



**SELF ASSESSMENT REPORT (SAR) FORMAT  
UNDERGRADUATE ENGINEERING PROGRAMS (TIER-I)**

**B.Tech. in Electrical Engineering**

**FIRST TIME ACCREDITATION**

**Department of Electrical Engineering**  
Faculty of Engineering  
Dayalbagh Educational Institute  
(Deemed University)  
Dayalbagh, Agra - 282005

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## PART A: Institutional Information

**1. Name and Address of the Institution:**

**FACULTY OF ENGINEERING**

**DAYALBAGH EDUCATIONAL INSTITUTE**

**DAYALBAGH, AGRA-282005, UTTAR PRADESH**

**INDIA**

**2. Name and Address of the Affiliating University:**

**DAYALBAGH EDUCATIONAL INSTITUTE (DEEMED TO BE A UNIVERSITY)**

**DAYALBAGH, AGRA-282005, UTTAR PRADESH**

**INDIA**

**3. 3. Year of establishment of the Institution: 1950**

**4. Type of the Institution:**

Institute of National  
Importance

☐

University

☐

**Deemed University**

☒

Autonomous

☐

Any other (Please specify)

☐

**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:**

**NOT APPLICABLE**

Name of the Institution(s)	Year of Establishment	Programs of Study	Location

**Table A.6**

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

S. No.	Program Name	Name of the Department	Year of Start	Intake	Increase/Decrease in intake, if any	Year of Increase/Decrease	AICTE Approval	Accreditation Status*
1	B. Tech. (Civil Engineering)	Civil Engineering	2013	60	NIL	NA	2013	Not Eligible, Applying in 2019-2020
2	B. Tech. (Electrical Engineering)	Electrical Engineering	1950	60	Yes	2011	1994	Applying 2018-19
3	B. Tech. (Footwear technology)	Footwear Technology	2014	60	NIL	NA	2014	Not Eligible
4	B. Tech. (Mechanical Engineering)	Mechanical Engineering	1950	60	Yes	2011	1994	Applying 2018-19
5	M. Tech. Full Time (Engineering Systems)	Electrical/ Mechanical Engineering	1992	30	Yes	2014	2014	Eligible, Not Applied
6	M. Tech. Part Time (Engineering Systems)	Electrical/Mechanical Engineering	1992	13	NIL	NA	1992	Eligible, Not Applied
7	B. Tech. Part Time (Electrical Engineering)	Electrical Engg.	2014	60	NIL	NA	2014	Not Eligible

**Table A.7 \* Write applicable one:**

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

S. No.	Program Name
1	B. Tech. (ELECTRICAL ENGINEERING)
2	B. Tech. ( MECHANICAL ENGINEERING)

**Table A.8**

**9. Total number of employees:**

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

Items		CAY		CAYm1		CAYm2	
		Min	Max	Min	Max	Min	Max
Faculty in Engineering	M	31	33	31	33	32	34
	F	2	2	2	2	1	1
Faculty in Maths, Science & Humanities teaching in engineering Programs	M	24	24	24	24	25	25
	F	26	26	26	26	25	26
Non-teaching staff	M	54	56	54	56	53	56
	F	1	1	1	1	1	1

**Table A.9a**

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

Items		CAY		CAYm1		CAYm2	
		Min	Max	Min	Max	Min	Max
Faculty in Engineering	M	7	9	1	3	3	5
	F	0	0	0	0	0	0
Faculty in Maths, Science & Humanities teaching in engineering Programs	M	3	3	2	2	3	0
	F	6	6	5	5	0	4
Non-teaching staff	M	5	17	5	17	7	8
	F	0	0	0	0	0	0

**Table A.9b 10.**

**Total number of Engineering Students: UG**

Item	CAY (2018-19)	CAYm1 (2017-18)	CAYm2 (2016-17)
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Total no. of boys	616	687	655
Total no. of girls	323	315	256
Total no. of students	939	1002	911

**Table A.10.1**

**Total number of Engineering Students: PG**

Item	CAY (2018-19)	CAYm1 (2017-18)	CAYm2 (2016-17)
Total no. of boys	72	69	51
Total no. of girls	15	10	10
Total no. of students	87	79	61

**Table A.10.2**

**Total number of Engineering Students: Ph.D.**

Item	CAY (2018-19)	CAYm1 (2017-18)	CAYm2 (2016-17)
Total no. of boys	33	35	34
Total no. of girls	1	1	1
Total no. of students	34	36	35

**Table A.10.3**

**11. Vision of the Institution:**

To provide education, more education, education made perfect, which is the only “panacea for our country’s ills and evils.” DEI aims to serve as an exemplary model of education, covering the entire spectrum of knowledge and wisdom, to selflessly serve mankind by evolving a race of supermen, who possess the virtues to resolve the grave global challenges and establish a more humane and enlightened society.

**12. Mission of the Institution:**

The mission objective of DEI is to provide value-based, comprehensive and inter-disciplinary education to evolve a ‘*complete person*’, i.e., a well-rounded total quality person, whose hallmarks are intellectual strength, emotional maturity, truthfulness, simple living, high moral character, scientific temper, general awareness, interdisciplinary outlook and one who discharges duties and obligations and is capable of giving a fuller response to social and environmental challenges.

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

- i. Name: Prof. Prem Kumar Kalra**  
Designation: Director, Dayalbagh Educational Institute  
Mobile No.: 9458553555  
Email id: [deidirector@dei.ac.in](mailto:deidirector@dei.ac.in)
- ii. Name: Prof. K. Hansraj**  
Designation: Dean, Faculty of Engineering, Dayalbagh Educational Institute  
Mobile No.: 9358877956  
Email id: [hansraj@dei.ac.in](mailto:hansraj@dei.ac.in)
- iii. NBA Coordinator Name: Prof. Ajay Kumar Saxena**  
Designation: Professor and Head, Electrical Engineering,  
Faculty of Engineering, Dayalbagh Educational Institute  
Mobile No.: 9412559851  
Email id: [ajay.saxena@dei.ac.in](mailto:ajay.saxena@dei.ac.in)

## PART B: Criteria Summary

Name of the program **B.Tech. Electrical Engineering**

Criteria No.	Criteria	Mark/ Weightage
<b>Program Level Criteria</b>		
1.	Vision, Mission and Program Educational Objectives	50
2.	Program Curriculum and Teaching –Learning Processes	100
3.	Course Outcomes and Program Outcomes	175
4.	Students’ Performance	100
5.	Faculty Information and Contributions	200
6.	Facilities and Technical Support	80
7.	Continuous Improvement	75
<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>	<b>1000</b>



<b>CRITERION 1</b>	<b>Vision, Mission and Program Educational Objectives</b>	<b>50</b>
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### **1.1. State the Vision and Mission of the Department and Institute (5)**

#### **Vision of the Institute**

To provide education, more education, education made perfect, which is the only “panacea for our country’s ills and evils”. DEI aims to serve as an exemplary model of education, covering the entire spectrum of knowledge and wisdom, to selflessly serve mankind by evolving a race of supermen, who possess the virtues to resolve the grave global challenges and establish a more humane and enlightened society.

#### **Mission of the Institute**

The mission objective of DEI is to provide value-based, comprehensive and inter-disciplinary education to evolve a ‘complete person’, i.e., a well-rounded total quality person, whose hallmarks are intellectual strength, emotional maturity, truthfulness, simple living, high moral character, scientific temper, general awareness, interdisciplinary outlook and one who discharges duties and obligations and is capable of giving a fuller response to social and environmental challenges.

#### **Vision of the Department**

To be among top Electrical Engineering Departments of the country known for excellence in teaching and research in Electrical Engineering with due emphasis on relevance to contemporary societal needs

#### **Mission of the Department**

##### **M1: Academic Excellence**

To develop outstanding engineers well versed in the theory and practice of electrical engineering discipline.

##### **M2: Systems Approach and Total Quality Management**

To follow a holistic approach based on excellence, initiative, creativity and innovation that ensures competence in electrical engineering with specialization in emerging areas.

##### **M3: Social Responsibility & Sustainable Development**

To contribute to National Development by meeting the needs of the society and industry, empowering weaker and underprivileged sections, and to build economy through research and frugal innovation, anchored in the principle of achieving more with less.

##### **M4: Ethics & Values**

To uphold the highest ethical standards, inculcate values, create willingness and capacity to work with one’s hands, promote respect for dignity of labour and a spirit of self-sacrifice to serve humanity.

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

### **Program Educational Objectives**

**PEO1.** To provide a solid foundation in Basic Sciences, analytical skills and engineering fundamentals required to succeed in engineering field and also to pursue higher research endeavours.

**PEO2.** To provide broad-based exposure to the state of the art in Electrical Engineering discipline and make the students industry ready.

**PEO3.** To prepare students to respond to societal needs through an understanding of the Rural ethos, Indian Culture and plurality of ethnic and religious communities in the country at large.

**PEO4.** To train students with good scientific and practical engineering application skills to comprehend, analyse, design and create novel engineering products.

**PEO5.** To encourage students to develop lifelong learning skills, entrepreneurship abilities and ethical values for a successful professional career.

## **1.3. Indicate where the Vision, Mission and PEOs are published and disseminated among stakeholders (15)**

The Mission and Vision are published at:

- Department website [http://www.dei.ac.in/Electrical\\_Engineering](http://www.dei.ac.in/Electrical_Engineering)
- Institute website <http://www.dei.ac.in>
- Institute Prospectus
- Faculty Notice Boards
- Class Rooms
- Faculty Library
- Dean's Office
- Curriculum Book
- Common Places in the Faculty
- Head of the Department Chamber
- Laboratories

Apart from the above, these are also disseminated to all the stakeholders of the programs through faculty meetings, student's awareness workshops, student induction programs, and parent-teacher meetings etc.

#### 1.4. State the process for defining the Vision and Mission of the Department, and PEOs of the program (15)

The vision and mission of the department and the PEOs of the program are defined by taking the views of various stakeholders associated with the Institute/Department, latest developments, future scope and needs of the society.

##### Process for Defining Vision and Mission of the Department:

A Committee at Institute-faculty-department level is formed for identification, implementation and review of Vision and Mission statements in consistency with the vision and mission statements of the institute. Various bodies like ACE (Advisory Committee on Education, AAAC (Academic and Administrative Audit Committee) are formed to advice in various matters. In departmental meetings, departmental Vision and Mission statements are reviewed by specifically considering the latest trends, industry demand etc. The proposed Vision and Mission statements are also circulated to the Alumni, Employer, Faculty and Parents and their feedback is taken. After taking into consideration of the feedback received, the Program Advisory Committee prepares draft Vision and Mission statements which are discussed and brainstormed in a meeting consisting of the entire faculty. The statements are then finalized.

#### 1.5. Establish consistency of PEOs with Mission of the Department (10)

*(Generate a "Mission of the Department – PEOs matrix" with justification and rationale of the mapping)*

PEO Statements	M1	M2	M3	M4	Justification
<b>PEO1:</b> To provide a solid foundation in Basic Sciences, analytical skills and engineering fundamentals required to succeed in engineering field and also to pursue higher research endeavours.	3	3	2	1	Requires strong correlation with academic excellence with TQM in teaching-learning process
<b>PEO2:</b> To provide broad-based exposure to the state of the art in Electrical Engineering	3	3	3	1	Focus on application of knowledge towards sustainable national

discipline and make the students industry ready.					development
<b>PEO3:</b> To prepare students to respond to societal needs through an understanding of the Rural ethos, Indian Culture and plurality of ethnic and religious communities in the country at large.	1	1	3	3	Emphasis on development of all-round personality of students by bringing about physical, intellectual, emotional and ethical integration with basic values of humanism, secularism and democracy, and make them capable of giving a fuller response to social and environmental challenges.
<b>PEO4:</b> To train students with good scientific and practical engineering application skills to comprehend, analyze, design and create novel engineering products.	3	3	3	2	Inculcating a scientific temper and to train a person in practical science and technology to make him better suited to the increasingly technologically oriented environment; to create willingness and capacity to work with one's hands, which would promote a respect for 'soiled hands' and the dignity of labour and a spirit of self-reliance.
<b>PEO5:</b> To encourage students to develop lifelong learning skills, entrepreneurship abilities and ethical values for a successful professional career.	1	1	3	3	Engendering professional ethics & human values, creating willingness and capacity to work with one's hands, promoting respect for dignity of labour and a spirit of self-sacrifice to serve humanity.

**Table B.1.5 Mission of the Department – PEOs matrix**

**Note:** M1, M2. . . Mn are distinct elements of Mission statement. 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 “-”*

*Note: Wherever the word “process” is used in this document its meaning is process formulation, notification to all the concerned, and implementation*

<b>CRITERION 2</b>	<b>Program Curriculum and Teaching –Learning Processes</b>	<b>100</b>
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## **2.1. Program Curriculum (30)**

### **2.1.1. State the process for designing the program curriculum (10)**

An extensive multi-step process has been put in place for the design of program curriculum to ensure that the curriculum is continuously updated and stays in sync with the fast paced changes in the industry requirements. The various Institute Bodies and mechanisms that have integrated to this end are as follows.

#### **Feedback processes**

- (i) The Department has a Proctorial System wherein every class has a Class Proctor and elected representative's viz., Class Captain, Vice-Captain and every batch (smaller subgroups in a class) has a Prefect and an Assistant Prefect. Feedback is taken from the students in Proctorial meetings.
- (ii) Parent Teachers meetings are held every year for obtaining feedback from the parents. The Institute observes January 31 every year as an Open Day wherein the portals of the Institute are thrown open to the public at large. Parents are encouraged to come and see all the Laboratories, facilities and meet the Faculty members to give their feedback.
- (iii) There is a very strong Alumni Network that meets in various places in the country. Faculty members attend these meetings to obtain feedback regarding the latest industry trends and need for curriculum changes.
- (iv) Every year a batch of students that graduated 25 years ago visits the Institute for its Silver Jubilee reunion as a tradition. Feedback is obtained from them regarding industry trends.
- (v) There is an External Exam component in every course wherein the paper is set by an Examiner from outside the Institute. This evaluation is completely transparent to the Department and is handled at the Institute level. The Examiner is requested to provide Question wise performance report and also overall report of the performance of the students in the course. These are shared with the Departments and any significant feedback is analyzed for curriculum enhancement and corrective measures.
- (vi) The Academic and Administrative Audit Committee of the Institute that has a large number of external members including both academicians and industry personnel meets the students every year for their inputs and suggestions regarding the Curriculum contents and delivery. The report is sent to the Departments and discussed in a meeting of all the faculty members with the AAAC.
- (vii) At the apex level, guidelines are provided by the Advisory Committee on Education that is a think tank for suggesting inter alia measures for enhancing the quality of the education in the Institute. It consists of Faculty members, and eminent academicians and persons from industry. Invited members also include eminent academicians from Universities in Germany, Japan, US etc.
- (viii) Feedback is obtained from the Industry mentors who mentor the students in their compulsory Co-op training that is for a period of five months at the end of the 3<sup>rd</sup> year. This is very useful as the students typically work on live projects in the industry and the industry has sufficient time to observe any points of concern (five months). This feedback is, therefore, very helpful.

**Curriculum Update Processes that receive inputs from the above feedback mechanisms and act thereupon**

- (i) The Department invites proposals from the Faculty members for Curriculum changes and introduction of new courses in the Month of January every year. These are discussed in the Department meeting as a preparation for the Department Board of Studies to be held in February. The BoS also considers the feedback obtained from various sources for curriculum update.
- (ii) Every Department has a Board of Studies that consists of the HoD, all the Professors in the Department, two other Faculty members of the Department by rotation and three or more external members from outside the Institute including both Academicians and Industry Experts. The BoS meets for a full – day meeting every year in the month of February as a calendar event to consider the proposals already prepared in (i) as above.
- (iii) The proposals that are cleared by the Department Board of Studies are discussed in the Faculty Board of Studies meeting held after the Departmental BoS every year. The Faculty Board of Studies consists of the Dean, HoD, Professors in each Department, two other Faculty members of each Department by rotation and three or more external members from outside the Institute including both Academicians and Industry Experts.
- (iv) The proposals that are cleared both by the Departmental BoS and the Faculty BoS are discussed in the meeting of the Institute Academic Council in March / April every year. The Institute Academic Council consists of Director of the Institute, Registrar, Controller Examinations, All HoDs, and external experts from Academics as well as Industry. The proposals that are cleared by the Academic Council are implemented from the next session that starts in July every year.
- (v) In case there are some proposals that arise from the Departments / Faculties that need urgent consideration there is provision for creation of the Standing Committee of the Academic Council at the Institute level that considers them. The proposals that are approved by the Standing Committee are then sent for ratification by the Academic Council.

The above process is followed every year for keeping the curriculum updated. However, periodically, there are major revisions that are carried out. These major overhauls are done only after extensive one or two day workshops with external experts from the industry and academia. Details of the last workshop are as follows.

Sl. No.	Topic of the Workshop / Seminar	Organized by	Date
1	Curriculum development workshop	Prof. A.K. Saxena	2018
2	Curriculum development workshop	Prof. A.K. Saxena	21 & 22-11-2016
3	Curriculum Development workshop	Prof. Bhagwan Das	24 to 26-10-2016
4	Curriculum Development of B.Voc.RE	Dr. Gaurav Pratap Rana	18-08-2015
5	Physics curriculum Redesign - Workshop	Dr. Shrioman Prakash	19-12-2014 & 20-12-2014

### 2.1.2. Structure of the Curriculum

**Notation used:** Lecture (L), Tutorial (T), Practical (P), Seminar (S)

Course Code	Course Title	Total number of contact hours					Credits
		L	T	P	S	Total Hours	
CHM181	Applied Chemistry	3	0	0	0	3	3
PHM181	Applied Physics 1	3	0	0	0	3	3
MEM101	Graphics Science	3	0	0	0	3	3
MEM102	Engineering Drawing 1	0	0	7	0	7	3
MEM103	Manufacturing Process 1	3	0	0	0	3	3
MAM181	Engineering Mathematics 1	3	0	0	0	3	3
MEM104	Workshop Practice 1	3	0	3	0	6	1.5
RDC181	Agricultural Operation 1	1	0	2	0	3	1.5
RDC182	Social Service	0	0	2	0	2	1
GKC181	G. K. and Current Affairs1	1	0	0	0	1	1
<b>Total</b>		<b>20</b>	<b>0</b>	<b>14</b>	<b>0</b>	<b>34</b>	<b>23</b>

Course Code	Course Title	Total number of contact hours					Credits
		L	T	P	S	Total	
PHM281	Applied Physics II	3	1	0	0	4	3
PHM282	Applied Physics Lab.	3	1	0	0	4	1
EEM201	Computer Concepts& C Programming	3	0	0	0	3	3
EEM202	Basic Electrical Engineering	3	1	0	0	4	3
MEM201	Engineering Thermodynamics	3	1	0	0	4	3
MEM202	Engineering Mechanics I	3	1	0	0	4	3
MEM203	Engineering Drawing II	0	0	3	0	3	3
MEM204	Workshop Practice II	0	0	3	0	3	1.5
MAM281	Engineering Mathematics II	3	0	0	0	3	3
EGC281	Industrial Visits	0	0	0	0	0	1
GKC281	Sc.Meth., G.K.& Current Affairs II	1	0	0	1	2	1
RDC281	Agricultural Operations II	0	0	2	0	2	1
RDC282	Social Service	2	0	0	0	2	1
CAC281	Co-curricular Activities	0	0	2	0	2	1
<b>Total</b>		<b>24</b>	<b>5</b>	<b>10</b>	<b>1</b>	<b>40</b>	<b>28.5</b>

Course Code	Course Title	Total number of contact hours					Credits
		L	T	P	S	Total	
ENH281	English II	3	0	0	0	3	2.5
HSH281	Household Management	3	0	0	0	3	2.5
MUH281	Sangeet Kriyatmak II	0	0	3	0	3	2.5
SYH281	Sociology of Science	3	0	0	0	3	2.5
ABH281	Principles of Economics	4	0	0	0	4	3
BBH281	Business Organisation	4	0	0	0	4	3
OMH201	Communication Techniques Hindi II	3	0	0	0	3	3
ZOH281	Basics Of Neuroscience	3	0	0	0	3	3
<b>Total</b>		<b>23</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>26</b>	<b>22</b>

Course Code	Course Title	Total number of contact hours					Credits
		L	T	P	S	Total	
EEM301	Basic Electronics	3	1	0	0	4	3
EEM302	Basic Electronics Lab.	0	0	2	0	2	1
EEM303	Data Structures	3	0	0	0	3	3
EEM304	C Programming Lab.	0	0	1	0	1	0.5
EEM305	Signals and Systems	3	1	0	0	4	3
MEM301	Engineering Mechanics II	3	1	0	0	4	3
MEM307	Mechanics Of Solids And Fluids	3	1	0	0	4	3
MEM308	Material Testing & Fluids Lab.	0	0	2	0	2	1
MEM310	Thermal Engineering Lab.	0	0	2	0	2	1.5
MAM381	Engineering Mathematics III	4	0	0	0	4	3
ENH381	English III	3	0	0	0	3	3
EGC381	Product Manufacturing Project	0	0	3	0	3	1.5
EGC382	Practical Training	0	0	0	0	0	2
<b>Total</b>		<b>22</b>	<b>4</b>	<b>10</b>	<b>0</b>	<b>36</b>	<b>28.5</b>



DD Code	Course Title	Total number of contact hours					Credits
		L	T	P	S	Total	
EEM401	Electrical Measurements	3	0	0	0	3	3
EEM402	Electrical Measurements Lab	0	0	1	0	1	0.5
EEM403	Network Analysis & Synthesis	3	0	0	0	3	3
EEM404	Electronics& Signal Processing Lab	0	0	3	0	3	1.5
EEM405	Electrical Machines I	3	1	0	0	4	3
EEM406	Electrical Machines Lab	0	0	3	0	3	1.5
EEM407	Electronic Devices & Circuits	3	1	0	0	4	3
MEM401	Instrumentation	3	1	0	0	4	3
MAM481	Engineering Mathematics IV	3	0	0	0	3	3
ENH481	English IV	3	0	0	0	3	2.5
EGC481	Industrial Visits	0	0	0	0	0	1
GKC481	Sc.Meth.,G.K.&Current Affairs IV	1	0	0	0	1	1
CAC481	Co-Curricular Activities	2	0	0	0	2	3
Total		24	3	7	0	34	29

Course Code	CourseTitle	Total number of contact hours					Credits
		L	T	P	S	Total	
Work Experience Course (On A Chosen Subject)							
ASW401	Metallurgical Analysis	0	0	2	0	2	2
DPW481	Commercial Art	0	0	4	0	4	2
EEW401	Radio & Television Repair	0	0	4	0	4	2
EEW402	Repair Of Electrical Equipment	0	0	4	0	4	2
EEW403	Printing Techniques	0	0	4	0	4	2
EEW404	Micro Controllers&IoT	0	0	4	0	4	2
MEW401	Automobile Engineering	0	0	4	0	4	2
MEW402	Photography	0	0	4	0	4	2
MEW403	Refrigeration& Air Conditioning	0	0	4	0	4	2
MEW404	Furniture Design & Manufacturing	0	0	4	0	4	2
Total		0	0	38	0	38	20

Course Code	Course Title	Total number of contact hours					Credits
		L	T	P	S	Total	
EEM501	Linear Control Engineering	3	1	0	0	4	3
EEM502	Control Engineering Lab.	0	0	0	0	0	1.5
EEM505	Analog Electronics	3	1	0	0	4	3
EEM506	Digital Systems	3	1	0	0	4	3
MAM581	Discrete Mathematics					0	3
PYH581	Industrial Psychology	2	0	0	0	2	2
EGC581	Design Engg./ Theme Develop. Project	0	0	3	0	3	1.5

EGC582	Practical Training	2	1	0	0	3	2
CRC581	Comparative Study Of Religions					0	2
GKC581	Sc. Meth., G.K. & Current Affairs II	1	0	0	1	2	1
RDC581	Agricultural Engineering	3	0	0	0	3	2.5
	<b>Mainstream Electrical</b>						
EEM503	Electrical Machines II	3	1	0	0	4	3
EEM504	Electrical Machines Lab.	0	0	2	0	2	1
	<b>Electronics Specialisation</b>						
EEM511	Analog ICs & Systems	3	1	0	0	4	3
EEM512	Analog ICs & Systems Lab	0	0	2	0	2	1
	<b>Computer Science Specialisation</b>						
EEM513	Computer Architecture	4	1	0	0	5	3
EEM514	Advanced Programming Lab	0	0	2	0	2	1
Total		36.5	7	9	1	44	36.5

Course Code	Course Title	Total number of contact hours					Credits
		L	T	P	S	Total	
ASM601	Electrical Engineering Materials	4	1	0	0	5	3
EEM601	Microprocessors & Microcontrollers	4	1	0	0	5	3
EEM602	Microprocessors Lab	0	0	0	3	0	1.5
EEM603	Power Systems I	3	1	0	0	4	3
EEM604	Applied Systems Engineering	3	1	0	0	4	3
EEM609	Stream Seminar	0	0	0	2	2	1
MAM681	Advanced Optimization Techniques	4	0	0	0	4	3
EGC681	Design Engg./Theme Develop. Project	0	0	3	0	3	1.5
RDC681	Village Industries & Entrepreneurship	2	1	0	0	3	2
CEC681	Cultural Education	2	1	0	0	3	2
CAC681	Co-Curricular Activities					0	3
	<b>Mainstream Electrical</b>					0	
EEM605	Power Electronics	3	0	0	0	3	3
EEM606	Power Electronics Lab	0	0	3	0	3	1.5
	<b>Electronics Specialisation</b>						
EEM605	Power Electronics	3	0	0	0	3	3
EEM606	Power Electronics Lab	0	0	3	0	3	1.5
	<b>Computer Science Specialisation</b>						
EEM611	Design & Analysis Of Algorithms	3	0	0	0	3	3
EEM612	Computer Science Lab	0	0	3	0	3	1.5
Total		31	6	12	5	51	39.5

<b>B.TECH. (ELECTRICAL) SEVENTH SEMESTER (2017-18)</b>							
<b>Core courses common to all the three streams:</b>							
<b>Course Code</b>	<b>Course Title</b>	<b>Total number of contact hours</b>					<b>Credits</b>
		<b>L</b>	<b>T</b>	<b>P</b>	<b>S</b>	<b>Total</b>	
EEM703	Communication Engineering	3	1	0	0	4	3
EEM704	Computer Technology Lab.	0	0	3	0	3	2
EEM705	Electrical Engineering Project I	3	0	0	0	3	3
MEM708	Managerial Eco. & Industrial Organ.	3	1	0	0	4	3
EGC781	Co-Op Training					0	4
GKC781	Sc. Meth., G.K. & Current Affairs Iii	1	0	0	0	1	1
RDC781	Rural Engineering Project	0	0	2	0	2	1
<b>Stream-Wise Optional Courses Any One Of The Following To Be Opted:</b>							
<b>Mainstream Electrical</b>							
*EEM715	Computer Methods In Power Systems	3	0	0	0	3	3
EEM717	Semiconductor Controlled Drives	3	0	0	0	3	3
EEM719	VLSI Design Techniques	3	0	0	0	3	3
<b>Electronics Specialization</b>							
EEM706	Electro-Magnetic Field Theory	3	1	0	0	4	3
EEM708	Communication Lab.	0	0	2	0	2	2
EEM712	Digital Design	5	0	0	0	5	5
*EEM720	Computer Networks	3	0	0	0	3	3
<b>Computer Science Specialization</b>							
EEM706	Electro-Magnetic Field Theory	3	1	0	0	4	3
EEM710	Software Design	4	1	0	0	5	5
*EEM720	Computer Networks	3	0	0	0	3	3
EEM723	System Lab.	0	0	2	0	2	2

### **B.Tech. (Electrical Engineering) VIII Semester**

<b>Course Code</b>	<b>Course title</b>	<b>Total number of contact hours</b>					<b>Credits</b>
		<b>L</b>	<b>T</b>	<b>P</b>	<b>S</b>	<b>Total</b>	
EEM802	Electrical Engineering Project II	6	2	0	0	8	8
MEM801	Business Management	3	0	0	1	4	4
EEM803	Seminars	0	0	0	2	2	1
RDC881	Rural Engineering Project	0	0	2	0	2	1
GKC881	Sc.Meth., G.K. & Current Affairs IV	1	0	0	0	1	1
CAC881	Co-Curricular Activities					0	3
#	Stream Wise Core Courses					0	3
*	Stream Wise I Optional Courses					0	3
**	Stream Wise II Optional Courses					0	3
***	Stream Wise III Optional Courses					0	3
<b>In Addition To Above Stream-Wise Core Courses</b>							
<b>Mainstream Electrical</b>							
EEM801	Utilization Of Electrical Power	3	0	0	0	3	
<b>Electronics Specialization</b>							
EEM822	Digital Communications	3	0	0	0	3	

<b>Computer Science Specialization</b>						0	3
EEM812	Operating Systems	3	0	0	0	3	
<b>Stream-Wise FIRST Optional Courses Any One Of The Following To Be Opted:</b>							
<b>Computer Science Specialization</b>							
EEM821	Neural Networks	3	0	0	0	3	3
EEM823	Systems Optimization Using EAs	3	0	0	0	3	3
EEM825	Mobile Computing	3	0	0	0	3	3
EEM814	Digital Signal Processing	3	0	0	0	3	3
<b>Electronics Specialization</b>							
EEM821	Neural Networks	3	0	0	0	3	3
EEM823	Systems Optimization Using EAs	3	0	0	0	3	3
EEM825	Mobile Computing	3	0	0	0	3	3
EEM814	Digital Signal Processing	3	0	0	0	3	3
<b>Electrical Mainstream</b>							
EEM815	High Voltage D.C.	3	0	0	0	3	3
EEM823	Systems Optimization Using EAs	3	0	0	0	3	3
EEM825	Mobile Computing	3	0	0	0	3	3
EEM814	Digital Signal Processing	3	0	0	0	3	3
<b>Stream-Wise SECOND Optional Courses Any One Of The Following To Be Opted:</b>							
<b>Computer Science Specialization</b>							
EEM817	Microwave Engineering	3	0	0	0	3	3
EEM820	Quantum Computing	3	0	0	0	3	3
EEM824	Fuzzy Systems	3	0	0	0	3	3
<b>Electronics Specialization</b>							
EEM817	Microwave Engineering	3	0	0	0	3	3
EEM820	Quantum Computing	3	0	0	0	3	3
EEM824	Fuzzy Systems	3	0	0	0	3	3
<b>Electrical Mainstream</b>							
EEM817	Microwave Engineering	3	0	0	0	3	3
EEM818	Planning & Oper.: Restructured P.S.	3	0	0	0	3	3
EEM820	Quantum Computing	3	0	0	0	3	3
EEM826	Electrical Machines-III	3	0	0	0	3	3
EEM824	Fuzzy Systems	3	0	0	0	3	3
<b>THIRD Optional Courses (common to all streams) Any One Of The Following To Be Opted:</b>							
EEM811	Robotics	3	0	0	0	3	3
MEM809	Nano-Technology & Nano-Computing	3	0	0	0	3	3
MEM824	Futurology Study	3	0	0	0	3	3
MEM812	Non-Conventional Energy Engineeirng	3	0	0	0	3	3
MEM813	Supply Chain Management	3	0	0	0	3	3

Curriculum is reviewed annually through Departmental and Faculty Board of Studies and Academic Council. Major review of curriculum is through Curriculum Development Workshops. The review of programmes and courses is undertaken according to prescribed norms of Statutory Regulatory

Authorities, feedback from all stakeholders, analysis of current market trends and industrial requirements and also maintaining national and international standards.

### 2.1.3. State the components of the curriculum (5)

*Program curriculum grouping based on course components*

Course Component	Curriculum Content (% of total number of credits of the program )	Total number of contact hours	Total number of credits
Basic Sciences	12.8	38	30
Engineering Sciences	6.4	41	15
Humanities and Social Sciences	6.4	8	15
Program Core	23	71	54
Program Electives	21.7	35	51
Open Electives	3.8	13	9
Project(s)	7.2	37	17
Internships/Seminars	3.4	95	8
Any other (Please specify)	15.3	30	36
<b>Total number of Credits</b>			<b>235</b>

**Table B.2.1.3**

### 2.1.4. State the process used to identify extent of compliance of the curriculum for attaining the Program Outcomes and Program Specific Outcomes (10)

Remarks by UGC Committee headed by Prof. M.V. Mathur that visited DEI Engineering College on 18<sup>th</sup> May 1977 “A comprehensive and integrated education with interdisciplinary approach, with the objective of not only improving the quality of existing education but also to effecting a radical change in its pattern and content so that while its academic excellence is improved upon, it produces better graduates suited to today’s needs, especially in the background of socio-economic conditions and rural reconstruction and development. The program is thus innovative.

... will present multi-disciplinary, and multi-faculty courses, integrated with other activities, work etc., which is not intended to be provide by one or two institutions only. Institutions will work in faculties, providing facilities for inter-faculty coaching of students in subjects assigned to the faculties – both as major and half subjects. In addition, all students will receive instructions as a part of curriculum in social service, Indian culture, rural problems, farming and comparative religion besides participating in relative field experience programs. It is expected that students with such a background would be able to provide in villages the much needed leadership in rural development. They would be academically better equipped

to undertake post graduate studies and majority of those who end their education at graduation level, will be able to have some independent self- employment.....”

The curriculum designed is in-line with the above innovative education and its compliance for attaining the program outcomes and program specific outcomes is listed below:

- (i) A semester system is followed in which marks and grading both are given for all the components of evaluation. Classes are regularly held and in each class the student is given a home assignment based on what was taught on that day so that he can not only revise but apply the scientific principles taught for engineering applications and retain the knowledge.
- (ii) Every week a class test is conducted for all subjects so that the students are assessed regarding the course specific outcomes.
- (iii) This continuous evaluation and feedback helps the students to identify and rectify their weakness and makes them attain the course specific outcomes and program outcomes.
- (iv) Further, the students are made to participate in group discussions and seminars and this makes them attain proficiency in the subject and helps the attainment.
- (v) Every quarter class tests are conducted and at the end of the semester final examinations are conducted which are evaluated by teachers of other reputed institutes. Thus external peer review is done on the evaluation of Course Specific Outcomes and Course Outcomes.
- (vi) Regular feedback is taken from students through class committee meetings and the meritorious students as well as weaker students are provided opportunity to improve themselves even after normal timings and during weak ends by providing extra consultation by teachers.
- (vii) During the semester teacher-student interaction is also arranged so that every parent is made aware of his ward’s performance and can gage the program outcome.

**Program Specific Outcomes:**

- PSO 1** Graduates will be able to analyze, innovate and provide practical electrical engineering solutions to real life problems.
- PSO 2** The graduates will acquire adequate practical skills in electrical engineering and develop capacity to work with one’s own hands in order to imbibe vocational and entrepreneurial traits
- PSO 3** Graduate will be able to specialize in any important discipline that includes Core Electrical Engineering, Electronics and Communications Engineering or Computer Science.
- PSO 4** Graduate will be able to demonstrate strong commitment to professional ethics and moral values through their conduct

## **2.2. Teaching-Learning Processes (70)**

### **2.2.1. Describe Processes followed to improve quality of Teaching & Learning (15)**

Some of the processes / initiatives that have been put in place for improving the Quality of teaching and learning are as follows.

- (i) A rigorous process of selection with student and Department participation along with a Committee including External Experts has been put in place for faculty selection with MTech as the minimum requirement. All the Faculty members are encouraged to pursue PhD programme if they are not PhDs and take up some research project if they are already PhDs. This is evident from the large number of research projects pursued in the Departments.
- (ii) A rigorous continuous evaluation process keeps the students engaged in daily learning and with continuous feedback. A special unique feature of this process is the administration of the Daily Home Assignment (DHA) that is given at the end of every lecture in a theory course and enables the student to “think” and assimilate the material delivered in the lecture of the day. These are to be submitted in the next class and evaluated and returned in the subsequent class. This is continuous learning and evaluation in the truest spirit of the term.
- (iii) Teaching-Learning in DEI follows a student-centric process employing experiential, participative, problem solving and constructivist methodologies, through (a) Teaching Methodology, (b) Experience-Based Courses, (c) Different Modes of learner-centered teaching (d) a wide range of co-scholastic components and (e) Specialized Centres of Learning.

#### **(a) Experiential and Participatory Teaching-Learning methods used include:**

- Seminar cum Group Discussions
- Individual and Group Projects
- Self-Study and Dissertations
- Field work
- Case Analysis
- Presentations
- Term Papers
- Self-Study Courses
- Research Colloquia

#### **(b) Experience-based/ Practice-oriented courses**

Based on the principle of ‘Learning by Doing’ a large proportion of courses in each programme have a high practical component to provide hands on learning experience to the students:

- Multiple projects in II year, III year and IV year BTech.
- Work-Based training
- Compulsory Summer Training after BTech I year (30 days) and II year (40 days)
- Compulsory Co-operative Industrial Internship after BTech III Year (5 months)
- Performing Arts Courses

- Vocational and Skill courses
- Rural Development Core course with focus on Agricultural Operations

### **(c) Learner-Centred Modes of Education**

Learner-Centred modes of teaching-learning are used that make learning self-paced and self-regulated:

- **Vidyaprasar** ([www.vidyaprasar.dei.ac.in](http://www.vidyaprasar.dei.ac.in)), an **on-line collaborative learning, live web cast and content management system** with state-of-the-art interactive learning resources. MOOCS developed by DEI and under e-PG-Pathshala and SWAYAM.
- Ten Virtual and Remote Triggered Laboratories
- Specialization streams are available for the student to choose within the Core Branch. BTech (Electrical Engineering) student can choose to specialize in Electronics or Computer Science or stay in the core discipline. The success of this approach is borne by the fact that BTech (Electrical Engineering) students have been appearing in the GATE exam in all the three disciplines i.e. Electrical Engineering, Electronics and Communications Engineering and Computer Science and scoring very high percentile marks in all the three disciplines enabling them to join PG programmes in IISc and various IITs.
- Variety of Elective courses

### **(d) Co-Scholastic Learning Components**

A wide range of compulsory co-scholastic learning components cater to varied learner interests and potentialities that include co-curricular activities, games and sports, yoga, community outreach, field and industrial visits, creative and problem-solving contests and Field and Industry experience. A Business Advisory Clinic provides free consultancy to Business firms and Industries facing difficulties. Faculty members and students take up real life case studies and offer appropriate guidance. More than 6,000 cases have been taken up and resolved satisfactorily.

