ethical, health and safety, manufacturability, and sustainability constraints					
PO4	<b>Conduct investigations of complex problems:</b> Reassess literature and indulge in research to use research based knowledge and methods to design and conduct new experiments, as well as to organize, analyze and interpret data to produce draw valid conclusions and recommendations.	55	44	88.63	17.72	61.72
PO5	<b>Modern tool usage:</b> Use appropriate techniques, resources, and modern engineering and IT tools necessary for computer engineering practice.	56	44.8	92.42	18.48	63.28
PO6	<b>The engineer and society:</b> Show the understanding of local and global impact of computing on individuals, organizations and society.	37	29.6	90.9	18.18	47.78
PO7	<b>Environment and sustainability:</b> Integrate IT-based solutions in environmental contexts, and demonstrate the knowledge of need for sustainable development.	47	37.6	95.45	19.09	56.69

PO8	<b>Ethics:</b> Demonstrate the knowledge of professional and ethical responsibilities along with the norms of the engineering practice.	47	37.6	95.45	19.09	56.69
PO9	<b>Individual and team work:</b> Demonstrate leadership and an ability to work as a member with responsibility to function on multi-disciplinary teams to accomplish a common goal.	48	38.4	96.96	19.39	57.79
PO10	<b>Communication:</b> Demonstrate effective communicate skills in both oral and written form with a range of audiences.	45	36	93.18	18.63	54.63
PO11	<b>Project management and finance:</b> Apply the knowledge and understanding of engineering and management principles to design, plan, budget and propose IT project for an identified need within a specific scope.	35	28	90.90	18.18	46.18
PO12	<b>Life-long learning:</b> Develop confidence to acquire new knowledge in the computing discipline and to engage in life-long learning.	62	49.6	87.12	17.42	67.02
PSO 1	Gain detailed Knowledge of various contemporary domains to identify research gaps and hence provide solutions by new ideas and innovations.	57	45.6	95.45	19.09	64.69

PSO 2	Have strong skills in learning new programming environments as it is used to automate things and simplify real world problems and human efforts.	57	45.6	97.72	19.54	65.14
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**Note: PO6 (Attainment =47.48%), PO7 (Attainment =56.69%), PO8 (Attainment =56.69%), PO9 (Attainment =57.79%), PO10 (Attainment =54.63%) and PO11 (Attainment =46.18%) have not been attained.**

## **CONCLUSION**

From the above tabulated data it has been observed that 6 PO out of 12 and 02 PSO out of 02 are attained.

For the purpose of attainment of rest of the PO the actions taken have been explained in Criterion 7.

<b>CRITERION4</b>	<b>STUDENTS' PERFORMANCE</b>	<b>100</b>
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#### 4. STUDENTS' PERFORMANCE

(150)

<b>Item (Information to be provided cumulatively for all the shifts with explicit headings, wherever applicable)</b>	<b>CAY (2018-19)</b>	<b>CAYm1 (2017-18)</b>	<b>CAYm2 (2016-17)</b>	<b>CAYm3 (2015-16)</b>
Sanctioned intake of the program ( <i>N</i> ) (first year)	60+3	60+3	60+3	60+3
Sanctioned intake of the program ( <i>N</i> ) (second year)	60+3	60+3	60+3	60+3
Total number of students admitted in first yr/transferred in 2 <sup>nd</sup> year <i>minus</i> number of students migrated to other programs/institutions plus no. of students migrated to this program ( <i>N1</i> )	59	53	39	38
Number of students admitted in 2nd year in the same batch via lateral entry ( <i>N2</i> )	11	12	7	8
Separate division students, if applicable ( <i>N3</i> ) (TFW: Tution Fee Waiver)	1			
<b>Total number of students admitted in the Program (<i>N1</i> + <i>N2</i> + <i>N3</i>)</b>	<b>71</b>	<b>65</b>	<b>46</b>	<b>47</b>

**Table 4 (a): Student Information**

Year of Entry	N1 + N2 + N3 (As defined above)	Number of students who have successfully graduated <u>without backlogs</u> in any semester/year of study (Without Backlog means no compartment or failures in any semester/year of study)			
		I Year	II Year	III Year	IV Year
CAY 17-18	71	42			
CAYm1 16-17	65	31	40	-	-
CAYm2 15-16	46	27	40	44	
CAYm3 14-15	47	18	34	46	46
CAYm4	44	26	37	40	42
CAYm5(LYG)	57	25	31	49	57
CAYm6(LYGm1)	66	26	39	50	51

**Table 4(b): Student Performance (without backlogs)**

Year of Entry	N1 + N2 + N3 (As defined above)	Number of students who have successfully graduated			
		I Year	II Year	III Year	IV Year
CAY (2018-19)	71	60			
CAY (2017-18)	66	53	62		
CAYm1 (2016-17)	47	37	46	46	
CAYm2(2015-16)	47	38	47	46	46
CAYm3(2014-15)	44	44	44	44	44
CAYm4 (LYG)	57	57	57	57	57
CAYm5 (LYGm1)	66	56	56	56	56

**Table 4(c): Student Performance (graduated)**

#### 4.1. Enrolment Ratio

(20)

Enrolment Ratio= N1/N

59/60

=0.98

OR 98%

<b>Item</b>	<b>Enrolment Ratio= N1/N</b>	<b>Marks</b>
>=90% students enrolled at the First Year Level on average basis during the period of assessment	<b>98</b>	<b>20</b>
>=80% students enrolled at the First Year Level on average basis during the period of assessment		
>=70% students enrolled at the First Year Level on average basis during the period of assessment		
>=60% students enrolled at the First Year Level on average basis during the period of assessment		
Otherwise		

**Table 4.1 Enrolment Ratio percentage**

**4.2. Success Rate in the stipulated period of the program (40)**

**4.2.1. Success rate without backlogs in any semester/year of study (25)**

<b>Item</b>	<b>Latest Year of Graduation, LYG(CAYm3)</b>	<b>Latest Year of Graduation minus 1, LYGm1 (CAYm4)</b>	<b>Latest Year of Graduation minus 2, LYGm2 (CAYm5)</b>	<b>Latest Year of Graduation minus 3, LYGm2 (CAYm5)</b>
Number of students admitted in the corresponding First	46	44	57	66

Year + admitted in 2nd year via lateral entry and separate division, if applicable				
Number of students who have graduated without backlogs in the stipulated period	26	30	19	25
Success Index (SI)	0.56	0.68	0.33	0.37
Average SI	0.48			

**Table 4.2.1: Success Rate (without backlogs)**

*Success rate without backlogs in any year of study = 25 × Average SI*

$$= 25 \times 0.48$$

$$= 12.1$$

#### **4.2.2. Success Rate in stipulated period**

**(15)**

<b>Item</b>	<b>Latest Year of Graduation, LYG(CAY<sub>m3</sub>)</b>	<b>Latest Year of Graduation minus 1, LYG<sub>m1</sub> (CAY<sub>m4</sub>)</b>	<b>Latest Year of Graduation minus 2, LYG<sub>m2</sub> (CAY<sub>m5</sub>)</b>	<b>Latest Year of Graduation minus 3, LYG<sub>m3</sub> (CAY<sub>m6</sub>)</b>
Number of students admitted in the corresponding First Year +	46	44	57	66

admitted in 2nd year via lateral entry and separate division, if applicable				
Number of students who have graduated with backlogs in the stipulated period	20	14	38	41
Success Index (SI)	0.43	0.31	0.66	0.62
<b>Average SI</b>		0.50		

**Table 4.2.2: Success Rate in stipulated period**

*Success rate without backlogs in any year of study =  $15 \times \text{Average SI} = 15 \times 0.50 = 7.59$*

### **4.3. Academic Performance in third year (15)**

<b>Academic Performance</b>	<b>CAY</b>	<b>CAY<sub>m1</sub></b>	<b>CAY<sub>m2</sub></b>	<b>CAY<sub>m3</sub></b>
Mean of CGPA or Mean Percentage of all successful students(X)	70.58	71.1	70.5	73.5
Total no. of successful students (Y)	46	47	47	44
Total no. of students appeared in the examination (Z)	46	46	46	42
API = $x * (Y/Z)$	7.05	7.11	7.05	7.35
Average API = $(AP1 + AP2 + AP3 + AP4)/4$	7.14			

**Table 4.3: Academic Performance in third year**

*Academic Performance =  $1.5 * \text{Average API (Academic Performance Index)}$*

$$= 1.5 * 7.14$$

$$= 10.71$$

**4.4. Academic performance in Second year****(15)**

<b>Academic Performance</b>	<b>CAY</b>	<b>CAY<sub>m1</sub></b>	<b>CAY<sub>m2</sub></b>	<b>CAY<sub>m3</sub></b>
Mean of CGPA or Mean Percentage of all successful students(X)	70.95	68.7	68.3	72.1
Total no. of successful students (Y)	62	67	47	47
Total no. of students appeared in the examination (Z)	62	64	46	47
API = X* (Y/Z)	7.09	6.87	6.8	7.21
Average API = (AP1 + AP2 + AP3+AP4)/4	6.99			

**Table 4.4: Academic Performance in second year**

$$\text{Academic Performance Level} = 1.5 * \text{Average API (Academic Performance Index)}$$

$$= 1.5 * 6.99$$

$$= 10.48$$

**4.5. Placement, Higher Studies and Entrepreneurship****(40)**

Assessment Points = 40 × average placement

<b>Item</b>	<b>CAY (2018-19)</b>	<b>CAY<sub>m1</sub> (2017-18)</b>	<b>CAY<sub>m2</sub> (2016-17)</b>	<b>CAY<sub>m2</sub> (2016-17)</b>
Total No. of Final Year Students (N)	46	44	57	66
No. of students placed in companies or Government Sector (x)		15	38	20
No. of students admitted to higher studies with valid qualifying scores (GATE or equivalent State or National Level Tests, GRE, GMAT etc.) (y)		04	05	02
No. of students turned entrepreneur in engineering/technology (z)		0	0	0

$x + y + z =$		19	42	22
Placement Index : $(x + y + z)/N$		0.43	0.73	0.33
Average placement= $(P1 + P2 + P3)/3$		0.50		

**Table 4.5: Placement & higher study details**

**Assessment Points =  $40 \times \text{average placement} = 20.17$**

#### **4.6 Professional Activities (20)**

##### **4.6.1 Professional societies/chapters and organizing engineering events (5)**

The following Tables give the events organized by the department in past three years

<b>Duration</b>	<b>Details of Seminar /Workshop Conducted/Expert Lecture</b>	<b>Source of Funding</b>
14-18, May 2018	“ICT course on <b>Scilab Programming</b> ”, organized by Department of Information Technology, Rajkiya Engineering College Ambedkar Nagar in collaboration with NITTTR Chandigarh.	NITTTR Chandigarh
05-06, May 2018	Expert Lecture On " <b>Machine Learning</b> " By: Dr. Arvind Kumar Tiwari, Associate Professor, KNIT, Sultanpur	TEQIP-III
05-06, May 2018	Expert Lecture On " <b>Python Language</b> " By: Dr. Akshay Deepak, Assistant Professor, NIT Patna.	TEQIP-III
05-06, May 2018	Expert Lecture On " <b>C Language</b> " By: Dr. Jyoti Prakash Singh, Assistant Professor, NIT Patna.	TEQIP-III

21 April, 2018	Expert Lecture On " <b>Natural Language Programming</b> " By: Dr. Vimal Mishra, Director, IERT Allahabad.	TEQIP-III
21 April, 2018	Expert Lecture On " <b>Software Project Management &amp; Entrepreneurship in IT Industry</b> " By: Mr. Praveen Kumar Diwedi, Deputy-Director, MEITY Govt. Of India.	TEQIP-III
21 April, 2018	Expert Lecture On " <b>Project Planning and Management</b> " By: Mr. Alok Tiwari, John Deere Foreign Agency.	TEQIP-III
21 April, 2018	Expert Lecture On " <b>Startup &amp; Entrepreneurship</b> " By: Prof. Devendra Kumar, Professor, IIT BHU.	TEQIP-III
21-25 August, 2017	One week Short Term Course on " <b>Scilab Programming through ICT</b> " conducted by Computer Science & Engineering Department, NITTTR, Chandigarh at Rajkiya Engineering College Ambedkarnagar	NITTTR, Chandigarh
03-07 October, 2016	Workshop on " <b>Android Technology</b> " for one week organised by the Department Of Information Technology, Rajkiya Engineering College Ambedkarnagar.	Rajkiya Engineering College Ambedkarnagar.

**Table 4.6.1: Professional Societies/Chapters and Organizing Engineering Events**

**4.6.2 Publication of Technical Magazines, Newsletters, etc.****(5)**

S. No.	Academic Year	Technical Magazines, Newsletters
1.	2017-18	Tamsha 2017

**4.6.3 Participation in Inter-Institute events by students of the program of study****(10)**

S.N	Academic Year	Details of the Events	Event Name/ Participating Student	Rank/ Responsibility
1	2014-15	Intra College Sport Fest (IIT-BHU) 2015	preeti	2nd
2	2015-16	Avighna 16(13,14,15 april 2016)	Sport	
			Long Jump	
			Anand Kumar Gupta	1
			Jyoti Bharti	1
			Aditya	3
			High Jump	
			Jyoti Bharti	1
			Aditya	2
			Vijeta Sharma	3
			Anand Kumar Gupta	1
			Shotput	
			Nisha Singh Chauhan	2
			preeti	3
			Discus	
			Manind Singh Chauhan	2

		Anand Kumar Gupta	3
		100 m(Race)	
		Vijeta Sharma	1
		jyoti bharti	2
		Deepti pankaj	3
		Anand Kumar Gupta	3
		200m(Race)	
		Anand Kumar Gupta	2
		Vijeta Sharma	1
		jyoti bharti	2
		400m(Race)	
		Vijeta Sharma	1
		jyoti bharti	2
		Rubi Sagar	3
		800m(Race)	
		Vijeta Sharma	1
		Ruby sagar	2
		pallavi	3
		1500m(Race)	
		Vishnu kumar	2
		Mohit bhaskar	3
		3000m(Race)	
		Manjeet	3
		Chess	
		Deeksha	1
		kahakashan khan	1

		vasudha	1
		Vollyball	
		vijeta sharma	1
		jyoti bharti	1
		mahima chaudhary	1
		anita kumari	1
		Rahul saroj	1
		anupam singh	1
		munni lal	1
		Table Tennis	
		Nilesh	1
		Shivalika Dev	1
		kamini singh	1
		rashmi verma	1
		Carrom	
		Swati jaiswal	1
		Cricket	
		mayank tyagi	1
		saurabh kumar	1
		rohit ranjan	1
		sumit pal	1
		adarsh karosia	1
		Football	
		mohit bhaskar	1
		vivek chaudhary	1
		Badminton	

			Anil Sahu	1
			Nisha singh Chauhan	1
			cultural	
			solo singing	
			Anushka singh	
			duet singing	
<b>3</b>	2016-17	National Level fest- Kshitiz2017(21,22,23 March)	sapna	
			Technical	
			Hykriti(civil warriors)	
			SUNIL KUMAR	2
			Hykriti(Techno Players)	
			prashant shekhar	3
			Fallschirm(Techno Maniax)	
			anita kumari	1
			kanchan	1
			Fallschirm(K.S.)	
			Kamal krishn gupta	2
			Fallschirm(IT Marshal)	
			rajneesh kr yadav	3
			mohit kumar	3
			Literary	
			Parliamentary Debate	
			Shreesh Gupta	3
			Quiz	
			Shubham harsh singh	1
			Rashmi Verma	2

			Shivam Vershaney	3
			Fine Art	
			open painting mela	
			nisha singh chauhan	1
			rohit kumar yadav	3
			Nail Art	
			kanchan	2
			mehandi	
			nisha singh chauhan	1
			vijeta sharma	2
			hand craft	
			sapna kumari	3
			tatto making	
			aman kumar	2
			Hairstyling	
			charuta	3
			charcol	
			vaishali gupta	1
			rangoli	
			anil sahu,rajesh	2
			arti,pooja	3
			Wallpainting	
			nisha singh,charuta	1
			neetu,neha pandey	2
			(Athletics)	
		National Level fest-	open painting mela	

		Kshitiz2017 (21,22,23 March)	nisha singh chauhan	1
			(Long Jump)	
			Anand Kumar Gupta	1
			Alka Kumari	1
			(High Jump)	
			Jyoti Bharti	1
			100 m(Race)	
			Sujit	2
			Vijeta Sharma	1
			200 m(Race)	
			Aaditya	3
			400 m(Race)	
			Vijeta Sharma	1
			800 m(Race)	
			Ritu Saini	3
			1500 m(Race)	
			preeti	2
			Relay	
			Sujeet	1
			Anand Kumar Gupta	1
			Vijeta Sharma	1
			Alka Kumari	1
			Throwing	
			Discus	
			Aaditya	1
			Vijeta Sharma	3

		Gaurav Maurya	3
		Shotput	
		Aaditya	3
		Javelin	
		preeti	2
		Aaditya	3
		Vollyball	
		Preeti Verma	1
		Kahakashan khan	1
		Vijeta Sharma	1
		Mahima Chaudhary	1
		Anita Kumari	1
		Akanchha	1
		Sushma Gautam	1
		Greenish Shatwal	1
		Carrom	
		Preeti	1
		Vijeta Sharma	1
		Gomti Singh	1
		Chess	
		Deeksha Verma	1
		Preeti	1
		Anjali	1
		Basketball	
		Komal Verma	1
		Shikha Chaudhary	1

		Greenish	1
		Alka Kumari	1
		table tennis	
		Shivalika Dev	1
		Anjali Bhandari	1
		Kabaddi	
		Preeti Rana	Discipline Head
		Krishna Singh	Informal Head
		Preeti Verma	Sponsorship Head
		Vicky Vikrant	Sponsorship Head
		Jeetu Kumar	Fooding Head
		Kahakashan Khan	Media Head
		Anupam Singh	Technical Head
		Amit Kumar	Technical Head
		Deeksha Verma	Transportation Head
		Anuj Kumar	CFA Head
		Sujeet Kumar	Event Head
		Munnilal	Maintenance Head
		Hospitality Team	
		mohit Bhaskar	Co-ordinator
		Shubham harsh singh	Co-ordinator

		Aaditya	Co-ordinator
		neha pandey	Co-ordinator
		Ruby Sagar	Co-ordinator
		Neetu Verma	Co-ordinator
		Arnav Singh	Executive
		Mohit Jaiswal	Executive
		Transportation Team	
		Adarsh Karosia	Co-ordinator
		Shivalika Dev	Co-ordinator
		Preeti	Co-ordinator
		Arvind Kumar Shukla	Executive
		Jyoti Bharti	Co-executive
		Deepti Pankaj	Co-executive
		Kanchan	Co-executive
		Fooding Team	
		Anita Kumari	Co-ordinator
		Hospitality Team	
		Amrita Gupta	Co-ordinator
		Deepika Kumari	Co-ordinator
		Medical Team	
		Anushka Singh	Co-ordinator
		Discipline Head	
		Shivam Varshney	Co-ordinator
		Robin Kumar	Co-ordinator
		Vivek Kumar	Co-ordinator
		Mohit Verma	Co-ordinator

			Rachit Kumar	Co-ordinator
			Kunvar Kanhaiya	Co-ordinator
			Rohit Yadav	Co-ordinator
			prashant Kumar	Executive
			Media Team	
			Mayank Tyagi	Co-ordinator
			Vivekanand	Co-ordinator
			Anushka SINGH	Executive
			Amit Kumar	Executive
			Abhishek prajapati	Executive
			Surendra Kumar	Executive
			chess	
4	2017-18	Avighna 2018	preeti	1
			carrom	
			preeti	1
			Table tennis	
			Shivalika Dev	1
			vollyball	
			shantanu singh	1
			rahul pal	1
			pratush yadav	1
			sarita	1
			alka kumari	1
			rajni singh	1
			basket ball	
			sarita kumari	1

			alka kumari	1
			arti yadav	1
			badminton	
			anand kumar gupta	1
			arnav singh	1
			rajni singh	1
			alka kumari	1
			Atheletics	
			long jump	
			anand kumar gupta	1
			laxmi patel	1
			high jump	
			sarita	1
			discus	
			laxmi patel	1
			Anand kumar gupta	1
			shotput	
			laxmi patel	1
			jablin	
			manind singh	1
			laxmi patel	1
			Relay	
			anand kumar gupta	1
			cricket	
			anand kumar gupta	1
			arnav singh	1

			arvind kumar shukla	
			football	
			anand kumar gupta	1
			Vivek Chaudhary	Carrom
		Intra college Sport Fest KNIT Sultanpur TVARAN2018	Anand Gupta	Carrom
			Mayank Tyagi	Carrom
			Arvind Shukla	Cricket
			Arvav Singh	Cricket
			Rahul kumar	Cricket
			Shantanu Singh	Volleyball
			Shubham Verma	Volleyball
			Shivalika Dev	Table tennis
			Praveen	Table Tennis
			Manvendra Singh Chauhan	Basketball
			Vijeta Sharma	Badminton
			Jyoti Bharti	Athletics
			Alka Kumari	Athletics
			Sushma	Athletics
			Sarita	Athletics
			Rajni Singh	Athletics
			Laxmi patel	Athletics
			Nidhi	Athletics
			Gomti singh	Athletics
			Arti Yadav	Athletics
			Shantanu	Volleyball

		Intra College Sport fest IIIT ALLAHABAD (ASMITA18)	Mayank	Vollyball
			Manvendra Singh Chauhan	Basketball
			Vibhanshu Vaibhav	Basketball
			Somesh Yadav	Basketball
			Chess	
		Intra college sport fest IIT BHU (SPARDHA18)	preeti	1
			carrom	
			preeti	1

**Table 4.10: Participation in Inter-Institute Events**

<b>CRITERION 5</b>	<b>FACULTY INFORMATION AND</b>	<b>200</b>
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## 5. FACULTY INFORMATION AND CONTRIBUTIONS

(200)

### Faculty Information

#### LIST OF FACULTIES 2018-19

S.N	Name of the Faculty Member	Qualification(Starting From Highest)	UNIVERSITY	Year of Graduation	All Designations since joining the institution	DOJ	Distribution of Teaching Load (%)				Academic Research		
							1st Year	UG (CS Dept)	UG(Other Program)	M.Tech	Faculty Recieving PhD during the Assessment Period	PhD Guidance	Research Publications
1	DR. SUDHAKAR TRIPATHI	Ph.D(Computer Sc.), M.Tech (Computer Sc.)	Ph.D(IIT BHU)	2005	Associate Professor	(27-12-2017)		100%		0%		1	43
2	MR. RAMESH CHAND PANDEY	Ph.D (Computer Sc.), M.E (Computer Sc.)	(IIT BHU))	2008	Assistant Professor	(08- 12-2017)		100%		0%	Ph.D (2018)		15
3	Mr. AMIT KUMAR	Ph. D (Pursuing); M.Tech (CS & T)	JNU NEW DELHI	2009	Assistant Professor	(08- 12-2017)		100%					10
							Sponsored/Funded Research				Consultancy/Product Development		
											Specialization		
											Artificial Intelligence		
											Image Processing		
											Swarm Intelligence		

4	Mr. ASHISH KUMAR MISHRA	Ph. D (Pursuing); M.Tech (Computer Sc.)	MNIT ALLAHABAD	2005	Assistant Professor	(08-12-2017)		50%		50%				5				Data Mining	Distributed Computing
5	MR. SHARAD VERMA	Ph. D (Pursuing); M.Tech (CS & T)	JNU NEW DELHI	2010	Assistant Professor	(08-12-2017)		100%		0%				3					
6	MR. SHIVENDU MISHRA	M.Tech (Information Security)	MNNIT Allahabad	2008	Assistant Professor	(08-12-2017)		100%		0%				8				Cryptography	
7	MR. Prince Rajpoot	Ph. D (Pursuing); M.Tech (Computer Sc.)	MNIT ALLAHABAD	2012	Assistant Professor	(08-12-2017)		100%						5				Wireless Sensor Network	
8	MR. Shivendra Kumar Pandey	Ph. D (Pursuing); M.Tech (CS & T)	JNU NEW DELHI	2012	Assistant Professor	(08-12-2017)		100%						2				Wireless Sensor NetworkProgramming	
9	MR. SHOBHIT KUMAR	M.Tech (Computer Sc.); B.Tech(CSE)	AKTU LUCKNOW	2009	Assistant Professor	(21-07-2011)		100%						8				Data Structure	
10	Mr. Shashank Shekhar Tiwari	M.Tech (Computer Sc.); B.Tech(CSE)	KNIT SULTANPUR	2013	Assistant Professor	(18-07-2018)		100%						5				Image Processing	

11	MR. SOHIT SHUKLA	M.Tech (Computer Sc.); B.Tech(CSE)	AMITY UNIVERSITY NOIDA (U.P.)	2009	Assistant Professor	(22-07-2016)		100%					5			Data Mining
12	MS. KUMKUM DUBEY	M.Tech (Computer Sc.); B.Tech(CSE)	MMUT GORAKHPUR(U.P)	2014	Assistant Professor	(18-07-2018)		100%					4			WSN

Faculty From other Departments (2018-19)																
1	Dr. Amit Singh	PhD	IIT BHU	2010	Assistant Professor	08-12-2017		100		12						
2	Dr. Prabhudatt Dwivedi	PhD	PhD(Shobhit University)	PhD(2012)	Associate Professor	08-12-2017		75		25						

## LIST OF FACULTIES 2017-18

S.N															
Name of the Faculty Member															
Qualification(Starting From Highest)															
UNIVERSITY															
Year of Graduation															
All Designations since joining the institution															
DOJ															
1st Year															
UG (CS Dept)															
UG(Other Program)															
M.Tech															
Faculty Recieving PhD during the Assessment Period															
PhD Guidance															
Research Publications															
Sponsored/Funded Research															
Consultancy/Product Development															
Specialization															



12	MS. DEEPA VERMA	M.Tech (Computer Sc.); B.Tech(CSE)	AKTU LUCKNOW	2011	Assistant Professor	(26-01-2014)		100%					5				Data Mining
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Faculty From other Departments (2017-18)																
1	Dr. Saurabh Srivastava	PhD	C.C.S University	2001	Assistant Professor	25-02-2014		100		25						
2	Dr. Devendra Pratap Mishra	PhD	Rajasthan University	2012	Assistant Professor	20-04-2014		100		40						
3	Dr. Prabhudatt Dwivedi	PhD	PhD(Shobhit University)	PhD(2012)	Associate Professor	01-08- 2005		75		25						

## LIST OF FACULTIES 2016-17

S.N	Name of the Faculty Member	Qualification(Starting From Highest)	UNIVERSITY	Year of Graduation	All Designations since joining the institution	DOJ	Distribution of Teaching Load (%)				Academic Research			Sponsored/Funded Research	Consultancy/Product Development	Specialization
							1st Year	UG (CS Dept)	UG(Other Program)	M.Tech	Faculty Recieving PhD during the Assessment Period	PhD Guidance	Research Publications			
1	MR. SHOBHIT KUMAR	M.Tech (Computer Sc.); B.Tech(CSE)	AKTU LUCKNOW	2009	Assistant Professor	(21-07-2011)		100%					8			Data Structure
2	MR. AKHILESH KUMAR	M.Tech (Computer Sc.); B.Tech(CSE)	KNIT SULTANPUR	2010	Assistant Professor	(6-08-2012)		100%					7			Computer Network
3	MR. SOHIT SHUKLA	M.Tech (Computer Sc.); B.Tech(CSE)	AMITY UNIVERSITY NOIDA (U.P.)	2009	Assistant Professor	(22-07-2016)		100%					4			Data Mining
4	MS. DEEPA VERMA	M.Tech (Computer Sc.); B.Tech(CSE)	AKTU LUCKNOW	2011	Assistant Professor	(26-01-2014)		100%					5			Data Mining

5	Mr. Rakesh Kumar	M.Tech (Computer Sc.); B.Tech(CSE)	GBU ,Noida	2007	Assistant Professor	(6-08-2012)		100%					5					Computer Network
6.	Mr. Ashish Kumar Srivastava	M.Tech (Computer Sc.); B.Tech(CSE)	AMITY UNIVERSITY NOIDA (U.P.)	2012	Assistant Professor	(6-08-2012)		100%					4					DDA
7.	Mrs Shashi Prabha Anan	M.Tech (Computer Sc.); B.Tech(CSE)	GBU ,Noida	2009	Assistant Professor	(6-08-2014)		100%					5					AI
8.	Ms. Supriya Mishra	M.Tech (Computer Sc.); B.Tech(CSE)	MDU University	2009	Assistant Professor	(6-08-2015)		100%					5					DS
9.	Ms. Anamica Srivastava	M.Tech (Computer Sc.); B.Tech(CSE)	AKTU	2010	Assistant Professor	(6-08-2015)		100%					5					PPL
10.	Mr. Ritu Verma	M.Tech (Computer Sc.); B.Tech(CSE)	MMMUT	2014	Assistant Professor	(6-08-2015)		100%					5					DIP

Faculty From other Departments ( 2016-17)							
	From other Department						
1	Mr. Vijay Verma	MBA	SRM University	A.P.		100%	
2.	Ms. Pratibha Singh	MBA	-	A.P.		100%	

## LIST OF FACULTIES 2015-16

S.N	Name of the Faculty Member	Qualification(Starting From Highest)	UNIVERSITY	Year of Graduation	All Designations since joining the institution	DOJ	Distribution of Teaching Load (%)				Academic Research			Sponsored/Funded Research	Consultancy/Product Development	Specialization
							1st Year	UG (CS Dept)	UG(Other Program)	M.Tech	Faculty Recieving PhD during the Assessment Period	PhD Guidance	Research Publications			
1	MR. SHOBHIT KUMAR	M.Tech (Computer Sc.); B.Tech(CSE)	AKTU LUCKNOW	2009	Assistant Professor	(21-07-2011)		100%					8			Data Structure
2	MR. AKHILESH KUMAR	M.Tech (Computer Sc.); B.Tech(CSE)	KNIT SULTANPUR	2010	Assistant Professor	(6-08-2012)		100%					7			Computer Network
3	Ms. Anamica Srivastava	M.Tech (Computer Sc.); B.Tech(CSE)	AKTU	2010	Assistant Professor	(6-08-2015)		100%					5			PPL
4	MS. DEEPA VERMA	M.Tech (Computer Sc.); B.Tech(CSE)	AKTU LUCKNOW	2011	Assistant Professor	(26-01-2014)		100%					5			Data Mining

5	Mr. Rakesh Kumar	M.Tech (Computer Sc.); B.Tech(CSE)	GBU ,Noida	2007	Assistant Professor	(6-08-2012)		100%					5			Computer Network
6.	Mr. Ashish Kumar Srivastava	M.Tech (Computer Sc.); B.Tech(CSE)	AMITY UNIVERSITY NOIDA (U.P.)	2006	Assistant Professor	(6-08-2012)		100%					4			DDA
7.	Mrs Shashi Prabha Anan	M.Tech (Computer Sc.); B.Tech(CSE)	GBU ,Noida	2009	Assistant Professor	(6-08-2014)		100%					5			AI
8.	Ms. Supriya Mishra	M.Tech (Computer Sc.); B.Tech(CSE)	MDU University	2009	Assistant Professor	(6-08-2015)		100%					5			DS

Faculty From other Departments ( 2015-16)							
	From other Department						
1	1	Mr Pankaj Singh	MBA	-	A.P.		100%
2	2.	Ms. Pratibha Singh	MBA	-	A.P.		100%

### 5.1 Student-Faculty Ratio (SFR)

(20)

(To be calculated at Department Level)

No. of UG Programs in the Department (n): **01**

No. of Students in UG 2nd Year= u1

No. of Students in UG 3rd Year= u2

No. of Students in UG 4th Year= u3

No. of Students = Sanctioned Intake + Actual admitted lateral entry students

S=Number of Students in the Department

F = Total Number of Faculty Members in the Department (excluding first year faculty)

Student Faculty Ratio (SFR) = S / F

Year	2018-19	2017-18	2016-17	2015-16
	<b>B.Tech (Information Technology)</b>			
u1	76	65	46	47
u2	64	46	47	44
u3	46	47	44	57
Total No. of Students in the Department ( <b>S</b> )	S=186	S1=158	S2=137	S3=148
No. of Faculty in the Department ( <b>F</b> )	F=12	F1=12	F2=10	F3=09
Student Faculty Ratio (SFR)	15.50:1	13.16:1	13.7:1	16.44:1
Average SFR	14.69:1			

Marks to be given proportionally from a maximum of 20 to a minimum of 10 for average

SFR between 15:1 to 20:1, and zero for average SFR higher than 20:1. Marks distribution

is given as below:

15.00 - 15.5 - 20 marks

15.51 - 16.50 – 18 marks

16.51 - 17.50 - 16 marks

17.51 – 18.50 - 14 marks

18.51 – 19.50 - 12 marks

19.51 – 20.00 - 10 marks

## 5.2 Faculty Cadre Proportion

(20)

The reference Faculty cadre proportion is 1(F1):2(F2):6(F3)

F1: Number of Professors required =  $1/9 \times$  Number of Faculty required to comply with 15:1

Student-Faculty ratio based on no. of students (N) as per 5.1

F2: Number of Associate Professors required =  $2/9 \times$  Number of Faculty required to comply

with 15:1 Student-Faculty ratio based on no. of students (N) as per 5.1

F3: Number of Assistant Professors required =  $6/9 \times$  Number of Faculty required to comply

with 15:1 Student-Faculty ratio based on no. of students (N) as per 5.1

Year	Professors		Associate Professors		Assistant Professors	
	Required F1	Available	Required F2	Available	Required F3	Available
<b>CAY (2018-19)</b>	1.17	0	2.34	1	7.02	11
<b>CAY (2017-18)</b>	1.17	0	2.34	1	7.02	11
<b>CAYmI(2016-17)</b>	1.01	0	2.02	0	6.08	10
<b>CAYm2(2015-16)</b>	1.09	0	2.19	0	6.57	9

<b>Average</b>						
<b>Numbers</b>	RF1=1.11	AF1=0	RF2=2.22	AF2=0.25	RF3=6.67	AF3=10.25

$$\text{Cadre Ratio Marks} = \left[ \left[ \frac{AF1}{RF1} \right] + \left[ \frac{AF2 \times 0.6}{RF2} \right] + \left[ \frac{AF3 \times 0.4}{RF3} \right] \right] \times 10 = 7.00$$

- If AF1 = AF2= 0 then zero marks
- Maximum marks to be limited if it exceeds 20

Example: Intake = 180; Required number of Faculty: 12; RF1= 1, RF2=2 and RF3=9

Case 1: AF1/RF1= 1; AF2/RF2 = 1; AF3/RF3 = 1; Cadre proportion marks = (1+0.6+0.4) x10 = 20

Case 2: AF1/RF1= 1; AF2/RF2 = 3/2; AF3/RF3 = 8/9; Cadre proportion marks = (1+0.9+0.3) x 10 =  
limited to 20

Case 3: AF1/RF1=0; AF2/RF2=1/2; AF3/RF3=11/9; Cadre proportion marks = (0+0.3+0.49) x 10 = 7.9

### 5.3 Faculty Qualification

(20)

FQ = 2.0 x [(10X + 6Y)/F] where X is no. of regular faculty with Ph.D., Y is no. of regular faculty with M. Tech., F is no. of regular faculty required to comply 1:15 Faculty Student ratio (no. of faculty and no. of students required are to be calculated as per 5.1)

	<b>X</b>	<b>Y</b>	<b>F</b>	<b>FQ=2.0 x [(10X +6Y)/F]</b>
<b>CAY (2018-19)</b>	2	10	10.53	15.19
<b>CAY (2017-18)</b>	1	11	10.53	14.43
<b>CAYm1(2016-17)</b>	0	10	9.13	13.14
<b>CAYm2(2015-16)</b>	0	9	9.86	10.95
<b>Average Assessment</b>				13.42

#### 5.4 Faculty Retention

(10)

No. of regular faculty members in 2018-19 = 12    2017-18 = 12    2016-17= 10    2015-16= 08

Year	Faculty retention
2018-19	100%
2017-18	100%
2016-17	100%
2015-16	62.50%
Average	86.45%

#### 5.5. Innovations by the Faculty in Teaching and Learning

(20)

**Departmental Initiatives:** Table 5.4 lists some of the innovations done by faculty members of Information Technology department so as to improve the teaching and learning process.

S. No.	INNOVATIONS IN TEACHING AND LEARNING	RESOURCE/REFERENCE	IMPACT ON TEACHING & LEARNING
1	<b><u>LEARNING VIA ONLINE CERTIFICATIONS</u></b> Promoting online student certifications (free)	Online	Final year students learning various courses through online portal
2	<b><u>LEARNING WITH MINI-PROJECTS &amp; MAJOR PROJECTS</u></b> Inclusion of mini-project per subject is must	Online/offline	Helps in reducing the gap between theory & practical
3	<b><u>LEARNING VIA ADDITIONAL VALUE ADDITION PROGRAMS</u></b> Department offers no. of short term value addition software programs along with normal classroom teaching during the semester.	Self-designed & well documented	Skill development & improving quality
4	<b><u>LEARNING WITH GROUP DISCUSSIONS, APTITUDE DEVELOPMENT, MOCK INTERVIEWS</u></b>	Part of our teaching learning process	Helps in all round development of students

5	<p><b><u>LEARNING WITH CLASSROOM PRESENTATIONS</u></b></p> <ul style="list-style-type: none"> <li>Each student is allocated one topic for each of the subjects.</li> <li>Student presents his topic in class covering the learnt concepts in innovative manner</li> </ul>	Contents from covered syllabus	Confidence building for public speaking
6	<p><b><u>CLASSROOM TEACHING</u></b></p> <ul style="list-style-type: none"> <li>Use of practical examples</li> <li>Interaction with students</li> <li>Involving students through question-answer sessions</li> <li>Lesson Observations</li> <li>Involving potential students by putting surprise questions</li> <li>Revision/ask questions from previous lecture</li> <li>Maintenance of proper discipline in class</li> <li>Use of real world examples</li> </ul>	Close monitoring of classroom teaching & Well documented formats	Enhancement of overall quality of teaching
7	<p><b><u>STUDENT COUNSELLING</u></b></p> <ul style="list-style-type: none"> <li>Allocation of small group of students to each faculty</li> <li>Faculty counselor involves their students in individual viva voce &amp; their academic monitoring</li> <li>Allocation of group projects to students</li> <li>Faculty counselor maintains the student portfolios which records all the academic activities of students</li> </ul>	Well formatted & documented student portfolios	Confidence building to students & more involvement of students in teaching learning process
8	<p><b><u>LAB SESSIONS</u></b></p> <ul style="list-style-type: none"> <li>Each lab experiment covers a) Experiment Objectives b) Introduction of concepts c) Algorithm/Model d) Implementation details with code e) practical applications w.r.t the experiment f) conclusion &amp; references</li> <li>Coverage of labs beyond the experiments</li> <li>Regular viva-voce &amp; monitoring of lab sessions</li> </ul>	Proper maintenance of lab records	<p>Mapping of theoretical concepts with practical implementations</p> <p>Understanding of real-time applications</p> <p>Performance evaluation of students</p> <p>Skill development</p>

	<ul style="list-style-type: none"> <li>• Group lab assignments</li> <li>• Comparative performance evaluations wherever applicable</li> <li>• Recognition of best lab assignments</li> </ul>		
9	<u><b>Online department magazine</b></u> Monthly publication of student technical e-magazine covering the technical/non technical writings of students as editors	proposed	
10	<u><b>PARTICIPATION IN INTERNATIONAL CONFERENCES &amp; STUDENT PUBLICATION</b></u> Organization of International Conferences in department proposed	proposed	Significant participation & papers from students
11	<u><b>INNOVATION IN STUDENT PROJECTS</b></u> <ul style="list-style-type: none"> <li>• Each student undergoes a project</li> <li>• Very close monitoring of project progress</li> <li>• Great emphasis on development research based projects, useful real world applications, significance &amp; presentation of results</li> </ul>	Proper record maintenance of project records	Few results are published Technical skill development Learning of project development cycle Improves the writing & presentation skills
12	<u><b>USE OF TEACHING AIDS</b></u> <ul style="list-style-type: none"> <li>• Well prepared PPTs</li> <li>• Video lectures like NPTEL</li> <li>• E-notes &amp; solutions</li> <li>• Use of standard books</li> </ul>	Quality Web contents	Quality contents & web references to students

**Table 5.4: Innovations by the Faculty in teaching and learning**

#### **5.6. Faculty as participants in Faculty development/training activities/STTPs**

**(15)**

- A Faculty scores maximum five points for participation
- Participation in 2 to 5 days Faculty/faculty development program: 3 Points
- Participation >5 days Faculty/faculty development program: 5 points

<b>FACULTY</b>	<b>CAY (2018-19)</b>	<b>CAY (2017-18)</b>	<b>CAYM1 (2016-17)</b>	<b>CAYM2 (2015-16)</b>
Dr. Sudhakar Tripathi	5	5	5	5
Mr. Ramesh Chand Pandey	5	2	0	0
Mr. Amit Kumar	5	5	5	5
Mr. Ashish Kumar Mishra	5	3	2	0
Mr. Sharad Verma	5	1	1	1
Mr. Shivendu Mishra	5	5	5	5
Mr. Prince Rajpoot	5	5	5	5
Mr. Shivendra Kumar Pandey	5	0	0	0
Mr. Shobhit Kumar	5	4	1	2
Mr. Akhilesh Kumar	0	4	1	2
Mr. Sohit Shukla	5	5	5	5
Ms. Deepa Verma	0	1	1	1
Mr Shashank Shekhar Tiwari	5	5	0	0
Ms Kumkum Dubey	0	5	0	0

<b>SUM</b>	55	50	32	31
<b>RF= Number of Faculty required to comply with 15:1 Student-Faculty ratio as per 5.1</b>	10.53	11	10	10
<b>Assessment = <math>3 \times</math> (Sum/0.5RF)</b>	31.33	27.57	19.2	18.6
	<b>Average assessment over three years (Marks limited to 15) =15</b>			

**Table 5.6: Participants in FDP/Training activities/STTPS**

**5.7. Research and Development (30)**

**5.7.1. Academic Research (10)**

**Faculty Research Publications**

<b>Year</b>	<b>Number of publications in Journals/Conferences</b>
CAY(2018-19)	8
CAY(2017-18)	41
CAYm1(2016-17)	25
CAYm2(2015-16)	13
CAYm3(2014-15)	13
Total	92

### **List of Faculty Publications (Information Technology Department)**

<b>S. NO .</b>	<b>Faculty</b>	<b>Paper Title</b>	<b>Conference Name/Journal Name with Publisher</b>	<b>YEAR</b>
1	Sudhakar tripathi	Classification of Neuromuscular Disorder using Machine Learning Techniques	NGCT-2018, UPES dehradun	2018
2	Ashish Kumar Mishar	A survey on optimal utilization of prinitable BM instances in cloud computing	Journal of Super Computing( <b>SCI, IF 1.6</b> )	2018
3	Prince Rajpoot	<i>Optimized and load balanced clustering for wireless sensor networks to increase the lifetime of WSN using MADM approaches.</i>	<i>Wireless Networks, pp.1-37. (SCI INDEXED, If 1.91)</i>	2018
4	Prince Rajpoot	HETEROGENEOUS CLUSTERING FOR ENERGY OPTIMIZATION IN WIRELESS SENSOR NETWORKS	Confluence-2019:9th IEEE International Conference (Accepted) (SCOPUS).	2018
5	Prince Rajpoot	“ Multi-Factor Based Energy Efficient Algorithm for Clustering and Routing in WSN”,	Proceedings of SPRINGER 3th International Conference SoCTA 2018 (Accepted) (SCOPUS).	2018
6	Shivendra Kumar Pandey	Energy Distance Clustering Algorithm (EDCA) for Wireless Sensor Networks	Confluence-2019:9th IEEE International Conference (Accepted) (SCOPUS).	2018
7	Shivendra Kumar Pandey	“ Multi-Factor Based Energy Efficient Algorithm for Clustering and Routing in WSN”,	Proceedings of SPRINGER 3th International Conference SoCTA 2018 (Accepted) (SCOPUS).	2018
8	Kumkum Dubey	Energy Distance Clustering Algorithm (EDCA) for Wireless Sensor Networks	Confluence-2019:9th IEEE International Conference (Accepted) (SCOPUS).	2018
9	Kumkum Dubey	“ Multi-Factor Based Energy Efficient Algorithm for Clustering and Routing in WSN”,	Proceedings of SPRINGER 3th International Conference	2018