### **(e) Specialized Centres of Learning**

The advanced centres of learning include:

- Multi-disciplinary Quantum and Nano Systems and the Consciousness Studies Virtual Centers
- The Virtual Advanced Lab for Interactive Design, Analyze, and Test in Electronics – eVALIDATE.
- The iNFORMATION- cOMMUNICATION- nEURO- cOGNITIVE- Technologies Assisted Language Lab (I-c-n-c-TALL)
- 2G to 5G, IOT, AI and Robotics Laboratories
- Quantum Jugaad Centre and Entrepreneurship and Virtual Incubation Centre



The above teaching learning modalities ensure experiential and participatory learning leading to a holistic development of students within and beyond the classroom.

- (iv) The curriculum has the following compulsory core courses in all UG programmes specially focused on the development of human values and professional ethics:
- Cultural Education (to take pride in national ethos so that one may not lose one's moorings).
  - Scientific Methodology, General Knowledge and Current Affairs: (to nurture a scientific temper and be aware of contemporary developments).
  - Rural Development: (to foster a fuller understanding of the rural life with a view to appreciate properly the polity and economy of our country and social forces at work).
  - Agricultural Operations (to inculcate a spirit of working with one's own hands and develop an understanding of the contribution of rural life)
  - Social Service: (to engender the spirit of brotherhood of man and to facilitate establishment of casteless and classless society).
  - Comparative Study of Religion: (to create a spirit of tolerance and awaken the spirit of Brotherhood of Man and Fatherhood of God).
  - Co-curricular Activities (for all-round development of personality)
  - Environment Studies (for environment consciousness and its impact on everyday life)
- (v) Special measures taken to support relatively slow learners, are:
- Organizing Extra Classes
  - Remedial and Tutorial Classes are held to prepare them for remedial exams
  - Assistance from classmates and senior students is arranged
  - Providing tutorial assignments
  - Providing lectures uploaded on web and extra reading material to improve basic understanding of subject
  - Encouraging students to study courses on developing soft skills to master understanding of language
  - Encouraging students to participate in various Co-Curricular and Extra-Curricular activities to develop social skills
- (vi) The Institute offers a number of opportunities for advanced learners to augment their talent and meet their learning needs:
- Under-Graduate Research Awards (UGRA): to encourage select bright UG students to undertake research projects.
  - Students are encouraged to make research contributions in their major project at the PG level and publish their results in journals and also present it at National and International Conferences.
  - Students are encouraged to participate in Summer Research Fellowship programmes at prestigious research institutes and laboratories in India and abroad.
  - The Institute, in collaboration with the Systems Society of India, organizes various competitions and an Annual Students' Systems Conference (Paritantra) and Technical Colloquia regularly and gives prizes and awards.

- Vertical and Horizontal Progression: Provision has been made for bright students to undertake advance credit courses and integrated degree programs.
- MoUs and Collaboration: Students are encouraged to work in laboratories of National and International Institutes and Universities with MoU.
- Financial support is provided to students for participation in National and International Conferences.
- The Institute, in association with Association of Alumni and Friends of DEI (AAFDEI) registered in USA, provides financial support for boarding and lodging and travel assistance to students on their visit abroad for higher studies or for conferences.
- Earn while you learn provision has been made for students for part-time jobs in the large number of projects running in the Institute. This helps them learn state of the art techniques and also get remuneration. Students are encouraged to help slow learners in their class and in junior classes.

### **2.2.2. Quality of end semester examination, internal semester question papers, assignments and evaluation (15)**

- i. Continuous evaluation is followed in the true sense in the Department. Every Theory course has components of evaluation like Class Tests 1 and 2, Daily Home Assignments (DHAs), Daily Class Assignments (DCA), Additional Assessment and Attendance.
- ii. The weightage of the internal evaluation is 75% whereas the external end semester exam is for 25 %. The grades obtained in both the internal and the external evaluations are mentioned separately in the grade sheet. This is very important because any discrepancies will immediately come to light and the evaluation in the internals is done very seriously. It is uncommon for students to actually get better grades in external than in internal evaluation.
- iii. 5% marks are given as an incentive to attend classes and for attendance. Similarly Practical Courses / Projects / Seminars have multiple components.
- iv. All the evaluations are time bound and are made available on the Course Monitoring System (CMS) so that the students can see their marks at any time they wish.
- v. The answer books of Class tests are shown to the students after evaluation within a week of the test. Feedback is given and answers to the questions are discussed in class so that the students know what they have done right and what they have not.
- vi. Daily Home Assignments (DHAs) are given after every class and concern the matter covered in that class. These are evaluated and returned in the next class. This helps in making the class assimilate the contents delivered in the class and establishes a routine that makes them regular, disciplined and punctual. Since assignments are to be submitted in class it provides an additional incentive for regularity in attendance. Thus class attendance is typically very good. More importantly, the DHAs help in preparing the students to face daily targets which are typical in the industry. Thus they do not feel any difficulty in their jobs as they are used to regular sustained hard work.
- vii. The Daily Class Assignments are short tests held in class every week on the matter covered in the previous week. These prepare the students to pay attention to detail as they are typically quiz type in nature.

- viii. The format of the Additional Assessment is left to the teacher to decide according to the nature of the course. It could be a seminar on a topic related to the subject wherein the student may be required to dig deeper than what is possible in the course work on a particular topic. In Computer Science courses, the course teacher might prefer an implementation assignment so that the student gets a feel for the practical details in a small application related to the course. Others might prefer some other mode of evaluation.
- ix. Every theory course has a Question Bank that is given to the students at the beginning the semester. The Question Bank clarifies the level of detail that is expected on every topic in the syllabus of the course. It is also sent to the examiner of the end semester exam. The Question Bank is very helpful in standardizing the content delivered when multiple teachers teach the same course in the same year or across different years. It establishes a basic level of coverage that is expected.
- x. Several feedback mechanisms in the form of Suggestion Box, Class Committees, Proctorial Meetings, Academic and Administrative Audit Committee meeting etc. All these mechanisms have been put in place to ensure that any discrepancies from the expected level are immediately spotted and mid course corrective measures are taken rather than as a post facto analysis.
- xi. The internal grades are proposed by the course teacher in each course. However, they are discussed in a Departmental Moderation Committee before finalizing. In this the all the course teachers teaching a particular class present their grade distributions. Any deviations from accepted norms are immediately visible. The grades in a particular course cannot be much higher or much lower than the other courses. If that happens, the course teacher has to provide a reasonable explanation or modify as per recommendation of the Committee. This is a powerful check and balance mechanism.
- xii. Attendance and performance have higher weightage in lab evaluations and projects.
- xiii. The end semester evaluation is completely transparent to the Department. Every course as a panel of examiners provided by the Department and the actual examiner in a particular year is decided centrally. So the course teacher is not aware of who it is. These examiners provide feedback about the student performance either question – wise or overall. Large discrepancy between the internal and external grades are spotted and reported to the Department for investigation and corrective measures if necessary. Some of the examiners in the last end semester examinations conducted in December, 2018 – January, 2019 include:
  - (i) Prof Prem Kalra, Professor, Department of Computer Science, IIT, Delhi
  - (ii) Prof V C Prasad, Retd. Professor, Department of Electrical Engg., IIT, Delhi
  - (iii) Prof. Hazur Saran, Professor, Department of Computer Science, IIT, Delhi
  - (iv) Prof. Nishchal Verma, Professor, Department of Electrical Engg., IIT, Kanpur
  - (v) Prof. R.K. Mishra, Professor, Electrical Engineering, IIT, BHU
  - (vi) Prof. Vishal Saxena, Department of Electrical Engineering, IIT, Roorkee
  - (vii) Mr. B. S. Gupta, Retd. DGM, BHEL, Bangalore
  - (viii) Mr. Bharat Bhushan, Project Officer, UPNEDA
  - (ix) Mr. Abhishek Nigam, Senior Manager, HCL Technologies

- xiv. All the above mechanisms ensure that the quality of evaluation meets the accepted standards world- wide.

### **2.2.3. Quality of student projects (20)**

- (i) Under Graduate Research Award fellowships are available on a competitive basis in several Departments. Students of Electrical Engineering can also compete for UGRA in Physics and Computer Science Department and several students do compete and win these awards. UGRA carries Rs 10,000 to enable students to meet small expenses in the project. Larger requirements, if any, are taken care of by the respective labs.
- (ii) Faculty members have sponsored Research projects from R&D Institutions and also have tie ups with industry for project work. Students who are associated with these faculty members have the additional benefit of working on live problems and, at the same time, get paid in the “Earn While You Learn” model.
- (iii) Students pursue their UG Major Project after returning from a 5 month stint in the industry. In many cases they bring their project idea from the industry and continue to be in touch with their mentor in that industry. This is especially true in the case of industries which offer a pre-placement to the student.
- (iv) The Department has close linkages with the other departments of the University like Physics and Computer Science and Mathematics and also with Centres like the Centre for Consciousness Studies. This enables students who are interested in these areas to take up projects in these and widens the choices. Students have presented their findings in International Conferences in India and Abroad.
- (v) Although the Department of Electrical Engineering is named so it is a 50 year old undivided Electrical Sciences Department i.e. it has Electrical Engineering, Electronics and Computer Science within its ambit. This brings in synergy of different idea and the cross fertilization of these ideas is very much evident in the diversity of the projects being carried out as given in the list of projects attached.
- (vi) The Department has very strong linkages with the Community of Dayalbagh. Projects of practical utility are pursued as a result of these linkages. Some of these are:
  - a. Power Quality measurement
  - b. Truck tracking during harvesting
  - c. Solar panel tracker
  - d. Remote Monitoring of Solar Panels
  - e. Smart Dairy
- (vii) Projects are evaluated by a Departmental Committee thrice in a Semester on the basis of written reports and a Viva-Voce examination. The Supervisor also submits his /her evaluation to the Coordinator of the Projects and all these evaluations are consolidated by the Project Coordinator.
- (viii) The unique feature of the B. Tech curriculum at DEI is that the students complete multiple projects. Apart from the Major project in the Final Year, at the II year level, the students

complete a Product Manufacturing Project that is a Workshop oriented project that requires them to work on Workshop machines. At the Third year level, they complete a Design Engineering and Theme Development Project so as to closely understand the whole process of Design and development of a new project by actually going through the steps. In the Final year they pursue a Rural Engineering Project to get a better understanding of the rural needs and opportunities in the rural sector. These multiple projects are distinctly a DEI innovation in times where some Institutes are removing even the Final Year Project from their curriculum.

#### **STUDENTS PROJECTS:**

In the entire course duration, the students are assigned following project work at different levels to improve their skill in various disciplines and imbibe a quality of community service for rural India in them.

Various projects assigned to the students are given below and each are of two semester duration except the Product Manufacturing Project:

- i) Product Manufacturing Project (PMP) at Second Year Level
- ii) Design Engineering & Theme Development Project (RDC-581 & RDC-681) at third Year Level
- iii) Rural Engineering Projects (RDC-782 & RDC-882) at Final Year Level
- iv) Major Project (EEM-705 & EEM 803) at Final Year Level

#### **Scheme of Evaluation for Projects work**

In each project there are internal assessment and external assessment in the ratio of 75 % and 25 % respectively during the even semester whereas it is all 100% during the odd semester. Continuous Evaluation scheme is being adopted and the progress is monitored through out the semester by the project guide and a team of professors. Marks are awarded by the project guide(75%) and the committee of Professors, excluding the guide (25%). Finally during the End Semester Evaluation an external expert from reputed institute is appointed for evaluation.

LIST OF STUDENTS PROJECTS (Final Year Major Project): An exhaustive list of projects done by the final year students for the last three academic years is presented hereunder-

### **Major Project List (Final year electrical). Session - 2016-17**

Batch	R.NO	NAME	Guide	Topic
1	116041	Abhishek gautam	Prof. A. K. Saxena	Energy Efficient Smart lighting System
2	116092	Shailendra agarwal	Prof. A. K. Saxena	Energy Efficient Smart lighting System
3	116163	Bhakti kapur	Sh. V. Prem Prakash	Normal form for single-Qudit Clifford+ T Operators
4	124008	Anurag kumar meena	Sh. K. Janardhan	Smart street lighting system
5	124038	Prathu sharma	Sh. K. Pritam Satsangi	Solar micro inverter

6	126105	Anil rawat	Prof. A. K. Saxena	Energy Efficient Smart lighting System
7	126139	Rajat upraity	Prof. A. K. Saxena	Energy Efficient Smart lighting System
8	126228	Gunjan singhal	Sh. V. Prem Prakash	A genetic algorithm for the longest common subsequence problem
9	126231	Khushboo chabra	Sh. Amol Gupta	Design and Synthesis of Asynchronous FIFO and implementation of AXI Slave
10	126242	Rekha bansal	Prof. Manmohan	Long term load forecasting by ANN and generalized Neural Network
11	134005	Ankit yadav	Dr. G. S. S. Babu	Unmanned Package delivery System
12	134017	Jhilmil bansal	Prof. Manmohan	Long term load forecasting by ANN and generalized Neural Network
13	134020	Kartikey gautam	Sh. Gaurav Pratap Rana	Wind turbine training system
14	134028	Mudit seksaria	Prof. C. Patvardhan	Determining Variety of Silk Sari using Machine Learning
15	134029	Narendra chaudhary	Sh. Gaurav Pratap Rana	Wind turbine training system
16	134032	Nikhil sharma	Prof. A. K. Saxena	Energy Efficient Smart lighting System
17	134033	P. Sri ramya	Sh. Amol Gupta	Analysis and Improvement of Stability of 6_T SRAM Cells at Deep Submicron CMOS Technology
18	134046	Sakshi saxena	Dr. Ashish Saini	Economic load Dispatch
19	134066	Aanand nayyar	Sh. Amol Gupta	Face recognition multi-classifier systems
20	134067	Abhishek rishi	Dr. Ashish Saini	Economic load Dispatch
21	134068	Adhar verma	Sh. Amol Gupta	Band gap Voltage reference
22	134069	Agraj kulshrestha	Prof. C. Patvardhan	Noise reduction in Digital Images
23	134070	Akanksha tiwari	Sh. Amol Gupta	Design and Synthesis of Asynchronous FIFO and implementation of AXI Slave
24	134071	Akash yadav	Prof. Manmohan	Long term load forecasting by ANN and generalized Neural Network
25	134072	Aman sisodiya	Prof. V.G. Das	To study different schemes involved in switched mode power supplies, design, implementation and testing
26	134073	Anand saran kakaraparty	Dr. K. Srinivas	Real time vehicle tracking system with decision support system
27	134074	Anjali kashyap	Prof. Manmohan	Long term load forecasting by ANN and generalized Neural Network
28	134075	Ankit kumar mittal	Prof. V.G. Das	To study different schemes involved in switched mode power supplies, design, implementation

				and testing
29	134076	Arsh gupta	Dr. Ashish Saini	Economic load Dispatch
30	134078	Ayushi agarwal	Sh. Amol Gupta	Portfolio Analysis and optimal Portfolio Prediction
31	134080	Divesh kumar srivastava	Prof. V.G. Das	To study different schemes involved in switched mode power supplies, design, implementation and testing
32	134081	Divyanshi malhotra	Prof. D. Bhagwan Das	Solar Grid in Taj Trapezium Zone
33	134082	D. Priscilla jennifer	Prof. D. Bhagwan Das	Solar Grid in Taj Trapezium Zone
34	134083	Geeta srivastava	Prof. D. Bhagwan Das	Solar Grid in Taj Trapezium Zone
35	134084	Gurpyari paswan	Dr. Ashish Saini	Economic load Dispatch
36	134085	Jugal tyagi	Prof. C. Patvardhan	Agra guide App (IOS application development)
37	134086	Koppu. Vishnu prasad,	Sh. K. Janardhan	Smart street lighting system
38	134087	Madhav dixit	Sh. Gaurav Pratap Rana	Wind turbine training system
39	134089	Mohit gupta	Sh. K. Pritam Satsangi	CMOS Analog Circuit Design & Simulation
40	134090	Nagma markan	Prof. D.B.Das	Designing of scanning mechanism for Biological materials at Microwave frequency using reflection method
41	134092	Nishant singhal	Prof. D. Bhagwan Das	Solar Grid in Taj Trapezium Zone
42	134093	Pankaj kumar gola	Sh. Gaurav Pratap Rana	Wind turbine training system
43	134094	Parman josan	Dr. G.S.S. Babu	Unmanned Package delivery System
44	134095	Prashant singh	Prof. D. K. Chaturvedi	Energy audit of Small and Medium scale industry
45	134096	Praveen kumar	Sh. Gaurav Pratap Rana	Wind turbine training system
46	134097	Prem kumar	Prof. V.G. Das	CMOS Analog circuit design and simulation
47	134098	Priyanka karira	Sh. Amol Gupta	Design and Synthesis of Asynchronous FIFO and implementation of AXI Slave
48	134099	Rahul chugh	Prof. V.G. Das	CMOS Analog circuit design and simulation
49	134100	Rajit kumar	Prof. D. K. Chaturvedi	Simulation of numerical relay protection and differential relay protection on virtual lab
50	134101	Raman garg	Prof. Manmohan	Long term load forecasting by ANN and generalized Neural Network
51	134102	Rishabh banerjee	Prof. D. Bhagwan Das	Controlling and monitoring of DEI Renewable Energy Microgrid
52	134103	Rohit kumar	Prof. D. K. Chaturvedi	Energy audit of Small and Medium scale industry

53	134104	Roop chaudhary	Sh. Gaurav Pratap Rana	Wind turbine training system
54	134105	Saksham pathak	Prof. D. K. Chaturvedi	Simulation of numerical relay protection and differential relay protection on virtual lab
55	134106	Sandeep kumar yadav	Prof. Manmohan	Long term load forecasting by ANN and generalized Neural Network
56	134107	Sanjana singh	Dr. Ashish Saini	Economic load Dispatch
57	134108	Sant saran	Prof. V.G. Das	Study of optogenetic control of neuronal signaling
58	134109	Sat prakash	Prof. V.G. Das	CMOS Analog circuit design and simulation
59	134110	Sharil agarwal	Prof. D. Bhagwan Das	Solar Grid in Taj Trapezium Zone
60	134111	Shefali tripathi	Prof. D. Bhagwan Das	Solar Grid in Taj Trapezium Zone
61	134112	Shitij jain	Prof. A. K. Saxena	Energy Efficient Smart lighting System
62	134113	Shivam yadav	Prof. V.G. Das	CMOS Analog circuit design and simulation
63	134114	Shobhit nagar	Prof. C. Patvardhan	Multi-font optical character recognition of complex handwritten scripts using deep learning
64	134115	Shreyansh upadhyaya	Dr. Rs Sharma	Design and modelling of Robust Controller for 20-DOF Quarter Car Semi-active Suspension system using MATLAB/SIMULINK
65	134116	Shubhangi seth	Sh. V. Prem Prakash	Normal form for single-Qudit Clifford+ T Operators
66	134117	Sunil chhalotra	Prof. D. K. Chaturvedi	Simulation of numerical relay protection and differential relay protection on virtual lab
67	134118	Tejaswi sachwani	Sh. K. Janardhan	Smart street lighting system
68	134119	Vishwas satsangi	Sh. K. Janardhan	Smart street lighting system
69	134120	Yogesh kumar	Prof. D. K. Chaturvedi	Simulation of numerical relay protection and differential relay protection on virtual lab

### Major project list (final year electrical). Session - 2017-18

Batch	Roll no.	Student name	Guide name	Project title
1	126127	Mehar gupta	Prof. V.G. Das	Sine wave oscillator using dds
2	126188	Devashish chauhan	Prof.A.K.Saxena	Real time data simulation
3	126222	Arti satsangi	Prof D. Bhagwan Das	Solor string monitoring
4	126223	D. Arti	Mr. Amol Gupta	Smart meter interface using iot
5	126234	Mehar srivastava	Prof. V. G. Das	Switched mode battery charger
6	134088	Mehar khatri	Dr. Ashish Saini	Unit commitment
7	136179	Pawan verma	Dr. Ashish Saini	Unit commitment
8	136281	Harsha mirchandani	Dr. Manmohan Agarwal	Long term load forecasting
9	136289	Roshni mohnani	Dr. Manmohan Agarwal	Long term load forecasting



10	136298	Zuba afzal	Dr. Manmohan Agarwal	Long term load forecasting
11	144034	Prateek jain	Prof. V.G. Das	Sine wave oscillator using dds
12	144041	Sapna solanki	Dr. Omhari Gupta	Impact of power swing on the sequence based relaying scheme
13	144055	Adesh kumar	Dr. Ashish Saini	Unit commitment
14	144056	Agam satsangi	Dr. K Srinivas	Dairy precision farming system
15	144057	Akshat srivastava	Prof.A.K.Saxena	Real time data simulation
16	144058	Amandeep singh	Prof G.S.S. Babu	Portable solar power system
17	144059	Anamika kaler	Prof. D. K. Chaturvedi	Solar panel cleaning system using drone
18	144060	Ankit kumar gupta	Prof G.S.S. Babu	Portable solar power system
19	144062	Astha saxena	Prof D.Bhagwan Das	Solar string monitoring
20	144063	Chandan singh kushwaha	Prof D.Bhagwan Das	Solar string monitoring
21	144064	Devesh singh	Dr. K Srinivas	Dairy precision farming system
22	144066	Gurudevraj g	Prof G.S.S. Babu	Portable solar power system
23	144067	Harsh pachauri	Dr. Om Hari Gupta	Impact of power swing on the sequence-based relaying scheme
24	144068	Harsh singh	Sh K.Janardhan	Modulation, simulation and validation of wind mill
25	144069	Kanak madhvi	Prof. D. K. Chaturvedi	Solar panel cleaning system using drone
26	144070	Karishma	Prof D.Bhagwan Das	Solar string monitoring
27	144071	Keshav agarwal	Prof. C. Patvardhan	Fabric detection using machine learning
28	144072	Komalchitt juneja	Prof. C. Patvardhan	Colorizing grayscale images
29	144073	Kulmani dubey	Prof. D.Prem Prasad	Error budgeting analysis of 4-bit flash adc converter
30	144074	Kunal kumar	Prof. A. K. Saxena	Real time data simulation
31	144075	Laxmi	V. Prem Prakash	Chess game in java
32	144076	Madhav goyal	Prof. V.G. Das	Sine wave oscillator using dds
33	144077	Mahima agrawal	Prof. C. Patvardhan	Colorizing grayscale images
34	144078	Manasvi garg	Dr. K Srinivas	Software for precision dairy farming system in php
35	144079	Manasvi pourush	Prof. A. K. Saxena	Real time data simulation
36	144081	Manoj kumar	Prof. A. K. Saxena	Real time data simulation
37	144082	Mayank singh soni	Prof. C. Patvardhan	Hot strip online surface defect detection system
38	144083	Mayuri verma	V.Prem Prakash	Comparative analysis of application of machine learning algorithms in prediction of stock prices
39	144084	Megha harplani	Prof D.Bhagwan Das	Solar string monitoring
40	144085	Mehar verma	Prof. D. K. Chaturvedi	Solar panel cleaning system using drone
41	144086	Mohd. Shahwaz	Prof D.Bhagwan Das	Solar string monitoring

42	144088	Monika vardhan	Prof. D. K. Chaturvedi	Solar panel cleaning system using drone
43	144089	Mukul sharma	Prof. A. K. Saxena	Real time data simulation
44	144091	Neeraj das	V.Prem Prakash	A novel meta-heuristic algorithm for longest common subsequence problem
45	144092	Pola praveen kumar	Sh K. Janardhan	Modulation, simulation and validation of wind mill
46	144093	Pawan kumar	Dr. Ashish Saini	Unit commitment
47	144095	Prateek badhautia	Dr. Om Hari Gupta	Impact of power swing on the sequence-based relaying scheme
48	144096	Priyanka singh	Amol Gupta	Cognitive study of brain
49	144097	Puneet munjal	Prof. C. Patvardhan	Hot strip online surface defect detection system
50	144098	Rahul singh	Dr. Manmohan Agarwal	Long term load forecasting
51	144099	Rohit lal	Prof. C. Patvardhan	Fabric detection using machine learning
52	144100	Ruchika chauhan	Prof D. Bhagwan Das	Solar string monitoring
53	144101	Rupal mittal	Dr.Manmohan Agarwal	Long term load forecasting
54	144102	Sandeep agarwal	Prof G.S.S. Babu	Portable solar power system
55	144103	Sankalp rai bhalla	Prof. A. K. Saxena	Real time data simulation
56	144105	Shakti singh	Dr. Ashish Saini	Unit commitment
57	144106	Shalu singh	Dr. Manmohan Agarwal	Long term load forecasting
58	144107	Shivam paliwal	Prof. A. K. Saxena	Real time data simulation
59	144108	Shlok mittal	Prof. D Prem Prasad	Sense amplifier layout
60	144109	Shubham kulshrestha	Dr. Manmohan Agarwal	Long term load forecasting
61	144110	Sukriti bhandari	Prof. C. Patvardhan	Text summariser using nlp with python
62	144111	Sumiran prabhakar	Prof D. Bhagwan Das	Solar string monitoring
63	144112	Swati chaturvedi	Dr. Manmohan Agarwal	Long term load forecasting
64	144113	V. Guru aarath	Prof. V.G. Das	Sine wave oscillator using dds
65	144114	Vasim ali	Dr. Om Hari Gupta	Impact of power swing on the sequence-based relaying scheme
66	144115	Vidushi mehta	Prof. C. Patvardhan	Text summariser using nlp with python.
67	144131	Deepti singh	Prof D. Bhagwan Das	Solar string monitoring
68	144141	Kanchan haswani	Prof D. Bhagwan Das	Solar string monitoring
69	144167	Shreya satsangi	V.Prem Prakash	A novel meta-heuristic algorithm for longest common subsequence problem

## Major Project List (Final year electrical). Session - 2018-19

S.No.	Roll Number	Name	Guide/Supervisor	Project Title
1	134091	Navjyoti Meena	Prof. A. K. Saxena	Frtu Based Simulation Interlocking Trolley
2	136099	Guru Dayal Patel	Dr. Ashish Saini	Profit Based Unit Commitment Problem Using Lagrange Relaxation Method
3	136165	Sheetal Swaroop Burada	Sh. Amol Gupta	Design Of Floating Point Alu And Implementation On Fpga.
4	136271	Anjali Jaiswal	Dr. K. Srinivas	Dairy Farm Management Automated Livestock Tracking System
5	136285	Jolly Raghav	Prof. A. K. Saxena	Frtu Based Simulation Interlocking Trolley
6	144061	Apoorva	Prof. D.K.Chaturvedi	Automatic Control Of Fan Speed Using Fuzzy Logic
7	146309	Puspendar Singh Yadav	Sh. Amol Gupta	To Comapare Area, Power Utilization Of Different Kind Of Floating Point Division Algorithm On Fpga
8	146311	Rahul Sharma	Sh. Amol Gupta	To Comapare Area, Power Utilization Of Different Kind Of Floating Point Division Algorithm On Fpga
9	146391	Soniya	Prof D Bhagwan Das	Design Of Protection Meters Using Fpga
10	146393	Vidushi Maheshwari	Dr. G.S. Sailesh Babu	Visualization Of Data In A Large Data Set
11	146445	Kratika Agarwal	Prof. A. K. Saxena	Frtu Based Simulation Interlocking Trolley
12	146448	Naina Sharma	Sh. Amol Gupta	Designing Of Intel 8051 Microprocessor Using Verilog
13	154024	Lavish Gupta	Prof. Manmohan Agarwal	Long Term Load Forecasting Using Gnn
14	154061	Aashi Gupta	Dr. Shiroman Prakash	Classical Simulation Of Quantum Circuits With Qutrits Using Clifford Gates
15	154062	Abeer Saxena	Prof. C.V. Lakshmi	Yield Prediction Of Chickpea Using Machine Learning
16	154063	Akansha Singh	Prof D Bhagwan Das	Design Of Protection Meters Using Fpga
17	154064	Ami Agarwal	Sh. Amol Gupta	Object Motion Abstraction In Real Time On Parallelized Fpga Hardware
18	154065	Amit Kumar	Dr. Ashish Saini	Profit Based Unit Commitment Problem Using Lagrange Relaxation Method

19	154066	Amolak Ratan Kalra	Dr. Shiroman Prakash	Entanglement In Theories Of Gravity
20	154067	Anjali Shukla	Prof. D.K.Chaturvedi	Automatic Control Of Fan Speed Using Fuzzy Logic
21	154067	Anjali Shukla	Prof. D.K.Chaturvedi	Automatic Control Of Fan Speed Using Fuzzy Logic
22	154068	Anjali Singh	Sh. V Prem Prakash	Obstacles P-Median Problem
23	154069	Bhakti Sehgal	Prof D Bhagwan Das	Automatic Control Of Fan Speed Using Fuzzy Logic
24	154070	Bhaskar Chauhan	Prof. Manmohan Agarwal	Automatic Speed Control Of Fan Using Fuzzy Logics
25	154071	Bhavika Arora	Dr. Lotika Singh	Agriculture Development Using Ai
26	154072	Chandradeep Gautam	Prof. C Patvardhan	Multi Class Classification Using Deep Learning
27	154073	Dheeraj Singh Chaudhary	Dr. Lotika Singh	Disease Detection In Plants Using Deep Learning
28	154074	Dinesh Kumar Meena	Prof. Manmohan Agarwal	Long Term Load Forecasting Using Gnn
29	154075	Garima B Sharma	Sh. V Prem Prakash	P - Median Problem
30	154076	Garima Meena	Prof. Manmohan Agarwal	Long Term Load Forecasting Using Gnn
31	154077	Gazal Dhanda	Dr. K. Srinivas	IoT Based Application To Control Water Level And Lights In Rss Gaushala
32	154078	Harsh Shukla	Dr. Shiroman Prakash	Simulation Of Stabilizer Quantum Circuits On Classical Computer
33	154079	Harshita Singhal	Sh. Amol Gupta	Development Of Verification Environment In Sv & Uvm For Dma
34	154080	Isha Nautiyal	Prof. D.K.Chaturvedi	Automatic Control Of Fan Speed Using Fuzzy Logic
35	154081	Isha Saxena	Prof D Bhagwan Das	Design Of Protection Meters Using Fpga
36	154082	Ishita Agarwal	Prof. C Patvardhan	Signature Verification Using Machine Learning
37	154083	Jitendra Kumar	Prof D Bhagwan Das	200kwp Solar Power Plant
38	154084	Kaamraan Khan	Prof. C Patvardhan	Video Indexing Using Digital Image Processing
39	154085	Kirti Kaharwar	Prof D Bhagwan Das	Design Of Protection Meters Using Fpga
40	154086	Kusum Pandey	Dr. K. Srinivas	IoT Based Application To Control Water Level And Lights In Rss Gaushala
41	154087	Mahima Agarwal	Dr. K. Srinivas	Dairy Farm Management Automated Livestock Tracking System

42	154088	Mahima Chaudhary	Prof. C Patvardhan	Automatic Speech Recognition Using Neural Networks For Phonetic Classification
43	154089	Mahima Satsangi	Dr. Prem Sewak Sudhish	Agriculture Development Using AI
44	154090	Mahima Yadav	Dr. Prem Sewak Sudhish	Agribot: Crop Forecasting
45	154091	Mahima Yadav	Sh. V Prem Prakash	P-Centre Problem
46	154092	Mamta Khimyani	Dr. K. Srinivas	Dairy Farm Management Automated Livestock Tracking System
47	154093	Mehar Saran	Prof D Bhagwan Das	Predictive Maintenance And Anomaly Detection Of Solar Plants Along with Battery Analysis
48	154094	Mithilesh Singh Yadav	Dr. Ashish Saini	Profit Based Unit Commitment Problem Using Lagrange Relaxation Method
49	154095	Mohita Chaudhary	Dr. Lotika Singh	Plant Species Recognition Using Deep Learning
50	154096	Monica Chaudhary	Dr. G.S. Sailesh Babu	Design And Verification Of High Speed 6t 4kb Sram
51	154097	Mradul Singh	Dr. K. Srinivas	Dairy Farm Management Web Application Using Xampp And Mysql
52	154098	Mudit Goswami	Sh. V Prem Prakash	Document Security Through Watermarking And Microfeatures
53	154099	Nagma Sharma	Prof. D.K.Chaturvedi	Automatic Control Of Fan Speed Using Fuzzy Logic
54	154100	Neeraj Singh Meena	Dr. Ashish Saini	Profit Based Unit Commitment Problem Using Lagrange Relaxation Method
55	154101	Nisha Singh	Prof D Bhagwan Das	Automatic Control Of Fan Speed Using Fuzzy Logic
56	154102	Nishtha Parashar	Sh. Amol Gupta	Fpga Implementation Of Crc
57	154103	Parul Agrawal	Prof. C Patvardhan	Signature Verification Using Machine Learning
58	154104	Priyanka Satsangi	Prof. D.K.Chaturvedi	Automatic Control Of Fan Speed Using Fuzzy Logic
59	154105	Priyanka Shah	Dr. G.S. Sailesh Babu	Design And Verification Of High Speed 6t 4kb Sram
60	154106	Priyanka Verma	Prof. A. K. Saxena	Plc Based Automatic Car Washing System
61	154107	Raginee Pachaury	Prof. C.V. Lakshmi	Quantum Genetic Algorithm For Multiple Sequence Alignment

62	154108	Ritika Agrawal	Prof. C Patvardhan	Multi Class Classification Using Deep Learning
63	154109	Saumya Agarwal	Prof. Prem Kumar Kalra	Xor Problem Using Ccvann
64	154110	Shivam Khandelwal	Sh. Amol Gupta	Design Of Floating Point Alu And Implementation On Fpga.
65	154111	Shivangi Gupta	Prof. Manmohan Agarwal	Long Term Load Forecasting Using Gnn
66	154112	Shivanjali Yadav	Prof. A. K. Saxena	Frtu Based Simulation Interlocking Trolley
67	154113	Somesh Agarwal	Prof. Manmohan Agarwal	Long Term Load Forecasting Using Gnn
68	154115	Sravya Varma	Dr. K. Srinivas	lot Based Application To Control Water Level And Lights In Rss Gaushala
69	154116	Tanya Agarwal	Prof. Manmohan Agarwal	Long Term Load Forecasting Using Gnn
70	154117	Udit Gupta	Prof D Bhagwan Das	200kwp Solar Power Plant
71	154118	Utsav Mittal	Prof D Bhagwan Das	200kwp Solar Power Plant
72	154119	Vishal Prajapati	Dr. Ashish Saini	Profit Based Unit Commitment Problem Using Lagrange Relaxation Method
73	154147	Monika Kumari	Prof. A. K. Saxena	Frtu Based Testing Simulation Interlocking Trolley
74	154175	Stuti Agarwal	Sh. V Prem Prakash	Stock Price Prediction In Algorithmic Trading
75	154178	Tarun Agarwal	Dr. R.S.Pavithra	Face Recognition Based Attendance System

#### 2.2.4. Initiatives related to industry interaction (10)

Industry interactions help the students to acquire the practical knowledge. In order to improve the technical abilities various industrial activities are carried out. The department has taken following initiatives for establishing and nurturing good relations with industry-

##### 1. Entered in to MoUs with industries

To strengthen interaction with industries and to keep our students updated with the latest trends being followed in the industry, MoUs were signed with the following companies.

S#	Name of the Industry/Company	Date of MoU	Area of Research & Collaboration Scope of Activities & benefits accruing to DEI
1.	Indian Oil Corporation, Faridabad	10.10.2014	<i>Indian Oil Corporation (R&amp;D Centre) Faridabad with Department of Chemistry</i> <ul style="list-style-type: none"> <li>For scaling up solar hydrogen generation by photo-electrochemical splitting of water</li> <li>Scaling up of photoelectrode from 1x1 to 3x3 has</li> </ul>

			been standardized while 6x6 is the final target
2.	Maruti Suzuki India Ltd.	20.04.2010	<i>Collaboration with Department of Automobile Engineering</i> <ul style="list-style-type: none"> <li>• Workshop set up</li> <li>• Student Training</li> <li>• Staff exchange</li> </ul>
3.	Bharat Heavy Electricals Ltd.	12.08.2010	<i>Collaboration with Department of Electrical Engineering</i> <ul style="list-style-type: none"> <li>• Student Training</li> </ul>
4.	India Yamaha Motor Pvt. Ltd.	22.10.2011 21.06.2015 09.06.2017	<i>Collaboration with Department of Automobile Engineering</i> <ul style="list-style-type: none"> <li>• A specialized Two-Wheeler Training Workshop was set up in Department of Automobile Engineering in which the students had undergone specialized training to enhance their employment opportunities and were also awarded Certificate of Proficiency by the Company</li> </ul>
5.	Honda Motorcycle and Scooter India Pvt. Ltd., Maanesar, Gurgaon	4.12.2012	<ul style="list-style-type: none"> <li>• Provide training to trainees and mentors of Painting and Welding Course</li> <li>• Provide practical teaching aids to these courses</li> </ul>
6.	TVS Motor Company Ltd., Chennai	9.08.2013	<i>Collaboration with Department of Automobile Engineering</i> <ul style="list-style-type: none"> <li>• Student Stipend</li> <li>• Training and Final Placement</li> </ul>
7.	Dayal Motors Agra		<ul style="list-style-type: none"> <li>• Providing skill –based training to students who have enrolled for vocational training at various levels</li> </ul>
8.	Mitsubishi Electric India Pvt. Ltd. Gurgaon, Haryana	17.03.2015	<ul style="list-style-type: none"> <li>• Student Training and Placement</li> </ul>
9.	Oasis Fabrications, Yamuna Nagar, Haryana	3.09.2015	<ul style="list-style-type: none"> <li>• Student Training and Placement</li> </ul>
10.	Genpact India Pvt. Ltd. Hyderabad	10.06.2016	<ul style="list-style-type: none"> <li>• Student Training and Placement</li> </ul>

## 2. Offering training to industry personal

B.Tech. and M.Tech. in Part-time are being offered to personal from various industries which forms a link for close interaction with industry. Besides, training programmes were also conducted to industry personal on their behest. A suggestive list is provided hereunder

- Training to Cadence Design Systems, NOIDA. Have been delivering two/three -day training workshops on “Advanced Algorithms” at Cadence, NOIDA every year from 2004 – 08 (5 years) in the area of Advanced Algorithms.
- Training to Atrenta Communications Pvt. Ltd., NOIDA, 2010
- Training to Electrical Supply Department personnel in Dayalbagh in repair and maintenance of distribution system 2016, 2017, 2018

### 3. Undertaken combined research projects with industry

Besides the B.Tech. major projects that are conducted in continuation with six month coop training, following sponsored research projects are done for and in collaboration with industry.