			SoCTA 2018 (Accepted) (SCOPUS).	
10	SUDHAKAR TRIPATHI	EM and EM'-index sequences: Construction and Application in scientific assessment of scholars.	Scientometrics, <b>SCI Expanded (Impact Factor 2.14)</b>	2018
11	SUDHAKAR TRIPATHI	Year based EM-index: a new approach to evaluate the scientific impact of scholars	Scientometrics, <b>SCI Expanded (Impact Factor 2.14)</b>	2018
12	AMIT KUMAR	Materialized View Selection using Set Based Particle Swarm Optimization	International Journal of Cognitive Informatics and Natural Intelligence (IJCINI) <b>(Scopus, ESCI)</b>	2018
13	SUDHAKAR TRIPATHI	Collaboration network analysis based on normalized citation and eigenvector centrality	IJRSDA, IGI Global	2018
14	SUDHAKAR TRIPATHI	A Column-Wise Distance- Based Approach for Clustering of Gene Expression Data with Detection of Functionally Inactive Genes and Noise	Advances in Intelligent Computing, Studies in Computational Intelligence (springer)	2018
15	PRINCE RAJPOOT	Matrix Method for Non- Dominated Sorting and Population Selection for Next Generation in Multi-Objective Problem Solution	International Conference CONFLUENCE' 2018 <b>(SCOPUS)</b>	2018
16	PRINCE RAJPOOT	Optimized H-LEACH algorithm for clustering to improve lifetime of WSN	International Conference on Recent Trends in Electronics, Information & Communication Technology (RTEICT-2018)	2018
17	PRINCE RAJPOOT	Energy Efficient Protocol to Supervise Overground Pipelines using WSN	International Conference on Recent Trends in Electronics, Information & Communication Technology (RTEICT-2018)	2018
18	PRINCE RAJPOOT	Partition Based Strategic Node Placement and Efficient Communication Method for WSN	International Conference on Recent Trends in Electronics, Information &	2018

			Communication Technology (RTEICT-2018)	
19	SUDHAKAR TRIPATHI	EM-index: a new measure to evaluate the scientific impact of scientists	Scientometrics (SPRINGER), <b>SCI Expanded (Impact Factor 2.084)</b>	2017
20	RAMESH CHAND PANDEY	A Passive Forensic Method for Video: Exposing Dynamic Object Removal and Frame Duplication in the Digital Video Using Sensor Noise Features	Journal of Intelligence &Fuzzy Systems (JIFS) <b>(SCIE )</b>	2017
21	SUDHAKAR TRIPATHI	GENETIC ALGORITHM BASED CLUSTERING FOR GENE- GENE INTERACTION IN EPISODIC MEMORY	Int. Bioinformatics Research and Applications (Inderscience). <b>(SCOPUS)</b>	2017
22	AMIT KUMAR	Improved Quality View Selection for Analytical Query Performance Enhancement using Particle Swarm Optimization	International Journal of Reliability, Quality and Safety Engineering <b>(Scopus, ESCI)</b>	2017
23	ASHISH KUMAR MISHRA	Analysis and Prediction of Amazon EC2 Spot Instance Prices	International Journal of Applied Engineering Research <b>(Scopus)</b>	2017
24	ASHISH KUMAR MISHRA	Forecasting Price of Amazon Spot Instances using Neural Networks	International Journal of Applied Engineering Research <b>(Scopus)</b>	2017
25	SHOBHIT KUMAR	Image Acquisition and techniques to perform Image Acquisition	SAMRIDDHI : A Journal of Physical Sciences, Engineering and Technology (S-JPSET)	2017

26	SHOBHIT KUMAR	Analysis of Neural Network Model Applied for Efficient Classification of Patterns	International Journal of Emerging Trends & Technology in Computer Science (IJETTCS)	2017
27	PRINCE RAJPOOT	Data Aggregation and Distance Based Approach to Boost Life Span of WSN	International Journal of Engineering Technology Science and Research	2017
29	SUDHAKAR TRIPATHI	A new approach of learning based on episodic memory model	International Conference on Advanced Computing and Intelligent Engineering ( <b>Springer</b> )	2017
30	SUDHAKAR TRIPATHI	Key Leader Analysis in Scientific Collaboration Network using h-type hybrid measures	Latest Advances in Machine Learning and Data Science, <b>Springer- AISC series</b>	2017
31	SUDHAKAR TRIPATHI	A graph based method for clustering of gene expression data with detection of functionally inactive genes and noise	Latest Advances in Machine Learning and Data Science, <b>Springer- AISC series</b>	2017
32	SUDHAKAR TRIPATHI	Key Researcher Analysis in Scientific Collaboration Network Using Eigenvector Centrality	International Conference on Advanced Computing, Networking, and Informatics (ICACNI) – <b>Springer- AISC series</b>	2017
33	SUDHAKAR TRIPATHI	Computational model of episodic memory: Encoding, Forgetting & Recalling	International Conference on Recent Advancement in Computer and Communication <b>LNNS Series , Springer</b>	2017
34	SUDHAKAR TRIPATHI	Key Community Analysis In Scientific Collaboration Network	International Conference on Computing Communication and Automation <b>IEEE Xplore</b>	2017

35	SUDHAKAR TRIPATHI	A new approach for clustering gene expression data	International Conference on Computational Intelligence, Communications, and Business Analytics <b>SpringerCCIS series</b>	2017
36	AMIT KUMAR	Materialized View Selection using Similarity Interaction Operator based Particle Swarm Optimization	Joint International Conference on Interdisciplinary Research and 8th International Conference on Quality, Reliability, Infocom Technology and Business Operations <b>Springer</b>	2017
37	SHIVENDRA KUMAR PANDEY	Context Based Cassandra Query Language	International Conference on Computing, Communication and Networking Technologies” (ICCCNT)(IEEE) ( <b>Scopus Indexed</b> )	2017
38	SHIVENDRA KUMAR PANDEY	An Approach to Improve Load Balancing in Distributed storage Systems for NOSQL Databases: MongoDB	International Conference on Computing, Analytics and Networking (ICCAN-2017), Springer ( <b>Scopus Indexed</b> )	2017
39	AMIT KUMAR	Materialized View Selection using Exchange Function based Particle Swarm Optimization	International Conference on Computational Intelligence and Communication Technology <b>IEEE Xplore</b>	2017
40	AMIT KUMR	Materialized View Selection using Genetic Operator based Particle Swarm Optimization	International Conference on Inventive Systems and Control <b>IEEE Xplore</b>	2017
41	ASHISH KUMAR MISHRA	Towards Validation of UML Design Rules	Advanced Engineering Research and Applications (AERA), Research India Publications	2017

42	ASHISH KUMAR MISHRA	Towards Validation of UML Design Model	Advanced Engineering Research and Applications (AERA), Research India Publications	2017
43	SHARAD VERMA	Enhancing the performance of SVM based document classifier by selecting good class representative using fuzzy membership criteria	International Conference on Computational Intelligence and Communication Technology <b>IEEE Xplore</b>	2017
44	SHARAD VERMA	Deep Sequential Model for Review Rating Prediction	International Conference on Contemporary Computing ( IC3)	2017
45	SHARAD VERMA	Multi-view ensemble learning using rough set based feature ranking for opinion spam detection	International Conference on Computer, Communication and Computational Sciences (IC4S)	2017
46	DEEPA VERMA	Survey Paper on Outlier Detection Using Fuzzy Logic Based Method	International Conference on Futuristic Trends in Computational Analysis and knowledge Management(ABLAZE- 2017)	2017
47	DEEPA VERMA	A Delay-Constrained in Multicast Routing Using JIA Algorithm	International Conference on Futuristic Trends in Computational Analysis and knowledge Management(ABLAZE- 2017)	2017
48	DEEPA VERMA	An efficient architecture and algorithm to prevent data leakage in cloud computing using multi-tier security and machine authentication	International Conference on Computing for Sustainable Global Development (INDIACom-2017)	2017
49	DEEPA VERMA	An efficient architecture for Load Balancing in Cloud computing using clustering approach	International Conference on Computing for Sustainable Global Development (INDIACom-2017)	2017

50	DEEPA VERMA	Dynamic Virtual Machine Provisioning in Cloud Computing-A Review	International Conference on Computing for Sustainable Global Development (INDIACom-2017)	2017
51	RAMESH CHAND PANDEY	Passive forensics in image and video using noise features: A review	Digital investigation Journal Elsevier ( <b>SCIE</b> )	2016
52	SUDHAKAR TRIPATHI	K Means Clustering for Gene-Gene Interaction in Episodic Memory	International Journal of Control Theory and Applications ( <b>SCOPUS</b> )	2016
53	RAMESH CHAND PANDEY	A Fully Automated Blind and Passive Forensic Method for Image splicing Detection	International Journal of Control Theory and Applications ( <b>SCOPUS</b> )	2016
54	AMIT KUMAR	Distributed query plan generation using multi-objective ant colony optimization	International Journal of Artificial Intelligence and Soft Computing- <b>Inderscience Publisher</b>	2016
55	SHOBHIT KUMAR	Modified Mean Square Error with Regularization Algorithm for Efficient classification of patterns in back-propagation Neural Networks	International Journal of Emerging Trends & Technology in Computer Science ( <b>IJETTCS</b> )	2016
56	SHOBHIT KUMAR	Evaluation of Image Fusion Algorithms	International Journal of Emerging Trends & Technology in Computer Science ( <b>IJETTCS</b> )	2016

57	DEEPA VERMA	An Efficient Approach for Outlier Analysis over Big Data	International Journal of Engineering Technology Science and Research(IJETSR)	2016
58	DEEPA VERMA	A Novel of Data Warehousing Queries in a Split Execution Environment (SEE) for Efficient Operation	International Journal of Computer Science & Wireless Security (IJCSWS)	2016
59	SHOHIT SHUKLA	A Privacy-preserving Opportunistic Computing Framework for Mobile-Healthcare Emergency	IJRDO - Journal of Computer Science and Engineering	2016
60	SHOHIT SHUKLA	Event Reducing for Cloud Architecture in Enterprise Application Development	International Journal of Computer Science and Engineering (SSRG-IJCSE)	2016
61	SHOHIT SHUKLA	A Survey: User Identification Techniques for Customization of Web Page	International Journal of Computer Science and Information Technologies (IJCSIT)	2016
62	SHOBHIT KUMAR	Digital image quality measurements	Asia Pacific Journal of Engineering Science and Technology (APJEST)	2016
63	AMIT KUMAR	Cuckoo Search Based View Selection	Emerging Research in Computing, Information, Communication and Applications <b>Springer</b>	2016

64	SUDHAKAR TRIPATHI	Score Level Fusion of Iris and Fingerprint using Wavelet Features	International Conference on Parallel, Distributed and Grid Computing <b>IEEE Xplore</b>	2016
65	SUDHAKAR TRIPATHI	Key Author analysis in Egocentric Collaboration Network	International Conference on Computational Intelligence in Data Mining <b>AISC Series , Springer</b>	2016
66	SUDHAKAR TRIPATHI	Key Author Analysis in Research Professionals Collaboration Network based on Collaborative Index	International Conference on Advanced Computing and Communication Technologies <b>AISC Series, Springer</b>	2016
67	SUDHAKAR TRIPATHI	A New Method for Key Author Analysis in Research Professionals' Collaboration Network	International Doctoral Symposium on Applied Communication and Security Systems(ACSS) In Advanced Computing and Systems for Security, Springer	2016
68	SUDHAKAR TRIPATHI	Protein Classification Using Hybrid Feature Selection Technique,	International Conference Smart Trends in Information Technology and Computer Communications	2016
69	SUDHAKAR TRIPATHI	A comparative analysis of enzyme classification approaches using hybrid feature selection technique	International Conference on Circuit, Power and Computing Technologies (ICCPCT) <b>IEEE Xplore</b>	2016
70	SUDHAKAR TRIPATHI	Key Author Analysis in Research Professionals Collaboration Network based on MST using Centrality Measures	International Conference on Information and Communication Technology for Competitive Strategies	2016

71	RAMESH CHAND PANDEY	Exposing Digital Forgeries in the Video by Detecting Frame Duplication	INRODS Journal	2016
72	RAMESH CHAND PANDEY	Image Splicing Detection using HMRF-GMM Based Segmentation Technique and Local Noise Variances	INRODS Journal	2016
73	RAMESH CHAND PANDEY	Face Recognition in Unconstrained Environment	Published in the United States of America by Information Science Reference <b>(an imprint of IGI Global)</b>	2016
74	ASHISH KUMR MISHRA	Towards Validation of UML Design Model	International Conference on Communication & Signal Processing (ICCASP2016)	2016
75	DEEPA VERMA	An Efficient Approach for Outlier Analysis over Big Data	International Conference on Innovative Research in Engineering Science and Management(ICIRESM-16)	2016
76	RAMESH CHAND PANDEY	Passive Copy- Move Forgery Detection Using Speed-Up Robust Features, Histogram Oriented Gradients &Scale Invariant Feature Transform,	International Journal of System Dynamics Applications <b>(ESCI)</b>	2015
77	AMIT KUMAR	Distributed Query Plan Generation using Ant Colony Optimization	International Journal of Applied Metaheuristic Computing <b>(Scopus, ESCI)</b>	2015

78	ASHISH KUMAR MISHRA	Towards Validation of UML Design Rules	International Journal of Applied Engineering Research <b>(Scopus)</b>	2015
79	AMIT KUMAR	Distributed Query Plan Generation using Multi- Objective Particle Swarm Optimization	International Journal of Collaborative Intelligence- <b>Inderscience Publisher</b>	2015
80	SUDHAKAR TRIPATHI	Computation of Induction Current in a Set of Dendrites	International Journal of Medical, Health, Biomedical, Bioengineering and Pharmaceutical Engineering.	2015
81	SHOBHIT KUMAR	Analysis On Pattern Classification Using Artificial Neural Networks	International journal of Science, Technology & Society (IJSTS)	2015
82	SHOBHIT KUMAR	Heterogeneous Face Recognition	International journal of Science, Technology & Society (IJSTS)	2015
83	ASHISH KUMAR MISHRA	Validation of UML Design Model	Journal of Software	2015
84	SUDHAKAR TRIPATHI	Computation of Induction Currents in a Set of Dendrites	International Conference on Neuroinformatics and Computational Neuroscience	2015
85	RAMESH CHAND PANDEY	Digital Video Tampering Detection Techniques	Published in the United States of America by Information Science Reference <b>(an imprint of IGI Global)</b>	2015
86	RAMESH CHAND PANDEY	Passive Copy-Move Forgery Detection Using Noise Features	Published in the United States of America by Information Science Reference <b>(an imprint of IGI Global)</b>	2015

87	ASHISH KUMAR MISHRA	Towards Validation of UML Design Rules	International Conference on Computing Paradigm (ICCP- 2015)	2015
88	ASHISH KUMAR MISHRA	Validation of UML Design Model	International Conference on Software Technology and Engineering (ICSTE-2015)	2015
89	AKHILESH KUMAR	Performance Evaluation Of Ip Network And Mpls Network Using Ns2 Simulator	International Conference On Futuristic Trends In Computational Analysis And Knowledge Management <b>IEEE XPLORE</b>	2015
90	SHOBHIT KUMAR	Comparative Analysis of various Performance Functions for Training a Neural Network	International journal of Computer science and Engineering (IJCSE)	2014
91	SHOBHIT KUMAR	Optimization of RSA Algorithm by using Binary Method	International journal of Computer science and Engineering (IJCSE)	2014
92	SHOBHIT KUMAR	Implementation and Comparison of Image Fusion using Discrete Wavelet Transform and Principal Component Analysis	International journal of Computer science and Engineering (IJCSE)	2014
93	SHOBHIT KUMAR	Design and Implementation of Image Fusion System	International journal of Computer science and Engineering (IJCSE)	2014
94	SUDHAKAR TRIPATHI	Assurance Liability and Security in Cloud Computing	International Journal of Computer Applications	2014
95	SUDHAKAR TRIPATHI	A Computational Model of Episodic Memory Encoding in Dentate Gyrus Hippocampus Sub Region as Pattern Separator Using ART Neural Network	Int. Journal of Engineering Research and Applications	2014

96	AKHILESH KUMAR	A Novel Approach: Security Measures And Concerns Of Cloud Computing	International Journal Of Computer Technology & Applications	2014
97	AKHILESH KUMAR	A Cross Layer Design Adaptation Model For Multimedia Transmission In Wireless Network	International Journal Of Computer Technology & Applications	2014
98	SHOHIT SHUKLA	A Literature Review Of E-Learning Model Based On Semantic Web Technology	International journal of scientific & Engineering research	2014
99	DEEPA VERMA	An Enhancement of K-Means Clustering for Progressive Data-Set	International Society of Thesis Publication-Journal of Research in Electrical and Electronics Engineering(ISTP-JREEE)	2014
100	RAMESH CHAND PANDEY	Passive Copy Move Forgery Detection Using SURF, HOG and SIFT Features	International Conference on Frontiers of Intelligent Computing Theory and Applications <b>SPRINGER</b>	2014
101	SUDHAKAR TRIPATHI	A computational model of STP and LTP for gene level signaling cascade in human episodic memory, Computer Science and Engineering	Asia-Pacific World Congress <b>IEEE EXPLORE</b>	2014
102	RAMESH CHAND PANDEY	Passive Copy Move Forgery Detection in Video	International Conference on Computer and Communication Technology <b>IEEE EXPLORE</b>	2014
103	RAMESH CHAND PANDEY	Fast and robust passive copy-move forgery detection using SURF and SIFT image features	International IEEE Conference on Industrial and Information Systems <b>IEEE EXPLORE</b>	2014

104	AMIT KUMAR	Distributed Query Plan Generation using Particle Swarm Optimization”	International Journal of Swarm Intelligence Research (Scopus, ESCI)	2013
105	SUDHAKAR TRIPATHI	Protein Function Prediction using Artificial Neural Network (Dynamic) Model	Journal of Computational Intelligence in Bioinformatics	2013
106	SUDHAKAR TRIPATHI	Comparison of Rule Based Classifiers by Pre-Learning for Clustering of Gene Expression Data	International Journal of Computational Bioinformatics and In Silico Modeling	2013
107	SUDHAKAR TRIPATHI	Two Phase Integrated Rule based Model (TPC-IRBM) for Clustering of Gene Expression Data of CA1 Region of Rat Hippocampus	International Journal of Computer Applications	2013
108	DEEPA VERMA	Association Rules Hiding Algorithm for Privacy Preserving Data Mining	International Journal on Computer Science and Emerging Trends(IJCSET)	2013
109	DEEPA VERMA	Obscure Surveillance and Server Monitoring	International journal of Computer Architecture and Mobility(IJCAM)	2013
110	SHOBHIT KUMAR	Modified Mean Square Error Algorithm with Reduced Cost of Training and Simulation Time for Character Recognition in Backpropagation Neural Network	International Conference on Frontiers in Intelligent Computing Theory & Applications (FICTA) <b>Springer, AISC Proceedings</b>	2013
111	SHOHIT SHUKLA	An Energy-Efficient Clustering Protocol for Wireless Sensor Network Using Fuzzy Logic	International Conference on Computer Science Engineering and Applications (ICCSEA-2013) <b>Springer</b>	2013
112	DEEPA VERMA	Application of E-commerce Website using Web Mining Algorithm based on Web Usage Mining	National Conference on Emerging Trends in Computational Science	2013

			organized by MANIET Bhopal	
113	DEEPA VERMA	Association Rules Hiding Algorithm for Privacy Preserving Data Mining	National Conference on Recent Trends in Data Mining & Warehousing organized by MGI Bhopal	2013
114	AKHILESH KUMAR	A Comprehensive Study On Cross Layer Design And Its Future”	International Journal Of Advanced Research In Computer Science	2013
115	SHOHIT SHUKLA	A survey: User Identification Techniques in View of Customization of Web Page	National Conf. on Recent Advances in Database Systems and Applications (NCRADSA-13)	2013
116	SHOHIT SHUKLA	A survey report on enhancing security in Software development life cycle	National Conference on Emerging Trends in Computer Science & Communication Technology (NCETCSCT-13)	2013
117	AKHILESH KUMAR	A Cross Layer Design Adaptation Model For Multimedia Transmission In Wireless Network	International Journal Of Computer Science And Technology	2012
118	SUDHAKAR TRIPATHI	Rule Based Model for Clustering Gene Expression Data	International Conference on Artificial Intelligence and Soft Computing <b>IEEE EXPLORE</b>	2012
119	SHIVENDU MISHRA	An ID-based signature scheme From Bilinear Pairing Based on k-plus Problem	International Conf. on Electronics Computer Technology <b>IEEE EXPLORE</b>	2011
120	SHIVENDU MISHRA	An ID-Based Signature Scheme from Bilinear Pairing Based on ex-k-plus Problem	Journal of Advanced Materials Research	2011
121	SHIVENDU MISHRA	Efficient ID-based multi-proxy signature scheme from bilinear pairing based on k-plus problem	International Conf. on Integrated Computing Technology(INTECH-2011) <b>CCIS, Springer</b>	2011

122	SHIVENDU MISHRA	An efficient Multi-proxy system for Proxy signature scheme	DLINE Journal of Information Security Research	2011
123	SHIVENDU MISHRA	An Efficient Password Authenticated Key Exchange Protocol for WLAN and WIMAX	International Conf. & Workshop on Emerging Trends in Technology (ICWET '11)	2011
124	SHIVENDU MISHRA	An Improved Password Based EAP Method for WiMAX with Formal Verification	International Journal of Computer Science and Applications	2011
125	SHIVENDU MISHRA	An Improved Secure Authentication Protocol for WiMAX with Formal Verification	International Conf. on Advances in Computing and Communication (ACC-2011) <b>CCIS, Springer</b>	2011
126	SHIVENDU MISHRA	Strong Password based EAP- TLS Authentication Protocol for WIMAX	International Journal on Computer Science and Engineering	2010
127	SUDHAKAR TRIPATHI	Importance of Management Information System in Electronic-Information Era	Journal SAMRIDDHI (S- JPSET)	2010
128	RAMESH CHAND PANDEY	Advance Memory Management Techniques	International Conference on Innovation Technology (ICIT-2009)	2009

**Faculty receiving Ph.D. during the assessment period**

<b>Faculty Name</b>	<b>Title of the Work</b>	<b>University</b>	<b>Year of Completion</b>	<b>Supervisor Name with Affiliation</b>	<b>Total Publication</b>
Ramesh Chand	Passive Forensic Techniques for	IIT BHU	2018	Prof. S.K. Singh, IIT BHU	15

Pandey	image and video tampering detection				
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**Table 5.7.1 (a) Ph.D. Submitted**

<b>Faculty</b>	<b>Thesis Title/Area</b>	<b>Course</b>	<b>University</b>	<b>Student Name</b>
Dr. Sudhakar Tripathi	Metrics for Scientific Assessment of Scholars	Awarded	NIT, Patna	Anand Bihari
Dr. Sudhakar Tripathi	Bio-informatics	Course Work	NIT, Patna	Ashish Ranjan
Dr. Sudhakar Tripathi	Brain Computing	Course Work	NIT, Patna	Rahul Shrivastava
Dr. Sudhakar Tripathi	Bio-informatics	Ph.D. at Advanced Stage	AKTU, Lucknow	Kailash Nath Tripathi
Dr. Sudhakar Tripathi	Bio-informatics	Ph.D. at Advanced Stage	AKTU, Lucknow	C.L.P. Gupta

**Table 5.7.1 (a) Ph.D. Supervision**

<b>Faculty Name</b>	<b>Title of the Work</b>	<b>University</b>	<b>Supervisor Name</b>	<b>Total Publication</b>
Mr. Ramesh Chand Pandey	Passive Forensic Techniques for image and video tampering detection	IIT BHU	Prof. S.K. Singh, IIT BHU	15
Mr. Amit Kumar	Nature Inspired Techniques and their Applications	JNU, New Delhi	Prof. T.V. Vijay Kumar	10
Mr. Ashish Kumar Mishra	Optimal Utilization of Pre-emptible VM instances in cloud	MNNIT, Allahabad	Prof. D.K. Yadav	5
Mr. Sharad Verma	Study of Text Representation Models	JNU, New Delhi	Dr. Aditi Sharan	4
Mr. Prince Rajpoot	Optimization in WSN	MNNIT, Allahabad	Dr. Pragya Dwivedi	8
Mr. Shivendra Kumar Pandey	Multi-Objective Clustering in WSN	JNU, New Delhi	Dr. Buddha Singh	5
Mr. Shobhit Kumar	Analysis of Neural Network Models for Efficient	AKTU, Lucknow	R.N. Verma	9

	Classification of Patterns			
Ms. Deepa Verma	Course work in Progress	AKTU, Lucknow	Dr. Pawan Tiwari	6

**Table 5.7.1 (c) Faculty Pursuing Ph.D.**

### **5.7.2. Sponsored Research (5)                      NIL**

Funded research:

(Provide a list with Project Title, Funding Agency, Amount and Duration)

Funding amount (Cumulative during assessment years):

Amount > 20 Lacs – 5 Marks

Amount >= 16 Lacs and <= 20 lacs – 4 Marks

Amount >= 12 Lacs and < 16 lacs – 3 Marks

Amount >= 8 Lacs and < 12 lacs – 2 Marks

Amount >= 4 Lacs and < 8 lacs – 1 Mark

Amount < 4 Lacs – 0 Mark

### **5.7.3 Development Activities (10)**

<b>Faculty involved in developmental activities</b>	
<b>Developmental Activities</b>	<b>Faculty/Resource person Involved</b>
IC College Website Hosting and Management	Mr. Ashish Kumar Mishra
IC Departmental Website Hosting and Management	Dr. Sudhakar Tripathi
SWAYAM and SWAYAM Prabha Coordinator	Mr. Shivendu Mishra
IC Career Development Cell	Mr. Amit Kuamr
Dean Research and Development	Dr. Sudhakar Tripathi

Convener of Photography and Fine Art club	Mr. Sharad Verma
Convener of Cultural Council	Mr. Shivendra Kumar Pandey
Convener of Sports Council	Mr. Ashish Kumar Mishra

### **Instructional Material**

**Instructional Materials-** The department maintains the following instructional materials that helps in teaching learning process

- Printed Lab manuals for each lab.
- Tutorial sheets
- Contents beyond the syllabus
- Hand written /printed lecture notes
- E-notes

### **Skill Development Activities (for Faculty)**

**(2018-19)**

Activity Organized	Conducted By	Participation	Date and Venue
Evolving Drifts in Computer Science” (NWEDCS-2018)	All IT Faculty	All IT Faculty and outsiders	July 09th– 13th, 2018. REC Ambedkar Nagar

**(2017-18)**

Activity Organized	Conducted By	Participation	Date and Venue
Laboratory and Workshop Management Issues” (Through ICT)	NITTR, Kolkata	All IT Faculty	09/04/2018 to 13/04/2018 Online
ICT Course on Scilab Programming	NITTR, Chandigarh	All IT Faculty	14/05/2018 to 18/05/2018 Online

#### **5.7.4 Consultancy (from Industry)**

**NIL**

(Provide a list with Project Title, Funding Agency, Amount and Duration)

Funding amount (Cumulative during assessment years):

Amount > 10 Lacs – 5 Marks

Amount  $\geq$  8 Lacs and  $\leq$  10 lacs – 4 Marks

Amount  $\geq$  6 Lacs and  $<$  8 lacs – 3 Marks

Amount  $\geq$  4 Lacs and  $<$  6 lacs – 2 Marks

Amount  $\geq$  2 Lacs and  $<$  4 lacs – 1 Mark

Amount  $<$  2 Lacs – 0 Mark

#### **5.8. Faculty Performance Appraisal and Development System (FPADS)**

**(30)**

REC Ambedkar Nagar conducts annual performance appraisals of all members of the faculty. A well-defined appraisal system runs in REC Ambedkar Nagar that offers both the higher authorities and employee valuable opportunities to focus on work activities, set goals for future efforts, identify existing problems and strategies for resolutions, and encourage positive future performance; thereby enhancing performance of the entire organization. The appraisal system primarily aims at the below-mentioned criteria:

- Identification of difficult sectors in the performance of individual faculty member
- Promote the interaction of faculty with higher authorities so as to discuss their weakness and strengths in order to use their potential in a proper manner and improve their performance.
- Motivating the faculty members with good performance by providing increments and/or promotions.
- Reorientation of the faculty members who experience difficulties in achieving academic standards and expectations by means of constructive discussions and interactive sessions.

- Enhancement of current performance or correcting deficiencies in areas which faculty or administration consider relevant and important

### **Appraisal Process: Implementation and effectiveness**

The internal assessment is performed on annual basis. The appraisal system especially becomes important during

- a) evaluation of faculty performance at the end of probation and/or contractual period for confirmation, and,
- b) assessment of faculty performance on consideration of their applications for promotion

The appraisal forms are filled by every faculty member and submitted to their respective HODs. HODs check all the entries and include their own comment and recommendations on the form. Subsequently the appraisal form is then countersigned by the Dean, Academics and Director who also put their recommendations on the form.

### **The following factors may be considered for the final recommendation:**

- Faculty member's attainment of previously set objectives and goals.
- Contributions made at department & institute level
- Fulfillment of Instructions at Department & college level
- New additions at department & institute level
- Self-development through Skill additions & research orientations
- Publication of quality research work
- Supervision of quality projects
- Quality of classroom teaching
- Promptness in completing assignments

- Interaction with industry & industry training

The above defined factors have quantitative evaluations.

The form is finally evaluated and it is assured that the evaluation function has been properly completed in a fair and objective manner. These evaluations serve a significant role in assessing faculty performance.

### **Criteria for promotions & increments**

Quantitative analysis based on the above defined factors is the basis for promotions & increments. Quantitative evaluation is done on a scale of 100 points. The quantitative requirements are defined accordingly for Professors, Associate Professors & Assistant Professors. A minimum score of 30% is necessary for considerations.

### **5.9. Visiting/Adjunct/Emeritus Faculty etc. (10)**

#### **Provision of inviting/having visiting/adjunct/emergitus faculty**

- Proposal submission to Director for approval (covering remuneration aspect also) for majority of cases.
- Invitation through email/post/telephonic as per the requirement
- For training related invitations from the industry, proposals are invited from targeted Industries.
- For conferences, workshops, FDP activities , invitations are sent in bulk to many resource persons

**Table 5.12: Invited Resource Persons**

S. N	RESOURCE PERSON WITH AFFILIATION	DATE	PURPOSE	ASSOCIATED ACTIVITY	No. of Hrs
1	PROF. R.B. Mishra, IIT BHU	Mar- Nov 2018	INVITED SPEAKER	Expert Lectures	5
2	Dr. Arvind Tiwari, KNIT Sultanpur		INVITED SPEAKER		6

3	J. P. Singh NIT Patna	INVITED SPEAKER	12
4	Akshay Deepak, NIT Patna	INVITED SPEAKER	12
5	Dr. Vimal Mishra, Director, IERT Allahabad	INVITED SPEAKER	2
6.	Shri Praveen Kumar Dwivedi Dy Director, STPI,Lucknow, India	INVITED SPEAKER	2
7.	Prof. Devendra Kumar, IIT BHU	INVITED SPEAKER	2
8.	Shri Alok Kumar Tiwari, John Deere , Pune	INVITED SPEAKER	4
9.	Prof. S. K. Chaturvedi (IIT Kharagpur)	INVITED SPEAKER	4
10 .	Prof. L.U.B. Pandey (KNIT Sultanpur)	INVITED SPEAKER	4
11 .	Praveen Kumar Dwivedi (Deputy Director, STPI,MEITY,India)	INVITED SPEAKER	4
12 .	Ram Sahay Ram ( Project Manager, Awas Vikas Parishad)	INVITED SPEAKER	4
13 .	Sunil Pandey (TCS Lucknow)	INVITED SPEAKER	4
14 .	Dr. Dharm Raj Chaudhary, (DRDO Lucknow)	INVITED SPEAKER	4
15	M. P. Singh NIT Patna	INVITED SPEAKER	6
TOTAL			75

<b>CRITERION 6</b>	<b>FACILITIES AND TECHNICAL SUPPORT</b>	<b>80</b>
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## 6. FACILITIES AND TECHNICAL SUPPORT

(80)

### 6.1. Adequate and well-equipped laboratories, and technical manpower

(30)

SR. NO.	NAME OF LABORATORY	NO. OF STUDENTS PER SETUP (BATCH SIZE)	NAME OF IMPORTANT EQUIPMENT	WEEKLY UTILIZATION STATUS (ALL THE COURSES FOR WHICH THE LAB IS UTILIZED)	TECHNICAL MANPOWER SUPPORT		
					NAME OF TECHNICAL STAFF	DESIGNATION	QUALIFICATION
1	Computer Lab-1 Academic Block Advance Programming lab	30	Desktop Computer with Licensed Windows 8.1 and other Academic Licensed Software, Open Source Software, LCD Projector, Printers, CCTV Camera, fire safety Appliances	20-30 hrs per week	Mr. Moti Lal	Lab Assistant  (Outsourcing)	BA, DCA
2	Computer Lab-2 Academic Block Computer Network Lab	30		20-30 hrs per week	Mr. Jitendra Kumar Verma	Lab Assistant  (Outsourcing)	BA, PGDCA
3	Computer Lab-3 Academic Block Computer Network Lab	25		10-20 hrs per week	Mr. Shailendra Kumar	Lab Assistant  (Outsourcing)	MA, DCA
4	Computer Lab-4 Academic Block Software Engineering Lab	25		10-20 hrs per week	Mr. Sailendra Kumar	Lab Assistant  (Outsourcing)	MA, DCA
5.	Computer Lab-5 Academic Block Research and Project Lab	25		25-40 hrs per week	Mr Rakesh Patel	Lab Assistant  (Outsourcing)	BCA, ADCA

**Table 6.1: Lab Facility and Technical Manpower**

**6.2. Additional facilities created for improving the quality of learning experience in laboratories**

**(25)**

SR. NO.	FACILITY NAME	DETAILS	REASON(S) FOR CREATING FACILITY	UTILIZATION	AREAS IN WHICH STUDENTS ARE EXPECTED TO HAVE ENHANCED LEARNING	RELEVANCE TO PSO
1	Student Project Lab	25 dedicated High Configuration PCs are allocated for students projects	For development of industry-oriented projects	As a project Lab	Soft computing, web development, image processing, computer Network research based projects	PSOs-1,2
2	Virtual class Room-1	High Definition e-class room with Tracking camera, PTZ camera, Speakers, 55" LED TV screen projector with 60 Min power backup	for expert lectures, interaction with renowned faculty and consultants	On line conferencing, expert Lecture	All Area Related to computer Science	
3	Virtual class Room-2			On line conferencing, expert Lecture	All Area Related to computer Science	

**Table 6.2: Additional Facility Created for learning experiences**

**6.3. Laboratories: Maintenance and overall ambiance**

**(10)**

Following components & procedures are used/followed for overall maintenance & overall ambiance

- Lab Technicians for labs with skills of repair & maintenance.
- Faculty Coordinators for labs are responsible for regular Audits & putting up the lab requirements to HODs.

- Proper seating with facilities like white board, LCD, Printer, AC etc.
- Documented /online procedure complaints /repair/procurement etc.
- AMC for some lab components
- Academic Licenses (Yearly renewable) including Microsoft academic licenses.
- Budget & purchase of consumables & other equipments.

#### 6.4. Project laboratory

(5)

(Mention facilities & Utilization)

S. NO.	FACILITY NAME	FACILITY	UTILIZATION
1	Student Project Lab/Software Development Lab	30 Dedicated latest PCs with necessary softwares/hardwares  LCD Projector	Students can work in labs also during beyond the teaching hours. Specific student groups engaged in development of live projects have been allocated the machines

**Table 6.3: Project Lab Details**

#### 6.5. Safety measures in laboratories

(10)

Name of the Laboratory	Safety measures
All Computer labs	<ol style="list-style-type: none"> <li>1. Fire Extinguishers</li> <li>2. Fire Fighting</li> <li>3. Auto cut MCBs</li> <li>4. UPS to control voltage fluctuations.</li> <li>5. Proper Electrical fittings with earthing</li> <li>6. Data Backup facility</li> <li>7. CCTV cameras</li> <li>8. 24 hr power supply</li> <li>9. First Aid Box.</li> <li>10. Firewalls</li> </ol>

	11. Antivirus
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**Table 6.4:** Safety Measures

<b>Name of the Laboratory</b>	<b>Safety measures</b>
DO's	<ol style="list-style-type: none"> <li>1. Be on time. At the start of the lab period, there will be a short introduction to the experiment you will perform that day.</li> <li>2. Inform the instructor if there is a problem. You will have their immediate attention if you have cut yourself (even if you consider it minor), if something broke and needs cleaning up, or if you are on fire.</li> <li>3. Be aware of all the safety devices. Even though the instructor will take care of emergencies, you should know where to find the first aid kit, the chemical spill kit, the eye wash and the safety shower.</li> <li>4. Wash your hands before you leave the lab for the day.</li> <li>5. Be aware of others in the lab. Areas of the room may be crowded at times and you should take care not to disturb the experiments of others in the lab.</li> <li>6. Bring your lab notebook and an open mind to every lab meeting.</li> </ol>
DON'Ts	<ol style="list-style-type: none"> <li>1. Do not eat, drink, chew gum, smoke or apply cosmetics in the lab. Just being in lab makes your hands dirtier than you can imagine and you don't want to accidentally eat any reagent.</li> <li>2. Do not put pieces of lab equipment in your mouth. It sounds obvious but you'd be surprised!</li> <li>3. Do not use the phone or computer with gloves on your hands.</li> </ol>

**Table 6.5: DO's and DON'Ts**

<b>CRITERION 7</b>	<b>CONTINUOUS IMPROVEMENT</b>	<b>50</b>
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### 7.1. Actions taken based on the results of evaluation of each of the POs & PSOs (20)

Department of Information Technology is putting continuously efforts for improvement in quality of education. For this purpose assessment for each subject or course is carried out while concentrating upon all the COs and POs and it is as represented in the forthcoming tables. Target and PO/PSO attainment levels are taken from section 3.3.2.

<b>POs</b>	<b>Target level</b>	<b>Attainment level</b>	<b>Observations</b>
<b>PO1: Engineering knowledge:</b> Apply the knowledge of mathematics, including discrete mathematics, probability, statistics and fundamentals of various engineering disciplines like computer science and engineering, electronic engineering and electrical engineering in the core information technologies.			
PO1	60%	74.44%	Attainment Level is more than Target value
No action is required as target value is more than attainment level.			
<b>PO2: Problem analysis:</b> Analyse a problem and identify the computing requirements appropriate to its solution.			
PO 2	60%	67.63%	Attainment Level is more than Target value
No action is required as target value is more than attainment level.			
<b>PO3: Design/development of solutions:</b> Design and implement hardware and software systems, components, process or program to meet the desired needs within reasonable economic, environmental,			

social, political, ethical, health and safety, manufacturability, and sustainability constraints.			
PO 3	50%	68.58%	Attainment Level is more than Target value
No action is required as target value is more than attainment level.			
<b>PO4: Conduct investigations of complex problems:</b> Reassess literature and indulge in research to use research based knowledge and methods to design and conduct new experiments, as well as to organize, analyse and interpret data to produce draw valid conclusions and recommendations.			
PO4	60%	61.72%	Attainment Level is more than Target value
No action is required as target value is more than attainment level.			
<b>PO5: Modern tool usage:</b> Use appropriate techniques, resources, and modern engineering and IT tools necessary for computer engineering practice.			
PO 5	60%	63.28%	Attainment Level is more than Target value
No action is required as target value is more than attainment level.			
<b>PO6: The engineer and society:</b> Show the understanding of local and global impact of computing on individuals, organizations and society.			
PO 6	60%	47.78%	Attainment Level is less than Target value
<b>ACTION 1:</b> Academic workshops and lectures are planned for future. <b>ACTION 2:</b> Projects design and planning as per needs of society. <b>ACTION 3:</b> More outreach activities such as blood donation camps etc. <b>ACTION 4:</b> Motivate students about tree plantation etc. <b>ACTION 5:</b> Organising more camps on social activities.			
<b>PO7: Environment and sustainability:</b> Integrate IT-based solutions in environmental contexts, and			

demonstrate the knowledge of need for sustainable development.			
PO 7	60%	56.69%	Attainment Level is less than Target value
<b>ACTION 1:</b> Students are motivated to generate interest in solving the problems by looking around the vicinity and to design the projects which can help the race. <b>ACTION 2:</b> Industrial Visits			
<b>PO8: Ethics:</b> Demonstrate the knowledge of professional and ethical responsibilities along with the norms of the engineering practice.			
PO 8	60%	56.69%	Attainment Level is less than Target value
<b>ACTION 1:</b> Personality Development Classes <b>ACTION 2:</b> Cultivation of ethics in classes			
<b>PO9: Individual and team work:</b> Demonstrate leadership and an ability to work as a member with responsibility to function on multi-disciplinary teams to accomplish a common goal.			
PO 9	60%	57.79%	Attainment Level is less than Target value
<b>ACTION 1:</b> More motivation to involve as volunteer/ participant in Tech Fest, National level sports meet, technical and cultural activities to generate the feeling of leadership and working in teams. <b>ACTION 2:</b> Final year project groups give students to work in team collaborations			
<b>PO 10: Communication:</b> Demonstrate effective communicate skills in both oral and written form with a range of audiences.			
PO 10	60%	54.63%	Attainment Level is less than Target value

<b>ACTION1:</b> PDP classes, English as mode of lecture delivery.			
<b>ACTION2:</b> Student presentations like seminar, project.			
<b>PO11: Project management and finance:</b> Apply the knowledge and understanding of engineering and management principles to design, plan, budget and propose IT project for an identified need within a specific scope.			
PO 11	60%	46.18%	Attainment Level is less than Target value
<b>ACTION1:</b> The awareness program for students regarding the management principles and managing projects.			
<b>ACTION 2:</b> Four Week industrial training will be made more effective to achieve the objective.			
<b>ACTION 3:</b> More industrial visits will be organised.			
<b>ACTION 4:</b> There will be more stress on the projects related to management.			
<b>ACTION 5:</b> Projects will be completed in collaboration with industry.			
<b>PO12: Life-long learning:</b> Develop confidence to acquire new knowledge in the computing discipline and to engage in life-long learning.			
PO 12	60%	67.02%	Attainment Level is more than Target value
No action is required as target value is more than attainment level.			
<b>PSO</b>			
<b>PSOs</b>	<b>Target level</b>	<b>Attainment level</b>	<b>Observations</b>
<b>PSO1:</b> Gain detailed Knowledge of various contemporary domains to identify research gaps and hence provide solutions by new ideas and innovations.			
PSO 1	60%	64.69%	Attainment Level is more than Target value

No action is required as target value is more than attainment level.			
<b>PSO2:</b> Have strong skills in learning new programming environments as it is used to automate things and simplify real world problems and human efforts.			
PSO2	60%	65.14%	Attainment Level is more than Target value
No action is required as target value is more than attainment level.			

**Table 7.1: Assessment of POs (2016-17)**

## **7.2 Academic Audit and actions taken thereof during the period of Assessment (10)**

Academic audit is done at two levels: College Level and Department Level

### **Objectives of Academic Auditing:**

- (i) To ensure academic accountability.
- (ii) To define quality of each component of the functionalities and to ensure quality of technical education throughout the system.
- (iii) To safeguard functionalities of technical education.
- (iv) To define effectiveness of teaching – learning process and to devise methodology to confirm maximum output from faculty members as well as students.

### **Documents to be produced for Audit**

Each faculty has to maintain the details of various academic activities in the form of documents given below. These documents shall be made available to the auditor as and when required.

- (i) Attendance record;
- (ii) Internal marks statement;
- (iii) Copies of test question papers;
- (iv) Samples of answer sheets;
- (v) Class assignments;

(vi) Samples of PPT slides and other teaching materials;

(vii) List of experiments conducted in laboratories.

### College Level:

- Auditing of Academic activities is done at Director and Dean Academics level
- Verification of compliance for Lecture Plan, time table, assignments & Tutorial, monthly attendance report etc. is also done.
- Student performance in internal and external exams, placements activities etc. are also audited.
- Adherence to activities defined as per the academic calendar.
- Overall observations are discussed with the concerned HODs for necessary corrective action.