1. ADRDE consultancy Project **Modeling and Simulation of Stanchion system of Aircraft Arrester Barrier System** from July 2004 – Dec. 2004, Rs. 3.5 Lakhs, 6-months from ADRDE, Agra Cantt. (completed).
2. ADRDE Consultancy Project **Automatic controlled voltage source for Aerostat**, from March 2008 – Aug. 2008, Rs. 9.95 Lakhs, 1yr from ADRDE, Agra Cantt. . (completed).
3. OCL India gave Consultancy Projects for Society on Human Energy Field from April 2014 to April 2015 Rs. 50.0 Lakhs.
4. Consultant on Regression Test Suite Optimization to Cadence Design Systems, NOIDA from March 1, 2011 to April 30, 2012, 25000\$.
5. **Design and Development of a Smart Micro Grid for Optimal Solar/Grid Power Synergy**, DST SERI project done by Department of Electrical Engineering in collaboration with BHEL, EDN, Bangalore. Project was successfully completed and a larger follow up project was granted under DST Mission Innovation in collaboration with IIT Roorkee, University of Tromso, Norway (Project grant of 3 Crore).

#### DST SERI Project proposal summary sheet

Nature of Proposal (Tick One)		A)	Enabling R&D for Solar Energy	
		B)	Technology Development, Demonstration & Application	
I	Title	<b>Design and Development of a Smart Micro Grid for Optimal Solar/Grid Power Synergy</b>		
II	Project cost (Amount in lakhs)	DST: Rs. 64,32,662.00		Collaborator (if any): Rs. 3,75,000.00
III	Duration (in months)	36		
III	PI Name Date of Birth	D. Bhagwan Das 16.01.1969		
IV	Co-PI Name Date of Birth	A. K. Saxena 24.01.1961		
V	Lead Organisation	DAYALBAGH EDUCATIONAL INSTITUTE		
VI	Lead Organisation Status	Deemed University		
VII	Collaborator(s), if any	BHEL Electronics Division, Bangalore		
VIII	Collaborators' Status			
IX	Objectives	<b>Indigenous Design and development of a Smart Micro Grid for optimal utilization of 518.2 kWp Distributed Solar PV Electric Power Plants commissioned at Dayalbagh Educational Institute, involving the following:</b> <ul style="list-style-type: none"> <li>• Remote monitoring and control of Solar Inverters</li> <li>• Remote monitoring and control of load</li> <li>• Dual axis sun tracking</li> <li>• String Monitoring and Diagnosis</li> <li>• Smart Battery Storage System</li> <li>• Remote monitoring &amp; Control of Water Pumping Motors</li> </ul>		



		<ul style="list-style-type: none"> <li><b>Decision Support System</b></li> </ul>
X	Methodology	<p><i>The objectives are proposed to be achieved with the following methodology</i></p> <ol style="list-style-type: none"> <li><b>Design and development of infrastructure for remote monitoring &amp; Control of</b> <ol style="list-style-type: none"> <li>Solar Inverters</li> <li>Load and Control Switchgear</li> <li>Battery Charging</li> <li>Water pumps</li> </ol> </li> <li><b>Development of MATLAB based Simulation Model</b> <ul style="list-style-type: none"> <li>Simulation of installed 170Wp, 24V solar panels</li> <li>Simulation of MPPT Buck converter charge controller</li> <li>Simulation of 6-pulse IGBT inverter with grid connection</li> <li>Validation of simulation models</li> </ul> </li> <li><b>Design and development of a 5kWp system with dual axis sun-tracking and String Monitoring</b></li> <li><b>Development of Goal Programming based multi-criteria optimization for Decision Support System</b></li> </ol>
XI	Deliverables	<ol style="list-style-type: none"> <li><b>Existing 518.2kWp distributed SPV system would be upgraded to Smart Micro Grid</b></li> <li><b>A 5kWp prototype plant with dual axis sun tracking and string monitoring would be developed</b></li> <li><b>Software development for System Integration and Decision Support Systems</b></li> <li><b>Performance analysis including Scientific data generation, analysis and evaluation)</b></li> <li><b>Technological Capability including Human Resource Development</b></li> </ol>
XII	Project Manpower	<b>DST:</b> Research Associates (one) Rs. 7,77,600.00 Project Assistants (one) Rs. 3,45,600.00
XIII	Equipment list and Total Cost	<b>DST:</b> Fluke Scope Meter 500MHz, dual channel : Rs. 5,85,000 Multimeters : Rs. 50,000 Fluke 3-Φ Power quality analyzer : Rs. 6,40,000 Solar quality analyzer : Rs. 4,75,000 Electrical Contactors (quantity 36) : Rs. 5,32,656 MCCBs (quantity 18) : Rs. 1,08,198 Smart Meters (quantity 22) : Rs. 1,39,898 Mechanical Interlocks (quantity 18) : Rs. 28,710 Cables (4 core Al, 185 sqmm and 150 sq mm) :Rs. 9,00,000 Assorted lengths : Rs. 6,50,000 5kVA Solar Inverter, 48V,600Ah battery bank :Rs. 1,50,000 Microcontroller boards, Zigbee modules embedded electronics :Rs. 3,75,000

		<b>BHEL, Electronics Div.</b> 5kWp SPV modules
XIV	Design, Engineering & Fabrication Cost of System*	Rs. 3,00,000
XV	Operation and Maintenance Cost per Annum*	NA
XVI	<b>Nature of Contribution from Collaborators*</b>	<b>BHEL would provide SPV modules of 5kWp capacity for the development of a prototype of 5kWp SPV plant with dual axis sun tracking and string monitoring.</b>

#### 4. Inducted personnel from Industry in various bodies

Eminent Persons from industry are inducted in Academic council, Chairman and members of Board of Governors for TEQIP Project, Institute Innovation Council, Industry Consultation Committee, etc. for closure participation in shaping the academic and administrative activities.

#### 5. Invited industry experts for interaction sessions with students

##### 1. Motivational Lecture-cum-Interaction Session organized a on 28th November, 2017 on “Career Opportunities for Engineering Students: is Entrepreneurship a Viable Option?”

*Drs. Ajay Sharma , CEO at ASR Ventures & President Rotary International Hague, Netherlands*

Ajay is accomplished Board member, international speaker, social entrepreneur, Impact investor and executive for business development in European, Asian Middle-East markets. Before becoming independent investor and consultant, he worked in corporations like TechMahinda, Huawei, Alcatel-Lucent and Escotel. He studied Diploma in Electrical Engineering in 1993 in DEI. now holds Engineering, MBA and LLM and studied at universities like Harvard Business School, University-Liverpool, University-of-Bradford and DEI. Ajay speaks at multiple international forums and universities in technologies BLOCKCHAIN and Cyber security and entrepreneurship.



and

Ajay

##### **Ajay holds following positions and delivers values in world.**

- CEO and Founder ASR Ventures – Invest in impact innovations
- Chief Regulatory and investments officer – TOBLOCKCHAIN (BLOCKCHAIN Powerhouse)
- President – Rotary Club The Hague Metropolitan (First English international club of Netherlands with 20 plus nationalities)
- Global Advisor and director– Sampoorana Global (Social enterprise- Augmenting menstrual hygiene for young girls)
- European Director– E2Labs– Critical Infrastructure Cyber-security Solutions. Partner– Exasun (Innovative Solar panels)
- Partner– BSS Holland (Defense Security Solutions) Mentor in World Startup Factory

A Lecture-cum-Interaction Session was organized a on 28<sup>th</sup> November, 2017 on **“Career Opportunities for Engineering Students: is Entrepreneurship a Viable Option?”**

During the interaction, Mr. Ajay explained the importance of balanced outlook towards career opportunities that includes conventional Jobs as well as entrepreneurial opportunities. He cited his own experience and growth as an example to lay emphasis on the view that- jobs provide level growth but more security. On the other hand, entrepreneurial activities provide more growth opportunities although involve more risk factors.

He explained that the best compromise of the two options has to be person specific and each individual must take his call on the basis of his comfort level. He stressed on introducing guarded entrepreneurial opportunities educational institutions to inculcate suitable mindset in the without actually exposing them to the risk factors. Students motivated by speaker and hand fruitful interaction and an impromptu session on innovations that they want to convert Start-up.



2. Motivational lecture and Interaction Session organized a on 8th December, 2017 on **“Internship, Choices, Career”**

*Rajendra S Pawar, Chairman & Managing Director, NIIT Ltd.*

Rajendra S Pawar is the Chairman and Co-Founder of NIIT Group that encompasses NIIT Limited, a leading Global Talent Development Corporation, and NIIT Technologies Limited, the software and

services arm. As a co-founder of the NIIT Group, Pawar has not only revolutionized the IT training industry, but is also recognized as a global technology thought leader.

As the Chairman of India's IT industry body- National Association of Software and Service Companies (NASSCOM), Pawar has led several ICT industry initiatives, giving voice to the sector's aspirations and goals. Earlier during 1990-92, as President of MAIT (Manufacturers' Association for Information Technology), Pawar integrated MAIT's activities with other leading industry associations in India.

A Fellow member of the Computer Society of India (CSI) and the Institution of Electronic and Telecommunication Engineers (IETE), Pawar was awarded an Honorary Doctoral Degree by Rajiv Gandhi Technical University (MP) in 2005.

#### **Awards and Accomplishments**

- Acknowledging his contribution to the IT industry in India, Pawar has been awarded the
- country's prestigious civilian honour, Padma Bhushan by the President of India in 2011
- Pawar is a member of the Prime Minister's National Council on Skill Development and has served the Prime Minister's National Task Force (1998) commissioned to develop India into an IT Superpower
- An advisor to the Hunan Province of China, he has also been a member of PIAC (Presidential International Advisory Council) of the Government of South Africa for IT
- As a founding member of the International Business Council of the World Economic Forum,

Pawar is deeply engaged in addressing issues of global significance

- Global Business Intelligence firm, Ernst & Young conferred Pawar with its prestigious “Master Entrepreneur of the Year” award, in 1999. He has also been named as the “IT Man of the Year” by IT industry journal, Dataquest
- Pawar has been awarded ‘The Global India Splendor Award’ on the occasion of the 60th
- year of Indian independence, for his work in developing human resource potential
- He has received ‘Distinguished Alumnus Award’ from IIT Delhi in 1995 and ‘Madhav Award’ from The Scindia School
- Pawar has also been honoured with the prestigious ‘Nayudamma Award’ in 2012, for his
- continued contribution to the IT industry in India

Mr. Pawar referred to historical developments in human society and how they resulted in agrarian, scientific, industrial and information revolutions. He said that the current century is the period of knowledge revolution. The industrial revolution was driven by innovations that reduce, and if possible remove, human intervention, whereas the knowledge revolution is driven by products having human being as the centre of the theme. This resulted in decline of conventional job careers and germination of altogether new paradigms of jobs, entrepreneurial objectives and innovations.

He also explained that the current generation professionals has better opportunities to explore and take risks as their typical career is spanned over 70 – 80 years. He urged the students to take a plunge in whatever endeavor they deem suitable without worry as they have ample time to switch. The session ended with a prolonged interaction with students. The impromptu session was highly appreciated and enjoyed by the students.

## **6. Regularly conducting Alumni meet**

The ‘Alumni Association of Dayalbagh Educational Institutions (AADEIs)’ closely works with DEI and provides dedicated support in all activities of DEI. It has contributed significantly through financial and non-financial means during the last five years:

1. Installation of EDUSAT facilities at a number of Study Centers, establishment of ICT Centres at Delhi, Timarni and Bangalore and also upgradation of the Multimedia lab and e-class rooms at DEI.
2. Seed funds for initiating Research in the area of Astro particle Physics, which eventually matured into an MoU with TIFR, Mumbai. It has created a chair of excellence in the Music Department.
3. Under Graduate Research Awards (UGRA) to encourage undergraduate students to take up research projects.
4. Development of Instruction books for vocational courses for Open and Distance Learning.
5. Short Courses on Soft Skills, Spoken English, Personality Development and skills to face Interviews, Resume Writing, Elementary Computer Courses, TALLY ERP 9, Advanced Computer Courses on Networking regularly on campus not only to DEI students, but also for unemployed graduates.
6. Special coaching for NET, GATE and civil services examinations.
7. Sponsored International Conferences conducted by DEI.

8. Sponsored faculty and students to participate in International Conferences abroad.
9. DEI Alumni Placement Assistance Cell (DEI-APAC), a wing of AAEIs helps in placement of DEI graduates.
10. Summer training and Co-op-Internship of students. It arranges to oversee the training by assigning this duty to an alumnus working in that Organization.
11. Unique mentorship program by assigning expert alumni to guide the final year engineering students in their projects in distance mode.
12. Campus development
13. The Alumni living in USA have registered a separate Association 'AAFDEI', to help DEI in its overseas activities: financing visits of eminent scientists from USA, assistance to DEI faculty and students in USA for research and establishment of Distance Education Study Center at Colombo.
14. Active members of various academic and administrative bodies of the Institute.
15. Conduct surveys to take feedback from all stakeholders and suggest improvements.
16. Deliver invited talks, guest lectures and seminars.
17. Provide counseling to students for employment.
18. Active members of IQAC.
19. Act as judges in cultural and sports competitions.
20. Actively help in organization and management of extensive outreach activities of the Institute.
21. Provide sponsorship and support for printing of magazines, conference proceedings, and brochures.
22. Offer services as mentors of DEI distance education programmes in India and abroad.
23. Offer honorary services to teach, guide research and help in establishing ICT centres in India and abroad.
24. Serve as role models for students through distinguished services in different fields of service.
25. Helped in organizing Alumni Reunion events.

**Number of Alumni Association /Chapters meetings held year wise during the last five years**

2013-14	2014-15	2015-16	2016-17	2017-18
3	3	5	4	2

**7. Increased stay of students at industry for internship**

Relevant exposure of industry environment to students is given through internship in summer terms of I & II years and through Six month Cooperative Education Programme for students. Some salient points of Coop training programme are presented hereunder-

## Cooperative Education Programme

➤ BHEL  
 ➤ Schneider  
 ➤ PGCIL  
 ➤ Siemens  
 ➤ Torrent Power  
 ➤ ESSAR Steels  
 ➤ Cadence  
 ➤ NXP  
 ➤ Zia Semiconductors  
 ➤ Analog Devices  
 ➤ Texas Instruments  
 ➤ TCS  
 ➤ Schlumberger  
 ➤ JSW  
 ➤ MITACS (Indo-Canada)  
 ➤ IITs

➤ DVVNL  
 ➤ UPPCL  
 ➤ Cognizant  
 ➤ DMRC  
 ➤ SunSure  
 ➤ Crompton Greaves  
 ➤ Keysight  
 ➤ HCL  
 ➤ IITs  
 ➤ DEI  
 ➤ NBCC  
 ➤ Phillips India  
 ➤ Airport Authority of India  
 ➤ STMicro Electronics  
 ➤ Microsoft  
 ➤ DVVNL/UPPCL

### 2017 Batch Status

- Students continue to pursue Final Year Major Project on industry problems identified during Coop Programme. **NINE** students of the present batch are working on problems acquired from SunSure, Essar Steel (paid through consultancy)
- **TEN** pre-placement offers already confirmed in Essar Steel, Zia Semiconductors, Cognizant Technologies, Cadence. More are expected.
- **TWO** students received Rs. 25000/- cash award each at Essar Steel for excellent performance.
- Best Trainee award at Cadence

From 2018 onwards, students will get stipend through TEQIP project sanctioned to the Faculty.

Sample training certificates are attached in Annexure Training Certificates.

### 8. Undertaken industry projects as B.Tech. major projects with supervisors from institute as well as industry

- Students continue to pursue Final Year Major Project on industry problems identified during Coop Programme. **NINE** students of the 2018 batch worked on problems acquired from SunSure, Essar Steel (paid through consultancy), with joint supervision from institute and industry.
- TEN pre-placement offers already confirmed in Essar Steel, Zia Semiconductors, Cognizant Technologies, Cadence. More are expected.
- TWO students received Rs. 25000/- cash award each at Essar Steel for excellent performance.
- Best Trainee award at Cadence

### 9. Preparing students for industry through various courses under the aegis of Industry-Institute Partnership Cell (IIPC).

Students are provided with ample support for enhancing their Industry Preparedness. Salient points are presented hereunder -



## Industry Preparedness

- Resume Writing/checking (650 students)
- Aptitude Test Practice (246 students in 10 sessions)
- Group Discussion Sessions (206 students in 9 sessions)
- Mock Interviews, 97 students
- Career Guidance (B. Tech 6th semester 260 students)
- Guest Lectures on Expectations from the Co-Op Trainee while at Internship in the Industry, for 6th Sem., Personal Effectiveness 190 students
- Soft Skills (45 students)
- Spoken English (45 students)
- Basic IT (51 students)
- Students Projects (DE/TD, Rural Engineering and Major Projects )



Above efforts by the department to have good interaction with industry resulted in excellent placement of students. Details of the same are presented hereunder

Electrical Engineering	Elect. Engg. with Specialization in Electronics	Elect. Engg. With Specialization in Computer Science
<b>Campus/off campus Placements at</b> BHEL, Siemens, IOCL, FIAT, Schneider, L&T, Kirloskar, PGCIL, BARC, Torrent Power, UPPCL, Crompton Grievies, DMRC, NPCIL, GE, ABB, Phillips India,	<b>•Campus/off campus Placements at</b> CISCO, Cadence, Freescale, ST Microelectronics, NXP, HCL, Analog Devices, Qualcomm, Huawei, LAVA, Freelancers	<b>•Campus/off campus Placements at</b> Microsoft, Google, Cognizant, Accenture, TCS, Adobe, LAVA, Headstrong, Oracle, Keysight,

To strengthen interaction with industries and to keep our students updated with the latest trends being followed in the industry, MoUs were signed with the following companies. Industry interactions help the students to acquire the practical knowledge. So in order to improve the technical abilities various industrial activities are carried out.

### Collaborations with Industries and Corporate Sectors and Institutions

#### a. International Collaborations

	Name of the University/Institute	Date of MoU	Area of Research & Collaboration and Scope of Activities & Benefits accruing to DEI
1.	University of Waterloo, Canada	17.7.2008	<i>Quantum Computing, Silicon Photonics with Departments of Mechanical Engineering, Electrical Engineering, Physics &amp; Computer Science</i> <ul style="list-style-type: none"> <li>• Publication of Books</li> <li>• Utilization of Experimental Facilities</li> <li>• Establishment of Centre for Quantum and Nano</li> </ul>

			Computing
2.	University of Maryland, College Park, U.S.A.	3.12.2011	<i>Nano-structured materials for photo-electro-chemical splitting of water to generate Hydrogen with Department of Chemistry, Physics &amp; Computer Science and Electrical Engineering</i> <ul style="list-style-type: none"> <li>• DST-NSF Research grant</li> <li>• Joint Research Publications Exchange visits</li> <li>• One joint Course each Semester from University of Maryland in Computer Science</li> </ul>
3.	Michigan State University, USA	14.2.2011	<i>International Agreement for Academic Cooperation with College of Engineering , College of Agriculture and Natural Resources, College of Education and Biometrics with Department of Physics &amp; Computer Science</i> <ul style="list-style-type: none"> <li>• Faculty Visits</li> <li>• Research Collaboration on UIDAI</li> <li>• Provisions for exchange of materials in education and research</li> <li>• Publications</li> <li>• Academic information</li> <li>• Exchange of Faculty and research scholars</li> <li>• Joint Research and meetings for education</li> <li>• Research and outreach</li> <li>• Technical assistance</li> <li>• Student exchanges</li> <li>• Joint curriculum development in support of K-12 education and joint development of innovative teaching methods</li> </ul>
4.	University of Missouri, USA	3.11.2011	<ul style="list-style-type: none"> <li>• Research Collaboration</li> <li>• Initiation of research on natural products for cancer treatment</li> </ul>
5.	Consciousness Quotient Institute (CQ-i), Romania	2013	<ul style="list-style-type: none"> <li>• Joint Publications</li> <li>• Collaborative Project (CQ-i)</li> <li>• Travel Grant awarded by CQ-i to CQ-i related research at TSC 2015 held in Finland</li> <li>• One of the faculty member (Education) is member of CQ-i team (since 2014) and one of the alumni of Faculty of Education is also member of CQ-I team</li> </ul>
6.	Simon Fraser University, Vancouver	2017	<ul style="list-style-type: none"> <li>• Visit of faculty for PDF</li> </ul>
7.	HAN University of Applied Sciences, Netherland	17.10.2014	<ul style="list-style-type: none"> <li>• Production and Operations Management, Lean Manufacturing</li> </ul>
8.	Vocational Training Authority of Sri Lanka, Colombo, Sri Lanka	20.10.2014	
9.	Irwin and John Jacob School of Engineering, University of California, San Diego	31.12.2014	
10.	Oakland University, Rochester, Michigan, USA	16.04.2015	<ul style="list-style-type: none"> <li>• Jointly organized two conferences: ICAM 2014 at Oakland University and ICAM 2015 at KNIT</li> </ul>



			Sultanpur and now are in the process of organizing a third conference ICAM 2017 at IIT BHU Varanasi in December 2017.
11.	Nano Characterization Unit, National Institute for Materials Science, Japan	16.5.2016	<p><i>Express the understanding of the parties to strengthen and promote research collaboration between the parties based upon the principles of equality, reciprocity, mutual respect, best effort and frequent interactions to</i></p> <ul style="list-style-type: none"> <li>• Strengthen and promote institutional exchange of personnel</li> <li>• Promote institutional exchange of scientific and technical information</li> <li>• Organize symposia, Conferences and workshops</li> <li>• Encourage joint research activities and other activities in the field of Materials Science</li> </ul>
12.	Christian Albrecht University of Kiel (CAU) , Germany (Letter of Intent)	17.2.2015 13.12. 2016	<ul style="list-style-type: none"> <li>• Joint Projects</li> <li>• Joint Lecture Series</li> <li>• Exchange Visits</li> <li>• Joint Publications</li> <li>• Joint Ph.D. Supervision</li> <li>• Shared Curricula and Courses</li> </ul>
13.	University of Arkansas	27.4.17	<ul style="list-style-type: none"> <li>• Exchange of Information</li> <li>• Exchange of Students and Faculty</li> <li>• Collaborative Programmes, Research and Seminars</li> </ul>

#### . b. Collaboration with National Universities and Institutes

	<b>Name of the University/Institute</b>	<b>Date of MoU</b>	<b>Area of Research &amp; Collaboration Scope of Activities &amp; benefits accruing to DEI</b>
1.	Indian Institute of Technology, Delhi	17.09.2007	<p><i>Computer Science, Nano-science and Management with Departments of Physics and Computer Science Electrical Engineering Management</i></p> <ul style="list-style-type: none"> <li>• Ph.D. under joint supervision</li> <li>• Joint courses every Semester taught jointly by both</li> </ul>
2.	TIFR, Mumbai	13.10.2007	<p><i>Astro-particle Physics, Nano-photonics with Department of Physics and Computer Science</i></p> <ul style="list-style-type: none"> <li>• R &amp; D</li> <li>• Utilization of Experimental Facilities</li> <li>• Joint Experiments</li> <li>• Joint Publications</li> </ul>
3.	Indian Institute of Technology, Kanpur		<p><i>Quantum and Nano Computing with Departments of Mechanical Engineering Physics and Computer Science</i></p> <ul style="list-style-type: none"> <li>• Publication of books as joint authors</li> <li>• Organization of Joint International Conferences</li> </ul>
4.	International Centre for Genetic Engineering (ICGEB), New Delhi	27.4.2012	<p><i>Biotechnology with Departments of Chemistry Zoology, Botany</i></p> <ul style="list-style-type: none"> <li>• Research Experiments</li> <li>• Establishing Post Graduate Diploma in</li> </ul>

			Environmental Biotechnology
5.	Indian Institute of Management, Bangalore	24.5.2014	<i>Supply Chain Management Center, IIM Bangalore with Department of Management</i> <ul style="list-style-type: none"> <li>• Joint research papers in Supply Chain Management Programme</li> <li>• Faculty Exchange</li> <li>• Faculty Visits</li> </ul>
6.	Centre for Development of Advanced Computing (CDAC), Pune		<i>Algorithms for recognition of similar trademarks with Department of Mechanical Engineering</i> <ul style="list-style-type: none"> <li>• Technology transfer to CDAC for Commercialization</li> </ul>
7.	Tata Institute of Social Sciences, Mumbai	24.05.2015	<i>Collaboration in the areas of Management, Sociology and Political Science</i> <ul style="list-style-type: none"> <li>• Joint Curriculum Workshop</li> <li>• Joint research supervision</li> <li>• Faculty Exchange</li> <li>• Faculty Visits</li> </ul>
8.	Mahatma Gandhi Chitrakoot Gramoudhyog Vishavidyalaya, Chitrakoot, Satna, M.P	4.09.2015	
9.	ICAR- National Dairy Research Institute Karnal, Haryana	3.10.2015	<ul style="list-style-type: none"> <li>• Visit and Special Lectures by experts</li> <li>• Student Internship</li> </ul>
10.	Indian Institute of Technology, New Delhi	07.09.2016	<i>Collaboration with Management, Physics and Computer Science and Electrical Engineering</i> <ul style="list-style-type: none"> <li>• Joint Courses</li> <li>• Joint supervision</li> </ul>
11.	Dr. Y.S. Parmar University of Horticulture and Forestry, Nauni, Solan	16.02.2016	<i>Major emphasis on faculty development, remote sensing, nanotechnology, biotechnology, natural products development, analysis of food and natural products, solar energy utilization, student exchange under sandwich programmes and development of a model farm near Nainatikkar by DEI</i> <ul style="list-style-type: none"> <li>• Research in the areas of mutual interest in areas of (1) Horticulture (2) Value-based agriculture and food processing, (3) Cultivation of medicinal Plants, (4) Floriculture, and (5) Remote sensing</li> <li>• Joint programmes of study through video conferencing and other multimedia facilities.</li> <li>• Promote collaborations between individual scientists in terms of research and project undertakings.</li> <li>• Providing opportunities to the academic staff to collaborate for the purposes of research, teaching and other outreach activities.</li> </ul>
12.	Jain Irrigation Systems Ltd. Jalgaon, Maharastra	31.03.2017	
13.	School of Planning and Architecture, Delhi	May, 2017	<i>Collaboration in the Fields of Architecture, Urban Planning and Civil Engineering</i> <ul style="list-style-type: none"> <li>• Exchange Programs</li> <li>• Joint Courses</li> <li>• Curriculum Workshops</li> </ul>

14.	Telecom Sector Skill Council		<i>Introducing Skill Based Training (Additional) in all the Colleges and Institutions of DEI as a part of Curricula of various Post Graduate (PG) and Under Graduate (UG) Courses/Programs</i>
15.	BeejSheetal Research Pvt. Ltd. Jalna, Maharashtra	5.5.2017	<ul style="list-style-type: none"> <li>• Training of students of UG in B.Voc Agricultural technology and Water sanitation &amp; solid waste management Stream and other students of DEI</li> <li>• Joint supervision of Dissertation Project</li> <li>• Provide knowledge for capacity building and human resource development</li> <li>• Deliver Lectures/Invited Talks</li> </ul>
16.	National University Education Planning and Administration		• Mutual Experts , Resource Persons
17.	NCERT		• Mutual Experts , Resource Persons
18.	University of Allahabad Kurushetra University Central Institute of Education Aligarh Muslim University		• Mutual Experts , Resource Persons, Examiners
19.	National Council for Technical Education, NCTE		• Members Peer Group Verification Teams

#### c. Collaborations with Ministries and National Missions

	Name	Date of MoU	Area of Research & Collaboration Scope of Activities & benefits accruing to DEI
1.	Madhya Pradesh Bamboo Mission, Bhopal Centre for Green Mission Building Material and Technology, Bengaluru	02.03.2014	<i>9-week modular course offered in the six Study Centres of M. P. including Timarni, Rajaborari Study Centres in the tribal belt of Harda district of M.P.</i> <ul style="list-style-type: none"> <li>• Start a modular course in Bamboo Application Technology</li> <li>• Over 100 artisans were sponsored by MPSBM and they successfully completed the course during the 2014-15 session</li> </ul>
2.	UP Skill Development Society	13.08.2015	
3.	Ministry of Micro, Small and Medium Enterprises, New Delhi	23.09.2015	• Student Training
4.	The Ministry of Textiles (*MOT*), R.K.Puram, New Delhi	19.05.2017	<i>Link with Department of Drawing and Painting</i> <ul style="list-style-type: none"> <li>• Upgrading and Imparting skills in different trade of Handicrafts</li> <li>• Provide an opportunity for the artisans to upgrade their skills, interact with other craftsmen</li> <li>• Create livelihood opportunity</li> </ul>

#### d. Collaborations with Industries and Corporate Sectors

	Name of the Industry/Company	Date of MoU	Area of Research & Collaboration Scope of Activities & benefits accruing to DEI
1.	Indian Oil Corporation, Faridabad	10.10.2014	<i>Indian Oil Corporation (R&amp;D Centre) Faridabad with Department of Chemistry</i>

			<ul style="list-style-type: none"> <li>• For scaling up solar hydrogen generation by photo-electrochemical splitting of water</li> <li>• Scaling up of photoelectrode from 1x1 to 3x3 has been standardized while 6x6 is the final target</li> </ul>
2.	Maruti Suzuki India Ltd.	20.04.2010	<i>Collaboration with Department of Automobile Engineering</i> <ul style="list-style-type: none"> <li>• Workshop set up</li> <li>• Student Training</li> <li>• Staff exchange</li> </ul>
3.	Bharat Heavy Electricals Ltd.	12.08.2010	<i>Collaboration with Department of Electrical Engineering Engineering</i> <ul style="list-style-type: none"> <li>• Student Training</li> </ul>
4.	India Yamaha Motor Pvt. Ltd.	22.10.2011 21.06.2015 09.06.2017	<i>Collaboration with Department of Automobile Engineering</i> <ul style="list-style-type: none"> <li>• A specialized Two-Wheeler Training Workshop was set up in Department of Automobile Engineering in which the students had undergone specialized training to enhance their employment opportunities and were also awarded Certificate of Proficiency by the Company</li> </ul>
5.	Honda Motorcycle and Scooter India Pvt. Ltd., Maanesar, Gurgaon	4.12.2012	<ul style="list-style-type: none"> <li>• Provide training to trainees and mentors of Painting and Welding Course</li> <li>• Provide practical teaching aids to these courses</li> </ul>
6.	TVS Motor Company Ltd., Chennai	9.08.2013	<i>Collaboration with Department of Automobile Engineering</i> <ul style="list-style-type: none"> <li>• Student Stipend</li> <li>• Training and Final Placement</li> </ul>
7.	Dayal Motors Agra		<ul style="list-style-type: none"> <li>• Providing skill –based training to students who have enrolled for vocational training at various levels</li> </ul>
8.	Mitsubishi Electric India Pvt. Ltd. Gurgaon, Haryana	17.03.2015	<ul style="list-style-type: none"> <li>• Student Training and Placement</li> </ul>
9.	Oasis Fabrications, Yamuna Nagar, Haryana	3.09.2015	<ul style="list-style-type: none"> <li>• Student Training and Placement</li> </ul>
10.	Genpact India Pvt. Ltd. Hyderabad	10.06.2016	<ul style="list-style-type: none"> <li>• Student Training and Placement</li> </ul>
	Swami Sivananda Memorial Institute, New Delhi		<ul style="list-style-type: none"> <li>•</li> </ul>

**e. Collaborations with Medical Research Centres and Hospitals**

	<b>Name of the Center</b>	<b>Date of MoU</b>	<b>Area of Research &amp; Collaboration Scope of Activities &amp; benefits accruing to DEI</b>
1.	Dr. Kamlesh Tandon Hospital and Test Tube Baby Centre, Agra	10.5.2016	<i>Collaboration in the field of Paramedical</i> For Student Training and Placement
2.	Lotus Super Speciality Hospital, Agra	10.5.2016	

3.	Purushottamdas Savitri devi Cancer Care and Research Centre, Agra	10.5.2016	
4.	Asopa Hospital and Research Centre, Agra	10.5.2016	

### Industrial Visits:

Industrial Visits for three days are organised every academic year and this activity has a 1 credit. Students of First year are divided in batches and visits industries for three days in and around Agra and within a range of 50 Km radius. Second year students also visits industries within a radius of 250 Km. Each batch is associated with teacher mentors. After the visit the students are asked to submit a visit report and the an internal viva by a group of teachers is conducted followed by an End semester external viva by an external examiner. A tentative list of the industries/Establishments visited by the students is given below:

S. No.	Industry
1	M/s. Atul Generators Pvt. Limited, Agra
2	M/s. Kotsons Transformers, Agra
3	M/s. Marsons Transformers, Agra
4	M/s. Raj Pattern Works, Agra
5	M/s. Basant Industries, Agra
6	220 kV Substation, UPPCL, Agra
7	400 kV Substation, UPPCL, Agra
8	Diesel Loco Shed, Indian Railways, Agra
9	U P Roadways Maintenance Depo, Agra
10	M/s. Prakash Agriculture Industries, Agra
11	Amar Ujala Press, Agra
12	Creambell Industry, Mathura
13	Pepsi, Mathura
14	Mathura Refinery, Mathura
15	Bhole Baba Dairy, Mathura
16	Havells India, Neemrana, Rajasthan
17	ACE, Faridabad
18	Moeserbaer, G Noida
19	YAMAHA Motors, Surajpur, G Noida
20	Maruti Suzuki, Manesar, Gurgaon
21	HVDC Power Plant, PGCIL, Dadri

### 2.2.5. Initiatives related to industry internship/summer training (10)

*(Mention the initiatives, implementation details and impact analysis)*

#### Industrial Internship

Marks awarded by Internship Coordinator & HOD/HOD Nominee based on the Progress of the project evaluated periodically (2 times) – 30 Marks + 20 Marks Consolidated marks list is signed by the industrial Internship Coordinator. Final Marks are entered by Industrial internship coordinator. Internship Coordinator & HOD/HOD Nominee will conduct the Examination.

**Internships:** The students are encouraged to take up intern ship programs during their semester break. Faculty members give their guidelines, suggestions and scope and contact details of an internship. They also help the students by interacting with the industrial experts, provide the students recommendation letters and other necessary supports. The alumni coordinator constantly interacts with alumni those who are working in the industries and request them to provide necessary guide lines and supports for their junior's internship.

- i. Summer training is a compulsory credit course to be completed in the summers after I and II years. The duration after I year is 30 days and the duration after II year is 40 days.
- ii. Some of the industries / Institutes where the students regularly go for summer training include but are not limited to BHEL, Torrent Power, UPPCL, IIT Delhi, ADRDE, Kirloskar, DEI USIC etc.
- iii. After the Third Year, the students go for a 5 month Co-op Internship to various Industries. The duration is long enough for them to be given some live project work and most industries do take advantage. Many students also get some monetary incentives for the training period going upto Rs 25,000 per month. Some industries offer free boarding and / or lodging.
- iv. Some of the industries where the students regularly go for co-op internship include Analog Devices, Texas Instruments, Essar Steel, Maruti, IIT Delhi, Cadence Design Systems, start-ups in Bangalore / NOIDA etc.

#### **Implementation details:**

- i. The Department has a strong Alumni Network across the country. The Alumni not only help arranging for the Co-op Internships but also mentor the students in their internship. The Placement cell coordinates this effort and ensures that every student gets the summer training / co-op internship opportunity in some industry / educational / R&D Institution.
- ii. Training sessions are conducted in DEI by the Alumni before the students go for their Internship on the dos and donts during the Internship. iii. The Alumni mentors also mentor the students during the Internship so that they get the maximum benefit by working on live projects.
- iv. Faculty members are assigned students that they have to evaluate according to the geographical spread of the industries. The industries are clustered into clusters based on the geographical location and one cluster is assigned to one Faculty member. Faculty members coordinate with the Industry personnel mentoring the students in their internship and get feedback on their performance through telephone / email interaction on a regular basis. This enables mid-course correction in case some student has some performance issues. They may also visit the industries where the students are in their internship and get first hand feedback.
- v. Students are required to submit a report of the work done during their Summer training / co-op internship when they come back to the Institute after the completion of these endeavours. They need to make a presentation to a Departmental committee that is set up for the purpose and face a Viva examination.
- vi. There is an external end semester examination also where the external examiner who is typically an Industry person evaluates their performance. These evaluations ensure that the training / copop Internships are taken up very seriously by the students.