### Department Level

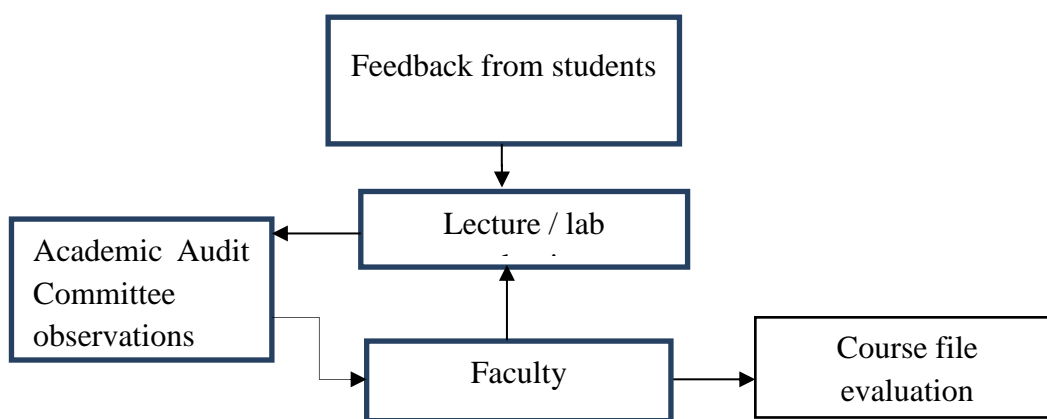
Some of the important methods for academic audits are:

S.N	Academic Audit Tools/Methods	Implementations & Actions
1	Syllabus Coverage	Audit of <ul style="list-style-type: none"><li>▪ Adherence to lecture plan</li><li>▪ status of assignment(uploaded &amp; Checked)</li><li>▪ Status Tutorial &amp; Quizzes</li><li>▪ Coverage of Lab Experiments</li><li>▪ Course Files.</li></ul>
2	Student Performance	Audit of <ul style="list-style-type: none"><li>▪ Performance of students in Internal &amp; External Exams subject wise/Student wise.</li><li>▪ Performance of students in other curricular and Technical activities.</li></ul>
3	Attendance monitoring	<ul style="list-style-type: none"><li>▪ Attendance Registers</li><li>▪ Attendances of students are displayed on notice boards twice a semester.</li></ul>
4	Academic surveys	<ul style="list-style-type: none"><li>▪ Graduate exit survey,</li><li>▪ Surveys for PO/PEO mapping,</li></ul>

		<ul style="list-style-type: none"> <li>▪ Alumni survey</li> <li>▪ Course End Survey</li> </ul>
5	Lab audits	Audit of <ul style="list-style-type: none"> <li>▪ Lab equipments by lab in charge( faculty members)</li> <li>▪ Softwares resources</li> <li>▪ Student lab records</li> <li>▪ Overall lab inventory</li> <li>▪ Lab experiments</li> </ul>
6	Student Project Audits	Monitoring system (weekly) for assessment of project progress. <ul style="list-style-type: none"> <li>▪ Monthly project presentations.</li> <li>▪ One faculty coordinator for each project group.</li> <li>▪ Regular interaction with guide</li> </ul>

**Table 7.7: Academic Audit & Implementations at department Level**

After the audit, action taken report is sent to head of the department. Academic audit and actions taken are carried out with the help of different components as explained in the following graph:



**Figure B.7.2**

### 1. Course file evaluation

Course files are prepared by faculty members before the semester starts. The academic committee consisting of HOD, course coordinator and few of departmental senior faculty members performs audit of course files i.e. verify the contents of the course file, lesson plan, assignments, extra material lecture notes, etc. at the end of semester. The comments of the committee are given as feedback to the faculty member to include the recommended material. This audit ensures the quality of education delivered to the students.

## 2. Lectures/ Lab evaluation

The academic audit committee during their random observation of the lectures/lab check delivery of course material as per the lesson plan, teaching aids used, communication skill and classroom management etc. parameters to ensure the teaching methods as per the standards are being used throughout the institute. Feedback is communicated to the faculty member. The academic audit committee for observation consists of HOD, and few senior faculty members.

## 3. Batch coordinators concept

The department has batch coordinator concept in which two (01) faculty members assign to new admitted students in the department. The batch coordinators counsel the students during his completion of B. Tech course.

Sr. No.	Batch	Name of Batch Coordinators
1.	2017-21	Mr. Ashish Kumar Mishra
2.	2016-20	Mr. Shivendra Kumar Pandey
3.	2015-19	Mr. Amit Kumar
4.	2014-18	Mr. Prince Rajpoot

## 7.2.Improvement in Placement, Higher Studies and Entrepreneurship

(10)

Item	CAY (2017-18) (47)	CAYm1 (2016-17) (44)	CAYm2 (2015-16) (45)

No. of Students Placed in Companies or Government Sector	15	38	20
No. of Students admitted to higher studies with valid qualifying scores (GATE or Equivalent State or National Level Tests, GRE, GMAT, etc.)	4	5	2
No. of students turned entrepreneur in engineering / technology	0	0	0

**Table 7.3a**

Placement	No.	Minimum Pay (Rs.)	Maximum Pay (Rs.)	Average (Rs.)
2015-16	31	2.5 lac	4.7 lac	3.34 lac
2016-17	43	1.8 lac	6.00 lac	4.04 lac
2017-2018	13	1.8 lac	4.9 lac	3.50 lac

**Table 7.3b**

#### **7.4. Improvement in the quality of students admitted to the program**

**(10)**

Item		CAY (2018-2019)	CAY <sub>m1</sub>	CAY <sub>m2</sub>	CAY <sub>m3</sub>
National Level Entrance Examination (Name of)	No. of Students admitted		--	--	--

the Entrance Examination)	Opening Score/Rank		--	--	--
	Closing Score/Rank		--	--	--
State/University/Level Entrance Examination/Others (Name of the Entrance Examination).	No. of Students admitted	59	43	44	47
	Opening Score/Rank	2955	5644	6159	915
	Closing Score/Rank	98439	83115	78127	145934
lateral entry details	No. of Students admitted	11	12	10	9
	Opening Score/Rank	542	871	222	-
	Closing Score/Rank	5057	6966	6294	-
Average CBSE/Any other Board Result of admitted students (Physics, Chemistry & Maths)			114	60	45

**Table 7.9: Improvement in quality of students admitted to program**

<b>CRITERION 8</b>	<b>FIRST YEAR ACADEMICS</b>	<b>50</b>
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### 8.1 First Year Student-Faculty Ratio (FYSFR) (5)

*Institutional Points=3.27*

Data for first year courses to calculate the FYSFR:

Year	Number of students (approved intake strength)	Number of faculty members (considering fractional load)	FYSFR	Assessment = $(5 \times 15)/\text{FYSFR}$ (Limited to Max. 5)
2018-2019	189	9	21	3.57
2017-2018	189	8	23.63	3.17
2016-2017	189	8	23.63	3.17
2015-2016	189	8	23.63	3.17
Average	189	8.25	22.97	<b>3.27</b>

**Table B.8.1**

### 8.2 Qualification of Faculty Teaching First Year Common Courses (5)

*Institutional Points=4.32*

Assessment of qualification =  $(5x + 3y)/RF$ ,  $x$  = Number of Regular Faculty with Ph D,  $y$  = Number of Regular Faculty with Post-graduate qualification  $RF$  = Number of faculty members required as per SFR of 25:1, Faculty definition as defined in 5.1

Year	$x$	$Y$	$RF$	Assessment of faculty qualification $(5x + 3y)/RF$
2018-2019	9	1	8	6
2017-2018	5	2	8	3.88
2016-2017	5	3	8	4.25
2015-2016	2	5	8	3.13
Average Assessment				<b>4.32</b>

**Table B.8.2****8.3: First Year Academic Performance (10)***Institutional Points=6.89*

Academic Performance	CAY	CAYm1	CAYm2
Mean of CGPA (X)	7.07	7.21	6.41
Total no. of successful students (Y)	187	165	143
Total no. of students appeared in examination (Z)	187	165	143
API = $X * (Y/Z)$	7.07	7.21	6.41
Average API = $(AP1+AP2+AP3)/3$	6.89		

**Table B.8.3****Academic performance=6.89****8.4: Attainment of Course Outcomes of first year courses (10)***Institutional Points=10***8.4.1. Describe the assessment processes used to gather the data upon which the evaluation of Course Outcomes of first year is done (5)***Institutional Points=5***Assessment Process**

Direct Assessment Method includes the following:

- **Internal Examination:** Internal examination is conducted twice (per semester). Each paper is of 20 marks. Apart from the two internal examinations, a third mercy examination is also conducted. If a student fails to get the pass percentage with the average score of the two internal examinations, only then he is given the chance to appear in this mercy examination. In addition to the average score obtained by the student, his share of class work and attendance is also included in his internal evaluation marks. Each is of 5 marks. Total of 30 marks are considered for internal examination. In the class work, 3 to 5 assignments and 1-2 quizzes are given by faculty members of their respective subjects to the students.
- **External Examination:** External examination is conducted at the end of the semester and is of 70 marks. Student is evaluated on the basis of 100 marks per subject which includes 70 marks of external examination and 30 marks of internal examination.

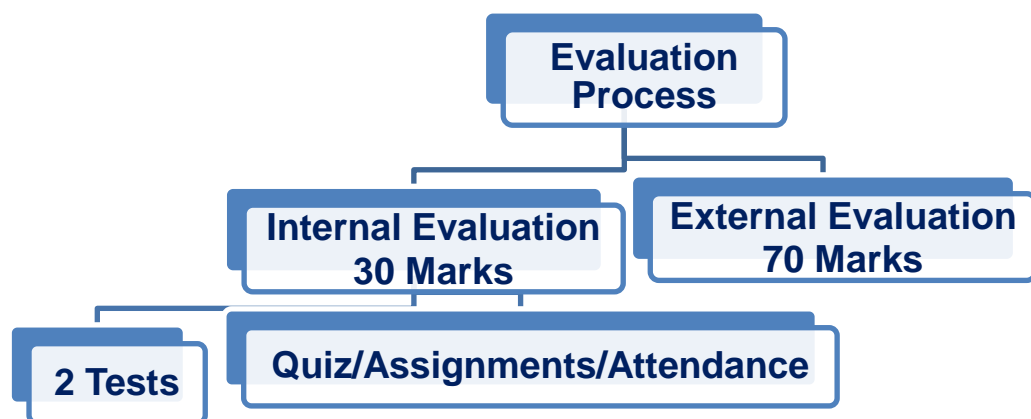


Fig. B 8.4.1

### Methodology to calculate CO's Attainment

10. Define CO's for a course and check their quality
11. Do mapping of CO with PO's (on a scale of 1,2 & 3)
12. Align CO's with questions of class tests, assignments and end semester exam
13. Prepare CO alignment sheet and decide Grade scale as follows:

Grade scale	
Marks	Score
$\leq 40\%$	1
$> 40\% \text{ and } \leq 60\%$	2
$> 60\%$	3

Table B.8.4.2

14. Calculate CO's as per table below on the basis of tests, assignments and end semester exams:

S.N.	ROLL NO	STUDENT NAME	CO1					CO2	CO...
			Total Marks Obtained	Total marks Attempted	$\geq 60\%$	Score (3,2,1)	Y/N		
1	1673713001	ABHISHEK BAUDH	25	33	75.76	3	Y		
2	1673713002	ADIITYA KUMAR	18	33	54.55	2	N		

3	1673713003	AKANCHHA	10	33	30.3	1	N		
				Average		2			

**Table B.8.4.3**

15. Prepare faculty course assessment record (FCAR) of each faculty.
16. Align or distribute result of CO attainment (in %) over PO's as per already done CO-PO mapping.

### **8.4.2. Record the attainment of Course Outcomes of all first year courses (5)**

*institutional Points=5*

**CO's attainment in percentage of 1<sup>st</sup> year all subjects**

<b>CO Attainment* in percentage</b>					
<b>Subject</b>	<b>CO1</b>	<b>CO2</b>	<b>CO3</b>	<b>CO4</b>	<b>CO5</b>
<u>Engineering Maths 1 (RAS-103)</u>	62.26	65.65	55.73	59.43	58.29
CO Result	Y	Y	N	N	N
Engineering Physcics 1 (RAS-101)	61.12	61.69	61.69	61.69	61.69
CO Result	Y	Y	Y	Y	Y
Elements of Mechanical Engineering RME-101	61.69	58.29	64.52	61.69	61.69
CO Result	Y	N	Y	Y	Y
Computer System and programming in C (RCS-101)	67.92	65.10	62.26	53.77	49.81
CO Result	Y	Y	Y	N	N

Engineering Chemistry (RAS-102)	71.69	69.80	73.58	72.65	68.86
CO Result	Y	Y	Y	Y	Y
Engineering Maths 2 (RAS-203)	69.81	70.94	72.64	69.24	65.85
CO Result	Y	Y	Y	Y	Y
Engineering Physics 2 (RAS-201)	71.69	72.26	72.26	72.26	72.26
CO Result	Y	Y	Y	Y	Y
Basic Electrical Engineering (REE-201)	72.03	78.70	78.70	78.70	78.70
CO Result	Y	Y	Y	Y	Y
Professional Communication (RAS-204)	67.19	68.29	63.56	56.97	56.4
CO Result	Y	Y	Y	N	N
Basic Electronics (REC-201)	56.21	33.92	58.27	53.35	61.39
CO Result	N	N	N	N	Y

**Table B.8.4.4**

\*Note: CO is attained (Y) if % attainment of that CO is more than 60%.

## **8.5: Attainment of Program Outcomes from first year courses (20)**

*Institutional Points=19*

### **8.5.1. Indicate results of evaluation of each relevant PO and/or PSO if applicable (10)**

**PO Attainment Procedure:**

1. Do mapping of CO's with PO's (a scale of 1,2 3).
2. If CO attainment is more or equal to 60%, Yes(Y) , if less than 60% , No (N).
3. PO attainment is calculated as per PO calculation Table, illustrated below for each subject:

<b>PO's</b>	<b>PO1-PO12 for Attainment of PO's</b>
	<b>PO Description</b>
PO1	<b>Engineering knowledge:</b> Apply the knowledge of mathematics, including discrete mathematics, probability, statistics and fundamentals of various engineering disciplines like computer science and engineering, electronic engineering and electrical engineering in the core information technologies.
PO2	<b>Problem analysis:</b> Analyze a problem and identify the computing requirements appropriate to its solution.
PO3	<b>Design /development of solutions:</b> Design and implement hardware and software systems, components, process or program to meet the desired needs within reasonable economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability constraints.
PO4	<b>Conduct investigations of complex problems:</b> Reassess literature and indulge in research to use research based knowledge and methods to design and conduct new experiments, as well as to organize, analyze and interpret data to produce draw valid conclusions and recommendations.
PO5	<b>Modern tool usage:</b> Use appropriate techniques, resources, and modern engineering and IT tools necessary for computer engineering practice.
PO6	<b>The engineer and society:</b> Show the understanding of local and global impact of computing on individuals, organizations and society.
PO7	<b>Environment and sustainability:</b> Integrate IT-based solutions in environmental contexts, and demonstrate the knowledge of need for sustainable development.
PO8	<b>Ethics:</b> Demonstrate the knowledge of professional and ethical responsibilities along with the norms of the engineering practice .

**Table  
B.8.5.1**

PO9	<b>Individual and team work:</b> Demonstrate leadership and an ability to work as a member with responsibility to function on multi-disciplinary teams to accomplish a common goal.
PO10	<b>Communication:</b> Demonstrate effective communicate skills in both oral and written form with a range of audiences.
PO11	<b>Project Management and finance:</b> Apply the knowledge and understanding of engineering and management principles to design, plan, budget and propose IT project for an identified need within a specific scope.
PO12	<b>Life-long learning:</b> Develop confidence to acquire new knowledge in the computing discipline and to engage in life-long learning.

**1. Course: Engineering Maths 1 (RAS-103)**

Course Outcome: after studying this course, students will be able to

CO	Statement
CO1	Explain the concept of partial derivatives, also describe trace of the curve in Cartesian and Polar coordinates.
CO2	Describe Taylor's and Maclaurin's Theorem and classify the use of partial derivatives to calculate errors, approximations and finding jacobians and calculate Extrema of functions of several variables.
CO3	Define and explain the rank of a matrix and use it to find nature of solution of system of equations, also explain Eigen values and Eigen vectors of different kind of Matrices.
CO4	Define double integrals and triple integrals and apply it to lengths, Surface areas and Volumes.
CO5	Define and explain Line, Surface and Volume integrals, Greens theorem, Stokes theorem and Divergence theorem.

**Table**

**B.8.5.2**

**CO-PO Mapping**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12

CO1	3	2	2	1	2	2						
CO2	3	3	3	2	2	2						
CO3	2	2	2	2	3	2					1	1
CO4	3	2	2	1	2	2					1	
CO5	2	1	2	2	2	3					1	1

**Table B.8.5.3**

### **Result of Attainment of CO's**

**Table B.8.5.4**

CO	CO1	CO2	CO3	CO4	CO5
% AGE of CO achieved in Class Test	88.68	100	66.93	79.25	75.47
% AGE of CO achieved in End Semester Exam	50.94	50.94	50.94	50.94	50.94
Overall Assessment of CO	62.26	65.65	55.73	59.43	58.29
CO RESULT	Y	Y	N	N	N

### **Results of Attainment of PO's**

CO	% AGE STUDENTS ACHIEVED CO	CO RESULT	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	62.262	Y	62.26	41.51	41.51	20.75	41.51	41.51						
CO2	65.658	Y	65.66	65.66	65.66	43.773	43.773	43.77						
CO3	55.737	N												
CO4	59.433	N												
CO5	58.299	N												
Average			63.96	53.58	53.58	32.26	42.64	42.64						

**Table B.8.5.5**

## **2. Course: Engineering Physics 1 (RAS-101)**

CO	Statement
----	-----------

**Table  
B.8.5.6**

**CO-  
PO**

CO1	Describe Relativistic physics
CO2	Develop basic knowledge on the historical development and time-to-time applications of quantum mechanics.
CO3	Define and explain the interference and diffraction from wave optics with its applications.
CO4	Describe polarization of light and its applications. Explain the principal of laser. Demonstrate the types of lasers and applications.
CO5	Explain the principle, design and application of optical fibers. Realize the basic principle of Holography, holograms and their applications.

**Mapping**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
CO1	3	2	2	1	2	2	1					
CO2	3	3	2	2	2	2	2					
CO3	2	2	2	2	3	2	1			2	2	2
CO4	3	2	2	2	2	2	1				2	
CO5	2	1	2	2	2	1	2			2	2	2

**Table B.8.5.7**

**Result of Attainment of CO's**

CO	CO1	CO2	CO3	CO4	CO5
% AGE of CO achieved in Class Test	98.11	100	100	100	100
% AGE of CO achieved in End Semester Exam	45.28	45.28	45.28	45.28	45.28
Overall Assesment of CO	61.12	61.69	61.69	61.69	61.69
CO RESULT	Y	Y	Y	Y	Y

**Table B.8.5.8**

### Results of Attainment of PO's

CO	% AGE STUDENTS	CO RESULT	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	61.12	Y	61.13	40.96	40.96	20.18	40.96	40.96	20.1729					
CO2	61.69	Y	61.7	61.7	41.34	41.34	41.34	41.34	41.34					
CO3	61.69	Y	41.34	41.34	41.34	41.34	61.7	41.34	30.8616			41.34	41.34	41.34
CO4	61.69	Y	61.7	41.34	41.34	30.86	41.34	41.34	30.86				41.34	
CO5	61.69	Y	41.339	30.86	41.34	41.34	30.85	61.7	41.34				41.34	41.34
Average			53.44	43.24	41.26	35.01	45.23	45.37	32.91			8.29	24.81	16.54

**Table B.8.5.9**

### 3. Course: Elements of Mechanical Engineering (RME-101)

CO	Statement
CO1	Determine the resultant force and moment for a given force system, Realize the basic force system, Calculate the motion parameters for a body subjected to a given force system. Know the general equations of equilibrium. Determine the Concept of Centre of Gravity and Centroid and Area Moment of Inertia & Determination of reactions
CO2	Analyze planar and spatial systems to determine the forces in members of trusses. Plot SF-BM diagram, slope-Deflection curve and combined bending stress in beams
CO3	Recognize the concept of one and two dimensional simple and compound stress and strain. Analyze Tensile Test diagram for ductile and brittle materials, Elastic constants and Strain energy. Understand the Importance of engineering materials, classification, mechanical properties and applications of Ferrous, Nonferrous and composite materials
CO4	Explain the Basic Concepts and Definitions of Thermodynamics, the concept of Zeroth & First law of thermodynamics law of thermodynamics system.
CO5	Explain the concept of Second law of thermodynamics system and identify the properties of pure substances. Describe basics of internal combustion engines & their parts.

**Table**

**B.8.5.10**

## CO-PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
CO1	3	3	2	2	1							
CO2	3	3	3	3	1	3	1					2
CO3	3	3	2	3	2	2	1				2	2
CO4	2	2	1	2	1	1	2				1	1
CO5	3	2	2	2	2	1	3				2	2

**Table B.8.5.11**

## Result of Attainment of CO's

CO	CO1	CO2	CO3	CO4	CO5
% AGE of CO achieved in Class Test	73.58	62.26	83.01	73.58	73.58
% AGE of CO achieved in End Semester Exam	56.6	56.6	56.6	56.6	56.6
Overall Assesment of CO	61.69	58.29	64.52	61.69	61.69
CO RESULT	Y	N	Y	Y	Y

**Table B.8.5.12**

## Results of Attainment of PO's

CO	% AGE STUDENTS ACHIEVED CO	CO RESULT	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	61.69	Y	73.58	73.58	49.05	49.05	24.52							
CO2	58.29	N												
CO3	64.52	Y	83.01	83.01	55.34	83.01	55.34	55.34	27.67				55.34	55.34

CO4	61.69	Y	49.05	49.05	24.52	49.05	24.52	24.52	49.05				49.05	49.05
CO5	61.69	Y	73.58	37.73	49.05	49.05	49.05	49.05	73.58				37.73	37.73
Average			68.29	61.12	48.04	58.48	34.83	38.23	34.21	0	0	0	28.42	36.7

**Table B.8.5.13**

**4. Course: Computer System and programming in C (RCS-101)**

**Table B.8.5.14**

5. CO	Statement
CO1	To develop simple algorithms and programs in C for arithmetic and logical problems.
CO2	To learn the various ways of providing the data to the programs & execution (in C language).
CO3	To implement conditional branching, iteration and recursion.
CO4	To decompose a problem into functions and synthesize a complete program using divide and conquer approach.
CO5	To use arrays, pointers and structures to develop algorithms and programs.