## Impact Analysis

- i. The industry exposure helps a lot in personality development of the students. For many students it is their first experience of staying away from home on their own. They learn to do manage. They are also exposed to industry culture and learnt to communicate with their industry mentors and perform tasks assigned within the given time frame in an industrial setting. The change in their personality is evident when they come back from the industry. They are more confident and more articulate.
- ii. Many students, who perform well, get Placement offers from the industry where they do their coop internship. In some cases there is a request that the student be allowed to join the industry earlier than the May of next year when they complete their graduation. Requisite arrangements are made in such cases to enable the student to complete the remaining credits through online mode and come to the Department for appearing in the tests / exams. In some cases these are arranged in the DEI local centres in the city where the student works.
- iii. One big advantage that the industry gets in offering the co-op training is that they get to observe the student for a considerable period i.e. 5 months and can evaluate their strengths / weaknesses better. In case they offer placement they can also ask the student to work on the weaknesses identified in their Final Year so that they are ready to be productive from day one when they join the industry after Graduation. This has been a very successful model in many cases.
- iv. Some students get their Final Year Major project ideas from their co-op training. They continue to be in touch with their industry mentor and many work on the project under their joint supervision. This is permitted by the Department.
- v. Some students work on projects that are industry sponsored and get paid for the work done in the Final Year major project. These incentives help raise the quality of the work done.

Training, counselling and placement is offered to every graduating student for her to be confident and competitive in her choice of career and for inculcating entrepreneurial skills.

Students of the institution are employed in Financial Institutions, educational institutions, IT companies, automobile industries, central and state government services, textiles industries and core engineering industries. During their course of study a five month Cooperative Education programme is made compulsory. Co-operative education is a structured method of combining classroom-based education with practical work experience in the industry. It entails cooperation between Institute and Industry to produce trained professionals. DEI is collaborating with University of Waterloo (a global leader in the Co-op education model) and has launched its own Co-op model in 2013, suitably adapted to Indian conditions. The model aims at development of 'employability skills' through the introduction of a 6 month industry stint as part of the course requirement.

Indian Industry has lately been very concerned with the lack of requisite technical and soft skills of students entering industry. The recent 'National Employability report' claims that 47% of graduates across India are unemployable for any job<sup>1</sup>. The time and cost of training students after

education is becoming a major challenge for industry. Three key reasons why DEI has launched the Co-op model are:

- Global practices
- Need expressed by industry in various interactions and forums in the past
- Need for reducing high rates of attrition amongst fresh graduates due to mismatch in culture and expectations

The Co-op model was launched by DEI in 2013 for its Engineering and MBA programmes. 100% of the students were placed within 5 months of the launch of the programme. The feedback from the first set of returning students has been excellent. 80% of companies paid stipend or provided some non-financial support.

While the cost of recruiting, training and developing a fresh graduate can be upwards of one year's salary, most fresh graduates leave the organisation within 2 years due to non-fitment with culture and working environment. The Co-op model allows organisations to observe the candidate closely for an extended period of time thus allowing a deeper understanding of the competencies and fit of the student. The students bring fresh ideas and perspectives to the organisation and they can be assigned routine duties or special projects. Students on the other hand gain immensely through an extended on-the-job understanding of how academic principles are applied in real situations and an opportunity to test the skills learnt in the classroom. The interaction and feedback from re-turning students and participating organisations allows the University to enhance and improve its curriculum. With a deeper understanding of the industry, which grows with each passing year, the faculty are able to relate practice to theory better.

Summer Training process is of a short duration and primarily aimed towards exposing students to industry practices. By the time students learn about the organisation and its processes, the training period is close to completion. Co-op model on the other hand is a partnership between the industry and the institute. Assignments (routine as well as special) are given with a view to

let the student face real situations with intensive supervision by the project guide and supported by the faculty of the institute. The longer period also allows the organisation to understand the personality and motivation of the student and use this information at the time of recruitment. The stipend or some other non-financial support provided by the organisation helps motivate the trainee to deliver his or her best performance and industry also gets involved in overseeing the trainee's work. A request letter in the following format is sent to the industries for training.





DAYALBAGH EDUCATIONAL INSTITUTE  
(Deemed University)  
DAYALBAGH, AGRA – 282005, U.P., INDIA  
Phone: (0562)-2801545; Fax: (0562)-2801226  
Web: <http://www.dei.ac.in/>

January 20, 2018

To,  
Manager (HR)  
Cadence Design Systems  
NOIDA

Dear Sir/Madam,

Greetings from Dayalbagh Educational Institute!

DEI is a Deemed University located in Dayalbagh, Agra, well known for its academic ascendancy and extramural excellence. DEI has been accredited by the National Assessment and Accreditation Council (NAAC) and has been awarded an 'A' grade in October 2013. In 2009, a Committee set up by the Ministry of Human Resource Development (MHRD) under Professor P.N.Tandon placed DEI in 'A' category, third in rank and 8th among all 130 Deemed Universities under review. Recent overall NIRF ranking of the Institute is 63 and the All India NIRF Ranking of the DEI Faculty of Engineering is 69.

From the year 2013, the DEI Faculty of Engineering introduced a compulsory 5-month Co-operative Education Internship Program for B.Tech. students after completion of their 6th semester of study. This unique internship program is one of very few such available in the country that offers a structured method of combining classroom-based education with practical work experience in the industry. It entails cooperation between Institute and Industry to produce trained professionals to meet current industry needs/skills. You will be happy to note that this initiative has been very well received by industry and over 60 companies / institutions have already participated in the program.

A brief introduction to the Co-operative Program (Co-op Program) is attached along with this email for your kind perusal. For B.Tech. students, the program is scheduled to run from April 01, 2019 till August 31, 2019.

Towards this end, we earnestly solicit your help and support by accommodating some of our B.Tech. (Electrical) students for the Co-op internship training in your esteemed organization as was being done in the past. I am enclosing the CVs of the following students who wish to undergo internship in your esteemed organization.

1. \_\_\_\_\_

I request you to kindly provide necessary facilities for the same at your works. The students may be allotted focused projects for the benefit of your organization under the joint supervision of an expert from your organization as well as faculty from our institute. We eagerly await your response to this email so that we can take the Co-op Program forward.

Thanking you and looking forward to hearing from you,  
Sincerely,  
Internship Coordinator

<b>CRITERION 3</b>	<b>Course Outcomes and Program Outcomes</b>	<b>175</b>
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### 3.1. Establish the correlation between the courses and the Program Outcomes (POs) & Program Specific Outcomes (25)

- NBA defined Program Outcomes as mentioned in Annexure I and Program Specific Outcomes as defined by the Program. Six to ten matrices of core courses are to be mentioned with at least one per semester.
- Select core courses to demonstrate the mapping/correlation with all POs and PSOs.
- Number of Outcomes for a Course is expected to be around 6.

#### Program Articulation Matrix

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	P0 12	PSO1	PSO2	PSO3	PSO4
MEM102	3	2	1	1	1	0	0	0	0	0	0	1	3	3	0	3
EEM-202	3	2.6	1.6	0.6	1.6	0	1.2	0	0	0	0	1	3	1.6	0	3
EEM-301	3	3	2.2	0	1	0	1.6	0	0	0	0	1	3	1.6	0	3
EEM-305	3	3	1	1	1	0	0	0	0.4	0	0	1	3	0.8	2	3
EEM-403	3	3	0.4	1.8	2	0	0	0	0	0	0	0	2.2	2.8	1.8	3
EEM-501	3	3	0.6	0	2.6	0	0	0	0.6	0	0	2	3	1.2	3	3
RDC581	3	1.6	1.4	1.4	0.4	0	3	0	0	0	0	0	2	3	0	3
EEM-604	3	3	0	2	1.2	0	1.8	0.6	0	0	0.4	0	2	2	0	2.6
CEC 681	0	0	0	0	0	0	2	3	0	1.4	0	3	0.8	1.6	3	3
EEM-706	3	3	0.8	0	0	0	0	0	0	0	0	1	2	1	2	3
EEM717	2	2	2	2	1	0	2	1	1	0	0	2	3	2	3	3
EEM-812	2.2	1.6	2	0	2	0	0	0	1	0	2.2	0	3	2	3	3

**Table B.3.1a**

### Course Articulation Matrix

MEM102	Engineering Drawing	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03	PS04
MEM 102.1	Understand the basic concepts of Engineering Drawing	3	2	1	1	1	0	0	0	0	0	0	1	3	3	0	3
MEM 102.2	Understand projections	3	2	1	1	1	0	0	0	0	0	0	1	3	3	0	3
MEM 102.3	Draw the section of solids, intersection of surfaces and development of surfaces	3	2	1	1	1	0	0	0	0	0	0	1	3	3	0	3
MEM 102.4	Learn isometric projections and plane geometry	3	2	1	1	1	0	0	0	0	0	0	1	3	3	0	3
MEM 102.5	Apply the concepts of engineering Drawing in the industries.	3	2	1	1	1	0	0	0	0	0	0	1	3	3	0	3
MEM102		3	2	1	1	1	0	0	0	0	0	0	1	3	3	0	3
EEM-202	BASIC ELECTRICAL ENGINEERING	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03	PS04
EEM 202.1	Recall basic concepts of Electrical Engineering	3	3	1	1	2	2	0	0	0	0	0	1	3	0	0	3
EEM 202.2	Explain basic concepts of AC circuits	3	3	1	1	2	2	0	0	0	0	0	1	3	2	0	3
EEM 202.3	Explain the principle of operation of transformer with background of magnetic circuits	3	3	2	1	2	2	2	0	0	0	0	1	3	2	0	3
EEM 202.4	Classify and compare different types of Electrical machines	3	2	2	0	1	2	2	0	0	0	0	1	3	2	0	3
EEM 202.5	Classify different	3	2	2	0	1	2	2	0	0	0	0	1	3	2	0	3

	electrical measuring equipment																
EEM-202		3	2.6	1.6	0.6	1.6	0	1.2	0	0	0	0	1	3	1.6	0	3
EEM-301	BASIC ELECTRONICS	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03	PS04
EEM 301.1	Analyze and design diode circuits	3	3	3	0	1	2	2	0	0	0	0	1	3	0	0	3
EEM 301.2	Analyze BJT based circuits	3	3	2	0	1	0	0	0	0	0	0	1	3	2	0	3
EEM 301.3	Classify BJT amplifiers and design OpAmp based linear and nonlinear circuits	3	3	2	0	1	2	2	0	0	0	0	1	3	2	0	3
EEM 301.4	Explain concepts of digital systems and analyze combinational circuits	3	3	2	0	1	2	2	0	0	0	0	1	3	2	0	3
EEM 301.5	Analyze and design basic Sequential circuits and understand ADC, DAC concepts	3	3	2	0	1	2	2	0	0	0	0	1	3	2	0	3
EEM-301		3	3	2.2	0	1	0	1.6	0	0	0	0	1	3	1.6	0	3
EEM-305	SIGNALS AND SYSTEMS	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03	PS04
EEM 305.1	Classify the signals and systems	3	3	1	1	1	2	0	0	0	0	0	1	3	0	2	3
EEM 305.2	Analyze the time response of LTI systems	3	3	1	1	1	2	0	0	0	0	0	0	3	0	2	3
EEM 305.3	Analyze the spectral characteristics of signals	3	3	1	1	1	2	0	0	1	0	0	1	3	1	2	3
EEM 305.4	Identify system properties based on impulse response and Fourier analysis.	3	3	1	1	1	2	0	0	0	0	0	1	3	1	2	3

EEM 305.5	Apply transform techniques to analyze continuous-time and discrete-time signals and systems	3	3	1	1	1	2	0	0	1	0	0	2	3	2	2	3
EEM-305		3	3	1	1	1	0	0	0	0.4	0	0	1	3	0.8	2	3
EEM-403	NETWORK ANALYSIS AND SYNTHESIS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03	PS04
EEM 403.1	Understand the concept of network topology and apply it for various formulations.	3	3	0	1	2	0	0	0	0	0	0	0	2	2	0	3
EEM 403.2	Apply basic circuit laws and simplify the network using reduction techniques and theorems.	3	3	0	1	2	0	0	0	0	0	0	0	2	3	0	3
EEM 403.3	Understand time domain analysis and evaluate transient response, Steady state response	3	3	0	2	2	0	0	0	0	0	0	0	2	3	3	3
EEM 403.4	Understand frequency domain analysis, use Fourier transform and Laplace transform for analyzing circuits.	3	3	0	2	2	0	0	0	0	0	0	0	2	3	3	3
EEM 403.5	Define network functions and Synthesize networks using Foster and Cauer Forms.	3	3	2	3	2	0	0	0	0	0	0	0	3	3	3	3
EEM-403		3	3	0.4	1.8	2	0	0	0	0	0	0	0	2.2	2.8	1.8	3
EEM-501	LINEAR CONTROL ENGINEERING	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03	PS04
EEM 501.1	Define transfer function using	3	3	0	0	2	1	0	0	0	0	0	2	3	0	3	3

	mathematical modeling																
EEM 501.2	List out control system components and define basic control actions	3	3	0	0	2	1	0	0	0	0	0	2	3	0	3	3
EEM 501.3	Analyze time response of 1st and 2nd order systems	3	3	0	0	3	2	0	0	1	0	0	2	3	2	3	3
EEM 501.4	Define stability and apply various techniques to find stability of a system	3	3	0	0	3	2	0	0	0	0	0	2	3	2	3	3
EEM 501.5	Design compensators	3	3	3	0	3	2	0	0	2	0	0	2	3	2	3	3
EEM-501		3	3	0.6	0	2.6	0	0	0	0.6	0	0	2	3	1.2	3	3
RDC581	AGRICULTURAL ENGINEERING	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03	PS04
RDC 581.1	Classify Agricultural Implements, identify appropriate instrument for different operations.	3	2	2	2	1	3	3	0	0	0	0	0	2	3	0	3
RDC 581.2	explain design aspects of tractors	3	1	1	1	0	3	3	0	0	0	0	0	2	3	0	3
RDC 581.3	Outline the process of Grain storage and drying	3	2	1	1	0	3	3	0	0	0	0	0	2	3	0	3
RDC 581.4	Explain various process employed in dairy	3	2	1	1	0	3	3	0	0	0	0	0	2	3	0	3
RDC 581.5	State principles of IRRIGATION ENGINEERING and design an Irrigation-Channel	3	1	2	2	1	3	3	0	0	0	0	0	2	3	0	3
RDC581		3	1.6	1.4	1.4	0.4	0	3	0	0	0	0	0	2	3	0	3

EEM-604	APPLIED SYSTEMS ENGINEERING	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03	PS04
EEM 604.1	Explain Physical Systems Theory	3	3	0	0	0	3	3	3	0	0	2	0	2	2	0	2
EEM 604.2	Develop mathematical models of systems using physical system theory	3	3	0	2	0	2	2	0	0	0	0	0	2	2	0	3
EEM 604.3	Use graph theoretical techniques for modeling of systems	3	3	0	2	2	2	2	0	0	0	0	0	2	2	0	3
EEM 604.4	Develop State space models of continuous time systems using physical systems theory	3	3	0	3	2	2	0	0	0	0	0	0	2	2	0	2
EEM 604.5	Analyze performance of systems	3	3	0	3	2	2	2	0	0	0	0	0	2	2	0	3
EEM-604		3	3	0	2	1.2	0	1.8	0.6	0	0	0.4	0	2	2	0	2.6
CEC-681	CULTURAL EDUCATION	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03	PS04
CEC 681.1	Para-phrase meaning, scope and nature of Indian culture	0	0	0	0	0	3	2	3	0	2	0	3	1	0	3	3
CEC 681.2	Describe Pre-Vedic Harappan Culture.	0	0	0	0	0	3	2	3	0	1	0	3	1	2	3	3
CEC 681.3	Classify Indian Literature	0	0	0	0	0	3	2	3	0	2	0	3	0	2	3	3
CEC 681.4	Explain salient aspects of Indian State and Society	0	0	0	0	0	3	2	3	0	1	0	3	1	2	3	3
CEC 681.5	Paraphrase various art forms of Indian Culture	0	0	0	0	0	3	2	3	0	2	0	3	1	0	3	3
CEC 681.6	Illustrate UNITY IN DIVERSITY in Indian culture	0	0	0	0	0	3	2	3	0	1	0	3	1	2	3	3
CEC-681		0	0	0	0	0	0	2	3	0	1.4	0	3	0.8	1.6	3	3

EEM-706	ELECTROMAGNETIC FIELD THEORY	P 01	P 02	P 03	P 04	P 05	P 06	P 07	P 08	P 09	P 010	P 011	P 012	PS 01	PS 02	PS 03	PS 04
EEM 706.1	Apply vector algebra to understand the behavior of static electric fields in standard configurations	3	3	1	0	0	0	0	0	0	0	0	1	2	1	2	3
EEM 706.2	Apply vector calculus to understand the behavior of static electric fields in standard configurations	3	3	1	0	0	0	0	0	0	0	0	1	2	1	2	3
EEM 706.3	Apply vector calculus to understand the behavior of static magnetic fields in standard configurations	3	3	1	0	0	0	0	0	0	0	0	1	2	1	2	3
EEM 706.4	Understand the time varying behaviour of electromagnetic fields	3	3	0	0	0	0	0	0	0	0	0	1	2	1	2	3
EEM 706.5	Describe and analyze electromagnetic wave propagation in free-space	3	3	1	0	0	0	0	0	0	0	0	1	2	1	2	3
EEM-706		3	3	0.8	0	0	0	0	0	0	0	0	1	2	1	2	3
EEM717	SEMICONDUCTOR CONTROLLED DRIVES	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03	PS04
EEM717.1	Determine performance parameters of dc drives	2	2	2	2	1	1	2	1	1	0	0	2	3	2	3	3
EEM717.2	Understand Supply side power factor and Harmonic factor control in rectifier circuits	2	2	2	2	1	1	2	1	1	0	0	2	3	2	3	3
EEM717.3	Analyze close loop control of dc motor	2	2	2	2	1	1	2	1	1	0	0	2	3	2	3	3



EEM717.4	Study variable voltage variable frequency (VVVF) sources	2	2	2	2	1	1	2	1	1	0	0	2	3	2	3	3
EEM717.5	Understand the working of VVVF fed ac drives	2	2	2	2	1	1	2	1	1	0	0	2	3	2	3	3
EEM717		2	2	2	2	1	0	2	1	1	0	0	2	3	2	3	3
EEM-812	OPERATING SYSTEMS	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03	PS04
EEM 812.1	Understand basic concepts of Operating Systems	1	0	0	0	0	0	0	0	0	0	0	0	3	2	3	3
EEM 812.2	Explain Process and Interprocess Synchronization	2	2	2	0	2	0	0	0	0	0	2	0	3	2	3	3
EEM 812.3	Understand Memory Management	2	2	2	0	2	0	0	0	1	0	3	0	3	2	3	3
EEM 812.4	Design Linux Operating System and Internal Structure	3	2	3	0	3	0	0	0	2	0	3	0	3	2	3	3
EEM 812.5	Learn programming in Linux Environment	3	2	3	0	3	0	0	0	2	0	3	0	3	2	3	3
EEM-812		2.2	1.6	2	0	2	0	0	0	1	0	2.2	0	3	2	3	3

**Table B.3.1b**

### 3.2 Attainment of Course Outcomes (75)

#### 1.2.1. Describe the assessment tools and processes used to gather the data upon which the evaluation of Course Outcome is based (10)

- i. An elaborate continuous evaluation system is in place including the following components.

**Theory Course:** Class Test1, Class Test2, Daily Home Assignments, Daily Class Assignments, Additional Assessment and Attendance for Internal Evaluation and one External End semester examination

**Practical Course / Project:** PV1, PV2, PV3, RC1, RC2, RC3, Attendance. PVs are Internal mid-term evaluations by Lab Course teacher / Project Supervisor and Departmental Committee and they are followed by an external end-semester examination.

- ii. In a Theory Course the Syllabus is divided into 5 units. The Class Test1 is typically based on the first three units and the Class Test2 is based on Units 3 to 5. These two reflect the performance in the corresponding units. Similarly DHA1 is based on the Daily Home Assignment1 is typically based on the performance in the DHAs and DCAs upto the CT1 and DHA2 is based on the performance in these evaluations after CT2. Typically 10 DHAs and 5 DCAs are there in each phase. These ensure regularity in the learning process and also ensure that the student gets a regular feedback on the performance in each course.
- iii. The Daily Assignments being in a sense of punctuality and regularity and inculcate in the student a habit of meeting daily targets which stand them in good stead when they join the industry because that is exactly what the industry demands.
- iv. The End-Semester is completely transparent to the Department and is conducted by an external Examiner unknown to the Department out of the panel constituted for the same with inputs from the Department. The performance on all five units of the syllabus is checked in the End-semester examination because the student has to answer one question from each unit.
- v. The Lab evaluation is also done on a regular basis. Lab records are to be submitted on the next turn describing the work done on the previous turn. Credit is given for performance and regularity. An A Grade in Lab assessment

indicates regular and good performance in terms of submissions and viva examinations.

- vi. Similarly in the Projects the regularity and performance in the Departmental evaluation is considered apart from the evaluation of the Supervisor. Students are encouraged to produce Research Papers / working projects and demonstrable results and credit is given to them. An A grade in a Project typically indicates one or more of these outcomes.
- vii. An attempt has been made to analyze the marks obtained in various tests and examinations and find out the learning outcomes from the level of achievement in these tests and examinations and assignments. Marks obtained by the students in the various components in each course are available on the Course Monitoring System. Marks have been obtained from there and have been analyzed to determine the learning outcomes.

**1.2.2. Record the attainment of Course Outcomes of all courses with respect to set attainment levels (65)**

Course No	CO1	CO2	CO3	CO4	CO5
BOH181	2	2	1	2	-
CHM181	2	2	2	2	2
CHM182	3	3	3	3	3
DPH101	3	3	3	3	3
ENH181	3	3	1	3	0
MAM181	2	2	2	2	2
MEM101	1	1	0	1	1
MEM102	3	3	3	3	3
MEM103	3	3	3	3	3
MEM104	3	3	3	3	-
PHM181	1	1	0	1	0
PHM182	3	3	3	-	-
RDC181	3	3	3	3	3
RDC182	3	3	3	3	3
CAC281	3	3	-	-	-
EEM201	2	2	2	2	2
EEM202	1	1	1	1	1
EGC281	3	3	3	3	3
ESC281	3	3	3	3	3
MAM281	2	2	1	2	0
MEM201	1	1	0	1	0
MEM202	2	2	2	2	2
MEM203	3	3	3	3	3
MEM204	3	3	3	3	3

PHM281	1	1	0	1	0
PHM282	1	1	0	1	-
RDC281	3	3	3	3	3
RDC282	3	3	3	3	3
EEM301	3	3	3	3	3
EEM302	3	3	3	3	-
EEM303	1	1	2	1	2
EEM304	3	3	3	3	3
EEM305	3	3	3	3	3
EGC381	3	3	3	3	3
EGC382	3	3	3	3	-
ENH381	3	3	3	3	3
MAM381	3	3	3	3	3
MEM301	2	2	3	2	3
MEM307	3	3	3	3	3
MEM308	3	3	2	-	-
CCA481	3	3	-	-	-
eem401	3	3	3	3	3
EEM402	3	3	3	-	-
EEM403	2	2	2	2	3
EEM404	3	2	3	-	-
EEM405	3	3	3	3	3
EEM406	3	3	3	3	2
EEM407	3	3	2	3	0
EEW401	3	3	3	3	-
EEW402	3	3	3	3	-
EEW403	3	3	3	-	-
EGC481	3	3	3	3	3
ENH481	3	3	3	3	3
GKC481	3	3	3	3	3
MAM481	3	3	3	3	3
MEM401	3	3	3	3	3
CRC581	3	3	3	3	3
EEM501	3	3	3	3	3
EEM502	3	3	3	-	-
EEM503	3	3	3	3	2
EEM504	3	3	3	2	3
EEM505	1	1	3	1	3
EEM506	2	2	3	2	3
EEM511	3	3	3	3	3
EEM512	3	3	3	-	-
EEM513	3	3	3	3	3
EEM514	3	3	3	2	3
EGC581	3	3	3	3	3

EGC582	3	3	3	3	-
GKC581	3	3	3	3	3
MAM581	3	3	3	3	3
PYH581	2	2	3	2	0
RDC581	3	3	3	3	0
ASM601	3	3	3	3	2
CAC681	3	3	-	-	-
CEC681	3	3	3	3	3
EEM601	2	2	2	2	2
EEM602	3	3	3	-	-
EEM603	3	3	3	3	3
EEM604	3	3	3	3	3
EEM605	3	3	3	3	2
EEM606	3	3	3	2	3
EEM609	3	3	3	3	3
EEM611	3	3	3	3	2
EEM612	2	3	3	2	3
EGC681	3	3	3	3	3
MAM681	3	3	3	3	3
RDC681	3	3	3	3	3
EEM701	2	2	2	2	0
EEM702	3	3	3	3	3
EEM703	3	3	3	3	2
EEM704	1	1	1	-	-
eem705	3	3	3	-	-
EEM706	1	1	1	1	0
EEM708	3	3	3	-	-
EEM710	3	3	0	2	-
EEM711	3	1	3	3	3
EEM717	3	3	3	3	1
EEM719	3	3	3	3	0
EEM720	3	3	3	3	0
EEM722	3	3	2	3	0
EEM723	3	3	3	-	-
EGC781	3	3	3	3	3
GKC781	3	3	3	3	3
MEM708	3	3	3	3	2
RDC781	3	3	3	3	3
CAC881	3	3	3	3	3
EEM801	3	3	2	3	0
EEM802	3	3	3	-	-
EEM803	3	3	3	-	-
EEM812	2	2	3	2	2
EEM814	1	1	1	1	0

EEM815	2	2	2	2	0
EEM817	2	2	2	2	2
EEM820	1	1	2	1	2
EEM821	3	3	3	3	3
EEM826	3	3	3	3	3
GKC881	3	3	3	3	3
MEM801	3	3	3	3	0
MEM809	3	3	3	3	3
MEM812	3	3	3	3	1
RDC881	3	3	3	3	3

### 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 Program Outcome and Program Specific Outcomes (10)

- i. First the mapping between the individual Courses or subjects and the learning outcomes in terms of program Outcomes and Program Specific Outcomes has been carried out.
- ii. Performance in these courses is then analyzed in detail to measure the degree to which the Program Outcomes and Program Specific Outcomes are attained.
- iii. For example, there are various Projects based courses wherein the idea is to complete projects by going through all the phases from realization of need to the final making of the product. The performance in these projects is indicative of the level of attainment of Program outcomes like Engineering problem solving and Design.
- iv. Performance in theory courses is measured according to the Grades obtained by the students in the Internal and External evaluation. These are shown separately in the Grade cards of the students so that the evaluation is independently performed by a least two different persons for the same course and provide an excellent basis for validation. The internal evaluation completely transparent to the student as they can see the corrected answer books and check the evaluation. In case they feel that they deserve more than what they have got they can approach the course teacher for their redressal.
- v. Performance in Seminar Courses is indicative of the communication skills. Students are required to give seminar on a topic of their choice. The topic should be related to their discipline but can be something that is not directly related to the classroom work. These courses provide excellent platform for self-study on topic of choice of the student and create the habit of life long and independent learning.

#### 3.3.2. Provide results of evaluation of each PO & PSO (65)

COURSE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
DPH101	0.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	0.00	0.00	3.00	3.00
MEM101	0.80	0.80	0.80	0.80	0.80	0.00	0.00	0.80	0.00	0.00	0.00	0.80	0.80	0.80	0.80	0.00

MEM102	3.00	3.00	3.00	3.00	3.00	0.00	0.00	3.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00
MEM103	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
MEM104	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
BOH181	1.00	1.00	1.00	1.00	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	0.00
CHM181	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
ENH181	0.00	0.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
MAM181	2.00	2.00	2.00	2.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
PHM181	0.64	0.60	0.71	0.71	1.00	1.00	0.00	0.00	0.00	0.67	1.00	0.60	0.60	0.60	0.60	0.00
RDC181	0.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
CHM182	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
PHM182	2.33	2.33	2.33	2.33	1.33	1.00	1.00	1.00	2.33	1.33	2.00	1.33	3.00	3.00	3.00	3.00
RDC182	0.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
ESC281	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EEM201	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
MEM201	0.67	0.62	0.80	0.55	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.67	0.67	0.67	0.67	0.00
EEM202	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MEM202	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
MEM203	3.00	3.00	3.00	3.00	3.00	0.00	0.00	3.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00
MEM204	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
CAC281	3.00	3.00	3.00	3.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EGC281	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
MAM281	1.40	1.40	1.40	1.45	1.40	1.33	0.00	0.00	0.00	1.25	2.00	1.17	1.40	1.40	1.40	0.00
PHM281	0.58	0.64	0.63	0.67	0.67	0.50	0.00	0.00	0.00	0.67	1.00	0.50	0.60	0.60	0.60	0.00
RDC281	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
PHM282	0.80	0.80	0.82	0.82	0.83	0.75	0.75	0.75	0.67	0.83	0.75	0.83	0.75	0.75	0.75	0.00
RDC282	0.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EEM301	3.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00
EEM302	3.00	3.00	3.00	0.00	3.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00
EEM303	1.40	1.40	1.40	2.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	1.40	1.40	1.40	1.40
EEM304	3.00	3.00	3.00	0.00	3.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00
EEM305	3.00	3.00	3.00	3.00	3.00	3.00	0.00	3.00	3.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00
MEM301	2.40	2.40	2.40	2.40	2.40	2.40	2.40	0.00	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
MEM307	3.00	3.00	3.00	3.00	3.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
MEM308	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
EGC381	3.00	3.00	2.00	2.00	3.00	2.00	1.00	3.00	3.00	2.00	3.00	3.00	3.00	3.00	3.00	3.00
ENH381	0.00	0.00	0.00	0.00	0.00	3.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
MAM381	3.00	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EGC382	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EEM401	3.00	3.00	0.00	3.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00
EEW401	3.00	3.00	0.00	0.00	2.00	3.00	2.00	3.00	3.00	2.00	2.00	3.00	2.00	3.00	1.00	3.00
MEM401	3.00	3.00	3.00	3.00	3.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EEM402	3.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	3.00	0.00	0.00	3.00	3.00	3.00	3.00
EEW402	3.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	3.00	0.00	0.00	3.00	3.00	3.00	3.00

EEM-403	2.20	2.20	3.00	2.33	2.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.27	2.21	2.33	2.20
EEW403	3.00	3.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EEM404	2.67	2.67	2.67	0.00	0.00	0.00	0.00	0.00	2.67	2.67	0.00	0.00	2.67	2.67	2.67	3.00
EEM405	3.00	3.00	0.00	0.00	0.00	3.00	0.00	0.00	3.00	3.00	0.00	3.00	3.00	0.00	3.00	3.00
EEM406	2.80	2.80	2.80	0.00	0.00	2.80	2.80	0.00	2.80	2.80	0.00	2.80	2.80	2.80	2.80	3.00
EEM407	2.20	2.20	1.67	0.00	0.00	0.00	0.00	0.00	2.20	2.20	0.00	2.20	2.20	0.00	2.20	2.20
CAC481	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EGC481	3.00	3.00	3.00	3.00	3.00	3.00	3.00	0.60	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
ENH481	0.00	0.00	0.00	0.00	0.00	3.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
GKC481	0.00	0.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
MAM481	3.00	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00
EEM501	3.00	3.00	3.00	0.00	3.00	3.00	0.00	3.00	3.00	0.00	0.00	3.00	3.00	3.00	3.00	0.00
EEM502	3.00	3.00	0.00	0.00	3.00	3.00	0.00	3.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00
EEM503	2.80	2.80	2.80	2.80	0.00	2.80	0.00	2.80	2.80	2.80	0.00	2.80	2.80	2.82	2.80	2.80
EEM504	2.80	2.80	2.80	0.00	0.00	2.80	2.80	2.80	2.80	2.80	0.00	2.80	2.80	2.80	2.80	2.80
EEM505	1.80	1.80	1.73	0.00	1.80	2.00	2.00	0.00	0.00	0.00	0.00	0.00	1.80	1.75	1.80	1.80
EEM506	2.40	2.40	2.36	0.00	2.40	2.50	2.50	0.00	0.00	0.00	0.00	0.00	2.40	2.38	2.40	2.40
EEM511	3.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00
EEM512	3.00	3.00	3.00	0.00	3.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00
EEM513	3.00	3.00	3.00	3.00	0.00	3.00	0.00	3.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00
EEM514	2.80	2.77	2.80	2.50	2.80	0.00	0.00	0.00	2.80	2.80	0.00	2.80	2.80	2.80	2.80	2.80
CRC581	0.00	0.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EGC581	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
GKC581	0.00	0.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
MAM581	3.00	3.00	3.00	3.00	3.00	3.00	0.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
PYH581	0.00	0.00	1.80	0.00	1.80	1.80	1.80	1.80	1.80	1.80	0.00	1.80	0.00	1.80	0.00	1.80
RDC581	2.40	2.63	2.14	2.14	1.50	2.40	2.40	2.40	2.40	2.40	2.40	2.40	0.00	2.40	0.00	2.40
EGC582	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
ASM601	2.80	2.75	0.00	2.67	0.00	2.75	2.80	0.00	0.00	0.00	0.00	0.00	2.83	2.82	2.80	2.80
EEM601	2.00	2.00	2.00	0.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
EEM602	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EEM603	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	0.00	0.00	3.00	3.00	3.00	3.00	0.00	0.00
EEM-604	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	0.00
EEM605	2.80	2.80	2.88	2.80	2.80	2.83	2.80	0.00	2.80	2.80	0.00	2.83	2.80	2.80	2.80	2.80
EEM606	3.00	3.00	3.00	0.00	0.00	3.00	3.00	0.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00
EEM609	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EEM611	2.80	2.50	2.70	2.75	0.00	2.80	0.00	2.83	2.80	2.80	0.00	2.80	2.80	2.78	2.80	2.80
EEM612	2.60	2.60	2.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60	2.60	2.60	2.60
CAC681	3.00	3.00	3.00	3.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
CEC681	0.00	0.00	0.00	0.00	0.00	2.83	2.83	2.83	0.00	2.89	0.00	2.83	2.80	2.75	2.83	2.83
EGC681	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
MAM681	3.00	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
RDC681	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00



EEM701	1.50	1.60	1.50	1.33	1.67	1.60	1.60	1.60	1.50	0.00	1.60	1.60	1.60	1.60	1.60	1.60
EEM702	3.00	3.00	3.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00
EEM703	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	0.00	2.80	2.80	2.80	2.80	2.80
EEM704	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
EEM705	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EEM706	0.80	0.80	0.75	0.80	0.00	0.80	0.80	0.80	0.00	0.00	0.00	0.80	0.80	0.80	0.80	0.80
EEM708	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MEM708	2.80	2.80	2.75	2.80	2.80	2.80	3.00	2.80	2.80	2.80	3.00	2.80	2.80	2.80	2.80	2.80
EEM710	2.00	1.67	2.00	2.00	2.00	2.00	0.00	2.00	1.50	0.00	2.00	2.00	2.00	2.00	2.00	2.00
EEM711	2.60	2.60	2.50	2.50	2.50	0.00	0.00	2.60	2.60	2.60	2.60	2.60	0.00	0.00	0.00	0.00
EEM717	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	0.00	0.00	2.60	2.60	0.00	2.60	2.60
EEM719	2.40	2.40	2.40	2.25	2.31	2.40	2.00	2.40	2.25	2.40	0.00	2.40	2.40	2.40	2.40	2.40
EEM720	2.54	1.50	2.14	1.50	1.50	1.50	1.50	2.00	1.50	3.00	3.00	1.50	3.00	2.40	2.40	2.40
EEM722	3.00	2.00	2.00	0.00	2.00	3.00	0.00	2.00	0.00	0.00	3.00	3.00	2.20	2.00	2.00	2.20
EEM723	3.00	3.00	3.00	3.00	0.00	3.00	0.00	3.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00
EGC781	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
GKC781	0.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
RDC781	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EEM801	2.08	2.20	2.08	1.67	2.33	2.20	2.20	2.20	2.25	0.00	2.20	2.20	2.20	2.20	2.20	2.20
MEM801	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EEM802	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EEM803	3.00	3.00	2.00	2.00	3.00	3.00	3.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	3.00	3.00
MEM809	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EEM812	2.18	2.25	2.20	0.00	2.20	0.00	0.00	2.00	2.20	2.20	0.00	0.00	2.20	2.20	2.20	2.20
MEM812	2.60	2.57	2.60	2.60	2.56	2.67	2.67	2.67	0.00	2.60	0.00	2.60	2.60	2.60	2.60	2.60
EEM814	0.80	0.80	0.86	0.80	0.86	0.00	0.00	0.80	0.80	0.80	0.00	0.80	0.80	0.80	0.80	0.80
EEM815	1.60	1.71	1.25	0.80	0.50	1.50	1.56	1.60	1.50	0.00	1.60	1.60	1.60	1.60	1.60	1.60
EEM817	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00
EEM820	1.46	1.43	1.42	1.40	1.40	1.40	1.40	1.40	0.00	1.40	0.00	1.40	1.40	1.40	1.40	1.40
EEM821	3.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	0.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00
EEM826	3.00	3.00	3.00	0.00	3.00	0.00	0.00	3.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00
CAC881	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
GKC881	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
<b>Direct Attainment</b>	<b>2.22</b>	<b>2.21</b>	<b>2.02</b>	<b>1.62</b>	<b>2.00</b>	<b>2.16</b>	<b>1.66</b>	<b>2.00</b>	<b>1.82</b>	<b>1.96</b>	<b>1.52</b>	<b>2.17</b>	<b>2.45</b>	<b>2.41</b>	<b>2.44</b>	<b>2.33</b>

**Table B.3.3.2a**

- Indirect attainment level of a PO/PSO is determined based on the following surveys:

Survey 1: Student exit survey

Survey 2: Alumni survey

Survey 3: Employer survey

Survey 4: Parent survey

COURSE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
<b>Survey 1</b>	2.00	2.00	3.00	2.00	2.00	3.00	3.00	3.00	3.00	1.00	2.00	2.00	2.00	2.00	2.00	3.00
<b>Survey 2</b>	3.00	3.00	3.00	2.00	2.00	3.00	3.00	3.00	3.00	2.00	2.00	3.00	3.00	3.00	3.00	3.00
<b>Survey 3</b>	3.00	2.00	2.00	3.00	3.00	2.00	3.00	3.00	3.00	2.00	3.00	3.00	3.00	3.00	3.00	3.00
<b>Survey 4</b>	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.00	2.00	3.00	3.00	2.00	3.00	3.00
<b>Indirect Attainment</b>	2.75	2.50	2.75	2.50	2.50	2.75	3.00	3.00	3.00	1.75	2.25	2.75	2.75	2.50	2.75	3.00