**CO-  
PO**

**Mapping**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
CO1	3	2		1							3	2
CO2	3		3	2							3	
CO3		2	2	2	3							2
CO4			2		2							
CO5	2		2		2						2	

**Table B.8.5.15**

### Result of Attainment of CO's

**Table B.8.5.16**

CO	CO1	CO2	CO3	CO4	CO5
% AGE of CO achieved in Class Test	94.34	84.91	75.47	47.17	33.96
% AGE of CO achieved in End Semester Exam	56.60	56.60	56.60	56.60	56.60
Overall Assesment of CO	67.92	65.10	62.26	53.77	49.81
CO RESULT	Y	Y	Y	N	N

### **Results of Attainment of PO's**

CO	% AGE STUDENTS ACHIEVED CO	CO RESULT	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	67.92	Y	67.92	45.28		22.64								
CO2	65.10	Y	65.10	0.00	65.10	43.40	0.00							
CO3	62.26	Y		41.51	41.51	41.51	62.26							
CO4	53.77	N												
CO5	49.81	N												
Average			44.34	28.93	35.53	35.85	20.75							

**Table B.8.5.17**

### **5.Course: Engineering Chemistry (RAS-102)**

CO	Statement
CO1	Explain the basic concepts and applications of Molecular orbital Theory, Liquid crystals and nano composites.
CO2	Describe the knowledge of polymer materials for futuristic engineering applications.

CO3	Identify and compare the materials best suited for construction of Battery and Fuel cells
CO4	Identify different techniques of water softening
CO5	Explain instrumentation and applications of UV-Visible, Infra Red spectroscopy (IR) and $H^1$ NMR spectral techniques.

**Table**

**B.8.5.18**

**CO-PO Mapping**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
CO1	2	3	2	1	2	2		2	2			
CO2	3	2	3	2	1	2	2	1	3			1
CO3	3	2	2	2	3	2	1	3	2			1
CO4	2	3	2	2	3	1	1	2	2			1
CO5	2	3	2	2	2	2	2		1			1

**Table B.8.5.19**

**Result of Attainment of CO's**

**Table B.8.5.20**

CO	CO1	CO2	CO3	CO4	CO5
% AGE of CO achieved in Class Test	96.22	92.45	100	98.14	90.56
% AGE of CO achieved in End Semester Exam	47.16	47.16	47.16	47.16	47.16
Overall Assesment of CO	71.69	69.80	73.58	72.65	68.86
CO RESULT	y	y	Y	y	y

### Results of Attainment of PO's

CO	% AGE STUDENTS ACHIEVED CO	CO RESULT	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	71.69	Y	47.49	71.69	47.49	24.89	47.49	47.49		47.49	47.49			
CO2	69.805	Y	69.8	46.53	69.8	46.53	23.66	46.53	46.53	23.66	46.53			23.66
CO3	73.58	Y	73.58	49.05	49.05	49.05	78.7	49.05	24.52	73.58	49.05			24.52
CO4	72.65	Y	48.44	72.67	48.44	48.44	72.67	24.22	24.22	48.44	48.44			24.22
CO5	68.86	Y	45.9	68.86	45.9	45.9	45.9	45.9	45.9		22.95			22.95
Average			57.04	61.76	52.13	42.96	53.68	42.63	28.23	38.63	42.89			19.07

**Table B.8.5.21**

### 6. Course: Engineering Maths 2 (RAS-203)

**Table B.8.5.22**

CO	Statement
CO1	Explain the concept of differentiation and apply it for solving differential equations
CO2	Define and explain the properties of Bessel function and Legendre polynomials.
CO3	Define and explain the fundamental concepts of Laplace transform of various functions like unit-step function, Dirac-delta function. Use this method to solve simple linear and simultaneous differential equation.
CO4	Define the concept of Fourier series and use this tool of Fourier series for learning advanced Engineering Mathematics.
CO5	Explain second order partial differential equation, and solve PDE using method of separation of variable. Analyze and formulate one and two dimensional wave and heat conduction equation, Laplace equation in two dimensions and solve it using separation of variable method.

**CO-  
PO**

## Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
CO1	3	2	2	1	2	2	1					
CO2	3	3	3	2	2	2	2					
CO3	2	2	2	2	3	2	1				1	1
CO4	3	2	2	1	2	2	1				1	
CO5	2	1	2	2	2	3	2				1	1

**Table B.8.5.23**

## Result of Attainment of CO's

**Table B.8.5.24**

CO	CO1	CO2	CO3	CO4	CO5
% AGE of CO achieved in Class Test	83.02	86.79	92.45	81.13	69.81
% AGE of CO achieved in End Semester Exam	64.15	64.15	64.15	64.15	64.15
Overall Assesment of CO	69.81	70.94	72.64	69.24	65.85
CO RESULT	Y	Y	Y	Y	Y

## **Results of Attainment of PO's**

CO	% AGE STUDENTS ACHIEVED CO	CO RESULT	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	69.81	Y	69.81	46.54	46.54	23.27	46.54	46.54	23.27				0.00	0.00
CO2	70.94	Y	70.94	70.94	70.94	47.30	47.30	47.30	47.30				0.00	0.00
CO3	72.64	Y	48.43	48.43	48.43	48.43	72.64	48.43	24.21				24.21	24.21

CO4	69.24	Y	69.24	46.16	46.16	23.08	46.16	46.16	23.08				23.08	0.00
CO5	65.85	Y	43.90	21.95	43.90	43.90	43.90	65.85	43.90				21.95	21.95
Average			60.46	46.80	51.19	37.19	51.31	50.85	32.35				13.85	9.23

**Table B.8.5.25**

## 7. Course: Engineering Physics 2 (RAS-201)

**Table B.8.5.26**

CO	Statement
CO1	Classification of crystals. Analysis of crystal parameters to investigate crystal structures. To classify various properties of the crystal. To find out the inter planner spacing in crystal by XRD technique.
CO2	Explain the basic properties of magnetic and dielectric materials and their various applications in engineering and sciences.
CO3	Describe the significance of Maxwell's equations in the Engineering applications and electromagnetic waves.
CO4	To demonstrate the success of quantum free electron theory over classical free electron theory. To examine the probability of occupancy of an electron in an energy state at different temperatures. To evaluate position of Fermi level in semiconductors.
CO5	To classify superconducting behavior of solids, their properties and applications. To study the structure and properties of Carbon Allotropes and their applications in the emerging technology.

**CO-  
PO**

### Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
CO1	3	2	2	1	2	2	1					
CO2	3	3	3	2	2	2	2					
CO3	2	2	2	2	3	2	1			1	1	2
CO4	3	2	2	1	2	2	1				1	
CO5	2	1	2	2	2	3	2			1	1	2

**Table B.8.5.27**

## Result of Attainment of CO's

**Table B.8.5.28**

CO	CO1	CO2	CO3	CO4	CO5
% AGE of CO achieved in Class Test	98.11	100	100	100	100
% AGE of CO achieved in End Semester Exam	60.38	60.38	60.38	60.38	60.38
Overall Assessment of CO	71.69	72.26	72.26	72.26	72.26
CO RESULT	Y	Y	Y	Y	Y

## **Results of Attainment of PO's**

CO	% AGE STUDENTS ACHIEVED CO	CO RESULT	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	71.69	Y	71.7	48.039	48.04	23.661	40.96	40.96	20.1729					
CO2	72.26	Y	72.27	72.27	72.27	48.4209	48.42	48.42	48.42					
CO3	72.26	Y	48.42	48.42	48.42	48.42	72.27	48.42	23.8491			23.85	23.85	48.42
CO4	72.26	Y	72.27	48.42	48.42	23.85	48.42	48.42	23.85				23.85	
CO5	72.26	Y	48.42	23.85	48.42	48.42	48.42	72.27	48.42			23.85	23.85	48.42
Average			62.616	48.19	53.11	38.55	51.69	51.69	32.94			23.85	23.85	48.42

**Table B.8.5.29**

## **8. Course: Basic Electrical Engineering (REE-201)**

CO	Statement
CO1	Analyze the DC & AC electrical circuits using KVL/KCL and network theorems.
CO2	Analyze the behavior of AC electrical circuits and resonance.
CO3	Apply the concepts of measurements in measuring electrical quantities.

CO4	Analyze the behavior of magnetic circuits and demonstrate the working of single-phase transformers, auto-transformer and their applications.
CO5	Demonstrate the working principles of basic electrical machines including DC as well as AC machines and identify the type of electrical machine used for a particular application

**Table**

**B.8.5.30**

**CO-PO Mapping**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
CO1	3	3	3	2	1		1		1		1	2
CO2	3	3	3	2	1		1		1		1	2
CO3	3	2	3	2	3	2	1	1	1		1	3
CO4	3	3	2	2	1	2	1	1	1		2	2
CO5	3	3	3	2	1	3	2	1	1		2	3

**Table B.8.5.31**

**Result of Attainment of CO's**

**Table B.8.5.32**

CO	CO1	CO2	CO3	CO4	CO5
% AGE of CO achieved in Class Test	75.92	98.148	98.14	98.14	98.14
% AGE of CO achieved in End Semester Exam	70.37	70.37	70.37	70.37	70.37
Overall Assesment of CO	72.03	78.70	78.70	78.70	78.70
CO RESULT	Y	Y	Y	Y	Y

## Results of Attainment of PO's

CO	% AGE STUDENTS ACHIEVED CO	CO RESULT	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	72.03	Y	72.03	72.03	72.03	48.02	24.01	0	26.23	0	24.01	0	24.012	48.02
CO2	78.70	Y	78.70	78.70	78.70	52.46	26.23	0	26.234	0	26.2	0	26.23	52.46
CO3	78.70	Y	78.70	52.46	78.70	52.46	78.70	52.47	26.234	26.23	26.2	0	26.23	78.70
CO4	78.70	Y	78.70	78.70	52.46	52.46	26.23	52.47	26.23	26.23	26.2	0	52.46	52.46
CO5	78.7	Y	78.70	78.70	78.70	52.46	26.23	78.7	52.46	26.23	26.2	0	52.46	78.70
Average			77.37	72.12	72.1	51.58	36.28	36.73	31.48	15.74	25.7		36.28	62.07

**Table B.8.5.33**

## 9. Course: Professional Communication (RAS-204)

CO	Statement
CO1	Analyze Technical Communication: features: Distinction between General and Technical Communication; Language as a tool of communications; Levels of communication: Interpersonal, Organizational, Mass communication; The flow of communication: Downward, Upward, Lateral/Horizontal (Peer group): Importance of technical communication; Barriers to Communication
CO2	Recognize, explain and use Written Communication, Words and Phrases: Word formation, Synonyms and Antonyms; Homophones; Select vocabulary of about 500-1000 New words; correct Usage: all Parts of Speech; Modals; Concord; Articles; Infinitives; Transformation of sentences; Requisites f Sentence Construction: Paragraph Development: Techniques and Methods- Inductive, Deductive, Spatial, Linear, Chronological etc.
CO3	Explore different format features of Sales & Credit letters; Claim and Adjustment Letters; Job Application and Resumes. Reports: Types; Significance; Structure, Style & Writing of Reports. Technical Proposal; Parts; Types; Writing of Proposal; Significance; Negotiation skills.
CO4	Participate actively in Presentation Strategies and Nuances and Modes of Delivery; Body Language; Dimensions of Speech: Syllable; Accent; Pitch; Rhythm; Intonation; Paralinguistic features of voice; Interpersonal communication: Definition; Types; Team

	work; Attitude; Way to improve Attitude Listening Skills: Types; Methods for improving Listening Skill
C05	Revise, develop and practice mechanics of writing with the help of prescribed following essays from the prescribed text book (i) Humanistic and Scientific Approaches to Human Activity by Moody E. Prior (ii) The Language of Literature and Science by A. Huxley (iii) Man and Nature by J. Bronowski (iv) Science and Survival by Barry Commoner (v) The Mother of the Sciences by A.J. Bahm.

**10. Table B.8.5.34**

### CO-PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
CO1	3	2	2	1	2	2	1					
CO2	3	3	3	2	2	2	2					
CO3	2	2	2	2	3	2	1			1	1	2
CO4	3	2	2	1	2	2	1				1	
C05	2	1	2	2	2	3	2			1	1	2

**Table B.8.5.35**

### Result of Attainment of CO's

**Table B.8.5.36**

CO	CO1	CO2	CO3	CO4	C05
% AGE of CO achieved in Class Test	96.22	100	84.21	62.26	60.37
% AGE of CO achieved in End Semester Exam	54.71	54.71	54.71	54.71	54.71
Overall Assesment of CO	67.19	68.29	63.56	56.97	56.4
CO RESULT	Y	Y	Y	N	N

## Results of

### Attainment of PO's

CO	% AGE STUDENTS ACHIEVED CO	CO RESULT	PO1	PO2	PO3	PO4	PO5	PO6	PO7	P O8	PO9	PO10	PO11	PO12
CO1	67.19	Y	67.1	44.7	44.7	22.3	44.7	44.7	22.39					
CO2	68.29	Y	68.2	68.2	68.2	45.5	45.5	45.5	45.5					
CO3	63.56	Y	42.3	42.3	42.3	42.3	63.5	42.3	21.1			21.1	21.1	42.37
CO4	56.97	N												
CO5	56.4	N												
Average			59.2	51.8	51.8	36.7	51.2	44.2	29.6			21.1	21.1	42.3

**Table B.8.5.37**

### 10. Course: Basic Electronics (REC-201)

**Table B.8.5.38**

CO	Statement
CO1	Analyze the PN junction diode, V-I characteristics, ideal and practical, diode resistance, capacitance, Diode Equivalent Circuits, Transition and Diffusion Capacitance, Zener Diodes breakdown mechanism (Zener and avalanche) Diode Application: Series , Parallel and Series, Parallel Diode Configuration, Half and Full Wave rectification, Clippers, Clampers, Zener diode as shunt regulator, Voltage-Multiplier Circuits Special Purpose two terminal Devices :Light-Emitting Diodes, Varactor (Varicap) Diodes, Tunnel Diodes, Liquid-Crystal Displays.
CO2	Explain the concept of Transistor Construction, Operation, Amplification action, Common Base, Common Emitter, Common Collector Configuration DC Biasing, Field Effect Transistor: MOSFET (Depletion and Enhancement) Type.
CO3	Describe the Op Amp, Ideal & Practical characteristics of Op Amp, Differential amplifier circuits, Practical OPAMP Circuits (Inverting Amplifier, Non inverting Amplifier, Unity Gain Amplifier, Summing Amplifier, Integrator, Differentiator).
CO4	Explain the concept of RAMP Techniques Digital Multimeters: Simple CRO, Digital Storage Oscilloscope.
CO5	Explain the Need of Modulation, Electromagnetic spectrum, Signal Representation and Analysis, Modulation and Demodulation Techniques of AM

**CO-  
PO**

## Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO 11	PO12
CO1	3	2	2	1	2	2	1					3
CO2	3	3	3	2	2	2	2					3
CO3	2	2	2	2	3	2	1			1	1	2
CO4	3	2	2	1	2	2	1				1	3
CO5	2	1	2	2	2	3	2			1	1	2

**Table B.8.5.39**

## Result of Attainment of CO's

**Table B.8.5.40**

CO	CO1	CO2	CO3	CO4	CO5
% AGE of CO achieved in Class Test	77.35	30	84.21	35.84	56.6
% AGE of CO achieved in End Semester Exam	47.16	47.16	47.16	47.16	47.16
Overall Assesment of CO	56.21	33.92	58.27	53.35	61.39
CO RESULT	N	N	N	N	Y

## Results of Attainment of PO's

CO	% AGE STUDENTS	CO RESULT	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	56.21	N												
CO2	33.92	N												
CO3	58.27	N												
CO4	53.35	N												
CO5	61.39	Y	40.92	20.46	40.92	40.92	40.92	61.39	40.92			20.46	20.46	40.92
Average			40.92	20.46	40.92	40.92	40.92	61.39	40.92			20.46	20.46	40.92

**Table B.8.5.41**

## 1<sup>st</sup> YEAR PO's Attainment

1 <sup>st</sup> YEAR PO's Attainment												
Subject	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Engineering Maths 1 (RAS-103)	63.96	53.58	53.58	32.26	42.64	42.64						
Engineering Physics 1 (RAS-101)	53.44	43.24	41.26	35.01	45.23	45.37	32.91			8.29	24.81	16.54
Elements of Mechanical Engineering RME-101	68.29	61.12	48.04	58.48	34.83	38.23	34.21	0	0	0	28.42	36.7
Computer System and programming in C (RCS-101)	44.34	28.93	35.53	35.85	20.75							
Engineering Chemistry (RAS-102)	57.04	61.76	52.13	42.96	53.68	42.63	28.23	38.63	42.89			19.07
Engineering Maths 2 (RAS-203)	60.46	46.80	51.19	37.19	51.31	50.85	32.35				13.85	9.23
Engineering Physics 2 (RAS-201)	62.616	48.19	53.11	38.55	51.69	51.69	32.94			23.85	23.85	48.42
Basic Electrical Engineering (REE-201)	77.37	72.12	72.1	51.58	36.28	36.73	31.48	15.74	25.7		36.28	62.07
Professional Communication (RAS-204)	59.2	51.8	51.8	36.7	51.2	44.2	29.6			21.1	21.1	42.3
Basic Electronics (REC-101/REC-201)	40.92	20.46	40.92	40.92	40.92	61.39	40.92			20.46	20.46	40.92
Average	58.76	48.80	50	40.95	42.85	41.37	26.26	5.43	5.43	7.37	16.87	27.52

**Table B.8.5.42**

### Summary of 1<sup>st</sup> YEAR PO Attainment:

Summary of 1 <sup>st</sup> YEAR PO Attainment												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Target Level %	50	50	50	50	50	50	50	50	50	50	50	50
Average % attainment of a I Yr courses	58.76	48.80	50	40.95	42.85	41.37	26.26	5.43	5.43	7.37	16.87	27.52
Attained , Y/N	Y	N	Y	N	N	N	N	N	N	N	N	N

**Table B.8.5.43**

### 8.5.2. Actions taken based on the results of evaluation of relevant POs and PSOs (10)

*Institutional Points=9*

Target set was 50% for all PO's of B.Tech. first year academics in consultation with faculty members & Dean Faculty (Engineering & Technology).

Po's	Target level	Attainment level	Observations
PO1: Engineering knowledge: Apply the knowledge of mathematics, including discrete mathematics, probability, statistics and fundamentals of various engineering disciplines like computer science and engineering, electronic engineering and electrical engineering in the core information technologies.			
PO 1	50%	58.76%	Target value is more than attainment level
Action: No action needed.			
PO2 Problem analysis: Analyze a problem and identify the computing requirements appropriate to its solution.			
PO 2	50%	48.80%	Target value is less than attainment level
Action: Students learning is enhanced by providing complex numerical problems in the field of science and engineering.			
PO3 Design/development of solutions: Design and implement hardware and software systems, components, process or program to meet the desired needs within reasonable economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability constraints.			
PO 3	50%	50%	Target value is equal to attainment level
Action: No action needed.			
PO4 Conduct investigations of complex problems: Reassess literature and indulge in research to use research based knowledge and methods to design and conduct new experiments, as well as to organize, analyze and interpret data to produce draw valid conclusions and recommendations.			
PO4	50%	40.95%	Target value is less than attainment level
Action: -- Faculty was instructed: 1. to make familiarise students for interpretation of data using latest research method. 2. To follow experimentation standard procedure and error is calculated for each. 3. Visit of R&D laboratories were planned.			

PO5 Modern Tool Usage: Use appropriate techniques, resources, and modern engineering and IT tools necessary for computer engineering practice.			
PO 5	50%	42.85%	Target value is less than attainment level
Action: Expert lectures from industry to be increased. Tour of industrial establishment to be conducted.			
PO6 The engineer and society: Show the understanding of local and global impact of computing on individuals, organizations and society.			
PO 6	50%	41.37%	Target value is less than attainment level
Action: A number of activities were planned for students. The students to participate/ conduct technical events, other events where their basic knowledge should convert to the application matching with professional engineering practice.			
PO7 Environment and sustainability: Integrate IT-based solutions in environmental contexts, and demonstrate the knowledge of need for sustainable development.			
PO 7	50%	26.26%	Target value is less than attainment level
Action1: Student learning to be enhanced by increased use of books related to environmental contexts. Action 2: Students were told to do innovation for its usefulness to society. They are required to work on projects from first rear.			
PO8 Ethics: Demonstrate the knowledge of professional and ethical responsibilities along with the norms of the engineering practice.			
PO 8	50%	5.43%	Target value is less than attainment level
Action: Faculty/ experts to familiarize about plagiarism and copyright rules.			
PO9 Individual and team work: Demonstrate leadership and an ability to work as a member with responsibility to function on multi-disciplinary teams to accomplish a common goal.			
PO 9	50%	5.43%	Target value is less than attainment level
Action: Students to be motivated to organize and participate in quiz contest and group participation in events. Motivate to do team work in projects.			
PO 10 Communication: Demonstrate effective communicate skills in both oral and written form with a range of audiences.			

PO 10	50%	7.37%	Target value is less than attainment level
Action: Student to do more practice for enhancing communication skill by organizing special coaching classes/ lecture from HR personnel.			
PO11: Project management and finance: Apply the knowledge and understanding of engineering and management principles to design, plan, budget and propose IT project for an identified need within a specific scope.			
PO 11	50%	16.87%	Target value is less than attainment level
Action: Faculty to conduct exercises / group activity regarding the management principles and managing projects.			
PO12: Life-long learning: Develop confidence to acquire new knowledge in the computing discipline and to engage in life-long learning.			
PO 12	50%	27.52%	Target value is less than attainment level
Action: To provide training of students in yoga and sports			

**Table B.8.5.44**

<b>CRITERIA 9</b>	<b>STUDENT SUPPORT SYSTEM</b>	<b>50</b>
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## **9. STUDENT SUPPORT SYSTEM (50)**

### **9.1 Mentoring system to help at individual level (5)**

The institute provides student support and mentoring system at department as well as institute level. At department level each year has one mentor or class coordinator who can help the students by discussing the issues (academics and personal) related to them. Class coordinator is also act as a counsellor for the same year students.

**The coordinators of Information Technology Department for various batches are as follows:**

<b>Sr.No.</b>	<b>Name of Course</b>	<b>Coordinator/mentor</b>
1.	B.Tech first year	Dr. Amit Kumar Pandey
2.	B.Tech Second year	Mr. Ashish Mishra
3.	B.Tech third year	Mr. Amit Kumar
4.	B.Tech Fourth year	Mr. Prince Rajpoot

At institute level mentoring of the students is done by different offices of institute i.e., office of Director of institution, Dean Student welfare (DSW), Training and placement cell, Student counsellor at department level. Following are some points of mentoring:

### **Career Guidance**

- To help students to chalk out academic and career roadmaps for themselves.

- To create awareness among the students about emerging professional trends and entrepreneurship and market needs etc.
- To provide guidance to the students on various options available for higher studies available in India and abroad.
- To help the students in the development of their strengths, sharpening their interests planning for a satisfying future.
- To provide guidance for personality development, positive attitude and inter-personal skills.
- To promote Value System and National Integration among students.