**Table B.3.3.2b.**

<b>Direct Attainment</b>	2.22	2.21	2.02	1.62	2.00	2.16	1.66	2.00	1.82	1.96	1.52	2.17	2.45	2.41	2.44	2.33
<b>Indirect Attainment</b>	2.75	2.50	2.75	2.50	2.50	2.75	3.00	3.00	3.00	1.75	2.25	2.75	2.75	2.50	2.75	3.00
<b>PO Attainment (80% Direct + 20% indirect)</b>	2.33	2.27	2.17	1.80	2.10	2.28	1.93	2.20	2.06	1.92	1.67	2.29	2.51	2.43	2.50	2.46

<b>CRITERION 4</b>	<b>Students' Performance</b>	<b>100</b>
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<b>Item</b> <b>(Information to be provided cumulatively for all the shifts with explicit headings, wherever applicable)</b>	<b>CAY</b>	<b>CAYm1</b>	<b>CAYm2</b>
Sanctioned intake of the program ( <i>N</i> )	60	60	60
Total number of students admitted in first year <i>minus</i> number of students migrated to other programs/institutions, plus no. of students migrated to this program ( <i>N1</i> )	70	72	62
Number of students admitted in 2nd year in the same batch via lateral entry ( <i>N2</i> )	0	12	12
Separate division students, if applicable ( <i>N3</i> )	0	0	0
Total number of students admitted in the Program ( <i>N1</i> + <i>N2</i> + <i>N3</i> )	70	84	74

**Table B.4a**

<b>Year of entry</b>	<b><i>N1</i> + <i>N2</i> + <i>N3</i> (As defined above)</b>	<b>Number of students who have successfully graduated without backlogs in any semester/year of study</b>			
		<b>I Year</b>	<b>II Year</b>	<b>III Year</b>	<b>IV Year</b>
CAY	70				
CAYm1	84 (6 migrated to program+12 LE)	66			
CAYm2	74 (12 LE)	60	58+9		
CAYm3	74 (9 LE+2 repeaters+3 migrated to program)	57	63+9	64+9	
CAYm4 (LYG)	69 (9LE + 3 migrated – two failed)	58	59+9	58+9	60+9
CAYm5 (LYGm1)	69 (9LE)	59	53+9	57+9	59+9
CAYm6 (LYGm2)	67 ( 9 LE + one repeater)	54	55+9	55+9	57+9

**Table B.4b**

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	70				
CAYm1	84 (6 migrated to program+12 LE)	0			
CAYm2	74 (12 LE)	2	4		
CAYm3	74 (9 LE+2 repeaters+3 migrated to program)	3	2	1	
CAYm4 (LYG)	69 (9LE + 3 migrated – two failed)	3	3	2	0
CAYm5 (LYGm1)	69 (9LE)	1	7	3	1
CAYm6 (LYGm2)	67 ( 9 LE + one repeater)	3	2	2	1

**Table B.4c**

#### 4.1. Enrolment Ratio (20)

Enrolment Ratio=  $N1/N = (68/60) \times 100\% = 113\%$

**Marks = 20**

Item	Marks
>=90% students enrolled	20
>=80% students enrolled	18
>=70% students enrolled	16
>=60% students enrolled	14
Otherwise	0

**Table B.4.1**

#### 4.2. Success Rate in the stipulated period of the program (20)

##### 4.2.1. Success rate without backlogs in any semester/year of study (15)

Average SI = Mean of Success Index (SI) for past three batches = **0.985**

Success rate without backlogs in any semester/year of study =  $15 \times \text{Average SI} =$

**14.78**

Item	Last Year of Graduate , LYG	Last Year of Graduate minus 1, LYGm1	Last Year of Graduate minus 2, LYGm2
Number of students admitted in the corresponding First Year + admitted in 2nd year via lateral entry and separate division, if applicable	72	69	66

Number of students who have graduated without backlogs in the stipulated period	69	68	66
Success Index (SI)	0.971	0.985	1.00

**Table B.4.2.1**

#### 4.2.2. Success rate with backlog in stipulated period of study (5)

*Average SI = mean of Success Index (SI) for past three batches = 1.0*

*Success rate = 5 × Average SI = 5*

**Marks=5**

Item	Last Year of Graduate, LYG (CAYm4)	Last Year of Graduate minus 1, LYGm1 (CAYm5)	Last Year of Graduate minus 2, LYGm2 (CAYm6)
Number of students admitted in the corresponding First Year + admitted in 2nd year via lateral entry and separate division, if applicable	72	69	66
Number of students who have graduated with backlogs in the stipulated period	8	12	8
Success Index (SI)	1.0	1.0	1.0
Average Success Index	1.0		

**Table B.4.2.2**

**Note:** If 100% students clear without any backlog then also total marks scored will be 20 as both 4.2.1 & 4.2.2 will be applicable simultaneously

#### 4.3. Academic Performance in Second Year (10)

*Academic Performance = Average API (Academic Performance Index), where*

**API** = ((Mean of 2<sup>nd</sup> Year Grade Point Average of all successful Students on a 10 point scale) or (Mean of the percentage of marks of all successful students in Second Year/10)) × (number of successful students/number of students appeared in the examination)

*Successful students are those who are permitted to proceed to the Third year.*

Academic Performance	CAYm1	CAYm2	CAYm3
Mean of CGPA or Mean Percentage of all successful students (X)	7.915	7.96	7.834
Total no. of successful students (Y)	74	74	65
Total no. of students appeared in the examination (Z)	74	74	65
API = $X * (Y/Z)$	AP1=7.915	AP2=7.86	AP3=7.834
Average API = $(AP1 + AP2 + AP3)/3$	7.903		

**Table B.4.3**

#### 4.4. Placement, Higher Studies and Entrepreneurship (30)

Assessment Points =  $30 \times \text{average placement} = 28.69$

Item	CAYm1	CAYm2	CAYm3
Total No. of Final Year Students (N)	69	70	69
No. of students placed in companies or Government Sector (x) *	61	52	55
No. of students admitted to higher studies with valid qualifying scores (GATE or equivalent State or National Level Tests, GRE, GMAT etc.) (y)	8	9	12
No. of students turned entrepreneur in engineering/technology (z)	0	1	0
$x + y + z =$	69	63	67
Placement Index : $(x + y + z)/N$	1.0	0.898	0.971
Average placement = $(P1 + P2 + P3)/3$	0.956		
Assessment Points = $30 \times \text{average placement}$	28.69		

\* Students placed Campus and off-campus

**Table B.4.4**

**4.4a. Provide the placement data in the below mentioned format with the name of the program**

**and the assessment year:**

Programs Name and Assessment Year B.Tech. Electrical 2018-19				
S.no.	Name of the student placed	Roll no.	Name of the Employer	Appointment letter reference no. with date
1	Harsh Shukla	154078	TCS	Confirmation communication is
2	Raginee Pachaury	154107	TCS	

3	Mradul Singh	154097	TCS	received from the industry. Individual letters are yet to be received
4	Saumya Agarwal	154109	TCS	
5	Stuti Agarwal	154175	TCS	
6	Kaamraan Khan	154084	TCS	
7	Nishtha Parashar	154102	TCS	
8	Mahima Yadav	154091	TCS	
9	Lavish Gupta	154024	TCS	
10	Mudit Goswami	154098	ESSAR STEEL	
11	Aashi Gupta	154061	ESSAR STEEL	
12	Chandradeep Gautam	154072	ESSAR STEEL	
13	Ishita Agarwal	154082	ESSAR STEEL	
14	Ritika Agarwal	154108	ESSAR STEEL	
15	Tarun Agarwal	154178	ESSAR STEEL	
16	Mahima Chaudhary	154088	TCS	

**Table B.4.4a**

#### **4.5. Professional Activities (20)**

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

###### **1. System Society of India**

Following Members of department are office bearers of Systems Society of India

1. Prof. Vishal Sahni: President
2. Prof. C. Patvardhan: Vice-president
3. Prof. D. Bhagwan Das: Secretary

The National Systems Conference is organized every year through the Systems Society of India. SSI promotes advancement of theory, research, application & practice keeping in view the holistic systems approach for the advancement of humankind. All regular faculty members of the Department are members of this society.

###### **National Systems Conference**

Department has organized The 41st National Systems Conference was organized during 1-3 December 2017 at DEI and Prof. D.K. Chaturvedi of EE Department was the Conference coordinator .

###### **Paritantra**

Prof. Vishal Sahni of EE Department organises an annual students' system conference under the flagship of SSI and DEI.

## 2. **Students Chapter of Institution of Engineers India (IEI)**

Electrical Engineering department runs a Students' Chapter of Institution of Engineers (India). All students admitting to the department joins the students' chapter. The students' chapter of IEI holds various activities round the year to aware the students about mechanical engineering fraternity and latest updates in the field. Activities like invited talks, competitions viz. quiz, essay writing, poster and model making are being held time to time.

S.No	Competition	Date		
		CAY (2018-19)	CAYm1 (2017-18)	CAYm2 (2016-17)
1	Essay Competition	3-9- 2018	1-9- 2017	8-9- 2016
2	Poster Making	3-9-2018	1-9-2017	8-9-2016
3	Quiz	4-9-2018	2-9-2017	9-9-2016
4	Model Making	5-9-2018	4-9-2017	10-9-2016

### ***Annual Engineering Events***

#### 1. **Engineers Day**

The Students' Chapter celebrates 'Engineers Day' on 15th September every year in the institute. A renowned engineering personality is facilitated on this auspicious occasion. The student winners of various competitions, being held round the year are awarded on this day.

#### 2. **Sampravah**

It is a technical-cum-cultural festival organised every year for all the students of Dayalbagh Educational Institute as well as students of other institutions.

#### 3. **Teachers Day**

Teachers Day is celebrated every year on 5<sup>th</sup> September.

## 3. **IEEE Region 10 Humanitarian Technologies Conference (IEEE HTC-2016)**

Members of the department are also members of IEEE at various levels. The department is involved in organizing IEEE HTC.

IEEE HTC is a flagship conference of Region 10 and IEEE HTC 2016 was organized at DEI and Prof. D. Bhagwan Das, EE Department was the coordinator for the same.



IEEE Women in Engineering track was conducted on 22nd December 2016 for a duration of 3 hours, as part of IEEE HTC 2016 organized at DEI, Dayalbagh Agra. The theme of the session is, “Women Empowerment to break barriers and lead the smart world”.

A Meetup was organized by the IEEE R10 Young Professionals community on 23<sup>rd</sup> December 2016 at Dayalbagh Educational Institute, Agra, India. It was organized as a parallel track in the IEEE R10 Humanitarian Technology Conference 2016 and saw a participation of about 40 people.

Within IEEE R10 Humanitarian Technologies Conference 2016, we launched a unique initiative that has seldom been a part of IEEE Conferences - A hackathon/makethon. A hackathon/Makethon offers the opportunity to bring together the best of Academia, Industry and Students. This comingling of new ideas, new technology and new talent is different from anything ever done at IEEE conferences before and is the way forward in our fast changing technological society. With this in mind, with Texas Instrument’s support and sponsorship we opened up this event to all the students in IEEE R10 region and received well over 150 registrations and 70 finally participated. The event was conducted from 21st to 23rd of December, 2016 at DEI Multimedia Extn. It was a rigorous prototyping camp where the 70 participants from various prestigious institutions like IIT Kanpur, IIT Roorkee, MSIT, DEI etc. worked to create innovative proto types and software solutions.

#### **4.5.2. Publication of technical magazines, newsletters, etc. (5)**

**DEI News** is published monthly. The magazine is edited by staff from all faculties of the Institute. From the Faculty of Engineering, Dr. V. Soamidas and Dr. Ashok Yadav are the concerned members. It contains information about

- a. Technical and other events organised in the Institute
- b. Conferences, workshops or other events attended by faculty members and students
- c. Prizes and awards won by staff and students
- d. Papers published by staff and students
- e. Any other matter concerning the Institute

**Paritantrika** General system news: a news letter by SSI chapter of Dayalbagh

More details are given in

[https://www.dei.ac.in/dei/index.php?option=com\\_content&view=article&id=862&Itemid=420](https://www.dei.ac.in/dei/index.php?option=com_content&view=article&id=862&Itemid=420)

#### 4.5.3 Participation in inter-institute events by students of the program of study (10)

(The Department shall provide a table indicating those publications, which received awards  
in the events/conferences organized by other institutes)

S.No	Technical Event	Venue	Dates	No. of Participants
1	MOOD INDIGO	IIT Mumbai	27-30 December, 2018	25
2	THOMSO	IIT Roorkee	26-28 October, 2018	20
3	SMART INDIA HACKATHON	BHU, Varanasi	30-31 March, 2018	6
4	COGNIZANCE	IIT Roorkee	23-25 March, 2018	7
5	TECHKRITI	IIT Kanpur	15-18 March, 2018	11
6	MITSUBISHI GOLDCUP	Nirma University	15-17 <sup>th</sup> February, 2018	4
7	THOMSO	IIT Roorkee	27-29 October, 2017	30
8	WORLD FOOD HACKATHON	World Habitat Centre, New Delhi	27-28 October, 2017	4
9	SMART INDIA HACKATHON	Jaipur	1-2 April, 2017	6

#### Achievements by students

**2018: Mitsubishi Gold Cup, Ahmedabad, Prize Money Rs. 1 Lakh and sponsored visit to Japan for the team and the mentor.**

Mitsubishi Electric India organized 3<sup>rd</sup> Mitsubishi Electric Cup at Nirma University, Ahmedabad, Gujarat from 15-17<sup>th</sup> February, 2018. A total 130 teams from several Institutes/Universities all over the country submitted their proposals out of which only top 35 were shortlisted. Four students viz. Abeer Saxena, Mehar Saran, Punarvasu Sharma and Achraj Prakash from Faculty of Engineering under the Supervision of Prof. D Bhagwan Das



represented Dayalbagh Educational Institute and stood as the Winners of 3<sup>rd</sup> Mitsubishi Electric Cup winning the Gold Cup, a cash prize of One lakh rupees and a 7 days trip to Japan sponsored by Mitsubishi Electric.

The theme of the Competition was **Innovative solutions for Smart Manufacturing**. With the use of various devices such as PLC, VFD and HMI of Mitsubishi Electric they designed a **Multipurpose Mobile Powerhouse**. It uses solar energy to generate electricity which is clean and green. The machine is able to generate DC, single phase and 3 phase power supply of 1.5 kW. The innovation is to design a remote controlled portable solar power plant with foldable solar panel mounting structure. This machine can be used as a substitute of Diesel generators without causing harm to environment.

Its applications are not only limited to Industry, but it can also be used at several places such as in Agricultural fields to supply power to irrigation pumps, threshers, feeders etc. In Military area, it can be ported to Indian borders and can supply electricity 24\*7 for various application ranging from monitoring of border to electricity supply for using and charging various gadgets and devices. It can also be used as a Fire Fighting robot, as a portable coffee vending machine in industries, as a mopping device, substitute of Diesel generators in medical/other camps at remote locations, marriage & religious processions etc., your imagination is the limit.

**2017 : Champion, Best Solar Skills Training Institute, Renewable Energy India Expo, September 21, 2017, Greater Noida.**



**2016: First Prize in Mitsubishi National Automation Contest, Pune. Prize Money Rs. 1 Lakh.**

A team comprising of Prem Kumar, Rishabh Banerjee, Rahul Chugh and Mohit Gupta, all of third year Electrical Engg., participated in the Mitsubishi Electric Cup 2016 : A National Level Automation Competition, organized by Mitsubishi Electric in Pune. The Theme of the competition was "Eco-Imagination through Smart Manufacturing". The team presented a working model of the project 'Smart Microgrid'.



Almost 70 teams from different institutions all over the country participated for the first round of Mitsubishi Electric Cup 2016. Finally 24 teams were selected for the final event held from 11 to 13 feb. 2016 at VIT, Pune.

The Faculty of Engineering Team won the first prize( Gold Cup) as well as The Most Popular Team Award, which was selected by voting. The team also received a Cash prize worth Rs 1,00,000. The project was guided by Prof. D. Bhagwan Das, Faculty of Engineering.

**2015: II Prize in Students' Innovation Pavilion organized by PGCIL, India at Pragati Maidan, New Delhi. Prize Money Rs. 2.5 Lakh**





## Students' Achievements at National Level

1. **Second PRIZE (Rs. 2.5 Lakh), Students' Innovation Pavilion, GRIDTECH 2015:** 5th International Exhibition and Conference on April 8-10, 2015 at Pragati Maidan, organized by POWERGRID with the support of Ministry of Power and in association with CBI&P and IEEMA.
2. **First prize (Mitsubishi Gold Cup and Rs. 1.0 Lakh) and The Most Popular Team Award at Mitsubishi Electric Cup 2016 :** A National Level Automation Competition, organized by Mitsubishi Electric in Pune.
3. **Participation in Rashtrapati Bhawan Code for India Hackathon for Social Innovations** held at President's Estate, New Delhi, India (March 2016)



4. **First prize (Mitsubishi Gold Cup and Rs. 1.0 Lakh) and The Most Popular Team Award at Mitsubishi Electric Cup 2018 :** A National Level Automation Competition, organized by Mitsubishi Electric in Pune. The participating Team and the Mentor visited Mitsubishi Industries, Japan for 5-day Trip.
5. **Champion 2017 : Best Solar Skills Training Institute, Renewable Energy India Expo, September 21, 2017, Greater Noida.**



6. **IEEE xTREME National Rankings 4, 28, 29**
7. **Selected for participation at National Level in ACM ICPC 2014, 2015**
8. **Best Graduate Engineer Trainee/ Best New Comer/ Star Performer of the Year/ Best Analyst/ Best Team** at Maruti Udyog, HCL, TCS, ST Microelectronics, Accenture, ACC Ltd., Siemens India
9. **Google Code Jam 2015 : International ranking 3275**
10. **Prizes won at National Level Essay Writing**

<b>CRITERION 5</b>	<b>Faculty Information and Contributions</b>	<b>200</b>
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Man Mohan	Name of the Faculty Member			Ajay Kumar Saxena	Patvardhan Chellapilla	D. K. Chaturvedi	D. Bhagwan Das		
	Degree (highest degree)	Qualification							
		University	Year of attaining higher qualification						
Ph.D.	Ph.D.	Ph.D.	1979	P	P	1989	1992	P	
DEI	DEI	DEI	1994	P	P	1989	1999	DEI	
2003	1994	1994	1994	1994	1998	1998	2003	2003	
1991	1979	1979	1979	1979	1989	1989	1992	1992	
P	P	P	P	P	P	P	P	P	
01-11-2014	14-07-2001	14-07-2001	14-07-2001	14-07-2001	08-12-2008	08-12-2008	29-10-2012	29-10-2012	
08-07-1991	03-09-1983	03-09-1983	03-09-1983	03-09-1983	02-10-1989	02-10-1989	02-11-1992	02-11-1992	
EE	EE	EE	EE	EE	EE	EE	EE	EE	
Electrical Machines, Power Electronics, Power system	Power Systems	Computer Science	Power Systems	Power Systems	Modelling and Simulation of Power Systems	Modelling and Simulation of Power Systems	Power systems, Smart Microgrids	Power systems, Smart Microgrids	
25	20	290	20	20	272	272	50	50	
3	9	10	9	9	12	12	4	4	
No	No	No	No	No	No	No	No	No	
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Regular	Regular	Regular	Regular	Regular	Regular	Regular	Regular	Regular	

V. Prem Prakash	Kedri Janardhan	Gaurav Pratap Rana	G. Seshu Sailesh Babu	Ashish Saini	K. Srinivas	D. Prem Prasad	Vishal Sahni
M.Tech.	M.Tech.	M.Tech.	Ph.D.	Ph.D.	Ph.D.	M.Tech.	Ph.D.
DEI	NIT Kurukshetra	DEI	DEI	DEI	DEI	IIT Madras	DEI
2009	2010	2006	2008	2007	2008	1985	2004
2009	2011	1998	1990	1993	1997	1985	1999
AP	AP	AP	ACP	ACP	ACP	ACP	P
06-06-1966	26-07-2011	NA	11-10-2016	28-02-2011	03-12-2016	27-07-2006	16-03-2016
25-07-2011	29-07-2017	01-10-2008	01-07-1998	17-11-1993	31-08-2000	16-03-1985	15-07-1999
EE	EE	EE	EE	EE	EE	EE	EE
Computer Science	Power Electronics and Drives	Fluid mechanics, hydraulic machines. Renewable fuels	Quantum evolutionary algorithms application to power system problems	Power Systems, Soft Computing, Information Retrieval System	Computer Science	Control, Guidance & Instrumentation Systems	Quantum and Nano Computing
20	4	5	15	15	27	0	10
0	0	0	1	3	2	0	2
Yes	No	No	No	No	No	No	No
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regular	Regular	Regular	Regular	Regular	Regular	Regular	Regular

Shambhu Sharma	Namita Bhatia	Subho Upadhyay	Amol Gupta
Ph.D.	Ph.D.	Ph.D.	M.Tech.
Patna University	DEI	IIT Roorkee	IIT Delhi
1996	2000	2017	2011
1998	1992	2017	2013
ACP	AP	AP	AP
01-09-2011	22-03-2014	22-01-2019	01-01-2013
01-09-1999	22-03-2013	24-07-2017	01-01-2013
Math	Humn	EE	EE
Operations Research	Indian Poetics, Communication techniques	Renewable energy and power electronics	Electrical
21	1	8	0
2	1	0	0
No	No	No	No
Yes	Yes	Yes	Yes
Regular	Regular	Contract	Regular

**Table B.5**

**Note:** Please provide details for the faculty of the department, cumulative information for all the shifts for all academic years starting from current year in above format in Annexure - II.

### 5.1. Student-Faculty Ratio (SFR) (20)

Student Faculty Ratio (SFR) = S / F = 13.6

Year	CAY	CAYm1	CAYm2
u1.1	84	74	74
u1.2	74	74	69
u1.3	74	69	69
UG1	<b>232</b>	<b>217</b>	<b>212</b>
p1.1	21	32	17
p1.2	22	17	14
PG1	<b>43</b>	<b>49</b>	<b>31</b>
Total No. of Students in the Department ( <b>S</b> )	<b>275=S1</b>	<b>266=S2</b>	<b>243=S3</b>
No. of Faculty in the Department ( <b>F</b> )	<b>19=F1</b>	<b>19=F2</b>	<b>20=F3</b>
Student Faculty Ration	<b>SFR1=S1/F1 =14.5</b>	<b>SFR2= S2/F2 =14.0</b>	<b>SFR3</b>



(SFR)		= $S3/F3 = 12.2$
Average SFR	$SFR = (SFR1 + SFR2 + SFR3)/3 = 40.7/3 = 13.6$	13.6

***PG Combined (Taken Half for EED)***

32+10	35+10	27+7
35+10	27+7	20+7

**Table B.5.1**

**5.1.1. Provide the information about the regular and contractual faculty as per the format mentioned below:**

	Total number of regular faculty in the department	Total number of contractual faculty in the department
2018-2019	14	5
2017-2018	14	5
2016-2017	15	5

**Table 5.1.1**

**5.2. Faculty Cadre Proportion (20)**

Year	Professors		Associate Professors		Assistant Professors	
	Required F1	Available	Required F2	Available	Required F3	Available
2018-2019	1.5	2	3	3	9	9
2017-2018	1.5	2	3	3	9	9
2016-2017	1.4	2	2.7	3	8	10
<b>Average Numbers</b>	RF1= 1.5	AF1= 2	RF2= 2.9	AF2= 3	RF3= 8.7	AF3= 9.33

**Table B.5.2**

**Cadre Ratio Marks =**

**23.82 = 20**

**5.3. Faculty Qualification (20) = 20**

	X	Y	F	$FQ = 2.0 \times [(10X + 4Y)/F]$
2018-2019	10	4	13.75	16.87
2017-2018	10	4	13.30	17.44
2016-2017	11	4	12.15	20.74

Average Assessment	18.68
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**Table B.5.3**

#### **5.4. Faculty Retention (10)**

Item	CAY 2018-2019	CAYm1 2017-2018	CAYm2 2016-2017
No. of regular faculty members in	14	14	15

Item (% of faculty retained during the period of assessment keeping CAYm3 as base year)	Marks
100% of faculty retained during the period of assessment keeping CAYm3 2015-2016 as base year	10

**Table B.5.4**

#### **5.5. Faculty competencies in correlation to Program Specific Criteria (10)**

*(List the program specific criteria and the competencies (specialization, research publications, course developments etc.,) of faculty to correlate the program specific criteria and competencies.)*

**PSO1** Graduates will be able to analyze, innovate and provide realistic electrical engineering solutions to real life problems.

**PSO 2** The graduates will acquire adequate practical skills in electrical engineering and develop capacity to work with one's own hands in order to imbibe vocational and entrepreneurial traits

**PSO 3** Graduate will be able to specialize in any one of their preferred choice in the area of Electrical Engineering i.e. Electrical Engineering, Electronics and Communications Engineering or Computer Science.

**PSO4** Graduate will be able to demonstrate strong commitment to ethics and moral values through his conduct

	PSO1	PSO2	PSO3	PSO4
Prof. Ajay Kumar Saxena	√	√	√	√
Prof. C Patvardhan	√	√	√	√
Prof. D. K Chaturvedi	√	√	√	√

Prof. D. Bhagwan Das	√	√		√
Prof. Man Mohan	√		√	√
Prof. Vishal Sahni	√	√		√
Sh D Prem Prasad	√		√	√
Dr. Ashish Saini	√		√	√
Dr. K Srinivas	√	√	√	√
Dr. G S S Babu	√	√		√
Sh. Kedri Janardhan	√		√	√
Sh. V Prem Prakash	√		√	√
Sh. Amol Gupta	√	√	√	√
Sh. Gaurav Pratap Rana	√	√		√

#### 5.6. Innovations by the Faculty in Teaching and Learning (10)

1. The Institute has about 30 e-classrooms from where the lectures can be transmitted and also can be received with 2-way communication as both sides can see each other. Students have the possibility of attending lectures given from even remote locations.
2. There is a system of Daily Home Assignments which are given at the end of every theory class. These provide an opportunity to further dig deeper into the content covered in the class on a particular and / or provide an opportunity to reflect on the material. These are evaluated and returned to the students in the next class so that they get immediate feedback on what they have understood and what they have not understood properly. This is continuous evaluation at its best and inculcates regularity and punctuality on the students.
3. Some teachers use on-line evaluation tools for continuous evaluation and administering the DHAs.
4. Several courses are available on the Vidyaprasar portal that is the Institute's portal. These lectures provide for anytime, anywhere learning.
5. The students are required to undergo a five month internship at the end of Third year in an industry or research establishment. This provides a firsthand feel for the job environment and makes them industry ready. Many students get the Pre-Placement offer from the organization where they complete their internship.
6. The Institute offers some Core Courses for all UG students cutting across disciplines. These include courses like Indian Culture, Comparative Study of Religion, NSS, Agriculture Operations, Co-Curricular Activities (duly evaluated as a Credit Course), General Knowledge and Current Affairs etc. These

courses ensure the development of a well rounded person with a value system that stands the graduate in good stead all through their life. This has been repeatedly stressed by the Alumni in their feedback given in informal as well as formal surveys.

7. All the students have to go through Work Experience Courses that provide hands on training in areas like Photography and Video editing, Radio and TV repair, PCB Design etc. These inculcate the capacity to work with their own hands that is very important for an engineer.
8. Many Institutes across the country are dispensing with the Final Year Major project with a plea that the students are no longer interested in pursuing these. The DEI curriculum actually includes multiple projects in II, III and IV year so that the students are well versed with practical problem solving that is very important for an engineer.
9. Faculty members who are on leave are encouraged to take their classes in video-conferencing mode from wherever they are. The Institute has e-classrooms to facilitate this.
10. Students are provided with video lectures for some courses that they can complete while they are away from the Institute for their Internship programme. This has enabled the Institute to include a five months internship programme without extending the duration of the BTech programme.
11. Students are encouraged to take up work in live projects and Community assistance projects taken up by Faculty members. Where possible they are provided incentives under earn while you learn scheme.
12. The Department has an Under Graduate Research Award with a cash incentive for selected students to pursue their Major Project under this scheme. This is to inculcate research culture in the students.

#### **5.7. 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

Name of the Faculty	Max. 5 per Faculty		
	2017-18	2016-17	2015-16
Prof. A. K. Saxena	3	3	
Prof. C. Patvardhan	1		
Dr. G.S.S.Babu	5		
Sh. Gaurav Pratap Rana	5	1	
Sh. Amol Gupta	5		

Sh. V Prem Prakash	5	5	1
Sh. Kedri Janardhan	5	5	3
Dr. K Srinivas	5		
Prof. Man Mohan	5		
Dr. Ashish Saini	5		1
Dr. Om Hari Gupta	5		
Prof. D. Bhagwan Das	3		
<b>Sum</b>	<b>52</b>	<b>14</b>	<b>5</b>
<b>RF= Number of Faculty required to comply with 20:1 Student-Faculty ratio as per 5.1</b>	<b>275/20=14</b>	<b>266/20=13</b>	<b>243/20=12</b>
<b>Assessment = 3 × (Sum/0.5 RF) (Marks limited to 15)</b>	<b>22.3 =15</b>	<b>6.5</b>	<b>2.5</b>
<b>Average assessment over last three years (Marks limited to 15) =</b>			<b>8</b>

**Table B.5.7**

	Name of Staff	Post	Course Attended		Duration	
			Course	Place	From	to
1	Ajay Kumar Saxena	Professor	FDP	IIM SHILLONG	31.10.2017	01.11.2017
2	Ajay Kumar Saxena	Professor	FDP	IIM UDAIPUR	12.02.2018	17.02.2018
3	Amol Gupta	Assistant Professor	Orientation	AMU	18.07.2018	14.08.2018
4	Amol Gupta	Assistant Professor	FDP	IITK	21.05.2018	25.05.2018
5	Ashish Saini	Assistant Professor	FDP	IITK	21.05.2018	25.05.2018
6	C. Patvardhan	Professor	FDP	JNTU	13.08.2018	15.08.2018
7	D Bhagwan Das	Professor	FDP	JNTU	13.08.2018	15.08.2018
8	G S S Babu	Professor	FDP	IITK	21.05.2018	25.05.2018
9	G S S Babu	Associate Professor	FDP	IIM UDAIPUR	12.02.2018	17.02.2018
10	G S S Babu	Associate Professor	FDP	JNTU	13.08.2018	15.08.2018
11	Gaurav Pratap Rana	Assistant Professor	Orientation	AMU	30.01.2018	28.02.2018
12	Gaurav Pratap Rana	Assistant Professor	Refresher	AMU	04.09.2018	25.09.2018
13	Gaurav Pratap Rana	Assistant Professor	FDP	IITK	21.05.2018	25.05.2018
14	Gaurav Pratap Rana	Assistant Professor	FDP	IITK	21.05.2018	25.05.2018
15	K Srinivas	Assistant Professor	FDP	IITK	21.05.2018	25.05.2018
16	Kedri Janardan	Assistant Professor	FDP	IIITM GWL	18.01.2016	22.01.2016
17	Kedri Janardan	Assistant Professor	Orientation	AMU	07.11.2016	03.12.2016
18	Kedri Janardan	Assistant Professor	FDP	IITK	21.05.2018	25.05.2018
19	Man Mohan	Associate Professor	FDP	IITK	21.05.2018	25.05.2018

20	Om Hari Gupta	Associate Professor	FDP	IITK	21.05.2018	25.05.2018
21	V. Prem Prakash	Assistant Professor	Orientation	AMU	07.11.2016	03.12.2016
22	V. Prem Prakash	Assistant Professor	Refresher	AMU	26.03.2018	20.04.2018
23	V. Prem Prakash	Assistant Professor	FDP	IITK	21.05.2018	25.05.2018

## 5.8. Research and Development (75)

### 5.8.1. Academic Research (20)

- DEI's research activities are governed by Research Promotion Policy (available on Institute Website). These are displayed on its website and communicated to all.
- It creates an enabling environment to foster research culture and provides required infrastructure and support.
- The IQAC facilitates dissemination of information related to Schemes, Awards, Fellowships etc.
- The Research Planning & Monitoring Committee provides advice and evaluates progress of funded projects to improve research outcome.
- Seed money is provided to young faculty to enable them to conduct their research activities.
- DEI has numerous research projects funded by major Science & Technology Govt. organizations (DST/AICTE/MHRD etc.).
- DEI has set up an Entrepreneurship and Virtual Incubation Cell, to facilitate students and entrepreneurs to start their own venture.
- DEI has facilitated faculty and students to market their products from Rural Economic Zones to International Economic Zones.
- DEI promotes faculty engagement in authoring books, publications, newsletters and organizing and participating in national and international seminars, conferences, workshops, consultancy and training.
- DEI follows its Code of Ethics to check Plagiarism and uses Urkund plagiarism software.

Academic research includes research paper publications, Ph.D. guidance, and faculty receiving Ph.D. during the assessment period.