### **Pre-Placement Courses**

- Strengthen Industry-Institute Interaction.
- To prepare a comprehensive list of industries.
- To visit industries frequently to explore possibilities of student's recruitment through campus interviews
- To prepare list of students along with bio-data eligible for various interviews.
- To conduct workshops/programmes for students in areas like personality development, communication skills
- To help students to get vocational training in industries during vacation.
- To make facilities available for the smooth conduct of interviews by visiting industry personnel.

### **9.2 Feedback analysis and reward /corrective measures taken, if any**

**(10)**

The institution is proactive for continuous improvement. To achieve this, it follows a 360° feedback system from Students, Alumni Parents, Peer group and Industry. Student Feedback is very important

factor. For time being Offline Feedback system is available and students are asked to give their confidential feedback for theory as well as practical subjects taught to them at the end of the semester. The feedback of alumni Parents, Peer group and industry person is also recorded time to time to improve the methodology of teaching and learning.

### **9.3 Feedback on facilities (5)**

The feedback of the students is not limited to the scope of improving teaching learning process. It also involves taking feedback of students for the laboratories for up gradation of software, Internet facilities, Library resources etc. An exit survey is conducted for final year students (a copy of questionnaire attached) to gather their feedback for the various facilities provided to them in their four-year program. These changes are then genuinely incorporated.

### **9.4. Self-learning (5)**

- The institute is running Self-Learning programme through MOOCS (Massive Open Online Course).
- The Institute has access to various e-books, journals and magazines which are available in the Institute Library to help students to explore and read about their areas of interest.
- In addition, there is an access of high speed Internet in each hostel which helps them to be tech savvy and moreover a free thinker.
- This helps student to come up with new ideas and new techniques.
- Faculty from time to time change adopt new ways in the course to enhance self-learning such as:
  - Presentation of seminars,

- Industrial Training
- Projects
- Assignments
- Dissertation in some courses are compulsory as a part of their course requirements.

In addition, these practices are highly encouraged to make learning more student-centric. Performance in these activities gives an excellent opportunity to students to improve upon their knowledge level.

Technical fests, contests, debates, etc. are arranged and organized mostly by the students themselves so that student-centered learning exercises are developed both at the department and institute level. This improves the qualities such as leadership, decision making, self-learning from experience.

### **MOOC Courses**

The University has incorporated MOOCs courses in its curriculum from the session January 2018 onwards to promote Self Learning. These are online courses run on an IT platform known as SWAYAM, an initiative taken by Govt. of India.

### **Institute Library**

A well-equipped library, having an area of 1586 m<sup>2</sup>, stocks around 67,000 books and around 105 printed National and International journals as well as 5990 e-journals. Books and journals are added every year. The library provides open access to students and faculty for search of reading material and the library services are computerized besides Internet and reprographic facilities.

### **Subscribed e-resources**

Library is having access of following e-resources which are accessible on Institute's IP including Wi-Fi in Institute Campus. Library is also member of DELNET, AICTE-INDEST and UGC INFONET consortium.

List of e-resources are:

<b>Sr. No.</b>	<b>Name of e-resource</b>	<b>URL</b>
1.	Springer Link	<a href="http://link.springer.com">http://link.springer.com</a>
2.	Taylor & Francis Group	<a href="http://www.tandfonline.com">http://www.tandfonline.com</a>
3.	Open source journals of repute	<a href="http://www.....com">http://www.....com</a>
4.	JSTOR	<a href="http://www.jstor.org">http://www.jstor.org</a>
5.	Oxford University Press	<a href="http://www.oxfordjournals.org/">http://www.oxfordjournals.org/</a>
6.	ASME	<a href="http://asmedigitalcollection.asme.org">http://asmedigitalcollection.asme.org</a>
7.	Elsevier's Science Direct (Engineering and Computer Collection)	<a href="http://www.sciencedirect.com">http://www.sciencedirect.com</a>
8.	IEEE ASPP	<a href="http://ieeexplore.com">http://ieeexplore.com</a>
9.	McGraw-Hill Access Engineering	<a href="http://accessengineeringlibrary.com">http://accessengineeringlibrary.com</a>
10.	JGate	<a href="http://jgateplus.com">http://jgateplus.com</a>

## 9.5 Career Guidance, Training, Placement

(10)

In order to meet the counselling needs of engineers, the Institute has a separate Career & counselling cell which provides counselling to students in areas like stress management, positive thinking, preparation for various competitive exams and general guidance regarding career. The Institute runs regular communication skills programmes in all the undergraduate courses. The course is designed to provide expertise in written language. Language lab is functional for developing the soft skills among students.

### Students Counsellors:

All Non-first year Students	Dr. Devendra Pratap Mishra
Civil Engineering First Year	Mr. Ayush Mittal
Information Technology First Year	Mr. Ashish Kumar Mishra
Electrical Engineering First Year	Mr. Puneet Joshi

### TPO Cell of institute:

Training and placement officer (TPO)	Mr. Amit Kumar
<b>Departmental TPO:</b>	
Civil Engineering	Mr. Ayush Mittal
Electrical Engineering	Mr. Sonu Kumar
Information Technology	Mr. Shivendra Pandey

**Objective of career and counselling cell are as follows:**

- To create awareness among the students about entrepreneurship and emerging professional trends and market needs etc.
- To provide guidance to the students on various available options for higher studies in India and abroad.
- To help the students in the development of their strengths, sharpening their interests planning for a satisfying future.
- To provide guidance for personality development, positive attitude and inter-personal skills.
- To promote Value System and National Integration among students.

**Placement record:****Session 2014-15**

S.No.	Company Name	Selected Student
1	Wipro Technology	6
2	TCS	3
3	Infosys	1
4	Accenture	6
5	Amdocs	3
6	Mindtree	2
7	HCL Technologies	2
8	Westin Electromech	2
9	Allerin Technologies	2
10	Indian army	1

11	Optimus Information	2
12	Arise India Ltd	2
13	Login Works	1
14	UPPCL	2
	<b>Total</b>	<b>35</b>

### Session 2015-16

S.No.	Company Name	Selected Student
1	GATE Qualified	20
1	Wipro Technology	6
2	TCS	5
3	Infosys	1
4	Accenture	6
5	Mindtree	2
6	Nippon Data System	1
7	HCL Technologies	2
8	RR Infosolution	12
9	Westin Electromech	12
10	Allerin Technologies	2
11	Optimus Information	2
12	Arise India Ltd	2
13	Login Works	1
14	IBM India's solutions and services	1

15	I Gate	1
16	LANCO India	5
17	UPPCL	4
	<b>Total</b>	<b>85</b>

**Session 2016-17**

<b>S.No.</b>	<b>Company Name</b>	<b>Selected Student</b>
1.	GATE Qualified	30
2.	Wipro Technology	4
3.	CEBS Worldwide	3
4.	Padmapat	4
5.	TCS	1
6.	uCertify	2
7.	Nippon Data System	1
8.	RR Infosolution	7
9.	Pompeii Technology	33
10.	Login Works	1
11.	Freshersworld	8
12.	Jal Nigam	2
13.	UPPCL	2
14.	Glime India Technologies	5
15.	BSNL JTO	2
16.	BTPS	2
	<b>Total</b>	<b>107</b>

### 9.6. Entrepreneurship Cell

(5)

(The institution may describe the facility, its management and its effectiveness in encouraging entrepreneurship and incubation) (Success stories of each of the assessment years are to be mentioned)

### 9.7. Co-curricular and Extra-Curricular Activities

(10)

(The institution may specify the co-curricular and extra-curricular activities) (Quantify activities such as NCC, NSS etc.)

Apart from the academic, co-curricular and extracurricular activities, students are also take part in various fest coordinated and conducted by themselves under the able guidance of institute and faculty.

Events	Description	Date
CRADLE 2018	It was an event of tree plantation in college campus	27, April 2018
FEST EVENT AVIGHNA	Annual Fest ,Technical cultural cum ,sport fest	4,5,6,7 April 2018
ROBOTICS Workshop	It was a 2 day workshop where students were introduced to Robotics	September 2017
SEMINAR	Seminar for final year student on YOGA	November 2017
FEST EVENT KSHITIZ'17	National level sport fest	21,22,23 March 2017
TREASURO HUNT	Technical event	October 2016

**Composition of CSA Team:**

1.	Chairman CSA	Dr. Devendra Pratap Mishra
2.	Convenor of Sports Council	Mr. Ashish kumar Mishra
3.	Convenor of Literary Council	Dr. Sushant Chaturvedi
4.	Convenor of Cultural Council	Mr. Shivendra Kumar Pandey
5.	Convenor of Hobby Club	Mr. Amit Kumar Pandey
6.	Convenor of Photography and Fine Art Club	Mr. Sarad Verma

**List of events organised by different Councils:****Events of Sports Council:**

<b>Sr. No.</b>	<b>Name of event</b>	<b>Venue</b>
1.	Athletics	Eklavya Stadium
2.	Cricket	Eklavya Stadium
3.	Foot ball	BNKV College
4.	Table Tennis	Student Activity Center
5.	Chess	Student Activity Center

6.	Carom	Student Activity Center
7.	Badminton	Eklavya Stadium
8.	Volleyball	Volleyball Court
9.	Basketball	Basketball Court

### **Literary Council**

<b>Sr. No.</b>	<b>Name of event</b>	<b>Venue</b>
1.	Extempore (Hindi + English)	CSA Hall
2.	Poem (Hindi + English)	CSA Hall
3.	Dumb Charades	CSA Hall
4.	Vocabulary Quiz	CSA Hall
5.	Story Writing	CSA Hall
6.	Quiz	CSA Hall
7.	Philosophical Talk	CSA Hall

**Hobby Club:**

<b>Sr. No.</b>	<b>Name of event</b>	<b>Venue</b>
1.	Quiz	CSA Hall
2.	Balloon Pyramid + Balloon Race	Ground near Admin
3.	Arrow throw + Dare Dance + News Paper Reading, Writing	Ground near Admin
4.	Sack Race + Bath Tub + Mud Race + Clue Puzzle	Ground near Admin

**Photography and Fine Art Club:**

<b>Sr. No.</b>	<b>Name of event</b>	<b>Venue</b>
1.	Tattoo Making	Near CSA Hall
2.	Face Painting	Near CSA Hall
3.	Open Painting	Near CSA Hall
4.	T-Shirt Painting	Near CSA Hall
5.	Wall Painting	Near CSA Hall
6.	Charcoal Painting	Near CSA Hall
7.	Sketching	Near CSA Hall
8.	Rangoli Making	Near CSA Hall

**Achievement Outside the college:**

<b>S. No.</b>	<b>Name Of Event</b>	<b>Organised by</b>	<b>Prizes/Place</b>	<b>Students Name</b>	<b>Year</b>
1.	TVARAN 2018	KNIT Sultanpur	1st Prize	Saurabh Dubey	2018
2.	SPARDHA 2017	IIT BHU	3rd in Zonal and 5thin District	Nikhil Jain	2017
3.	UDGHOSH 2017	IIT Kanpur	1st Prize	Pranshu	2017
4.	EFFULGENCE 2017	KNIT Sultanpur	3st Prize	Saurabh Dubey	2017
5.	SPARDHA 2016	IIT BHU	1st Prize	Abhishek Sagar	2016
6.	APAROKSHA 2015	IIIT Allahabad	1st Prize	Moksh	2015
7.	SPARDHA 2015	IIT BHU	1st Prize		2015

<b>CRITERION 10</b>	<b>GOVERNANCE, INSTITUTIONAL SUPPORT AND FINANCIAL RESOURCES</b>	<b>120</b>
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## **10.1. Organization, Governance and Transparency (55)**

### **10.1.1. State the Vision and Mission of the Institute (5)**

#### **Vision**

To attain the global level of excellence in scientific and technical education, fostering research, innovation, leadership qualities and entrepreneurial attitude, contributing to the advancement of the society and mankind.

#### **Mission**

- To create an ambience for new idea, research, innovation and entrepreneurial attitude, with a high level of ethics, communication and leadership qualities.
- To enhance knowledge and skills of students in science, technology and human behavior that will serve the nation.
- To develop ability and passion to work wisely, creatively, and effectively in each member of college for the betterment of the mankind and all living beings.

### **10.1.2. Governing body, administrative setup, functions of various bodies, service rules, procedures, recruitment and promotional policies (10)**

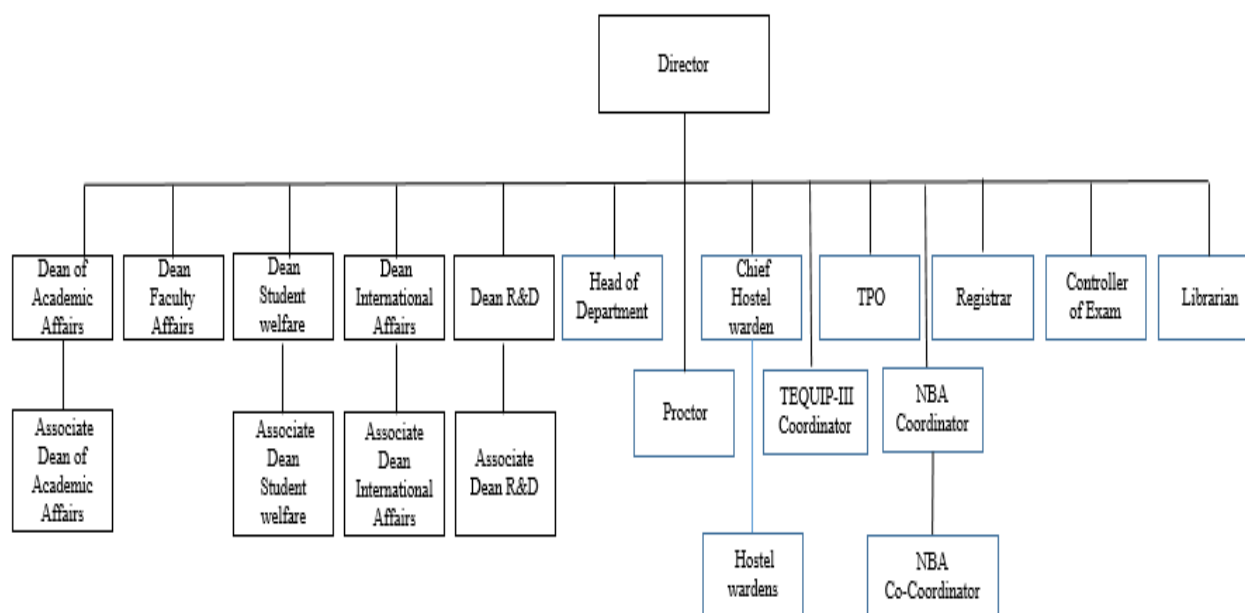
#### **Governing Bodies**

The members of the governing body of the society to which, by rule Bye-laws of the society, the management of its affairs is entrusted are:

1.	Minister Vocational and Technical Education, U.P.	Chairman
2.	Principal secretary/Secretary, Vocational and Technical Education Department, (U.P.)	Vice-Chairman
3.	Secretary, Finance Department, (U.P.)	Member
4.	Director, Indian institute of technology, Kanpur	Member
5.	Director, MNNIT Allahabad(U.P.)	Member
6.	Director, Technical Education, Uttar Pradesh, Kanpur	Member
7.	A nominee of the All India council for technical education.	Member
8.	One eminent technologist/engineer having specialization in the field advent to college to be nominated by Board.	Member
9.	Vice-Chancellor of the university to which the college is affiliated.	Member
10.	One professor to be nominated by the Board for one year by rotation in order of seniority.	Member
11.	Two eminent person in the field of technical education to be nominated by the state government.	Member

12.	One eminent person from industry to be nominated by the state government.	Member
13.	One representative from scheduled caste/scheduled tribe from amongst reputed teachers /educationist/industrialist nominated by the chairman, Governing Body.	Member
14.	One representative from other Backward class from reputed teacher/educationist /industrialist nominated by the chairman, Governing Body.	Member
15.	Principal of the college.	Member/Secretary

#### Administrative Set Up:



**10.1.3. Decentralization in working and grievance redressal mechanism****(5)**

List the names of the faculty members who have been delegated powers for taking administrative decisions. Mention details in respect of decentralization in working. Specify the mechanism and composition of grievance redressal cell including Anti Ragging Committee & Sexual Harassment Committee

<b>Sr. No.</b>	<b>Designation</b>	<b>Name</b>
1	Director	Dr. Akhilesh Kumar Mishra
2	Registrar	Dr. Vishal Singh Chandel
3	Account Officer	Sri Jagropan Ram
4	Head Of Department Electrical Engineering	Dr. S.P.Singh
5	Head Of Department Civil Engineering	Mr. Avaneesh Kumar Yadav
6	Head Of Department Information Technology	Dr. Sudhakar Tripathi
7	Head of Department Applied SC. & Hum. Department	Dr. Vishal Singh Chandel

8	Dean Academic Affairs	Dr. S.P.Singh
9	Associate Dean Academic Affairs	Mr. Amit Kumar Rai
10	Dean of Faculty Affairs	Dr. Vishal Singh Chandel
11	Dean of Student Welfare	Dr. Sudhakar Tripathi
12	Associate Dean of Student Welfare	Dr. Prabhudatt Dwivedi
13	Dean International Affairs	Dr. Sudhakar Tripathi
14	Associate Dean International Affairs	Dr. Sanjay Agrawal
15	IC. Training & Placement (Career Development)	Mr. Amit Kumar
16	Dean Research & Development	Dr. Sudhakar Tripathi
17	Associate Dean Research & Development	Dr. Amit Kumar Singh
18	Chief Vigilance Officer	Mr. Vikas Patel

19	IC. Maintenance	Mr. Vivekanand Singh
20	IC. Maintenance (Additional)	Ms. Shalini Verma
21	Chairman CSA	Dr. Devendra Pratap Mishra
22	Controller of Examination	Dr. Vishal Singh Chandel
23	IC. Library	Mrs. Poonam Singh
24	IC. Library (Additional)	Dr. Ashok Kumar Upadhyay
25	IC. Remedial Classes & Skill Development	Dr. Prabhudatt Dwivedi
26	IC. House Allotment Committee	Dr. Saurabh Srivastava
27	IC. Electrical Maintenance	Dr. Mohd. Aslam Husain
28	IC. Electrical Maintenance (Additional)	Mr. Ravindra Kumar
29	Addl. Controller of Examination	Mr. Manjeet Singh

30	Dy. Controller of Examination	Mr. Sharad Verma
31	O.C. Guest House	Mr. Prince Rajpoot
32	O.C. Class Rooms	Mr. Lokesh Kumar Yadav
33	O.C. Vehicle	Dr. Saurabh Srivastava
34	Public Information Officer	Registrar
35	Additional Public Information Officer	Mr. Ashok kumar Mishra
36	O.C. Central Store	Ms. Vaishali Rajbhar
37	O.C. Central Store (Additional)	Ms. Mamta Mishra
38	O.C. Security	Mr. Vikas Patel
39	O.C. Purchase	Mr. Amit Kumar
40	Coordinator TEQIP-III	Dr. Sanjay Agrawal

41	O.C. Procurement TEQIP-III	Mr. Puneet Joshi
42	I/C. Internet Operation & Maintenance	Mr. Shivendu Mishra & Mr. Akhilesh Kumar
43	Additional Officer I.C. Internet Operation & Maintenance	Mr. Yudhishtir Pandey
44	I/C. Website Hosting & Management	Mr. Ashish Kumar Mishra
45	Additional I/C. Website Hosting & Management	Mr. Shivendu Mishra
46	I/C. Horticulture & Upkeep of Campus	Mr. Avaneesh Kumar Yadav
47	Additional I/C. Horticulture & Upkeep of Campus	Mr. Shyam Ji
48	Equity Action Plan Coordinator	Mr. Anoop Kumar Verma
49	Start-up Coordinator	Mr. Vikas Patel & Mr. Sonu Kumar
50	Curriculum Reform Coordinator	Mr. Ayush Mittal

51	SAYAM & SWAYAM PRABHA Coordinator	Mr. Shivendu Mishra
52	Industry Institute Interaction Coordinator	Mr. Sharad Verma
53	<b>Faculty Coordinator</b>	
	Faculty Coordinator Placement	Mr. Amit Kumar
	Faculty Coordinator Training & Workshop	Mr. Nitin Kumar Shukla
	Faculty Coordinator Internship	Dr. Arif Iqbal
54	<b>Departmental Representatives for Career Development Cell</b>	
	Civil Engineering Department	Mr. Ayush Mittal
	Electrical Engineering Department	Mr. Sonu Kumar
	Information Technology Department	Mr. Shivendu Mishra
55	<b>Faculty Coordinator alumni affairs</b>	
		Mr. Amit Kumar Rai
		Ms. Mamta Mishra
	<b>I/C. Institute Industry Interaction Cell</b>	

56	Civil Engineering Department	Mrs. Poonam Singh & Mr. Majneet Singh
	Information Technology Department	Mr. Sharad Verma & Mr. Shohit Shukla
	Electrical Engineering Department	Mr. Vikas Patel & Mr. Sonu Kumar
57	<b>Officer I/C. Time Table</b>	
	<b>Departmental Representatives</b>	
	Applied Sc. & Hum. Department	Dr. Sushant Chaturvedi
	Civil Engineering Department	Ms. Vaishali Rajbhar
	Information Technology Department	Mr. Ramesh Chand Pandey
	Electrical Engineering Department	Mr. Sonu Kumar
58	<b>Chief Warden Boys</b>	Mr. Sohik Shukla
59	<b>Wardens Boys Hostels</b>	
	Ambedkar Hostel	Dr. Arif Iqbal
	Lohiya Hostel	Dr. Amit Kumar Singh
	Gandhi Hostel	Mr. Vikas Patel

<b>60</b>	<b>Chief Warden Girls</b>	Mrs. Deepa Verma
<b>61</b>	<b>Wardens A.S Girls Hostels</b>	Ms. Vaishali Rajbhar
		Mrs. Poonam Singh
		Ms. Mamta Mishra
<b>62</b>	<b>Conveners of the CSA</b>	
	Sports Council	Mr. Ashish Kumar Mishra
	Literary Council	Dr. Sushant Chaturvedi
	Cultural Council	Mr. Shivendra Kumar Pandey
	Hobby Club	Mr. Amit Kumar Pandey
	Photography & Fine Art Club	Mr. Sharad Verma
<b>63</b>	<b>Students Counsellors' for</b>	
	All Non-first year Students	Dr. Devendra Pratap Mishra
	Civil Engineering First Year	Mr. Ayush Mittal
	Information Technology First Year	Mr. Ashish Kumar Mishra
	Electrical Engineering First Year	Mr. Puneet Joshi

As per directive of the MHRD/AICTE for prevention of ragging in the Rajkiya Engineering College, Ambedkar Nagar Campus and hostel an anti-ragging committee has been constituted for the academic session 2017-18.