- Number of quality publications in refereed/SCI Journals, citations, Books/Book Chapters etc. (15)

#### Books/Book Chapters:

##### Books

G.S.S. Babu: **Quantum Evolutionary Algorithms for Unit Commitment and OPF**, Lap Lambert Academic Publishing, 2016, ISBN: 978-3-649-94875-6

### Book Chapters

Ashish Saini, A.K. Saxena: Chapter 5 Title- “**Multi-objective Congestion Management Methodology Based on Generation Rescheduling Bids and Load Curtailment in Competitive Electricity Markets**” , pp. 119-154, Energy Management, Volume 12, Chapter 5 in series Energy Science and Technology, Studium Press LLC USA, 2015, ISBN of Series, 1-62699-061-ISBN of Volume, 1-62699-073-5

Ashish Saini: Chapter 21 Title- “**Zonal Reactive Power Market Clearing Model in Competitive Electricity Markets using Multi-objective Optimization Approach**”, pp. 508-532, Energy Management, Volume 12, Chapter 21 in series “Energy Science and Technology”, Studium Press LLC USA, 2015, ISBN of Series, 1-62699-061-ISBN of Volume, 1-62699-073-5

**Number of Publications: 101, Number of Citations: 2221**

	<b>Title of paper</b>	<b>Name of the author/s</b>	<b>Name of journal</b>	<b>Year</b>
1.	Interval Type-2 Mutual Subsethood Fuzzy Neural Inference System (IT2MSFuNIS)	V Sumati C Patvardhan	IEEE Transactions on Fuzzy Systems, December, 2016. Google Scholar h-index: 144 Imapct Factor: 6.306	2018
2.	A Parallel Interval Type-2 Fuzzy Neural Inference System Using Different Similarity Measures: Comparative Study	V Sumati, C Patvardhan	Advanced Computational and Communication Paradigms, Springer, Singapore, 2018, pp 165-173	2018
3.	An Improved Generalized Quantum-Inspired Evolutionary Algorithm for Multiple Knapsack Problem	S Bansal, C Patvardhan	International Journal of Applied Evolutionary Computation (IJAEC) 9 (1), 2018, pp 17-51	2018
4.	Navigation, Guidance & Control Program for GPS based Autonomous Ground Vehicle	AmitYadav, AjeetGaura, S M Jainb and D K Chaturvedi	Materials Today Proceedings Elsevier, Sept 2018	2018
5.	Performance analysis of grid interactive solar photovoltaic plant in India	K PritamSatsangi, G S Saileshbabu, D Bhagwan Das, A K Saxena	Energy for sustainable development - ELSEVIER	2018
6.	Validation of Selected SPV Module	S. Mishra, K. Janardhana, D. Bhagwan Das	International Journal of Microelectronics and Digital Integrated Circuits	2018
7.	Effective Color image watermarking scheme using YCbCr color space	C. Patvardhan, Pragyesh Kumar, C. Vasantha Lakshmi	Multimedia Tools and Applications, PP 1-23, June, Springer.	2017

	and QR code		Impact Factor : 1.53	
8.	An Intelligent Electric Vehicle (IEV) Using LabVIEW	AmitYadav, NitinYadav, D.K.Chaturvedi	International Journal of Electrical Machines & Drives	2017
9.	Navigation, Guidance & Control Program for GPS based Autonomous Ground Vehicle	AmitYadav, Ajeet Gaur, D.K.Chaturvedi	International Journal of Engineering Development and Research	2017
10.	A novel Fuzzy-PSO term weighting Automatic Query Expansion approach using combined semantic filtering	Yogesh Gupta and AshishSaini	Knowledge-Based Systems, Elsevier	2017
11.	Parallel Improved Quantum Inspired Evolutionary Algorithms to solve large sized Quadratic Knapsack Problems	C Patvardhan SulabhBansal AnandSrivastav	International Journal on Swarm and Evolutionary Computation, February, 2016, Elsevier. Impact factor: 2.963 SCIMago h-index - 22.	2016
12.	Enhanced Quantum Inspired Evolutionary Algorithm For Automatic Synthesis	SwantiSatsangi, C. Patvardhan	International Journal of Engineering Technology Science and Research, Volume 3, Issue 1, 2016, pp. 34 - 45.	2016
13.	Classification of Devanagari Characters based on Water Bodies	Manoj Kumar Gupta, C. Vasantha Lakshmi, C. Patvardhan	International Journal of Computer & Mathematical Sciences (IJCMS), Volume 5, Issue 1, January 2016, pp. 18 – 27	2016
14.	System for OCR of printed Telugu text in complicated layouts and backgrounds	C Vasantha Lakshmi, Sarika Singh and C Patvardhan	International Journal of Electronics, Electrical and Computational System (IJECS) ISSN 2348-117X	2016
15.	A Parallel Interval Type-2 Fuzzy Neural Inference System Using Different Similarity Measures: Comparative Study	V Sumati C Patvardhan	International Journal of Electronics, Electrical and Computational System (IJECS) ISSN 2348-117X, Special Issue, February, 2016.	2016
16.	An Improved Generalized Quantum-Inspired Evolutionary	C Patvardhan SulabhBansal AnandSrivastav	International Journal of Computers and Mathematical Science,	2016



	Algorithm for Multiple Knapsack Problem		ISSN 2347 – 8527, February, 2016.	
17.	Model Simulation & Resource Allocation in Cognitive Radio System	Swati, Deeksha Singh, AmitYadav	International Journal of Telecommunications & Emerging Technologies	2016
18.	Enabled Impairment Cognizant Of Elastic Optical Networks by Traffic Grooming and Multipath Routing	Deeksha Singh, AmitYadav	International Journal of Telecommunications & Emerging Technologies	2016
19.	Development of Mathematical Model for Electric Vehicle using Matlab -Simulink	AmitYadav, D K Chaturvedi, N K Mishra	International Journal of Management Development and Information Technology	2016
20.	Mathematical Model for Ground Electric Vehicle using Matlab -Simulink	AmitYadav, AjeetGaur, D K Chaturvedi	International Journal of Automatic Control System	2016
21.	EFFECT OF STATOR WINDING FAULTS ON PERFORMANCE CHARACTERISTICS OF THREE PHASE INDUCTION MOTOR	Prof. D. K. Chaturvedi, MayankPratap Singh	INTERNATIONAL JOURNAL OF COMPUTER APPLICATIONS(IJCA)	2016
22.	Quantum-Inspired Evolutionary Algorithm for Difficult Knapsack Problems	C Patvardhan SulabhBansal AnandSrivastav	International Journal on Memetic Computing, Springer Volume 7, Issue 2, 2015, pp 135-155. Scimago H-Index 13.	2015
23.	Evolution of Quantum Teleportation Circuits with Improved Genetic Algorithm	SwantiSatsangi, C. Patvardhan	International Journal of Computer Applications (0975 – 8887) Volume 130 – No.11, November, 2015	2015
24.	Solving the 0-1 Quadratic Knapsack Problem with a competitive Quantum Inspired Evolutionary Algorithm	C Patvardhan SulabhBansal AnandSrivastav	Journal of Computational and Applied Mathematics, (2015), Elsevier, Volume 285, pp. 86-99, 5-year Impact Factor: 1.245 Scimago H-index 81.	2015
25.	Towards right amount of randomness in Quantum-inspired Evolutionary Algorithms	C Patvardhan SulabhBansal AnandSrivastav	International Journal on Soft Computing, Springer, 2015 pp 1-20. Impact factor: 1.67 SCIMago h-index: 46	2015

26.	Robust adaptive watermarking scheme based on image contents in Wavelet domain	A. K. Verma, C. Patvardhan and C. V. Lakshmi	International Journal of Image, Graphics and Signal Processing (IJIGSP), Vol. 7, No. 2, pp. 48-55, 2015 (Google scholar H-index 9).	2015
27.	Fast Heuristics for large instances of the Euclidean Bounded Diameter Minimum Spanning tree problem	C Patvardhan V PremPrakash AnandSrivastav	International Journal, Informatica, Vol. 39, No. 3, 2015 Impact factor:1.386 SCImago H-index 26.	2015
28.	An Exhaustive Font And Size Invariant Classification Scheme For OCR Of Devanagari Characters	Manoj Gupta C Vasantha Lakshmi M Hanmandulu C Patvardhan	International Journal on Natural Language Computing (IJNLC) Vol. 4, No.1, February 2015	2015
29.	Evolution Of Simpler Quantum Teleportation Circuit With Improved Genetic Algorithm	SwantiSatsangi, C. Patvardhan	International Journal of Computer Applications, Vol. 130, 2015, pp. 27-32	2015
30.	On line cooling system fault detection in induction motor	Chaturvedi D K, Md. Sharif Iqbal, MayankPratap Singh and VikasPratap Singh	The Journal of CPRI(Central Power Research Institute),	June 2015
31.	Solution to Electric Power Dispatch Problem using Fuzzy Particle Swarm Optimization Algorithm	Sanjeev Kumar, D.K. Chaturvedi	Journal of Institution of Engineers (India)	2015
32.	On line GNN based induction motor parameter estimation	Chaturvedi D K, MayankPratap Singh, Md. Sharif Iqbal and VikasPratap Singh	The Journal of CPRI(Central Power Research Institute	June 2015
33.	ON LINE GNN BASED INDUCTION MOTOR PARAMETER ESTIMATION	Prof. D. K. Chaturvedi, MayankPratap Singh, Md. Sharif Iqbal, VikasPratap Singh	CENTRAL POWER RESEARCH INSTITUTE(CPRI)	2015
34.	ON LINE COOLING SYSTEM FAULT DETECTION IN INDUCTION MOTOR	Prof. D. K. Chaturvedi, MayankPratap Singh, Md. Sharif Iqbal, VikasPratap Singh	CENTRAL POWER RESEARCH INSTITUTE(CPRI)	2015
35.	An Overview of Intelligent Moving Machines (IMM)	AmitYadav, D.K.Chaturvedi	IJCA	2015
36.	Modified Neural Approach for Inverted Pendulum Control	D.K. Chaturvedi, Manmohan, TanveerQamar	International Journal of Engineering Technology, Management and Applied Sciences	2015

37.	Quantum Inspired GA based Neural Control of Inverted Pendulum	D.K. Chaturvedi, TanveerQamar, O. P. Malik	International Journal of Computer Applications	2015
38.	A new fuzzy logic based ranking function for efficient Information Retrieval system	Yogesh Gupta, AshishSaini and A.K. Saxena	Expert Systems with Applications, Elsevier	2015
39.	Solution of 'hard' knapsack instances using Quantum Inspired Evolutionary Algorithm	C Patvardhan SulabhBansal AnandSrivastav	International Journal of Applied Evolutionary Computation (IJAEC), 5(1), January – March, 2014, pp 52 – 68. (Impact Factor 0.86).	2014
40.	Balanced Quantum-Inspired Evolutionary Algorithm for Multiple Knapsack Problem	C. Patvardhan, SulabhBansal, AnandSrivastav	International Journal of Intelligent Systems and Applications (IJISA), 11, 2014, pp 1 -11. MECS-press. ISSN: 2074-9058 (IF 0.10). Google scholar H-index 10.	2014
41.	Optimal Power Flow Solution Using GA-Fuzzy and PSO-Fuzzy	Sanjeev Kumar, D.K. Chaturvedi,	Journal of Institution of Engineers (India)	2014
42.	On Line Fault Identification of Induction Motor using Fuzzy System	D. K. Chaturvedi, AkashGautam, MayankPratap Singh, Md. Sharif Iqbal	TECHNIA – International Journal of Computing Science and Communication Technologies	January. 2014
43.	ON LINE FAULT IDENTIFICATION OF INDUCTION MOTOR USING FUZZY SYSTEM	Prof. D. K. Chaturvedi, MayankPratap Singh, Md. Sharif Iqbal, AkashGautam	INTERNATIONAL JOURNAL OF COMPUTING SCIENCE AND COMMUNICATION TECHNOLOGIES(IJCSCT)	2014
44.	ESTIMATION OF INDUCTION MOTOR PARAMETERS- AN OVERVIEW	Prof. D. K. Chaturvedi, MayankPratap Singh, Md. Sharif Iqbal, VikasPratap Singh	CENTRAL POWER RESEARCH INSTITUTE(CPRI)	2014
45.	A REVIEW OF HEALTH MONITORING TECHNIQUES OF INDUCTION MOTOR	Prof. D. K. Chaturvedi, MayankPratap Singh, Md. Sharif Iqbal, VikasPratap Singh	CENTRAL POWER RESEARCH INSTITUTE(CPRI)	2014
46.	A Review of Health Monitoring Techniques of Induction Motor	Chaturvedi D. K., Md. Sharif Iqbal, MayankPratap Singh and VikasPratap Singh	The Journal of CPRI(Central Power Research Institute)	September 2014
47.	Estimation of induction motor parameters: an overview	Chaturvedi D. K., MayankPratapSingh,Md. Sharif Iqbal and VikasPratap Singh	The Journal of CPRI(Central Power Research Institute),	December 2014

48.	FPGA- based Digital Overcurrent Relay with Concurrent Sense-Process-Communicate Cycles	VarunMaheshwari,Bhagwan Das Devulapalli and A.K.Saxena	Elsevier International Journal of Electrical Power and Energy Systems	2014
49.	Fuzzy Logic based approach to develop hybrid similarity measure for efficient Information Retrieval	Yogesh Gupta, AshishSaini and A.K. Saxena	Journal of Information Science, Sage Publications, U.K.	2014
50.	Principal component analysis-based real coded genetic algorithm for optimal reactive power dispatch	AmitSaraswat and AshishSaini	Power and Energy Conversion, Inderscience	2014
51.	FPGA-Based Digital Over current Relay with Concurrent Sense-Process-Communicate Cycles	Varun Maheshwari, D. Bhagwan Das, A.K. Saxena	International Journal of Electrical Power and Energy Systems no.55, pp.66-73,2014	2014
52.	HEALTH MONITORING TECHNIQUES OF INDUCTION MOTOR- AN OVERVIEW	Prof. D. K. Chaturvedi, MayankPratap Singh, Md. Sharif Iqbal	INTERNATIONAL JOURNAL OF RECENT TRENDS IN ENGINEERING AND TECHNOLOGY(IJRTET)	2013
53.	Optimal Power Flow Solution using Fuzzy Evolutionary and Swarm Optimization	Sanjeev Kumar, D.K. Chaturvedi	International Journal of Power and Energy Systems	2013
54.	Hardware Implementation of DSP Filter on FPGAs	Apurva Singh Chauhan, A.MukundLal, VarunMaheshwari and D.Bhagwan Das	International Journal of Computer Applications	2013
55.	Design and Development of Concurrent Processing Digital Overcurrent Relay	VarunMaheshwari,Bhagwan Das Devulapalli and A.K.Saxena	International Journal of Applied Engineering Research	2013
56.	Design and Development of FIR Filter with IP Cores on FPGA	Apurva Singh Chauhan, VarunMaheshwari and AmitSrivastava	International Review of Applied Engineering Research	2013
57.	A novel multi-zone reactive power market settlement model: A pareto-optimization approach	AmitSaraswat, AshishSaini, Ajay Kumar Saxena	Energy, Elsevier	2013

58.	Multi-objective optimal reactive power dispatch considering voltage stability in power systems using HFMOEA	AmitSaraswat and AshishSaini	Engineering Applications of Artificial Intelligence, Elsevier	2013
59.	Multi-objective reactive power market clearing in competitive electricity market using HFMOEA	AshishSaini and AmitSaraswat	Applied Soft Computing, Elsevier	2013
60.	Multi-objective day-ahead localized reactive power market clearing model using HFMOEA	AshishSaini and AmitSaraswat	Electrical Power and Energy Systems, Elsevier	2013
61.	A Robust Denoising Algorithm for Sounds of Musical Instruments Using Wavelet Packet Transform	Raghavendra Sharma, VuppuluriPremPyara	Circuits and Systems, Vol.4 No.7	2013
62.	Hardware Implementation of DSP Filter on FPGAs	Apurva Singh Chauhan, A.Mukund Lal, Varun Maheshwari and D,Bhagwan Das	International Journal of Computer Applications	2013
63.	Design and Development of Concurrent Processing Digital Over current Relay	Varun Maheshwari, Bhagwan Das Devulapalli and A.K.Saxena	International Journal of Applied Engineering Research	2013
64.	Solar Power and Harmony with Nature: A Smarter Way To Protect The Environment	D.K. Chaturvedi, Rahul Umrao, Sanjeev Kumar	Electrical India,	2012
65.	Load Frequency Control Methodologies for Power System	Rahul Umrao, D.K. Chaturvedi, Sanjeev Kumar	IEEE International Conference on Power, Control and Embedded Systems, MNNIT, Allahabad	2012
66.	Performance indicators for assessing solar photovoltaic microgrids in grid connected mode	K.Pritam Satsangi, D. Bhagwan Das, G.S.S. Babu, A.K. Saxena	Springer - MARC - 2018, HMRIT, New Delhi	2018
67.	Performance Evaluation of Grid Interactive Photovoltaic System	K.Pritam Satsangi, D. Bhagwan Das, G.S.S. Babu, A.K. Saxena	International Conference on Computing, Power and Communication Technologies (GUCON)	2018
68.	"Multi-objective congestion management based on	AshishSaini	International Conference on Computer, Communications and	2017

	generator's real and reactive power rescheduling bids in competitive electricity markets", pp. 442-447		Electronics (Comptelix), 2017, Jaipur, India	
69.	"A comparative analysis of fuzzy based ranking functions for information retrieval", pp.60-64	AshishSaini, A.K. Saxena	3rd International Conference on Computing for Sustainable Global Development, INDIACom 2016, New Delhi, 2016	2016
70.	A new category based Deep Performance Index using Machine Learning for IPL Cricketers	C Deep Prakash C Patvardhan Sushobhit Singh	Presented at International Conference, India Habitat Centre, New Delhi	2016
71.	Hybrid DWT-SVD based Digital Color Image Watermarking	C Patvardhan Pragyesh Kumar C Vasantha Lakshmi	Presented at International Conference, India Habitat Centre, New Delhi	2016
72.	System for OCR of printed Telugu text in complicated layouts and backgrounds	C VLakshmi, Sarika Singh and C Patvardhan	ICETESMA16, IJEECS	2016
73.	Identification and use of Touching Property for Piece wise Classification of Devanagari Characters	Manoj Kumar Gupta, C. Vasantha Lakshmi, C. Patvardhan	Presented at International Conference, India Habitat Centre, New Delhi, February, 2016.	2016
74.	Condition Monitoring of Induction Motor International Conference Technically Co-sponsored by IEEE at Amity University Noida,India, On 12-13 March, 2015 , pp.135-140	D.K.Chaturvedi., Md. Sharif Iqbal, Mayank Pratap Singh	Recent Developments in Control Automation and Power Engineering (RDCAPE 2015)	2015
75.	Intelligent Health Monitoring System for Three Phase Induction Motor Using Infrared Thermal Image International Technically Co-sponsored by IEEE at	D.K.Chaturvedi., Md. Sharif Iqbal, Mayank Pratap Singh	International Conference on Energy, Economics and Environment (ICEEE2015)	2015

	Galgotias College of Engineering and Technology, Greater Noida on March 27-28, 2015. IEEE digital Lib. pp.1-6.			
76.	Design of Reversible Quantum Equivalents of Classical Circuits Using Hybrid Quantum Inspired Evolutionary Algorithm	Swanti S. Gupta C Patvardhan	2015 IEEE International Advance Computing Conference, Bangalore.	2015
77.	Application of Genetic Algorithm for Evolution of Quantum Fourier Transform Circuits	Swanti Satsangi, C. Patvardhan	Proceedings of the Second International Conference on Computer and Communication Technologies, Vol. 379 of the series Advances in Intelligent Systems and Computing, pp. 773-782.	2015
78.	<i>"A New Similarity function for Information Retrieval based on Fuzzy logic", pp. 1472-1478</i>	AshishSaini	Third International Conference on Advances in Computing, Communications and Informatics (ICACCI-2014), 2014	2014
79.	"Fuzzy logic based similarity measure for Information Retrieval System performance improvement", pp. 224-232	AshishSaini, A.K. Saxena	International Conference on Distributed Computing and Internet Technology (ICDCIT 2014), Lecture Notes on Computer Science (LNCS 8337), Springer	2014
80.	<i>"Fuzzy based approach to develop hybrid ranking function for efficient Information Retrieval", pp. 471-479</i>	AshishSaini, A.K. Saxena	Third International Symposium on Intelligent Informatics (ISI'14), Third International Conference on Advances in Computing, Communications and Informatics (ICACCI-2014), 2014	2014
81.	"Development of hybrid similarity measure using fuzzy logic for performance improvement of	AshishSaini, A.K. Saxena	International Conference on Computing for Sustainable Global Development, INDIACom 2014, New Delhi	2014

	information retrieval System”, pp. 1-5			
82.	Parallel Heuristics for the Bounded Diameter Minimum Spanning Tree Problem	C Patvardhan V PPrakash A Srivastav	Proceedings of 11th IEEE India Conference, INDICON, Pune	2014
83.	Robust Temporal Video Watermarking Using YCbCr Color Space in Wavelet Domain	AK Verma Mayank Singhal C Patvardhan	3rd IEEE International Advance Computing Conference (IACC-2013), pp. 1184-1189, 22-23 Feb,.	2013
84.	Robust content based image retrieval based on multi-resolution wavelet features and edge histogram	C Patvardhan Ajay Verma C Vasantha Laskhmi	Proceedings of IEEE Second International Conference on Image Information Processing (ICIIP), 2013 , 9-11 Dec., Pp 447 – 452	2013
85.	A Complete OCR System for Telugu Document Images with Complex Backgrounds	C Vasantha Lakshmi, Sarika Singh and C Patvardhan	-do-	2013
86.	On Line Fault Identification of Induction Motor using Fuzzy System Panipat (Haryana), Souvenir – pp.61, proc. pp.106-112, 16-Nov. 2013	Chaturvedi D.K., Akash Gautam, Mayank Pratap Singh, Md. Sharif Iqbal	IEEE Co-Sponsored 7th International Conference on Advanced Computing and Communication Technologies (ICACCT™-2013) & INDERSCIENCE Publishers, UK, IETE, IEE Computer society and Asia Pacific Institute of Information Technology SD India	2013
87.	Health Monitoring Techniques of Induction Motor: An Overview IEEE and Geeta Institute of Management and Technology, Kurukshetra, India, PP. 469-477, 25-27 October, 2013	Chaturvedi D.K., Md. Sharif Iqbal, Mayank Pratap Singh	4th International Conference on Emerging Trends in Engineering and Technology (IETET-2013)	2013
88.	Unmanned Package Delivery System	Ankit Yadav, Parman Josan, G.S.S. babu	XLI –National System Conference NSC-2017, DEI, Agra	2017
89.	A Study of Generation	Ravindra Bharadwaj, G.S.S.	XLI –National System	2017



	of Biogas from Kitchen Waste & Cow dung: An Experimental Analysis	Babu A.K. Saxena	Conference NSC-2017, DEI, Agra	
90.	A TQM approach for Engineering Education in 2020	C Patvardhan C V Lakshmi	Presented at 2-day Conference on Quality and Values in Science, Engineering and Management Education, DEI, Agra	2015
91.	Determination of Optimal Features Database for OCR of Printed Telugu Text	C V Lakshmi, Sarika Singh, C Patvardhan	National Systems Conference, NSC 2015	2015
92.	A wholistic education system	C VLaskhmi C Patvardhan	Presented at 2-day Conference on Quality and Values in Science, Engineering and Management Education, DEI, Agra	2015
93.	Health Analysis of Cooling System in Induction Motor Jamia Millia Islamia, New Delhi, India, pp. 285-293., 2nd - 3rd February 2015.	D.K.Chaturvedi, Md. Sharif Iqbal & Mayank Pratap Singh	National conference on Emerging Trends in Electrical and Electronics Engineering (ETEEE - 2015),	2015
94.	Design of Reversible Quantum Equivalents of Classical Circuits Using Hybrid Quantum Inspired Evolutionary Algorithm	Swanti Satsangi, C. Patvardhan	Advanced Computing Conference, 2015, pp. 258-262.	2015
95.	An Artificial Bee Colony Algorithm for the Bounded Diameter Minimum Spanning Tree Problem	C Patvardhan V PPrakash A Srivastav	Proceedings of the 38th National Systems Conference, NSC 2014, Hyderabad	2014
96.	Health Monitoring of Three Phase Induction motor, Sachdeva Institute of Technology, Farah, Mathura and The institution of Engineers (India) Agra Local Chapter. 8 March 2014	D.K. Chaturvedi, Md. Sharif Iqbal & Mayank Pratap Singh	National Conference On Soft Computing	2014
97.	Analysis of Vibration	D.K.Chaturvedi, Md. Sharif	IEEE Sponsored National	2014

	Signal to Detect the Faulty Condition of Induction Motor IEEE Sponsored National Conference Organized by Electrical and Electronics Engineering (EEE) Department, Galgotias College of Engineering and Technology, Greater Noida, India, 28-29 March, 2014.	Iqbal & Mayank Pratap Singh,	Conference On Energy, Power And Intelligent Control Systems (Epics)	
98.	Soft Computing Techniques for Parameter Estimation, Eshan College of Engineering, Mathura U.P., pp. . 32-36.. 15-16 Nov. 2013	. K. Chaturvedi, Mayank Pratap Singh & Md. Sharif Iqbal	National conference on Globalized Leading Edge Technologies in Engineering (GLETE 2013)	2013
99.	Stress Analysis of Induction motor during its starting under different operating conditions Eshan College of Engineering, Mathura U.P., pp. 1-5. 15-16 Nov. 2013	D. K. Chaturvedi, Mayank Pratap Singh & Md. Sharif Iqbal	National conference on Globalized Leading Edge Technologies in Engineering (GLETE 2013)	2013
100	Different faults in an Induction Motor and Their Diagnostic Techniques Eshan College of Engineering, Mathura U.P., pp. . 20-25... 15-16 Nov. 2013.	D.K.Chaturvedi, Md. Sharif Iqbal & Mayank Pratap Singh	National conference on Globalized Leading Edge Technologies in Engineering (GLETE 2013)	2013

- Ph.D. guided /Ph.D. awarded during the assessment period while working in the institute (5) **Awarded: 16 Submitted: 02 Ongoing: 13**

Name of the PhD scholar	Name of the Guide	Title of the thesis	Year of award of PhD
Raghvendra Sharma	Prof. V.Prem Pyara	Characterization, coding and identification of sounds of some musical instruments	2015
Amit Saraswat	Dr. Ashish Saini	Optimal Reactive Power Management in	2013

	Prof. A.K.Saxena	Competitive Electricity Market	
Prakash Sahni	Dr. Shiroman Prakash Prof. H Saran, IITD	Challenges in Quantum computing: quantum algebraic algorithms	2018
Deepak Singh	Prof. D. B. Das Dr. K. Srinivas	Optimization of Mobile Telecommunication Network Design and Operations Using Metaheuristic Search Techniques	2015
Amit Mishra	Prof. A.K.Saxena	Data Mining Applications in Power Systems	2017
V Sumati	Prof C Patvardhan Prof GS Adhar, University of North Carolina, USA	Parallel Soft Computing Models and their Applications	2018
Neeraj Tiwari	Prof. D. B.Das Dr. G.S. Sailesh Babu	Design, Development and Hardware Realization of Comprehensive Monitoring and Control Strategies for Solar Photovoltaic Power Plants	2016
Varun Maheshwari	Prof. D. B. Das Prof. A. K. Saxena	Design and Development of FPGA Based Relays for Modern Power System Protection Schemes	2016
Tanveer Qamar	Prof. D.K.Chaturvedi Prof. Man Mohan	Inverted Pendulum Control Using Soft Computing Techniques	2018
Swanti G. Satsangi	Prof C Patvardhan Prof PK Kalra, IITD	Automatic Design of Quantum Circuits	2018
Sarika Singh	Prof C V. Lakshmi Prof C Patvardhan	Techniques for the development of multi font printed text OCR system for Indian scripts	2018
Mayank Pratap Singh	Prof. D.K.Chaturvedi Prof. Man Mohan	Parameter Estimation of Three Phase Induction Motor: An Innovative Approach	2018
Sulabh Bansal	Prof C Patvardhan Prof A Srivastav, Kiel University	Algorithm Engineering for solution of some Hard Combinatorial Optimization problems	2018
Yogesh Gupta	Dr. Ashish Saini Prof. A.K.Saxena	Soft Computing Techniques for improving Information Retrieval System	2018
Ashish Chandhok	Prof. D.K.Chaturvedi	Unified Cooperative Enactive Social Cognitive Artificial System for Solving Real World Problems	2018
Md. Sharif Iqbal	Prof. D.K.Chaturvedi	Health Monitoring System for Three Phase Induction Motor using Soft Computing Techniques	Submitted
Sushobhit Singh	Prof. A.K.Saxena Prof.P.K.Kalra,IITD	efficient algorithms for timing analysis and signal integrity for VLSI Circuits	Submitted
V. Prem Prakash	Prof C Patvardhan Prof A Srivastav,	Heuristics and meta heuristics for some	Submitted

	Kiel University	constrained spanning tree generation problems	
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### 5.8.2. Sponsored Research (20) = 20 Marks

Project Title	PI/Co-PI	Funding Agency	Amount Sanctioned (Rs. In Lacs)	Duration (Years)
Design & Development of hybrid renewable energy micro-grid with value chain applications for Agriculture & Dairy farm (DST-MI)	Prof. D. Bhagwan Das Prof. A.K. Saxena Dr. G.S.S.Babu Sh. G.P. Rana	DST-MI	Rs. 223.945	2018-2020
Indo-German Project "Evolutionary Algorithms for parameter optimization of whole ocean Coupled Biogeochemical Models and for Genome Assembly"	Prof. C Patvardhan	DST	Rs. 5.90	2017-2020
Design and development of robust watermarking system for still images and videos	Prof. C Patvardhan	MICT	Rs. 42.00	2014-2017
Quantum and Nano-computing Virtual Centre	Prof. V. Sahni	MHRD	Rs. 650.00	2009-2015
Power Lab (Simulation) Virtual Lab Phase – II	Prof. D.K. Chaturvedi	MHRD	Rs. 24.60	2012 - Contd. Contd.
Virtual Power Lab	Prof. D.K.Chaturvedi	MHRD	Rs. 70.50	
Design and development of Smart Micro Grid with optimal solar/grid power synergy. (DST-SERI)	Prof. D. Bhagwan Das, Prof. A.K. Saxena	DST-SER/I	Rs. 58.49	2015-2018

### 5.8.3. Development activities (15)

#### A. Product Development

Developed a Two-Axis Sun Tracker for SPV Plants for BHEL	3318/CHE/2013
Developed a Single Axis Sun Tracker for Pole Mounted Solar Plant for Solar Agriculture Farm and applied for Patent	2015
Developed a FPGA Based Relay for Sense and Communicate and filed for Patent	2016-2017

Virtual Power Lab	2012 onwards
Development of Smart Microgrid	2015
Design and development of integrated 5 kWp SPV-wind system at DEI ICT DE Center, MTV Puram	2014
Design and development of prototype of Mobile SPV Plant for industries	2017
5kWp SPV system in DEI ICT Center, Murar	2016
10kWp SPV system in DEI ICT Center, Amritsar	2016
25 kWp distributed SPV system in DEI ICT Center, Rajaborari-Timarni	2010
Remote monitoring and control system of STP Pumps	2016
Automatic Security Alarm system for DEI Girls Hostels	2015
Solar Electric Van converted from diesel van	2009
Solar Thermal cooking system for DEI hostels	2010-2011
Design and commissioning of 25.5kWp SPV system in Dayalbagh	2010
DPR for Green Campus for Nagar Panchayat, Dayalbagh	2014
DPR for implementation of Renewable energy systems at Sewagram Ashram,	2015
Design and implementation of distributed SPV power plants of total capacity - 650 kWp	2010 onwards
Energy audit of Dayalbagh Colony	2014
Tracking of cattle using RFID Tag implementation for RSS Gaushala	2016
Precision dairy farming software	2017
Low cost water trough for Gaushala	2016
GPS based Live vehicle tracking system for RSS agriculture farm	2015

• **Research Laboratories:**

1. Multimedia Laboratory
2. Virtual Labs for Power Systems Lab.
3. Instrumentation Laboratory
4. Quantum Computing Laboratory
5. State of the Art Real Time Simulation Lab with OPAL-RT Simulator
6. Computer-Aided Design Laboratory

7. Electrical Engineering Workshop
8. Renewable Energy Lab.
9. Advanced Power Systems lab with Transmission line Simulator
10. E-Classrooms: State-of-the-art e-classrooms have been setup in different Faculties in the Institute. Most of the e-Classrooms have the following facilities: Overhead projection, smart interactive boards, recording and archiving of lectures in digital format and full interactive video conferencing for lecture transmission and interactions.
11. High Performance Computing A 24 Blade, Dual Xeon, 6 core, processor based high performance computing cluster has been setup at the Multimedia Laboratory at DEI. With specialized software such as multiuser MATLAB and connection to the Institute LAN, the cluster is accessed by students and faculty members across the University for research involving parallel computing and compute intensive simulations. One of the blades is also a CUDA™ parallel computing platform.

- **Instructional materials**

**Question Banks** comprising of indicative set of questions are given to students in all theory courses as mandatory practice

**Lab Manual** of following lab courses is provided

Basic Electronics Lab  
 Measurements Lab  
 Electrical Machines Lab  
 C Programming Lab  
 Microprocessors Lab  
 Analog Electronics Lab  
 Power Systems Lab etc.

Besides the lab manuals for internal circulations, following have been published/ hosted of public circulation

- Power Systems Lab.: Virtual Simulation: It is hosted on National Portal of Government of India. <http://msvs-dei.vlabs.ac.in/>
- Instruction Material for Modelling & Simulation
- Instruction Material for Electrical Machines Lab.,(Published by University Scientific Press, Delhi)

### Instructional Material in Theory courses

Instructional material in the form of Tutorial sheets, Study material and course notes are provided in the following courses

Basic Electrical Engineering

Basic Electronics

HVDC Transmission

Modelling and Simulation

Applied Systems Engineering

Agricultural Engineering

Comparative study of Religions

Cultural Education

General Knowledge and Current Affairs

Communication Engineering

Microprocessors and Microcontrollers

- **Working models/charts/monograms etc. :**  
Several working models are being used/displayed for laboratory experiments  
Instructional charts for performing experiments are being displayed in the department and laboratories.  
Charts on general and electrical safety are being displayed in all labs  
Charts of Standards, wire gauges, working of lab equipment viz. CROs etc. are displayed in laboratories.  
Chart of electric shock treatment procedures

#### 5.8.4. Consultancy (from Industry) (20) = 20 Marks

S. No.	Year	Funding Agency	Specs	Amount
1	2018-19	Agra Smart City, Agra	Technical	17,00,000.00
2	2017-18	Calibration & Testing of Instruments	Vetting of	53750.00
3	2016-17	Calibration & Testing of Instruments	DPRs	7750.00
4	2015-16	Calibration & Testing of Instruments	Testing of Meters, Motors, Pumps etc.	19750.00
Calibration & Testing of Instruments for the following Companies are carried out: 1. M/s . Atul generators Pvt. Ltd., Agra 2. M/s. B.S.A. industries, Agra 3. M/s. Swaroop Pumps, Agra 4. M/S. Prakash Agricultural Industries,				

5. M/s. Hanuman Electricals, Agra
6. M/S. K C P R Mathura
7. M/s. Sniper Leathercraft Pvt. Ltd.,
8. M/s. Bharat Industries, Agra
9. M/s Bharat Agriculture, Agra
10. M/s. Basant Industries, Agra
11. M/s. Shinning Engg. Works, Agra
12. M/s. B. R. Enterprises, Agra
13. M/s. Kamlesh Kr Singh Engg. Pvt. Ltd., Mathura
7. M/s. basant ispat Udyog, Agra
11. M/s. Shriram Diesel India, Agra
12. M/s. Amar Engg. Company, Agra
13. M/s. Ratan Construction Company, Mathura
14. M/s. Kartik Construction Co., New Delhi
15. M/s. Perfect Engg. Works, Agra
16. M/s. Agra Smart City, Agra

### **5.9. Faculty Performance Appraisal and Development System (FPADS) (10)**

Faculty members of Higher Educational Institutions today have to perform a variety of tasks pertaining to diverse roles. In addition to instruction, Faculty members need to innovate and conduct research for their self-renewal, keep abreast with changes in technology, and develop expertise for effective implementation of curricula. They are also expected to provide services to the industry and community for understanding and contributing to the solution of real life problems in industry. Another role relates to the shouldering of administrative responsibilities and co-operation with other Faculty, Heads-of-Departments and the Head of Institute. An effective performance appraisal system for Faculty is vital for optimizing the contribution of individual Faculty to institutional performance.

The assessment is based on:

- A well-defined system for faculty appraisal for all the assessment years (5)
- Its implementation and effectiveness (5)

#### **System for Faculty Appraisal**

##### **Focus on Quality**

Using the medium of an innovative, comprehensive and flexible education policy, DEI attempts to chisel out the total quality person through a persistent focus on imparting quality education. In its pursuit of quality



education, DEI has instituted an Internal Quality Assurance Cell (IQAC) based on the specific guidelines of the National Assessment and Accreditation Council, an autonomous body set up by the UGC. The activities of the IQAC envelop the University central administrative structure, University departments, P.G. centres and every component of the University system.

DEI relentlessly strives towards an institutionalized quality control process through the following quality focused approach: Admission Criteria -> Curriculum Design -> Programme Selection -> Curriculum Implementation -> Evaluation -> Employability.

The Internal Quality Assurance Cell of Dayalbagh Educational Institute was constituted on 16 September, 1995. It is performing following tasks on regular basis:

1. Improvement in quality of teaching and research by regular inputs to all concerned based on feedback from students.
2. Providing inputs for best practices in administration for efficient resource utilization and better services to students and staff.
3. Providing inputs for Academic and Administrative Audit and analysis of results for improvement in areas found weak.

Students and staff give their feedback and suggestion on teaching and administrative performance by dropping their views in the Suggestion Box located in DEI Computer Centre, or through email to the Coordinator, IQAC at [iqac@dei.ac.in](mailto:iqac@dei.ac.in).

### **ASSESSMENT OF THE PERFORMANCE**

#### **TEACHING, LEARNING AND EVALUATION RELATED ACTIVITIES**

##### **Teaching**

- Classes taught includes session tutorials, lab and other teaching related activities
- regular and punctuality to class, remedial teaching, clarifying doubts, counselling and mentoring, additional teaching etc.
- Examination, Evaluation Activities and Administrative Support & Participation in Students' Co-curricular & Extra-curricular Activities:

##### **Involvement in students related activities/research activities**

- (a) Administrative responsibilities such as Head/ Chairperson /Dean/ Director/ Co-ordinator, Warden etc.
- (b) Examination and evaluation duties assigned by the University or attending the examination paper evaluation.

- (c) Student related co-curricular, extension and field based activities such as students clubs, career counselling, study visits, students seminars and other events, cultural, sports, NCC, NSS and community services.
- (d) Organising seminars/conferences/workshops, other universities activities.
- (e) Evidence of actively involved in guiding Ph.D. students.
- (f) Conducting minor or major research project sponsored by national or international agencies.
- (g) At least one single or joint publication in peer reviewed or UGC list of Journals.
- (h) Presentation of papers and chairing of sessions
- (i) Guiding and carrying out research projects and publishing the research output in national and international journals

### **Implementation**

- The Department follows the UGC approved self-appraisal method to evaluate teachers regarding research and other activities.
- The IQAC regularly monitors and collects the annual self-appraisals in the prescribed format from each Faculty member, duly forwarded by the Head of the Departments and respective Deans.
- A Key Performance Indicators (KPI) system has been introduced in the Department of Mechanical Engineering to align teachers' initiatives in teaching, research and administration areas.
- In the Key Performance Indicators System, an additional self-appraisal is undertaken for continuous quality enhancement.
- Reviewed by the Head and Dean.
- Teachers are individually apprised of their strengths and weaknesses by their respective Heads and encouraged to achieve higher goals.
- The appraisals also help to assess the merit of the faculty members in applying for personal promotions.

A well-defined Proforma of self- appraisal report for the faculty is available on the institute web site. It consists of academic, research, curricular and extra-curricular contributions for the academic year. It is filled by the faculty and submitted in the department.

The faculty submits self- appraisal reports for the academic year which is evaluated by the head of the department.

The contents of the self-appraisal are mentioned below:

- i. Steps taken to advance technical knowledge
- ii. Research contribution & other publications
- iii. Capacity to guide research UG/PG/Ph.D.

- iv. Development work in the Lab/Workshop
- v. Contributions to the Department/College
- vi. Any other additional information related to their academic excellence.

#### 5.10. Visiting/Adjunct/Emeritus Faculty etc. (10)

Adjunct faculty also includes Industry experts. Provide details of participation and contributions in teaching and learning and /or research by visiting/adjunct/Emeritus faculty etc. for all the assessment years:

##### **List of Emeritus Professor/Adjunct Professor/Emeritus Teacher/Honorary Faculty :**

All the faculty listed below are assigned teaching load for theory classes between **78 hours to 156 hours per year** in addition to Laboratory/Project/Research Guidance. Each of the following faculty are devoting more than 50 hours per year.

S.No.	Name	Designation	Hours* / year		
			CAYm1	CAYm2	CAYm3
1.	Prof. V. Prem Pyara	Emeritus Professor	180	180	180
2.	Prof. V.G. Das (expd. 2018)	Emeritus Professor	200	200	200
3.	Prof. V. Charan Prasad	Adjunct Faculty	100	100	100
4.	Brig. P.D.Gupta	Adjunct Faculty	50	0	0
5.	Sh. V. Prem Swarup Placement Activities	Adjunct Faculty	50	50	50
6.	Sh. Padam Das Workshop and Projects	Honorary Faculty	70	70	70
7.	Mrs. Poonam Prakash Employability skills & Career Guidance	Honorary Faculty	400	400	400
8.	Sahab Das Training and Placement	Honorary Faculty	100	100	100

\*Approximate hours contributed

<b>CRITERION 6</b>	<b>Facilities and Technical Support</b>	<b>80</b>
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### 6.1 Adequate and well equipped laboratories, and technical manpower (40)

Sr. No.	Name Of The Laboratory	No. Of Students Per Setup	Name Of The Important Equipment	Weekly Utilization Status	Technical Manpower Support		
					Name Of The Technical Staff	Designation	Qualification
1.	Electrical Machines Lab	4	Single Phase Transformer , Dc Separately Excited Motor , Traction Motor , Dc Shunt Motor , Three Phase Induction Motor, Dc Motor Alternator Set, Shunt Generator , Compound Generator, Maxwell Bridge, Schering Bridge , Frequency Meter , Dc Motor, Alternator Set Dc Motor Alternator Set, High Voltage Oil Testing Set, Over Voltage Relay, Over Current Relay, Power Quality Analyzer, Earth Resistivity Tester Synchro Transmitter And Receiver , Magnetic Amplifier, Dc Motor, Matlab With Control Systems Toolbox	39	Azad Babu	S.T.A	Diploma Elect
					Gur Dayal	Electrician	ITI
					Chhavi Nath Prasad Gautam	Peon	High School
2	Electronics Lab	5	CRO , Power Supply, Multimeter, Function Generator, Personal Computer	34	Pooran Jati	Lab Assistant	Bsc
					Manoj Kumar Sah	Peon	High School
3	Microprocessor & Power Electronics Lab	4	8085 Microprocessor Kit , Power Supply, Cro, Microcontroller Kits, Fpga Kits Cro, Function Generator ,Power Supply Multimeter, Personal Computers, Solar Array Tester, Power Quality Analyzer, Cctv System, Lcd Tvs,	36	Shivanarayan Verma	J.T.A	Diploma Elect. Engg., +2 +Electrician
					Uday Kumar	Peon	High School
4	Computer Lab.	1	Dell Precision T410 Tower Server(1) Dell T5500 Workstation (1), Personal Computers	34	Sarkar Saran	Mechanic Grade-B	ITI Four Wheeler & Diploma In Leather Technology

**Table B.6.1**

### 6.2. Laboratories maintenance and overall ambience (10)

All the laboratories used for teaching (UG/PG) and research are well maintained with adequate number of instruments/equipment for the students. Regular maintenance budget is provided by the institute for maintaining the Labs. Apart from the budget provided by the institute, the department also receives several

research & development grant for upgradation of the labs. A few labs have been upgraded from AICTE MODROBS grants also.

All the labs have sufficient space for conducting experiments and are properly ventilated and illuminated. Since 2009, after the installation of 520 kWp solar power plant (now around 700 kWp) in the campus there is no power breakdown since then. In case of emergencies a standby 125 kVA Diesel Generator can be used. The institute has its own 33 kV substation with 1.5 MVA transformer and a dedicated line from the power utility.

PG and part time students are also trained and helps in conducting experiment under “Earn while you Learn” scheme of the institute. Several students have been benefitted by this scheme in the past and which had also helped them to acquire skills.

### 6.3. Safety measures in laboratories (10)

Sr. No.	Name of the Laboratory	Safety measures
1.	Electrical Engineering Labs	Sand Buckets, Fire Extinguishers, Safety Gloves, Safety Boots, First Aid Kits, Display of safety Measures to be taken, What to do and what not to do display, use of proper protection systems (i.e. use of Apron in Chemistry Labs, Workshop etc.) Multiple doors for emergency exit, properly ventilated labs.
2.	Workshop	
3	Physics and Chemistry Labs.	

**Table B.6.3**

The following safety tools are also available in the labs

1.Hand Apron 2. Insulated Tools And Testers 3. Electric Fire Extinguisher 4 Insulated Tools And Tester, 5 Fire Extinguisher, 6 Insulated Tools And Tester, 7 Proper Earthing For Electrical Safety

### 6.4. Project laboratory (20)

Following specialized labs for Projects are available in the department

MICROGRID LAB

COMPUTER SIMULATION LAB

Microprocessors Lab

For projects the following major facilities are available to the students:

- 24 X 7 uninterrupted power supply
- 24 x 7 Wi-Fi connections in the campus
- Subscriptions to e-Journals

- d. MoUs with institutions of Higher Learning for Joint/collaborative project guidance
- e. MoUs with the industries for Joint Guidance
- f. High Speed latest computers
- g. All state of the art equipment are available in the departments
- h. Students are free to utilise any faculties under supervision.
- i. More than 75 % utilization of the equipment available
- j. Sufficient Funds for the project whenever required
- k. Opportunity for the students to display their project to Public on every 31<sup>st</sup> January celebrated as Founders Day (Open Day)

<b>CRITERION 7</b>	<b>Continuous Improvement</b>	<b>75</b>
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**7.1. Actions taken based on the results of evaluation of each of the COs, POs & PSOs (30)**

**POs & PSOs Attainment Levels and Actions for improvement – CAY only**

<b>POs</b>	<b>Target Level</b>	<b>Attainment Level</b>	<b>Observations</b>
<b>PO1: Engineering knowledge:</b> Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.			
<b>PO1</b>	2.00	2.33	Target achieved
<b>Action :</b> <ul style="list-style-type: none"> <li>(i) Physics course has been strengthened and modernized to include Quantum Physics.</li> <li>(ii) Syllabus of Mathematics courses has been revamped to strengthen the Math base and Applications.</li> <li>(iii) Students have been encouraged to take up specialization in Electronics or Computer Science to develop additional skills apart from a strong background in the core Electrical Engineering subjects.</li> <li>(iv) Curriculum updates are taken up every year basis to spruce up the curriculum with the latest trends in Engineering. Several new Electives have been started and old one spruced up in the last four years. These include a new elective on Mobile Computing, quantum computing, work experience course on IoT etc.</li> <li>(v) A strong Alumni connect has been created to enable students to pursue their 5 months co-op training in the progressive industries which offer them live projects. These projects give a very good training and exposure to the students who derive a lot of benefit. Some students are also pursuing their training in Advanced Labs internationally in schemes like MITACS and otherwise through referrals and applications.</li> </ul>			
<b>PO2: Problem analysis:</b> Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.			
<b>PO2</b>	2.00	2.27	Target achieved
<b>Action :</b> <ul style="list-style-type: none"> <li>(i) The Department has instituted the Under Graduate Research Award (UGRA) wherein some of the selected UG students are given cash incentive to pursue a well formulated research problem as their Major project with the help of an assigned Faculty mentor. The students can take up these projects in other departments also e.g. Department of Physics and Computer Science if they are interested. These strengthen their Problem Analysis Skills.</li> <li>(ii) Students have been encouraged to participate in the sponsored R&amp;D Projects being carried out in the Department. They are also given incentive under “Earn while you learn” scheme for this work. These provide practical real-life situations for improving problem analysis skills.</li> <li>(iii) Several Community related real-life projects are being taken up in the Department with the full</li> </ul>			

<p>participation of the students. These provide practical real-life situations for improving problem analysis skills. Some of these are as follows.</p> <ol style="list-style-type: none"> <li>Truck tracking during wheat harvesting for transporting harvest from fields to threshers located near granary.</li> <li>RFID based identification of cattle in Dairy with full database maintenance of feed data, yield data etc enabling precise interventions as necessary.</li> <li>Automatic tracking of Solar Panels</li> <li>Implementation of Smart Solar Grid in the University</li> <li>Energy Audit of the Dayalbagh colony</li> </ol> <p>(iv) Some students take up projects that they pursue during their co-op internship in the industry for their Major Project. Some of these are as follows.</p> <ol style="list-style-type: none"> <li>Surface defect detection of hot steel rolling products</li> <li>Sentiment Analysis</li> <li>Vehicle identification</li> </ol>			
<p><b>PO3: Design/development of solutions:</b> Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.</p>			
<b>PO3</b>	2.00	2.17	Target achieved
<p><b>Action 1:</b></p> <ol style="list-style-type: none"> <li>All the students are required to complete a Design Engineering and Theme Development project in which the emphasis is on learning to follow the complete Design Engineering process from identification of need, problem formulation, generation of ideas, analysis of solutions, preliminary design, verifying technological feasibility and economic viability, detailed design and implementation.</li> <li>All the students are required to complete a Rural Engineering Project wherein they formulate a plan for setting up an industry in a rural setting using locally available resources. This helps in developing an understanding the practical needs of the rural areas and formulating solutions.</li> <li>The Department has instituted the Under Graduate Research Award (UGRA) wherein some of the selected UG students are given cash incentive to pursue a well formulated research problem as their Major project with the help of an assigned Faculty mentor. The students can take up these projects in other departments also e.g. Department of Physics and Computer Science if they are interested. These provide practical real-life situations for improving skills for Design / development of solutions.</li> <li>Students have been encouraged to participate in the sponsored R&amp;D Projects being carried out in the Department. They are also given incentive under “Earn while you learn” scheme for this work. These provide practical real-life situations for improving skills for Design / development of solutions.</li> <li>Several Community related real-life projects are being taken up in the Department with the full participation of the students. These provide practical real life situations for improving skills for Design / development of solutions. Some of these are as follows. <ol style="list-style-type: none"> <li>Truck tracking during wheat harvesting for transporting harvest from fields to threshers located near granary.</li> </ol> </li> </ol>			



<ul style="list-style-type: none"> <li>b. RFID based identification of cattle in Dairy with full database maintenance of feed data, yield data etc enabling precise interventions as necessary.</li> <li>c. Automatic tracking of Solar Panels</li> <li>d. Implementation of Smart Solar Grid in the University</li> <li>e. Energy Audit of the Dayalbagh colony</li> </ul>			
<b>PO4: Conduct investigations of complex problems:</b> Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions			
<b>PO4</b>	2.00	1.80	Deficiency : addressed by following actions
<b>Action 1:</b> <ul style="list-style-type: none"> <li>(i) All the students are required to complete a Design Engineering and Theme Development project in which the emphasis is on learning to follow the complete Design Engineering process from identification of need, problem formulation, generation of ideas, analysis of solutions, preliminary design, verifying technological feasibility and economic viability, detailed design and implementation.</li> <li>(ii) All the students are required to complete a Rural Engineering Project wherein they formulate a plan for setting up an industry in a rural setting using locally available resources. This helps in developing an understanding the practical needs of the rural areas and formulating solutions.</li> <li>(iii) Students have been encouraged to participate in the sponsored R&amp;D Projects being carried out in the Department. They are also given incentive under “Earn while you learn” scheme for this work. These provide practical real life situations for improving skills for Design / development of solutions.</li> <li>(iv) Several Community related real life projects are being taken up in the Department with the full participation of the students. These provide practical real life situations for improving skills for conducting investigations of complex problems. Some of these are as follows.               <ul style="list-style-type: none"> <li>a. Truck tracking during wheat harvesting for transporting harvest from fields to threshers located near granary.</li> <li>b. RFID based identification of cattle in Dairy with full database maintenance of feed data, yield data etc enabling precise interventions as necessary.</li> <li>c. Automatic tracking of Solar Panels</li> <li>d. Implementation of Smart Solar Grid in the University</li> <li>e. Energy Audit of the Dayalbagh colony</li> <li>f. Solar vehicle</li> <li>g. Driverless car</li> </ul> </li> <li>(v) Some students take up projects that they pursue during their co-op internship in the industry for their Major Project. These provide practical real life situations for improving skills for Design / development of solutions. Some of these are as follows.               <ul style="list-style-type: none"> <li>a. Surface defect detection of hot steel rolling products</li> <li>b. Sentiment Analysis</li> <li>c. Vehicle identification</li> </ul> </li> </ul>			
<b>PO5: Modern tool usage:</b> Create, select, and apply appropriate techniques, resources, and modern			

engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations			
<b>P05</b>	2.0	2.1	Target achieved
<b>Action 1:</b> <ul style="list-style-type: none"> <li>(i) The Department has received FIST II grant through which modern lab facilities have been set up for the students to perform experimentation.</li> <li>(ii) The Department is a recipient of UGC SAP grant through which modern lab facilities have been set up for the students to perform experimentation.</li> <li>(iii) The University is completely Solar powered. A Smart Microgrid has been developed indigenously by the department. This is used as a live laboratory by the students for performing experiments, analysis and research.</li> <li>(iv) The University has a Cluster Computing Facility that the students can use for learning and implementing Parallel Computing.</li> <li>(v) The students are encouraged to use the Vidyaprasar portal of the Institute where complete videos and other resources of several courses are available.</li> <li>(vi) Teachers are also using on-line teaching &amp; evaluation software and the students get familiar with them.</li> </ul>			
<b>P06 :The engineer and society:</b> Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice			
<b>P06</b>	2.0	2.28	Target achieved
<b>Action 1:</b> <ul style="list-style-type: none"> <li>(i) All the students are required to complete a Design Engineering and Theme Development project in which the emphasis is on learning to follow the complete Design Engineering process from identification of need, problem formulation, generation of ideas, analysis of solutions, preliminary design, verifying technological feasibility and economic viability, detailed design and implementation.</li> <li>(ii) All the students are required to complete a Rural Engineering Project wherein they formulate a plan for setting up an industry in a rural setting using locally available resources. This helps in developing an understanding the practical needs of the rural areas and formulating solutions.</li> <li>(iii) Several Community related real life projects are being taken up in the Department with the full participation of the students. These provide practical real life situations for understanding responsibilities relevant to the professional engineering practice.</li> <li>(iv) The students observe the various measures taken up by the Institute in the areas of renewable energy, water harvesting, minimization of energy usage, simple lifestyle, non-polluting transportation using cycles and electric vehicles and learn frugal innovation for solution of pressing problems and consequent responsibilities relevant to professional engineering practice.</li> </ul>			
<b>P07: Environment and sustainability:</b> Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development			

<b>PO7</b>	2.0	1.93	Deficiency addressed by following actions
<b>Action 1:</b>			
<ul style="list-style-type: none"> <li>(i) A compulsory course on Environmental Science has been introduced for better understanding of the environmental issues and how engineering solutions to the problems can be devised</li> <li>(ii) DEI has been ranked 5th cleanest University in 2017.</li> <li>(iii) DEI has won several awards for implementing the Clean Energy initiatives ...</li> <li>(iv) The Institute promotes a culture wherein air conditioners are utilized only in absolutely essential labs and not as a means of luxury / comfort with resulting energy savings.</li> <li>(v) Dayalbagh Community follows a way of life that is geared towards sustainability and has been declared as an Eco-village by MNRE.</li> <li>(vi) The Institution has increased the involvement of its staff and students in several environment-related activities with the active participation of students and faculty and through the outreach programmes.</li> <li>(vii) Tree planting in the campus and in the adopted villages is done regularly as part of the activities of NSS volunteers.</li> <li>(viii) Energy conservation is practised by the installation of LED Lamps and LED tube light and energy efficient fans.</li> <li>(ix) Water conservation is adopted through rain water harvesting mechanisms</li> </ul>			
<b>PO8: Ethics:</b> Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice			
<b>PO8</b>	2.0	2.2	Target achieved
<b>Action 1:</b>			
<ul style="list-style-type: none"> <li>(i) All the students have to undergo courses on Indian Culture and Comparative Study of religion as a means of promoting harmony and understanding of the Unity in diversity of the country's polity.</li> <li>(ii) Ethical practices are promoted by the ethos of Dayalbagh. The day starts with prayer in the assembly in which all students participate.</li> <li>(iii) Uniform is compulsory for students for promoting equality and eliminating class consciousness.</li> <li>(iv) Students participate in NSS activities and learn that Service to the Society is an important part of professional life.</li> <li>(v) Participation in Co-Curricular activities and Games is compulsory and promote commitment to ethical principles and an understanding of sportsmanship and that participation is more important than winning.</li> <li>(vi) A comprehensive continuous evaluation system including Daily Home Assignments and Daily Class Assignments inculcates the culture of regularity and punctuality.</li> </ul>			
<b>PO9 :Individual and team work:</b> Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings			
<b>PO9</b>	2.00	2.06	Target achieved
<b>Action 1:</b>			
<ul style="list-style-type: none"> <li>(i) The students have to complete several courses involving team projects like Design Engineering</li> </ul>			

/Theme Development in III year, Rural Engineering Project (REP) in Final year. These teams cut across Departments and enable students to learn to work in teams and in multidisciplinary settings. (ii) Student coordinators contribute to the Placement activities and learn leadership skills. (iii) The Faculty organizes an Annual Fest called “Sampravah” that is completely managed by the students. Participation is of the order of couple of thousand students across various faculties of the University and this requires good management skills to organize. (iv) The Department has a Proctorial System with Batch Prefects and Assistant Prefects being elected representatives of the batch. Similarly there are Class captains and Vice-Captains who take up various responsibilities and learn to lead. (v) The Final Year Major project may also be taken up as an individual or a Group activity depending on the project and the students learn to work in teams.			
<b>PO10 : Communication:</b> Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions			
<b>PO10</b>	2.0	1.92	Deficiency addressed by following actions
<b>Action :</b> (i) The students are required to complete two Seminar based courses – one in Third year and the other in final year. They give presentations on latest technological topics and these may go beyond the syllabus of theory courses and promote self learning as well as communications skills. (ii) All the Lab and Project courses have Viva – voce examinations which are both internal and external and promote good communication skills. (iii) Students regularly participate in tech fests outside the Institute and present their papers in Student Contests. The Institute also funds such endeavors. (iv) The students are required to submit detailed reports on their Project work, lab work and Seminar courses for promoting written communication skills			
<b>PO11 :Project management and finance:</b> Demonstrate knowledge and understanding of the engineering and management principles and apply these to one’s own work, as a member and leader in a team, to manage projects and in multidisciplinary environments			
<b>PO11</b>	1.5	1.67	Target achieved
<b>Action :</b> (i) The students have to complete several courses involving team projects like Design Engineering /Theme Development in III year, Rural Engineering Project (REP) in Final year. These teams cut across Departments and enable students to learn to work in teams and in multidisciplinary settings. (ii) Student coordinators contribute to the Placement activities and learn leadership skills. (iii) The Faculty organizes an Annual Fest called “Sampravah” that is completely managed by the students. Participation is of the order of couple of thousand students across various faculties of the University and this requires good management skills to organize.			

(iv) The Final Year Major project may also be taken up as an individual or a Group activity depending on the project and the students learn to work in teams.			
<b>PO12 :Life-long learning:</b> Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change			
<b>PO12</b>	2.0	2.29	Target achieved
<b>Action:</b>			
(i) The students are required to complete two Seminar based courses – one in Third year and the other in final year. They give presentations on latest technological topics and these may go beyond the syllabus of theory courses and promote self learning and prepare students for lifelong learning. (ii) Practical Training at the end of I and II year and co-op Internship at the end of Third year enable students to pursue independent projects in an industrial setting with limited mentorship and prepare for lifelong learning.			
<b>PSO1 :</b> Graduates will be able to analyze, innovate and provide realistic electrical engineering solutions to real life problems			
<b>PSO1</b>	2.00	2.51	Target achieved
<b>Action :</b>			
(i) The Department has instituted the Under Graduate Research Award (UGRA) wherein some of the selected UG students are given cash incentive to pursue a well formulated research problem as their Major project with the help of an assigned Faculty mentor. The students can take up these projects in other departments also e.g. Department of Physics and Computer Science if they are interested. These provide practical real life situations for improving skills for Design / development of solutions. (ii) Students have been encouraged to participate in the sponsored R&D Projects being carried out in the Department. They are also given incentive under “Earn while you learn” scheme for this work. These provide practical real-life situations for improving skills for Design / development of solutions. (iii) Several Community related real life projects are being taken up in the Department with the full participation of the students. These provide practical real-life situations for improving skills for Design / development of solutions. Some of these are as follows. a. Truck tracking during wheat harvesting for transporting harvest from fields to threshers located near granary. b. RFID based identification of cattle in Dairy with full database maintenance of feed data, yield data etc enabling precise interventions as necessary. c. Automatic tracking of Solar Panels d. Implementation of Smart Solar Grid in the University e. Energy Audit of the Dayalbagh colony (iv) Some students take up projects that they pursue during their co-op internship in the industry for their Major Project. These provide practical real life situations for improving skills for Design / development of solutions. Some of these are as follows. a. Surface defect detection of hot steel rolling products			

b. Sentiment Analysis c. Vehicle identification			
<b>PSO2</b> : The graduates will acquire adequate practical skills in electrical engineering and develop capacity to work with one's own hands in order to imbibe vocational and entrepreneurial traits			
<b>PSO2</b>	2.00	2.43	Target achieved
<b>Action:</b> <ul style="list-style-type: none"> <li>(i) Several Community related real life projects are being taken up in the Department with the full participation of the students. These provide practical real life situations for improving problem analysis skills. Some of these are as follows.               <ul style="list-style-type: none"> <li>a. Truck tracking during wheat harvesting for transporting harvest from fields to threshers located near granary.</li> <li>b. RFID based identification of cattle in Dairy with full database maintenance of feed data, yield data etc enabling precise interventions as necessary.</li> <li>c. Automatic tracking of Solar Panels</li> <li>d. Implementation of Smart Solar Grid in the University</li> <li>e. Energy Audit of the Dayalbagh colony</li> </ul> </li> <li>(ii) Some students take up projects that they pursue during their co-op internship in the industry for their Major Project. Some of these are as follows.               <ul style="list-style-type: none"> <li>a. Surface defect detection of hot steel rolling products</li> <li>b. Sentiment Analysis</li> <li>c. Vehicle identification</li> </ul> </li> <li>(iii) The time spent in internship by a student has been significantly increased to provide adequate exposure to industry environment through summer internships and Cooperative Education training. The Coop training serves dual purpose of providing exposure to industry as well as opportunity to work on real life industry standard problems</li> </ul>			
<b>PSO3</b> : Graduate will be able to specialize in any one of their preferred choice in the area of Electrical Engineering i.e. Electrical Engineering, Electronics and Communications Engineering or Computer Science			
<b>PSO3</b>	2.00	2.5	Target achieved
<b>Action :</b> <ul style="list-style-type: none"> <li>(i) Specialization streams have been started in core electrical engineering, electronics and computer science areas</li> <li>(ii) Number of electives are being offered in all four years of study.</li> </ul>			
<b>PSO4</b> : Graduate will be able to demonstrate strong commitment to ethics and moral values through his conduct			
<b>PSO4</b>	2.00	2.46	Target achieved
<b>Action :</b> <ul style="list-style-type: none"> <li>(i) Strict discipline is ensured</li> </ul>			

- |       |  |
|-------|--|
| (ii)  | A number of institute core courses have been included in the curriculum with a view to inculcate moral and ethical values in the graduates |
| (iii) | Student participation in various administrative committees is encouraged.  |

**Table B.7.1**

## **7.2. Academic Audit and actions taken thereof during the period of Assessment (15)**

Academic audit was conducted in the institution by an internal expert committee (AAAC: Academic & Administration Audit Committee) constituted by the Director. The academic audit team meets PG and UG students for taking their feedback about the teaching, research and infrastructure. The committee also meet the teaching and Non-teaching staff to confirm the students' feedback and any other issues of the faculty.

The academic audit focuses on:

- Assuring quality of learning process
- Determining desired learning outcomes
- Assessing course content and curriculum
- Assessing teaching and learning process
- Implementing quality education
- Student assessment and evaluation

The academic audit is based on

- Annual Reports of the Departments
- Annual Quality Assurance Report AQAR of the institution
- Feedback from stakeholders
- Visits to Departments
- Presentation of Achievements by the Departments

The following documents are made available to the AAAC committee.

- Copy of the Time Table
- Course File
- Lab. Equipment Details
- Students Projects
- Various Grants received by the Institute/Department
- Internal evaluation marks
- Details of Remedial classes
- Result Analysis

The institution has an **Internal Quality Assurance Cell (IQAC)** to monitor and maintain the standard of academic affairs of the institution. The cell is chaired by the Vice-Chancellor and the activities of the cell are being planned, executed and co-ordinated by a senior professor with the assistance of representative members of faculty from each domain. The details of IQAC cell is provided on institute website [www.dei.ac.in](http://www.dei.ac.in) with various actions taken.

The Internal Quality Assurance Cell of Dayalbagh Educational Institute is performing following tasks on regular basis:

1. Improvement in quality of teaching and research by regular inputs to all concerned based on feedback from students.
2. Providing inputs for best practices in administration for efficient resource utilization and better services to students and staff.
3. Providing inputs for Academic and Administrative Audit and analysis of results for improvement in areas found weak.

Students and staff give their feedback and suggestion on teaching and administrative performance by dropping their views in the Suggestion Box located in DEI Computer Centre, or through email to the Coordinator, IQAC at [iqac@dei.ac.in](mailto:iqac@dei.ac.in).

Minutes of IQAC meetings and the annual reports are available on institute website

The major activities of IQAC are

- ♦ Documentation of all academic and outreach programmes activities
- ♦ Prepare the annual report to be sent to the UGC (All AQARs prepared till the academic year 2015-2016 has been submitted to the National Accreditation and Assessment Council (NAAC) and the same has been uploaded in the institution's website)
- ♦ Preparation of periodic reports to be read by the Vice Chancellor in the BoM meetings
- ♦ Conducting academic audit
- ♦ Documentation of the self appraisal reports of the faculty members
- ♦ Documentation of annual staff and student feedback reports
- ♦ Documentation of completed projects with Utilization Certificate
- ♦ Documentation of Ph.D. Thesis abstracts
- ♦ Planning and execution of quality assurance measures in academic and curricular aspects
- ♦ Preparation of report for Thanks Giving day of the Institution
- ♦ Provision of data to be published in the News letter (half –yearly)
- ♦ Documentation of minutes of RAC meetings
- ♦ Organizing seminars/workshops related to quality assurance aspects of the University

#### **TQM Framework**

DEI has put in place Total Quality Management in its education system based on the following four cardinal objectives :

1. Innovation
2. Creativity
3. Initiative
4. Excellence



Monitoring at various levels and introduction of standards and accountability at all levels are ensured in this setup. A conceptual model of the total quality system in Higher Education adopted in DEI is depicted in the figure.

The three main committees that oversee and ensure TQM at DEI are (i) IQAC (ii) Academic and Administrative Audit Committee (AAAC) and (iii) Advisory Committee on Education (ACE) comprising distinguished intellectuals from academia and industry and faculty of DEI meets every two months to review the progress of the Institute and make valuable recommendations. It plays only an advisory role and acts like an external quality assurance cell.

**Recent Feedback Mechanism on Daily Basis: Daily Home and Class Assignments (DHA/CAs)**  
Recent research in cognitive science and psychology shows that the frequent process of recalling information fosters deep learning. [A.M. Paul, Scientific American, August 1, 2015]. Inspired by these studies, DEI has initiated short DHAs or CAs in all courses on topics covered in each class to improve the quality of teaching-learning experience.

Other important factors that contribute to the practice are the following:

- Disciplined, Eco-friendly and Serene Atmosphere
- Dedicated Faculty
- Weightage of Attendance, Discipline, Co-curricular Activities, Sports and Social Service
- Simple Student Dress Code
- Morning Assembly
- Variety of Community Outreach Activities for under-privileged
- Daily Agricultural Operations to instill Dignity of Labor
- Research emphasis on Environment, Ecology, Nature-Inspired Engineering and Consciousness Studies

All students are apprised of the objectives and expected outcomes on admission during the compulsory Orientation programmes and at the beginning of each course by instructors. Students are provided with the detailed syllabus and course outcomes in each course. Faculty and students can also readily access programme specific outcomes and course outcomes listed on the DEI website.

The variety of elements for continuous assessment and feedback mechanisms in DEI enable effective direct and indirect monitoring and measurement of outcomes and appropriately identify and address gaps. The learning outcomes are also reviewed regularly by external examiners and external experts in the Departmental and Faculty Board of Studies Meetings, Academic and Administrative Audit Committee (AAAC), IQAC and the Advisory Committee on Education.

### **Evidence of Success**

Evidence of the tremendous success of DEI's value-based and quality education is through the following:

1. Recognition as the USP of Education at DEI by Statutory Regulatory Authorities
2. Positive feedback on this aspect from all stakeholders
3. Improvement in teaching-learning experience
4. Higher number of women enrolments
5. Higher number of women staff

6. Award of ISO 9001:2015 certification

**7.3. Improvement in Placement, Higher Studies and Entrepreneurship (10)**

Item	CAYm1	CAYm2	CAYm3
Total No. of Final Year Students	69	70	69
No. of students placed in companies or Government Sector	61	52	55
No. of students admitted to higher studies with valid qualifying scores (GATE, GRE, GMAT etc.)	8	9	12
No. of students turned entrepreneur in engineering/technology (z)	0	1	0
Number of Students engaged in further career	69	62	67

**7.4. Improvement in the quality of students admitted to the program (20)**

Item		CAY 2018-2019	CAYm1 2017-2018	CAYm2 2016-2017
National Level Entrance Examination JEE	No. of Students admitted	180	197	179
	Opening Score/Rank	142	239	159
	Closing Score/Rank	18	8	20
State/Institute/Level Entrance Examination/Others DEI	No. of Students admitted	232	262	308
	Opening Score/Rank	86.76	87.16	86.65
	Closing Score/Rank	39.28	40.02	40.28
Name of the Entrance Examination for Lateral Entry DEI	No. of Students admitted	12	9	9
	Opening Score/Rank	82.15%	85.87%	78.90%
	Closing Score/Rank	70.62%	69.43%	68.72%
Average CBSE/Any other Board Result of admitted students (Physics, Chemistry & Mathematics)		75%	75%	75%

**Table B.7.4.**

CRITERION 8	First Year Academics	50
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### 8.1. First Year Student-Faculty Ratio (FYSFR) (5)

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 = $(5 \times 20) / \text{FYSFR}$ (Limited to Max. 5)
CAY	60	8	7.5	5
CAYm1	60	8	7.5	5
CAYm2	60	8	7.5	5
Average	60	8	7.5	5

**Table B.8.1.**

**\*Note:** If FYSFR is greater than 25, then assessment equal to zero.

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

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 20:1, Faculty definition as defined in 5.1

Year	x	Y	RF	Assessment of faculty qualification $(5x + 3y) / RF$
CAY	4	4	3	12
CAYm1	4	4	3	12
CAYm2	4	4	3	12
Average Assessment				12

**Table B.8.2**

### 8.3. First Year Academic Performance (10)

*Academic Performance = ((Mean of 1<sup>st</sup> Year Grade Point Average of all successful Students on a 10 point scale) or (Mean of the percentage of marks in First Year of all successful students/10)) x (number of successful students/number of students appeared in the examination) Successful students are those who are permitted to proceed to the second year.*

Academic Performance	CAYm1 2017-2018
Mean of CGPA or Mean Percentage of all successful students	7.76
Total no. of successful students (Y)	65

#### 8.4. Attainment of Course Outcomes of first year courses (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)

- I. An elaborate continuous evaluation system is in place including the following components.

**Theory Courses:** Class Test1, Class Test2, Daily Home Assignments, Daily Class Assignments, Additional Assessment and Attendance for Internal Evaluation and one External End semester examination

**Practical Courses / Project:** PV1, PV2, PV3, Attendance. PVs are Internal mid-term evaluations by Lab Course teacher / Project Supervisor and Departmental Committee and they are followed by an external end-semester examination.

Theory Courses	Practical Courses
(i) Class Tests	(i) Record-cum-Home Assignments
(ii) Daily Home Assignments	(ii) Practical Tests
(iii) Additional Assignments	(iii) Viva-voce
(iv) Seminars & Group Discussions	(iv) Attendance
(v) Attendance	(v) Semester/Module End-Semester Examination
(vi) Semester/Module End-Semester Examination	

- I. In a Theory Course the Syllabus is divided into 5 units. The Class Test1 is typically based on the first three units and the Class Test2 is based on Units 3 to 5. These two reflect the performance in the corresponding units. Similarly DHA1 is based on the Daily Home Assignment1 is typically based on the performance in the DHAs and DCAs upto the CT1 and DHA2 is based on the performance in these evaluations after CT2. Typically 10 DHAs and 5 DCAs are there in each phase. These ensure regularity in the learning process and also ensure that the student gets a regular feedback on the performance in each course.
- II. The Daily Assignments being in a sense of punctuality and regularity and inculcate in the student a habit of meeting daily targets which stand them in good stead when they join the industry because that is exactly what the industry demands.
- III. The End-Semester is completely transparent to the Department and is conducted by an external Examiner unknown to the Department out of the panel constituted for the same

with inputs from the Department. The performance on all five units of the syllabus is checked in the End-semester examination because the student has to answer one question from each unit. xii. The Lab evaluation is also done on a regular basis. Lab records are to be submitted on the next turn describing the work done on the previous turn. Credit is given for performance and regularity. An A Grade in Lab assessment indicates regular and good performance in terms of submissions and viva examinations.

- IV. Similarly in the Projects the regularity and performance in the Departmental evaluation is considered apart from the evaluation of the Supervisor. Students are encouraged to produce Research Papers / working projects and demonstratable results and credit is given to them. An A grade in a Project typically indicates one or more of these outcomes.
- V. An attempt has been made to analyze the marks obtained in various tests and examinations and find out the learning outcomes from the level of achievement in these tests and examinations and assignments. Marks obtained by the students in the various components in each course are available on the Course Monitoring System. Marks have been obtained from there and have been analyzed to determine the learning outcomes.

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

*Program shall have set attainment levels for all first year courses.*

Percentage Distribution of Components to COs For Theory Subjects							
Component	CT1	CT2	DH1/DA1	DHA/DA2	AA	ATT	EXT
Marks	40	40	40	40	20	10	50
CO1	40		20	20	20	20	20
CO2	40		20	20	20	20	20
CO3	20	20	20	20	20	20	20
CO4		40	20	20	20	20	20
CO5		40	20	20	20	20	20

Assesment Criteria	
Criertia	Attainment Level
80 % Students scoring more than 50 % marks	3
70 % Students scoring more than 50 % marks	2

60 % Students scoring less than 50 % marks	1
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**Course Attainment of First Year Students**

Course No	CO1	CO2	CO3	CO4	CO5
BOH181	2	2	1	2	-
CHM181	2	2	2	2	2
CHM182	3	3	3	3	3
DPH101	3	3	3	3	3
ENH181	3	3	1	3	0
MAM181	2	2	2	2	2
MEM101	1	1	0	1	1
MEM102	3	3	3	3	3
MEM103	3	3	3	3	3
MEM104	3	3	3	3	-
PHM181	1	1	0	1	0
PHM182	3	3	3	-	-
RDC181	3	3	3	3	3
RDC182	3	3	3	3	3
CAC281	3	3	-	-	-
EEM201	2	2	2	2	2
EEM202	1	1	1	1	1
EGC281	3	3	3	3	3
ESC281	3	3	3	3	3
MAM281	2	2	1	2	0
MEM201	1	1	0	1	0
MEM202	2	2	2	2	2
MEM203	3	3	3	3	3
MEM204	3	3	3	3	3
PHM281	1	1	0	1	0
PHM282	1	1	0	1	-
RDC281	3	3	3	3	3
RDC282	3	3	3	3	3

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

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

**PO/PSO Attainment: Mention first year courses**

COURSE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
DPH101	0.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	0.00	0.00	3.00	3.00
MEM101	0.80	0.80	0.80	0.80	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.80	0.80	0.80	0.80	0.00
MEM102	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00

MEM103	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
MEM104	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
BOH181	1.00	1.00	1.00	1.00	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	0.00
CHM181	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
ENH181	0.00	0.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
MAM181	2.00	2.00	2.00	2.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
PHM181	0.64	0.60	0.71	0.71	1.00	1.00	0.00	0.00	0.00	0.67	1.00	0.60	0.60	0.60	0.60	0.00
RDC181	0.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
CHM182	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
PHM182	2.33	2.33	2.33	2.33	1.33	1.00	1.00	1.00	2.33	1.33	2.00	1.33	3.00	3.00	3.00	3.00
RDC182	0.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
ESC281	3.00	3.00	3.00	3.00	3.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EEM201	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
MEM201	0.67	0.62	0.80	0.55	0.00	1.00	1.00	0.00	0.00	0.00	0.00	0.67	0.67	0.67	0.67	0.00
EEM202	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MEM202	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
MEM203	3.00	3.00	3.00	3.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00
MEM204	3.00	3.00	3.00	3.00	3.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
CAC281	3.00	3.00	3.00	3.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
EGC281	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
MAM281	1.40	1.40	1.40	1.45	1.40	1.33	0.00	0.00	0.00	1.25	2.00	1.17	1.40	1.40	1.40	0.00
PHM281	0.58	0.64	0.63	0.67	0.67	0.50	0.00	0.00	0.00	0.67	1.00	0.50	0.60	0.60	0.60	0.00
RDC281	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
PHM282	0.80	0.80	0.82	0.82	0.83	0.75	0.75	0.75	0.67	0.83	0.75	0.83	0.75	0.75	0.75	0.00
RDC282	0.00	0.00	0.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Attainment	1.62	1.69	1.70	1.76	2.17	1.94	1.66	1.45	1.85	1.91	1.98	2.17	2.13	2.13	2.23	1.71

**Table**

**B.8.5.1.**

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

(The attainment levels by direct (student performance) are to be presented through Program level Course-PO matrix as indicated)

**PO Attainment Levels and Actions for improvement – CAY only – Mention for relevant POs**

POs	Target Level	Attainment Level	Observations
<b>PO1: Engineering knowledge:</b> Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.			
PO1	1.5	1.62	Target achieved

<b>Action :</b> (i) Physics course has been strengthened and modernized to include Quantum Physics. (ii) Syllabus of Mathematics courses has been revamped to strengthen the Math base and Applications.			
<b>PO2: Problem analysis:</b> Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.			
PO2	1.5	1.69	Target achieved
Action: Several Community related real-life projects are being taken up in the Department with the full participation of the students. These provide practical real-life situations for improving problem analysis skills. Some of these are as follows. <ul style="list-style-type: none"> <li>a. Truck tracking during wheat harvesting for transporting harvest from fields to threshers located near granary.</li> <li>b. RFID based identification of cattle in Dairy with full database maintenance of feed data, yield data etc enabling precise interventions as necessary.</li> <li>c. Automatic tracking of Solar Panels</li> <li>d. Implementation of Smart Solar Grid in the University</li> <li>e. Energy Audit of the Dayalbagh colony</li> </ul>			
<b>PO3: Design/development of solutions:</b> Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.			
PO3	1.5	1.70	Target achieved
Action : Students are given ample exposure to community needs through NSS, Social Service, Agriculture Operations etc. This exposure helps fresh entrant to realize specific needs of the society. The introductory courses on Workshop and manufacturing process provide technical inputs to realize the solutions			
<b>PO4: Conduct investigations of complex problems:</b> Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions			
PO4	1.5	1.76	Target achieved
Action : Students are encouraged to participate in technical competitions right from the beginning of the course			
<b>PO5: Modern tool usage:</b> Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations			



PO5	1.5	2.17	Target achieved
Action 1: Laboratories are being modernized through TEQIP Grant, DST FIST and UGC SAP grants			
<b>PO6 :The engineer and society:</b> Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice			
PO6	1.5	1.94	Target achieved
Action : Participation in NSS camp, Agricultural Operations, Social Service enables them to appreciate societal problems and possibility of engineering solutions.			
<b>PO7: Environment and sustainability:</b> Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development			
PO7	1.5	1.66	Target achieved
Action : (i) Introduced course on Environmental Sciences (ESC281) (ii) Tree planting in the campus and in the adopted villages is done regularly as part of the activities of NSS volunteers. (iii) Energy conservation is practised by the installation of LED Lamps and LED tube light and energy efficient fans. (iv) Water conservation is adopted through rain water harvesting mechanisms			
<b>PO8: Ethics:</b> Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice			
PO8	1.5	1.45	Deficiency addresses by induction training programme
Action: Component on professional ethics and human values included in the induction training programme			
<b>PO9 :Individual and team work:</b> Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings			
PO9	1.5	1.85	Target achieved
Action : Compulsory participation in group activities like Agricultural Operations, Social Service, Games, Co-curricular Activities and Marchpast helps the student to understand importance of team work			
<b>PO10 : Communication:</b> Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions			
PO10	1.5	1.96	Target achieved
Action : Compulsory courses on English Language, seminars and group discussion as part of course curriculum help student in this dimension			

<b>PO11 :Project management and finance:</b> Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments			
<b>PO11</b>	1.5	1.98	Target achieved
<b>Action 1:</b> Students are encouraged to participate in technical competitions right from the beginning of the course to acquire project management skills			
<b>PO12 :Life-long learning:</b> Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change			
<b>PO12</b>	1.5	2.17	Target achieved
<b>Action 1:</b> Practical Training at the end of I and II year and co-op Internship at the end of Third year enable students to pursue independent projects in an industrial setting with limited mentorship and prepare for lifelong learning.			