**An anti-ragging committee is formed with the following members:**

1.	Dr. Vishal Singh Chandel	Chairman
2.	Dr. S. P. Singh, dean Academic affairs	Convener
3.	Chairman, Council of student activities	Member
4.	Chief Proctor	Member
5.	Conveners of various student council	Member
6.	Mrs. Poonam Singh	Member
7.	Chief warden, ( Boys' and Girls' ) Hostel	Member

**An anti –Ragging squad is formed with following members:**

1.	Mr. Vikash Patel	Member
2.	Ms. Vaishali Rajbhar	Member
3.	Mr. Shivendra Kumar Pandey	Member
4.	Dr. Amit Kumar pandey	Member

**A faculty and staff grievance redressal cell has been constituted with following members for session 2017-18**

1.	Dr. Vishal Singh Chandel ( professor APSH)	Chairman
2.	Dr. Sudhakar Tripathi (Associate Prof. ITD)	Member
3.	Dr. S. P. Singh ( Associate Prof. EED )	Member
4.	Mr. Avaneesh Kumar Yadav ( Asst. Prof. CED)	Member
5.	Ms. Vaishali Rajbhar ( Asst. Prof. CED)	Member
6.	Mr. R.C. Prajapati ( Staff Representative)	Member

**A sexual harassment committee has been constituted with following member for session 2017-18**

1.	Mrs. Poonam Singh ( Asst. Prof. CED)	Chairman
2.	Ms. Vaishali Rajbhar ( Asst. Prof. CED)	Member
3.	Dr. Prabhudatt Dwivedi (Asst. Prof. APSH )	Member
4.	Dr. Mohd. Aslam Husain ( Asst. Prof. EED)	Member
5.	Mr. Anoop Kumar Verma ( Asst. Prof. CED)	Member

#### 10.1.4. Delegation of financial powers

(5)

Institution should explicitly mention financial powers delegated to the Principal, Heads of Departments and relevant in-charges. Demonstrate the utilization of financial powers for each of the assessment years.

##### **Purchase Committee:**

There shall be a Central Purchase Committee (herein after in this rule referred to as committee) which shall consist of:

(a)	The Principal	Chairman
(b)	Two senior member of the faculty to be nominated by the Board of Governors	Member
(c)	Head of the Indenting Department	Member
(d)	One member to be nominated by the Government	Member
(e)	Accounts Officer	Member
(f)	Registrar	Member/Secretary

There shall also be Departmental Purchase Committees consisting of the followings:

(a)	Head of the Concerned Department	Chairman
(b)	One senior member of concerned  Department to be nominated by the  Head.	Member
(c)	One member from other faculty to  be nominated by Principal	Member

- Purchase up to Rs.5000/- pertaining to a particular department would be made on the recommendation of the Departmental Purchase Committee.
- All purchases above Rs.15000/- would be made on recommendation of the Central Purchase Committee. The Government nominee's presence would be essential in the meetings of the Committee finalizing purchases amounting to Rs.10.00 lacs & above.
- Purchase procedures would be as per Government rules, and directives of the Government in this regard issued from time to time.

**10.1.5. Transparency and availability of correct/unambiguous information in public domain (5)**

(Information on policies, rules, processes and dissemination of this information to stakeholders is to be made available on the web site)

**10.2. Budget Allocation, Utilization, and Public Accounting at Institute level (15)**

Summary of current financial year's budget and actual expenditure incurred (for the institution exclusively) in the three previous financial years.

Total Income at Institute level: For CFY, CFYm1, CFYm2 & CFYm3

CFY: Current Financial Year – CFYm1 (Current Financial Year minus 1), CFYm2 (Current Financial Year minus 2), CFYm3 (Current Financial Year minus 3)

**AT INSTITUTE LEVEL**

Total Income at Institute level: For CFY, CFYm1, CFYm2 & CFYm3

CFY: Current Financial Year – CFYm1 (Current Financial Year minus 1), CFYm2 (Current Financial Year minus 2), CFYm3 (Current Financial Year minus 3)

**For CFY (2017-18)**

<b>Total income</b>				<b>Actual Expenditure</b>			<b>Total No. of students (750)</b>
<b>Fee (Lacs)</b>	<b>Govt. (Lacs)</b>	<b>Grants (Lacs)</b>	<b>Other Sources (Specify) (Lacs)</b>	<b>Recurring including salaries (Lacs)</b>	<b>Non-recurring (Lacs)</b>	<b>Special Projects/Any other specify (Lacs)</b>	<b>Expenditure per student (Lacs)</b>
325.59	312.76	-	427.95	316.60	-	-	

**For CFY (2016-17)**

<b>Total income</b>				<b>Actual Expenditure</b>			<b>Total No. of students (750)</b>
<b>Fee (Lacs)</b>	<b>Govt. (Lacs)</b>	<b>Grants (Lacs)</b>	<b>Other Sources (Specify) (Lacs)</b>	<b>Recurring including salaries (Lacs)</b>	<b>Non-recurring (Lacs)</b>	<b>Special Projects/Any other specify (Lacs)</b>	<b>Expenditure per student (Lacs)</b>
232.23	55	-	8.54	226.67	-	146.03	

**For CFY (2015-16)**

<b>Total income</b>				<b>Actual Expenditure</b>			<b>Total No. of students (750)</b>
<b>Fee (Lacs)</b>	<b>Govt. (Lacs)</b>	<b>Grants (Lacs)</b>	<b>Other Sources (Specify) (Lacs)</b>	<b>Recurring including salaries (Lacs)</b>	<b>Non-recurring (Lacs)</b>	<b>Special Projects/Any other specify (Lacs)</b>	<b>Expenditure per student (Lacs)</b>
273.01	50	-	8.75	128.63	-	297.72	

**For CFY (2014-15)**

<b>Total income</b>				<b>Actual Expenditure</b>			<b>Total No. of students (750)</b>
<b>Fee (Lacs)</b>	<b>Govt. (Lacs)</b>	<b>Grants (Lacs)</b>	<b>Other Sources (Specify) (Lacs)</b>	<b>Recurring including salaries (Lacs)</b>	<b>Non-recurring (Lacs)</b>	<b>Special Projects/Any other specify (Lacs)</b>	<b>Expenditure per student (Lacs)</b>
281.52	2.20	-	7.59	81.88	-	62.68	

<b>Items</b>	<b>Budgeted in 2017-18 (Lacs)</b>	<b>Actual expenses in 2017-18 (Till) (Lacs)</b>	<b>Budgeted in 2016-17 (Lacs)</b>	<b>Actual expenses in 2016-17 (Lacs)</b>	<b>Budgeted in 2015-16 (Lacs)</b>	<b>Actual expenses in 2015-16 (Lacs)</b>	<b>Budgeted in 2014-15 (Lacs)</b>	<b>Actual expenses in 2014-15 (Lacs)</b>
<b>Infrastructure Built-Up</b>	-	-	-	-	-	-	-	-
<b>Library</b>	25	0.238	25	21.80	10	10	6.21	6.21
<b>Laboratory equipment</b>	25	20.06	200	41.39	120	120	-	-
<b>Laboratory consumables</b>	6	4.72	5	0.462	3	2.77	-	-
<b>Teaching and Non-teaching staff salary</b>	544.88	316.60	590	226.76	190	129	81.88	81.88
<b>Maintenance and spares</b>	12	12	10.5	10.5	7	11.58	4.02	4.02
<b>Travel</b>	2	0.91	1.5	0.41	1.5	0.96	-	-
<b>Miscellaneous</b>	73.12	81.85	74.75	71.378	51.5	152.09	52.45	52.45
<b>Total</b>	688	435.66	906.75	372.70	383	426.4	144.56	144.56

**AT Departmental Level (IT Department)**

S.N	ITEM	2017-18		2016-17		2015-16	
		Proposed(RS)	Actual Cost(RS)	Proposed(RS)	Actual Cost(RS)	Proposed(RS)	Actual Cost(RS)
1	Laboratory Equipment		2995000.00		3900000.00		27108014.00
2	Software				2928792.00		1144365.00
3	Laboratory Consumables						
4	Maintenance and Spares						
5	Travel						
6	R&D						
7	Others (TA/Honarorium for invited experts /Events)						
	Total						

**10.2.1. Adequacy of budget allocation****(5)**

(The institute needs to justify that the budget allocated over the years was adequate)

The budget allocation and utilization in the Institute is a well-defined process wherein the account section of institute seeks the fund requirement from various departments of the Institute for the next financial year. These requirements are then summed up and total budget requirement is prepared at the central level. This demand is then sent to the state government for the allocation of the funds. The Institute has been receiving adequate funds to meet its expenses.

**10.2.2. Utilization of allocated funds****(5)**

(The institution needs to state how the budget was utilized during the last three years)

The funds are utilized as per Dr. A.P.J. Abdul Kalam Technical University (AKTU) rules. The budget allocation and utilization of the Institute for the past three years has been given in the above Tables.

**10.2.3. Availability of the audited statements on the institute's website****(5)**

(The institution needs to make audited statements available on its website)

**10.4. Library and Internet****(20)**

(Indicate whether zero deficiency report was received by the Institution for all the assessment years. Effective availability/purchase records and utilization of facilities/equipment etc. to be documented and demonstrated)

#### **10.4.1. Quality of learning resources (hard/soft**

**(10)**

Relevance of available learning resources including e-resources

Accessibility to students

Support to students for self-learning activities

#### **Central Library, R.E.C. Ambedkar Nagar:**

The Jairam Verma Central Library of Rajkiya Engineering College (REC) Ambedkar Nagar was established in 2010. The total area of the Library building is about 14338 Sq.ft. It stocks over 10 Thousand books. The Library has been computerised for circulation and search of books with Libris Software. The Institutional Repository is provided with digitized B.Tech. Dissertations and Question Papers etc. The Cyber room of Library has 25 Computers for open access of e-resources.

#### **Departmental Library:**

- Departmental Library of Civil Engineering
- Departmental Library of Electrical Engineering
- Departmental Library of Information Technology
- Departmental Library of Applied Science and Humanities
- Various computer systems with Wi-Fi facilities for internet and e-resources access.

#### **OPEN ACCESS JOURNALS**

Directory of Open Access Journals

<http://www.doaj.org>

Open j-gate Access

<http://www.openj-gate.com>

## **E-Lectures**

E-Lectures prepared by expert IITs and other eminent personalities on various topics are available in CD ROMs.

## **NISCAIR Research Journals:**

Annals of Library and Information Studies (ALIS) Full Articles

<http://www.niscair.res.in/sciencecommunication/researchjournals/rejour/annals/annals0.asp>

Bharatiya Vaigyanik evam Audyogik Anusandhan Patrika (BVAAP) Full Articles

<http://www.niscair.res.in/sciencecommunication/researchjournals/rejour/bvaap/bvaap0.asp>

Formerly Natural Product Radiance(NPR) Full Articles

<http://www.niscair.res.in/sciencecommunication/researchjournals/rejour/npr/npr0.asp>

Indian Journal of Biochemistry and Biophysics(IJBB) Full Articles

<http://www.niscair.res.in/sciencecommunication/researchjournals/rejour/ijbb/ijbb0.asp>

Indian Journal of Biotechnology (IJBT) Full Articles

<http://www.niscair.res.in/sciencecommunication/researchjournals/rejour/ijbt/ijbt0.asp>

Indian Journal of Chemistry, Sec A (IJC-A) Full Articles

<http://www.niscair.res.in/sciencecommunication/researchjournals/rejour/ijca/ijca0.asp>

Indian Journal of Chemistry, Sec B (IJC-B) Full Articles

<http://www.niscair.res.in/sciencecommunication/researchjournals/rejour/ijcb/ijcb0.asp>

Indian Journal of Chemical Technology (IJCT) Full Articles

<http://www.niscair.res.in/sciencecommunication/researchjournals/rejour/ijct/ijct0.asp>

Indian Journal of Engineering & Materials Sciences(IJEMS) Full Articles

<http://www.niscair.res.in/sciencecommunication/researchjournals/rejour/ijems/ijems0.asp>

Indian Journal of Experimental Biology (IJEB) Full Articles

<http://www.niscair.res.in/sciencecommunication/researchjournals/rejour/ijeb/ijeb0.asp>

Indian Journal of Fibre & Textile Research (IJFTR) Full Articles

<http://www.niscair.res.in/sciencecommunication/researchjournals/rejour/ijftr/ijftr0.asp>

Indian Journal of Marine Sciences (IJMS)Full Articles

<http://www.niscair.res.in/sciencecommunication/researchjournals/rejour/ijms/ijms0.asp>

Indian Journal of Natural Products and Resources (IJNPR) Full Articles

<http://www.niscair.res.in/sciencecommunication/researchjournals/rejour/npr/npr0.asp>

Indian Journal of Pure and Applied Physics (IJPAP) Full Articles

<http://www.niscair.res.in/sciencecommunication/researchjournals/rejour/ijpap/ijpap0.asp>

Indian Journal of Radio and Space Physics(IJRSP) Full Articles

<http://www.niscair.res.in/sciencecommunication/researchjournals/rejour/ijrsp/ijrsp0.asp>

Indian Journal of Traditional Knowledge(IJTK) Full Articles

<http://www.niscair.res.in/sciencecommunication/researchjournals/rejour/ijtk/ijtk0.asp>

## Journal of Intellectual Property Rights(JIPR) Full Articles

<http://www.niscair.res.in/sciencecommunication/researchjournals/rejour/jipr/jipr0.asp>

## Journal of Scientific and Industrial Research(JSIR) Full Articles

<http://www.niscair.res.in/sciencecommunication/researchjournals/rejour/jsir/jsir0.asp>

## Indian Academy of Sciences Journals

### **Pramana: Journal of Physics**

<http://www.ias.ac.in/pramana/>

### Journal of Chemical Sciences

<http://www.ias.ac.in/chemsci/index.html>

### Proceedings of the Indian Academy of Sciences

<http://www.ias.ac.in/mathsci/index.html>

### Journal of Earth System Science

[http://www.ias.ac.in/jess/index\\_body.html](http://www.ias.ac.in/jess/index_body.html)

### Sadhana (Proceedings in engineering sciences)

<http://www.ias.ac.in/sadhana/index.html>

### Journal of Astrophysics & Astronomy

<http://www.ias.ac.in/jaa/index.html>

### Resonance-Journal of Science Education

<http://www.ias.ac.in/resonance/>

### Bulletin of Materials Science

<http://www.ias.ac.in/maternalsci/>

### Journal of Genetics

<http://www.ias.ac.in/jgenet/>

### Journal of Biosciences

<http://www.ias.ac.in/jbiosci/>

### Current Science

<http://www.currentscience.ac.in/>

## Name of the Resource with URLs

### National Program on Technology Enhanced Learning (NPTEL)

<http://www.nptel.iitm.ac.in>

<http://nptel.iitk.ac.in>

<https://www.youtube.com/user/nptelhrd>

Talk to A Teacher: Accessible at: <http://co-learn.in/>

Spoken Tutorial: <http://www.spoken-tutorial.org/>

Coursera: <https://www.coursera.org/>

Khan Academy: <http://www.khanacademy.org/>

Open Courseware Consortium: <http://www.ocwconsortium.org/home.html>

Open Culture: <http://www.openculture.com/2007/07/freeonlinecourses.html>

Open Learn: <http://www.open.ac.uk/openlearn/home.php/>

Open Michigan: <https://open.umich.edu/>

Open Yale Courses: <http://oyc.yale.edu/>

Webcast.Berkley: <http://webcast.berkeley.edu/>

World Lecture project : <http://www.world-lecture-project.org/index.php?navId=1>

Courses for Higher Education: <https://www.edx.org/>

Lecture fox: <http://www.lecturefox.com>

MIT: <http://techtv.mit.edu>

<http://ocw.mit.edu>

<http://video.mit.edu>

Berkeley University: <http://ocw.uci.edu>

Princeton University: [www.princeton.edu/webmedia](http://www.princeton.edu/webmedia)

John Hopkings University: <http://ocw.jhsph.edu>

Rice University: <http://cnx.org>

Carnegie Mellon University: <http://www.cmu.edu/oli>

Tufts Open Courseware: <http://ocw.tufts.edu>

University of Notre Dame: <http://ocw.nd.edu>

Paris Tech Graduate School: <http://graduateschool.paristech.org>

Open University of Nederland: <http://ocw.tudelft.nl>

University of Southern Queensland : <http://ocw.usq.edu.au/>

United Nations University: <http://www.ocw.unu.edu>

OER Commons: [www.oercommons.org](http://www.oercommons.org)

Open learning object repository:(Merlot): [http://merlot.org/merlot/materials.htm? materialType= Learning%20Object%20Repo](http://merlot.org/merlot/materials.htm?materialType=Learning%20Object%20Repo)

Open textbooks: (Connexions): <http://cnx.org/>

Aggregated video: Academic Earth:<http://www.academicearth.org>

Mixed Media: Wikimedia: <http://en.wikipedia.org/wiki/Mixed>

University of Minnesota: (Open academics textbook catalog) : <http://open.umn.edu/opentextbooks/>

Open textbooks for K12: (Siyavula): <http://www.siyavula.com/>

Excel Tutorial: <http://www.excel-easy.com/>

## **Contemporary eBooks**

These collections for free e-books published a little more recently. There are thousands of contemporary books available in digital form to be found here. All are free to read and/or download.

**Free eBooks.net** :On this site, you can download thousands of free titles in every genre from biography to erotica. Newer and independent authors are featured which is a win-win for everyone: readers get free books, and budding authors gain exposure.

**Baen eBooks Free Library**: Baen eBooks is a company offering cross-platform ebooks in exchange for a membership fee. They have also made a number of titles available to read online or download in just about any format completely free through their online library.

**Get Free eBooks**: The site's name is pretty self-explanatory and, aside from the free eBooks, you can also find interesting articles and links to other eBook resources. This site is always publishing new lists of places to find free eBooks.

**eBook Lobby**: This site collection of eBooks that anyone read. There are several categories to choose from including children's books, self-help, cooking, and more.

**Bookyards**: Bookyards' motto is "Library to the World" and in keeping with that they work to provide as many free eBooks to as many people as possible. The site is entirely free, but one can make a donation via PayPal to help sustain their efforts.

## Specialty eBooks

These sites feature collections of free ebooks that are more specialized in nature.

**Librivox:** On Librivox, one can download audio-versions of public domain books for free. All titles are read by volunteers, and one can pay it forward by volunteering to read a chapter – or an entire novel – for the site.

**Free Computer Books:** This site focuses solely on eBooks in computer and tech-related categories. One can find guides and books about programming, mathematics, networking, design, and more – all for free.

**Online Programming Books:** For something a little more specific, look here for all kinds of books about nothing but programming. Software, website building, guides to programming languages.

**Free eBooks from Poem Hunter:** Find thousands of classic and contemporary poems on this page. All are available in PDF format and are free to use.

**ManyBooks.net:** Find classics, contemporary fare, reference books, and more here. All are free to download on any e-reader device. The site is run as a courtesy service by people who want to make literary works available to everyone.

**Accessibility to students**

Through digital library in main library and departmental library.

**Support to students for self-learning activities**

Opening of library beyond normal university hours.

Reading section in the library.

Availability of books beyond curriculum.

Availability of newspapers and magazines (both general and technical)

Reference Books

**10.4.2. Internet (10)**

Name of the Internet provider: BSNL

Available bandwidth: 100 Mbps

Wi Fi availability: Yes, 24 X 7

Internet access in labs, classrooms, library and offices of all Departments: Yes, through Wi-Fi and

Wired network

Security arrangements: Cyberoam Firewall.

### Declaration

I undertake that, the institution is well aware about the provisions in the NBA's accreditation manual concerned for this application, rules, regulations, notifications and NBA expert visit guidelines in force as on date and the institute shall fully abide by them.

It is submitted that information provided in this Self-Assessment Report is factually correct. I understand and agree that an appropriate disciplinary action against the Institute will be initiated by the NBA in case any false statement/information is observed during pre-visit, visit, post visit and subsequent to grant of accreditation.

**Date:** 13/06/2018

**Place:** REC Ambedkarnagar

(Dr. Akhilesh Kumar Mishra)

Director

Rajkiya Engineering College, Ambedkarnagar

Sd/-



## **ANNEXURE I:**

### **(A) PROGRAM OUTCOMES (POs)**

**Engineering Graduates will be able to:**

- 1. Engineering knowledge:** Apply the knowledge of mathematics, including discrete mathematics, probability, statistics and fundamentals of various engineering disciplines like computer science and engineering, electronic engineering and electrical engineering in the core information technologies.
- 2. Problem analysis:** Analyze a problem and identify the computing requirements appropriate to its solution.
- 3. Design/development of solutions:** Design and implement hardware and software systems, components, process or program to meet the desired needs within reasonable economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability constraints.
- 4. Conduct investigations of complex problems:** Reassess literature and indulge in research to use research based knowledge and methods to design and conduct new experiments, as well as to organize, analyze and interpret data to produce draw valid conclusions and recommendations.
- 5. Modern tool usage:** Use appropriate techniques, resources, and modern engineering and IT tools necessary for computer engineering practice.
- 6. The engineer and society:** Show the understanding of local and global impact of computing

on individuals, organizations and society.

- 7. Environment and sustainability:** Integrate IT-based solutions in environmental contexts, and demonstrate the knowledge of need for sustainable development.
- 8. Ethics:** Demonstrate the knowledge of professional and ethical responsibilities along with the norms of the engineering practice.
- 9. Individual and team work:** Demonstrate leadership and an ability to work as a member with responsibility to function on multi-disciplinary teams to accomplish a common goal.
- 10. Communication:** Demonstrate effective communicate skills in both oral and written form with a range of audiences.
- 11. Project management and finance:** Apply the knowledge and understanding of engineering and management principles to design, plan, budget and propose IT project for an identified need within a specific scope.
- 12. Life-long learning:** Develop confidence to acquire new knowledge in the computing discipline and to engage in life-long learning.

**(B) PROGRAM SPECIFIC OUTCOMES (PSOs)**

**PSO1:** Gain detailed Knowledge of various contemporary domains to identify research gaps and hence provide solutions by new ideas and innovations.

**PSO2:** Have strong skills in learning new programming environments as it is used to automate things and simplify real world problems and human efforts.