**Table B.8.5.2**

<b>CRITERION 9</b>	<b>Student Support Systems</b>	<b>50</b>
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### 9.1 Mentoring system to help at individual level (5)

#### Proctorial System

- The Institute has a proctorial system under which a senior staff is deputed as the Chief Proctor. Each class is divided into batches of about 20 students and a teacher is deputed as the Proctor for the batch to act as the mentor. Each batch of students elects a Prefect and an Assistant Prefect from among themselves, apart from a Captain and Vice Captain of the class.
- To understand the problems of students, the concerned Proctor remains in regular contact with the Prefect and the Assistant Prefect. He also conducts quarterly Class Committee meetings. During these meetings Class Proctors discuss various issues with the students of their batches and provide necessary counselling.
- The details such as student's address, his parents details, contact numbers, economic background etc. are kept in record.
- Student diary is issued to each student with detailed calendar and names of coordinators of various activities. A sample is given in  
  
[https://www.dei.ac.in/dei/index.php?option=com\\_content&view=article&id=862&Itemid=420](https://www.dei.ac.in/dei/index.php?option=com_content&view=article&id=862&Itemid=420)
- During the Class Committee meeting Performance in internal and final examinations, attendance in class, special achievements by the student etc, are discussed.
- In addition to this, Batch Proctor takes regular feedback from the students and Class Representatives about the difficulties and problems of students and discuss with the Dean and Head periodically. He verifies the statement of marks and attendance of the students every quarter before informing to the parents. He also interacts with parents/guardians of the students as and when necessary.
- Normally, the Batch proctor has the fair idea of the performance, skill and attitude of

a student. He informs the Dean if any student is not attending the classes/practical/tests etc. The Proctor with the help of prefect and Assistant Prefect monitors the implementation of Institute rules such as dress code.

- Regular Parent-Teacher-Committee meetings are held to monitor progress of students
- Feedback from various stakeholders is sought regularly to improve monitoring quality
- Help from established alumni is taken in mentoring individual students for specific needs

**Responsibilities of the Batch Proctor as a counsellor includes:**

- Identifying strengths and weaknesses of the student and work for his strengths.
- Providing guidance in selecting the job/higher education.
- Motivating the students to take GATE examination and go for higher studies.
- Guiding the students to excel.
- On completion of the course, recording the future plans and communicate to the placement cell.
- Motivating the students to take up minor research work/article writing/community service/field studies/ industrial training etc. which will ensure value addition and provide competitive edge.
- Organize small educational tours, class level cultural activities, sports, literary and academic programmes to break the monotony of the class.
- Recognize the students with learning difficulties and chalk out programmes to assist them.
- Any other related matter.

**Outcome of mentoring system**

- Students who perform badly in initials tests are able to improve due to the assignments given, question paper solving and effective guidance.

- A system of remedial coaching is in place for each student who could not perform well in regular pattern to clear supplementary and join back the mainstream without time lapse
- The motivation given right from the first year to prepare for GATE encourages the students to perform well in the exam.
- Regular mentoring is helping the students in selecting specialization at undergraduate and post graduate levels.
- Over the years, number of students who clear GATE has increased.
- Students who lose focus and interest in academics are counselled and motivated.

**Other curricular, co-curricular and extra-curricular activities in which mentoring is provided are as follows:**

- Projects, Seminars, Industrial visits, Internships for B. Tech. students.
- Participatory learning activities are adopted by the faculty to facilitate student-centric learning, apart from class room instructions.
- Seminar, case study, group discussion and demonstration, conceptual quiz, role-play, mini project, dissertation work, internship, industrial visits, and hands on-/field training forms an integral part of participatory learning methodologies.
- All models of the curriculum meant for the UG and PG students incorporate one or more of such participatory techniques in the teaching learning process as a compulsory component.
- Students and scholars are involved and given responsibilities in organising events such as association meetings, seminars, conferences, workshops during the period of study and hence are provided an opportunity to develop/enhance administrative and leadership traits.
- The institution encourages e-learning by enabling access to online resources (e-books/journals/databases) and digitized resources made available in the central library.
- The wi-fi environment of the campus makes it as a 24x7 learning spot, especially for post graduate students and scholars.

- To enable slow learners overcome the learning disabilities remedial classes are being conducted and individual care is taken to bring out the inherent talents of each and every individual student and for the overall development of the students to make them as a valuable citizens.
- Project work is integral part of all post graduate courses and faculty members provide guidance and evaluate the thesis too.
- As a whole, the Teaching –Learning process advocates principles of Life Long Dynamic Learning by the inclusion of
  - i. Mentored learning
  - ii. Stimulated learning
  - iii. Experiential learning
  - iv. Self-Paced learning
  - v. Learning by research
  - vi. Self-learning
  - vii. Interdisciplinary and Multidisciplinary learning
  - viii. Culturally inclusive learning
- Where ever required, technology is incorporated into teaching-learning process in the form E-Class rooms, multimedia facilities, use of software, Projectors etc.
- ICT based instructional strategies find a definite place in the teaching process to augment chalk and talk method for enhanced visualization of concepts.
- The following ICT facilities are available in the institution for technology enhanced learning are utilized in addition with
  - i. Video Conferencing Facilities (EDUSAT, A-view, NPTEL and NKN facilities)
  - ii. DELNET/INFLIBNET
  - iii. Virtual and ICT enabled classrooms
  - iv. Working models
  - v. Simulated software
  - vi. Video lectures
  - vii. Interactive boards [Smart Boards]
  - viii. Visualizers
  - ix. LCD and LED Projectors

- An allied paper on Computer Science is made mandatory for all Undergraduate programmes in order to make the students familiar with ICT skills.
- To ensure computer literacy an interdisciplinary course in basic computing aspects is offered in all UG programmes.
- Post graduates and research students present their seminars using ICT facilities.
- All students have to attend a compulsory Orientation Programme on admission. The wide range of continuous assessment components that include, Daily Home Assignments, Class Assignments, Seminars and Group Discussions, Additional Assignments, Quizzes, Class Tests, Projects, Internships, Viva-voce examinations and attendance, enable effective assessment of learning levels of students. In addition, teacher-student interactions, reports of Class Committees and Proctorial meetings help in identification of different levels of learners. Faculty members and various Committees regularly review the academic progress and counsel students to improve their performance to ensure their academic growth.

The Institute offers a number of opportunities for advanced learners to augment their talent and meet their learning needs for which mentoring is offered on need basis:

1. Under-Graduate Research Awards (UGRA): to encourage select bright UG students to undertake research projects.
2. Students are encouraged to make research contributions in their major project at the PG level and publish their results in journals and also present it at National and International Conferences.
3. Students are encouraged to participate in summer research fellowship programmes at prestigious research institutes and laboratories.
4. The Institute, in collaboration with the Systems Society of India, organizes various competitions and an Annual Students' Systems Conference (Paritantra) and Technical Colloquia regularly and gives prizes and awards.
5. Vertical and Horizontal Progression: Provision has been made for bright students to undertake advance credit courses and lateral entry to higher degree programs.
6. MoUs and Collaboration: Students are encouraged to work in laboratories of National and International Institutes and Universities with MoU.
7. Financial support is provided to students for participation in National and International Conferences.
8. The Institute, in association with Association of Alumni and Friends of DEI (AAFDEI) registered in USA, provides financial support for boarding and lodging and travel assistance to students on their visit abroad for higher studies or for conferences.

9. Earn while you learn provision has been made for UG, PG and research students for part time jobs in the large number of projects running in the Institute. This helps them learn state of the art techniques and also get remuneration.
10. Students are encouraged to help slow learners in their class and in junior classes.

Special measures are taken to support relatively slow learners, are :

- *Organizing Extra Classes*
- *Remedial and Tutorial Classes are held to prepare them for remedial exams*
- *Assistance from classmates and senior students is arranged*
- *Providing tutorial assignments*
- *Providing lectures uploaded on web and extra reading material to improve basic understanding of subject*
- *Encouraging them to study courses on developing soft skills to master understanding of language*
- *Encouraging them to participate in various activities to develop social skills*

Participatory learning activities are adopted by the faculty to facilitate student-centric learning, apart from class room instructions. Seminar, case study, group discussion and demonstration, conceptual quiz, role-play, mini project, dissertation work, internship, industrial visits, and hands on-/field training form an integral part of participatory learning methodologies. ***All models of the curriculum, meant for the UG and PG students, incorporate one or more of such participatory techniques in the teaching learning process as a compulsory component.***

Students and scholars are involved and given responsibilities in organising events such as alumni association meetings, seminars, conferences, workshops during the period of study and hence are provided an opportunity to develop/enhance administrative and leadership traits under the mentoring of faculty.

The institution encourages e-learning by enabling access to online resources (e-books/journals/databases) and digitized resources made available in the central library. The wi-fi environment of the campus makes it as a 24x7 learning spot, especially for post graduate students and scholars.

Project work is integral part of all post graduate courses and faculty members provide guidance and evaluate the thesis too. As a whole, the Teaching –Learning process advocates principles of Life Long Dynamic Learning by the inclusion of

- **Mentored learning**
- **Stimulated learning**
- **Experiential learning**
- **Self Paced learning**
- **Learning by research**
- **Self learning**



- Interdisciplinary and Multidisciplinary learning
- Culturally inclusive learning

## 9.2. Feedback analysis and reward /corrective measures taken, if any (10)

*Feedback collected for all courses: YES/NO; Specify the feedback collection process; Average Percentage of students who participate; Specify the feedback analysis process; Basis of reward/ corrective measures, if any; Indices used for measuring quality of teaching& learning and summary of the index values for all courses/teachers; Number of corrective actions taken.*

- **YES**, Feedback is collected regularly during each semester for all the courses from students on a ten point scale, by a neutral mentor who is not conducting their classes. Besides, the feedback taken **during Class Committee Meetings, online feedback, paper based feedback by neutral teachers, Feedback by Central Committee, Feedback from Examiners** are also used as tools for providing feedback.
- More than 90% students do take part in the feedback.
- In yearly feedback system, teachers who do not teach to a particular class are deputed to take the feedback of the teachers of that class. The formats of various feedback sheets are presented hereunder:

Feedback Form for Societal Representatives		
I. Please fill in the following:		
Name:	Age	Ph.No.
Address		Email id:
Qualification:		Course/ s (with year) pursued from DEI:
Are you a parent or a guardian of DEI student?	NO	YES
Please put a tick mark (v) in the appropriate column:		Course completed / being pursued by your ward _____ Year of course admission: _____ Year of course completion: _____

<b>II. Please assign a score from 5 to 1 (Highest: 5, Lowest: 1)* to the following statements with reference to DEI.* Interpretation of the scores 5, 4, 3, 2, 1</b>				
5 = Completely Agree	4 = Agree to a large extent	3 = Moderately Agree	2 = Agree to a lesser extent	1 = Do Not Agree

S. No.	Statements with reference to DEI	Score (5-1)
1	Commendable reputation for quality education	
2	'A' grade brand image (nationally and internationally)	
3	Better possibilities for recruitment	
4	Philanthropic social collaborations and contributions	
5	Low fee structure	
6	Location of the Institute	
7	Disciplined environment in the campus	
8	Security provisions in the campus	
9	Transparency in admission process	
10	Admission result declaration well in time	
11	Infrastructure, water and sanitation facilities in DEI	
12	Administrative staff is cooperative and supportive	
13	Teaching staff is co-operative and supportive	
14	Course curriculum is well structured and up to date	
15	Quality of teaching-learning is up to the mark	
16	Desirable positive development in students' personality	
17	Socially desirable attributes in DEI alumni	
18	Examination system is appropriate and well defined	
19	Examination results are declared in a timely manner	
20	Evaluation is fair and unbiased	
21	Curriculum is well diversified to inculcate value dimension and social sensitivity in the students	
22	Provisions in the institute for co-curricular activities	
23	Contribution of the institute in social upliftment	
24	Contribution of the institute in women empowerment	
25	Contribution of the institute in improving the living standards of the people of the nearby slum and rural areas	
26	Participation of the institute in the nationally significant events	
27	Contribution of alumni of the institute in economic development of the society	
28	Adherence of the staff of the institute to moral values	
29	Adherence of the students of the institute to moral values	
30	Importance given by the alumni of the institute to the ethics and value oriented quality living	

<b>31</b>	Institution is a pride of City of Taj
<p><b>What do you like about DEI?</b></p> <p><b>What would you like to be improved in DEI?</b></p> <p><b>Your expectations from DEI in the coming years:</b></p> <p style="text-align: center;"><b>Thank you very much for sparing your precious time.</b></p>	

<b>Parents Feedback Form</b>
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I. Please rank from 1 to 5 (**Highest: 1, Lowest: 5**) the following reasons for choosing DEI for your ward:

Rank (1-5)	Reasons for choosing DEI
	Reputed for Quality Education
	Better possibilities for recruitment
	Low fee structure
	Location (vicinity)
	Campus Discipline

II. Please tick (✓) mark in the column of the best option (as per your experience) for each of the statements given in the table below:

	Do Not Agree	Agree to lesser extent	Moderately Agree	Agree to greater extent	Completely Agree
Admission Process is quite transparent					
Prospectus is informative					
Admission result is declared well in time					
Campus discipline is appropriate					
Security of students is ensured in the campus					
Infrastructure, water and sanitation facilities are up to the mark					
Administrative staff is cooperative and supportive					
Teaching staff is co-operative and supportive					
Course curriculum is well structured and up to date					
Quality of teaching-learning is up to the mark					

I see positive behavioural change in my ward after taking admission in DEI					
Examination system is appropriate and well defined					
Semester examination result is declared in time					
Evaluation is fair and unbiased					
Curriculum is well diversified to inculcate value dimension and social sensitivity in my ward					
Focus on all round personality grooming of students					
Grooming students for job- interviews					
Provisions for placement assistance					
Library and Book Bank facility is quite appropriate					
Internet & Computer facility availability					
Availability of games-field					
I would recommend others' kids to study in DEI					

### Student Feedback Form

**Please provide the following information:**

Faculty:          Class:

**1. Why you have chosen DEI for education? (Please rank in order of preference):**

S No	Parameters	Rank
1	For Quality Education	
2	Low fee	
3	Location (vicinity)	
4	Discipline	
5	Qualified & Experienced Faculty	
6	Placements	
7	Goodwill of the Institute	
8	Others ( Please Specify)	

**2. Please tick the most appropriate box suited for given statements:**

S No	Parameters	Do Not Agree	Agree to lesser extent	Moderately Agree	Agree to greater extent	Completely Agree
<b>A</b>	<b>Admission &amp; Registration</b>					
1	Admission process is transparent					

2	Admission information is timely available					
3	All required information for admission is available in Prospectus					
4	Standard questions are asked in entrance exam and interview					
5	Admission result is declared well in time					
6	Staff behaviour is cooperative during admission process					
7	Online registration process is convenient and clear					
8	Enrolment numbers are allotted timely					
9	Fee deposit procedure is convenient and clear					
10	Student ID card and Library card issued well in time					
<b>B</b>	<b>Infrastructure</b>					
1	Infrastructure, water and sanitation facilities are up to the mark					
2	Campus discipline and security is appropriate					
3	Proper first-aid and other emergency services are available in the campus					
4	Photocopy/Printing/stationery facilities are available to the students in the campus					
5	Canteen facility is available in the campus					
6	Regular power supply is available in the campus					
7	Proper Parking facility is available in the campus					
8	ATM/Telephone facility is available in the campus					
9	Proper internet facility is available for students in the campus					
10	Proper sports and extra-curricular facilities are available for students in the					

	campus					
11	Appropriate provisions are made for campus recruitment and placement assistance					
12	The laboratories are well-equipped and maintained					
<b>C</b>	<b>Teaching &amp; Examination</b>					
1	Administrative and teaching staff is cooperative and supportive					
2	Course curriculum is well structured and up to date					
3	Quality of teaching-learning is up to the mark					
4	Faculty student ratio is satisfactory					
5	Teaching staff is well-qualified and experienced					
6	Appropriate teaching aids are used in classes					
7	Teacher-student interaction is encouraged in the campus					
8	Teachers are Regular and punctual for classes					
9	Examination system is appropriate and well defined					
10	Examination results are declared in time					
11	Evaluation of exams are unbiased					
12	Grading system is well defined					
13	Exam re-evaluation rules are well defined and followed					
14	RDC is held timely for Research Scholars <b>(to be filled only by Ph.D. scholars)</b>					
15	Ph.D. viva is timely conducted <b>(to be filled only by Ph.D. scholars)</b>					
16	Students are encouraged to participate in extracurricular activities					
17	I would recommend others to study in DEI					
<b>D</b>	<b>Library Facilities</b>					

1	All Required books are available in the library					
2	Library is well equipped with journals/e-journals/software's/database					
3	Library timings are suitable for students					
4	Sufficient reading space is available for the students					
5	Sufficient number of books are issued at a time					
6	Library staff is supportive and courteous to students					

***Any other comments/observations -***

#### **Staff Feedback Form**

**Please provide the following information (optional):**

Department: Faculty:

- Please mention the reason for joining DEI. (Please rank in order of strength of the reason):**

<b>S No</b>	<b>Parameters</b>	<b>Rank</b>
<b>1</b>	Better career opportunity	
<b>2</b>	Good working environment	
<b>3</b>	Location (vicinity)	
<b>4</b>	Discipline	
<b>5</b>	Standard Norms	
<b>6</b>	NAAC Accreditation	
<b>7</b>	Goodwill of the Institute	
<b>8</b>	Good Package	
<b>9</b>	Others ( Please Specify)	

- Please tick the most appropriate box suited for given statements:**

<b>S No</b>	<b>Parameters</b>	<b>Do Not Agree</b>	<b>Agree to lesser extent</b>	<b>Moderately Agree</b>	<b>Agree to greater extent</b>	<b>Completely Agree</b>
<b>A</b>	<b>Administration</b>					
1	Fair recruitment and selection process is followed					
2	Proper orientation for newly selected					

	employees					
3	Administrative staff is cooperative and supportive					
4	Salary and other financial incentives are timely provided					
5	Staff benefit schemes information are timely available to the staff					
6	Tax related provisions are clarified to the staff					
7	University By-laws are accessible to all staff					
8	Internal promotion rules are well defined and properly followed					
9	Leave application rules are consistent with UGC rules					
10	Adequate time is taken in leave application processing					
11	Post retirement support services are up to the mark					
12	ID card and Library card issued well in time					
13	Working hours are properly defined					
<b>B</b>	<b>Infrastructure</b>					
1	Infrastructure, water and sanitation facilities are up to the mark					
2	Campus discipline and security is appropriate					
3	Proper first-aid and other emergency services are available in the campus					
4	Photocopy/Printing/stationery facilities are available to the staff in the campus					
5	Canteen facility is available in the campus					
6	Regular power supply is available in the campus					
7	Proper Parking facility is available in the campus					
8	ATM/Telephone facility is available in the campus					
9	Proper internet facility is available for staff in the campus					
10	Required working equipment and facilities are properly available to the staff					
11	Proper sports and extra-curricular					



	facilities are available for students in the campus					
12	Appropriate provisions are made for campus recruitment and placement assistance					
13	The laboratories are well-equipped and maintained					
<b>C</b>	<b>Academic (For teaching staff only)</b>					
1	Proper distribution of work load					
2	Course curriculum is well structured and up to date					
3	Quality of teaching-learning is up to the mark					
4	Appropriate teaching aids are available in classes					
5	Teacher-student interaction is encouraged in the campus					
6	Examination system is appropriate and well defined to teaching staff					
7	Evaluation of exams are unbiased					
8	Grading system is well defined to teaching staff					
9	Teaching staff is encouraged for research activities					
10	Teachers are encouraged to participate in conferences and seminars					
11	Sufficient number of workshop/seminar/conferences/FDP's are organized for staff					
12	Proper sports and extra-curricular facilities are available for students in the campus					
13	Appropriate provisions are made for campus recruitment and placement assistance					
14	The laboratories are well-equipped and maintained					
<b>D</b>	<b>Library Facilities(For teaching staff only)</b>					
1	All Required books are available in the library					
2	Library is well equipped with journals/e-					

	journals/software's/database					
3	Library timings are suitable for staff					
4	Sufficient reading space is available for the staff					
5	Library staff is supportive and courteous with teaching staff					
6	Proper training provided to teaching staff for using e-resources					
<b>Any other comments/observations</b>						

### **DAYALBAGH EDUCATIONAL INSTITUTE (DEEMED UNIVERSITY)**

#### **EMPLOYERS FEEDBACK FORM**

Dear Madam, Sir

We thank you for having chosen DEI for recruiting students. We would request you to spend a few minutes to answer the questions below related to our students and systems. Your response will greatly help us improve the quality of our systems and programmes. These responses will be kept completely confidential. Thanks.

**(A) Please rate the following attributes / systems at DEI on a scale of 1 (lowest) to 5 (highest)**

		<b>Rating</b> (on a scale of 1 to 5) 1-poor; 5-excellent
1	Placement process (timing, organisation, response)	
2	Infrastructure at DEI campus	
3	Support from DEI	

**(B) Please look at the attributes below as applied to students of DEI working in your organisation. Please rate the students on a scale of 1 (poor) to 5 (excellent)**

		<b>1</b> (lowest)	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b> (highest)
1	Comfort level while working in teams					
2	Technical knowledge & skills					
3	Displaying creativity and innovation in assigned tasks					
4	Analytical skills (ability to visualize, articulate and conceptualize both complex and uncomplicated problems by making decisions that are sensible given the available information)					
5	Communication Skills (Verbal, Non-Verbal and					

		1 (lowest)	2	3	4	5 (highest)
	Written)					
6	Use of Information Technology and computers					
7	Use of data and statistical tools to support decision making					
8	Leadership skills / ability to manage					
9	Planning and organisation skills					
10	Demonstrating initiative					
11	Displaying adaptability and flexibility as per situation					
12	Working under pressure					
13	Managing time efficiently					
14	Looking for ways to perform better					
15	Working beyond schedule if required					
16	Overall evaluation of the students					

**(C) In D.E.I. certain values are reinforced in students. Please rate the students on a scale of 1 (lowest) to 5 (highest) based on the values displayed by the student in day to day tasks**

	Rating (on a scale of 1 to 5) 1-poor; 5-excellent
1. Hard working	
2. Demonstrating Integrity	
3. Demonstrating Self-reliance	
4. Selfless service to others	
5. Cooperation within and outside team	
6. Honesty in everyday tasks	
7. Sincerity towards work	
8. Dignity of labour	
9. Humility	
10. Any other (please list) _____	

**(D) What specific feedback would you want to give DEI regarding changes in courses / curricula that would help its students perform better in industry**

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(E) What feedback would you want to give DEI regarding the skills that need to be developed in the students during their stay in DEI

(F) Please mention any other comments which you would like to provide

**DAYALBAGH EDUCATIONAL INSTITUTE (DEEMED UNIVERSITY)**

**ALUMNI FEEDBACK FORM**

Dear Alumni,

We thank you for having chosen DEI to complete your course. We would request you to spend a few minutes to answer the questions below. Your response will greatly help us improve the quality of our systems and programmes and will be kept completely confidential. Thanks.

**(A) Please rate the following attributes / systems at DEI on a scale of 1 (lowest) to 5 (highest)**

		<b>Rating</b> (on a scale of 1 to 5 1-poor; 5-excellent)
1	DEI Admission Process	
2	Infrastructure and Other Facilities	
3	Teaching Staff	
4	Administrative Staff	
5	Examination System	
6	Training (Summer / Co-op)	
7	Placement Activities	
8	Library facilities	
9	Canteen facilities	
10	Hostel facilities (if applicable)	

**(B) Please look at the statements below as applied to DEI, mark your choice accordingly.**

		<b>Do Not Agree</b>	<b>Agree to lesser extent</b>	<b>Moderately Agree</b>	<b>Agree to greater extent</b>	<b>Completely Agree</b>
1	Teaching at DEI focuses on concepts so as to make learning better					
2	The learning I had in DEI has been useful in					

		<b>Do Not Agree</b>	<b>Agree to lesser extent</b>	<b>Moderat ely Agree</b>	<b>Agree to greater extent</b>	<b>Complete ly Agree</b>
	my career / further education					
3	The continuous evaluation pattern used in DEI is useful for student development					
4	The examination system at DEI is well planned					
5	DEI has a strong alumni association which is active and supportive					
6	Students passing out from DEI generally do well in their professions					
7	The courses that are taught at DEI help meet contemporary requirements					
8	DEI focuses on holistic development of the student rather than just academic					
9	DEI involves alumni in its activities					
10	Less weightage should be given to extracurricular activities in the overall system at DEI					
11	The course curriculum and contents at DEI are updated regularly					
12	The innovative features of D.E.I. (such as interdisciplinary courses, work-based training, social service, continuous evaluation etc.) has helped me in					

		Do Not Agree	Agree to lesser extent	Moderately Agree	Agree to greater extent	Completely Agree
	my outlook and job					
13	Values (e.g. hard work, self-reliance, selfless service, cooperation, honesty, sincerity, dignity of labour etc.) that are reinforced in DEI have made a significant impact on me					
14	I would recommend others to study in DEI					

**(C) Please mention any other comments which you would like to provide.**

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***Dayalbagh Educational Institute (Deemed University)***

**Alumni Survey 2018**

**(Students who graduated from DEI (beyond School level) between 1981 & 2018)**

**Demographic Data**

1	<b>Name (optional)</b>		
2	<b>Address (optional)</b>		
3	<b>Age</b>	<b>Gender</b>	Male / Female
4	<b>Present Occupation</b>		
5	<b>Position/Designation</b>		
6	<b>Job Through</b>	Placement Office/Own Efforts	
7	<i>Faculty &amp; Department / Technical College / Women's Polytechnic / Distance Education &amp; Location / ICT Centre &amp; Location / Any other (For a complete list of faculty &amp; departments, refer Annex I)</i>	<b>Please specify (DEI):</b>	
8	<i>Module/Certificate/Diploma/ Undergraduate/ PG Diploma/ Masters/M.Phil/Ph.D.</i>	<b>Please specify (DEI):</b>	

9	Specialization, if any				
10	Year of entry (DEI)				
11	Year of passing (DEI)				
12	Are you a member of any Alumni Association?	Yes/No; If Yes, Name of Association:			
13	<b>Education</b>				
	School/College	Year	Programme	% (optional)	Rank (optional)

### **Instructions**

The objective of this survey is to get feedback from Alumni of the Dayalbagh Educational Institute (DEI) to help improve the quality of DEI. Space is provided after each section for your additional comments, if any.

Each statement given in the survey has to be rated on **one** of the following scales depending upon its application. The ratings have to be on 1 to 5 scale only. Please read the statements carefully and indicate the rating of each attribute by placing a tick mark (✓) against the statement. **Please avoid neutral ratings as far as possible.**

### **Rating Scales**

<b>1</b> <b>(Disagree)</b>	<b>2</b> <b>(Somewhat Disagree)</b>	<b>3</b> <b>(Neutral)</b>	<b>4</b> <b>(Somewhat Agree)</b>	<b>5</b> <b>(Agree)</b>
<b>1</b> <b>(None)</b>	<b>2</b> <b>(25%)</b>	<b>3</b> <b>(50%)</b>	<b>4</b> <b>(75%)</b>	<b>5</b> <b>(All)</b>

### ***Dimensions for Assessment***

**PART A (PLEASE ANSWER ALL QUESTIONS)**

	<b>1. TEACHING / TEACHERS</b>	<i>NONE</i>	<b>25%</b>	<b>50%</b>	<b>75%</b>	<b>ALL</b>
	Rating Scale	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1	Teachers' knowledge of the subject is excellent.					
2	Teachers continuously update themselves about the latest in their field.					
3	Teachers display genuine enthusiasm in teaching.					
4	Teachers explain/clarify doubts in the class.					
5	Teachers encourage students to ask questions in the class.					
6	Teachers substantiate lectures with practical examples.					
7	Teachers are regular and punctual in conducting the class.					
8	Teachers are available and helpful for clearing doubts outside the class.					
9	Teachers are more interested in private tuition than teaching in the class					
10	Teachers are impartial in the class.					
11	Teachers are well prepared for the class.					
12	Teachers are well respected by the students.					
13	Teachers distribute the relevant reading material in the class.					
14	Teachers regularly take feedback from students and are open to students' opinions.					
15	Teachers provide motivation for self-learning					
16	Teachers focus on concepts so as to make learning better.					
17	Overall quality of teachers/teaching in the program was excellent.					
<b>Additional Comments</b>						



	<b>2. EVALUATION</b>	<b>Disagree</b>	<b>Somewhat Disagree</b>	<b>Neutral</b>	<b>Somewhat Agree</b>	<b>Agree</b>
	Rating Scale	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1	Criteria for evaluation are scientifically designed to ensure learning.					
2	Continuous evaluation pattern used in DEI is useful for student development.					
3	DHA (Daily Home Assignment) concept used in DEI is useful for student development					
4	Evaluation focuses on testing students' application of knowledge.					
5	All teachers uniformly implement the evaluation system.					
6	Testing is fair and transparent.					
7	Evaluation gives a good indication of a student's learning and achievement.					
8	Exams and tests are well planned and scheduled appropriately during the semester.					
9	Number of quizzes and tests are adequate.					
10	Assignments given are challenging.					
11	Students undertake assignments seriously.					
12	Students treat external exams casually because of their low weightage in the overall evaluation.					
13	DEI focuses on holistic development of the student					
<b>Additional Comments</b>						

	<b>3. CURRICULUM</b>	<b>Disagree</b>	<b>Somewhat Disagree</b>	<b>Neutral</b>	<b>Somewhat Agree</b>	<b>Agree</b>
	Rating Scale	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1	Subjects covered in the curriculum are relevant to the area of specialization.					
2	Weightage given to courses in the overall system is appropriate.					
3	Contents of courses are updated at regular intervals.					
4	Fundamental concepts are well covered in the courses.					
5	Question banks are relevant and useful for courses.					
6	Curriculum encourages creativity/research.					
7	Adequate emphasis is given to developing communication skills					
8	Courses that are taught in DEI help meet contemporary requirements.					
<b>Additional Comments</b>						

	<b>4. RESOURCES</b>	<b>Disagree</b>	<b>Somewhat Disagree</b>	<b>Neutral</b>	<b>Somewhat Agree</b>	<b>Agree</b>
	Rating Scale	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1	DEI has adequate resources for teaching/teaching aids.					
2	DEI has facilities for photocopying /printing etc.					
3	DEI has well equipped labs to meet course requirements.					
4	DEI has good computer facilities for students.					
<b>Additional Comments</b>						

	<b>5. LIBRARY</b>	<b>Disagree</b>	<b>Somewhat Disagree</b>	<b>Neutral</b>	<b>Somewhat Agree</b>	<b>Agree</b>
	Rating Scale	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1	Library has adequate books of the subjects taught.					
2	Students get the desired books whenever needed.					
3	Library journals are available to students if needed.					
4	Timings of the library are suited to students.					
5	Photostat facility is adequate in the library.					
<b>Additional Comments</b>						

	<b>6. INFRASTRUCTURE</b>	<b>Disagree</b>	<b>Somewhat Disagree</b>	<b>Neutral</b>	<b>Somewhat Agree</b>	<b>Agree</b>
	Rating Scale	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1	Classrooms are well designed.					
2	Reading room facility is available to students.					
3	Toilets are well maintained.					
4	Canteen facilities exist in the campus.					
5	Sports facilities are adequate in the campus.					
6	Campus has well laid out gardens /greenery.					
<b>Additional Comments</b>						

<b>8. VALUES AND INNOVATIONS</b>					
In DEI certain values (e.g. hard work, self reliance, selfless service, cooperation, honesty, sincerity, dignity of labour etc. are reinforced in students. Please indicate the extent to which these values have made an impact on your personal and professional life.					
	<b>NONE</b>	<b>25%</b>	<b>50%</b>	<b>75%</b>	<b>100%</b>

Rating Scale	1	2	3	4	5
1. Hard work					
2. Integrity					
3. Self reliance					
4. Selfless Service					
5. Cooperation					
6. Honesty					
7. Sincerity					
8. Dignity of labour					
9. Humility					
10. Any Other (Please list.)					
<b>Have the innovative features of DEI (such as interdisciplinary courses, work-based training &amp; social service) helped you in your general outlook and career? Please also suggest other innovative features that can strengthen the education system of DEI</b>					
<b>9. Suggest three areas of DEI that need improvement.</b>				<b>10. Suggest three areas of strength of DEI</b>	

<b>11. OVERALL RATING OF D.E.I. (Please encircle your choice)</b>				
<b>Below Average</b>	<b>Satisfactory</b>	<b>Good</b>	<b>Very Good</b>	<b>Excellent</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Would you recommend others to study in DEI?</b>  Yes/No		<i>If yes, why? If no, why not?</i>		
<b>Do you think education in DEI has helped you in shaping your career?</b>  Yes/No/To some extent		<b>Please explain.</b>		
<b>Did you participate in the DEI Alumni Survey conducted in 2003</b>		<b>Yes / No</b>		

Date \_\_\_\_\_

Place \_\_\_\_\_

**PART B (OPTIONAL)**

<b>12. SKILLS &amp; COMPETENCIES</b>					
<b>Please assess the preparedness of a DEI student in the following skills / competencies when he / she passes out. Please use a scale of 1 (lowest) to 5 (highest)</b>					
	<b>Very Low</b>	<b>Low</b>	<b>Medium</b>	<b>High</b>	<b>Very High</b>
Rating Scale	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>1. Intellectual Skills</b> e.g. ability to think independently & exercise critical judgement, demonstration of creativity & innovation, analytical skills, problem solving skills and ability to apply practical knowledge & project experience to new situations					
<b>2. Communication Skills</b> e.g. writing ability, ability to articulate & convey a message coherently, fluency in speaking & making presentations and listening skills					
<b>3. Computers and Use of Information Technology</b> e.g. basic familiarity with computers & computer software, ability to use IT for professional development and programming					
<b>4. Quantitative and Design Skills</b> e.g. ability to apply mathematical concepts, ability to use empirical data & statistical tools to support decision making and ability to design & conceptualize a system					
<b>5. Interpersonal Skills</b> e.g. ability for diverse & cross-functional teamwork, ability for team building and for taking ownership of team results					
<b>6. Management Skills</b> e.g. leadership, project planning & management, initiative & responsiveness, professional ethics, integrity, ability to work under pressure, adaptability & flexibility and time management					

7. <b>Self-Development and Growth</b> e.g. knowledge of latest developments, maintaining balance between theoretical knowledge & practical applications, ability to develop plans & methodologies for implementation, zeal to succeed and urge to perform better					
--	--	--	--	--	--

#### **Annexure I: List of Faculties & Departments at DEI**

<b>Faculty of Arts</b>	<b>Faculty of Commerce</b>	<b>Faculty of Education</b>	<b>Faculty of Engineering</b>	<b>Faculty of Science</b>	<b>Faculty of Social Sciences</b>
<ul style="list-style-type: none"> <li>• Department of Drawing &amp; Painting</li> <li>• Department of English</li> <li>• Department of Hindi</li> <li>• Department of Home Science</li> <li>• Department of Music</li> <li>• Department of Sanskrit</li> </ul>	<ul style="list-style-type: none"> <li>• Department of Accountancy &amp; Law</li> <li>• Department of Applied Business Economics</li> </ul>	<ul style="list-style-type: none"> <li>• Department of Foundations of Education</li> <li>• Department of Pedagogical Sciences</li> </ul>	<ul style="list-style-type: none"> <li>• Department of Electrical Engineering</li> <li>• Department of Mechanical Engineering</li> </ul>	<ul style="list-style-type: none"> <li>• Department of Botany</li> <li>• Department of Chemistry</li> <li>• Department of Mathematics</li> <li>• Department of Physics &amp; Computer Sciences</li> <li>• Department of Zoology</li> </ul>	<ul style="list-style-type: none"> <li>• Department of Economics</li> <li>• Department of Management</li> <li>• Department of Psychology</li> <li>• Department of Sociology &amp; Political Science</li> </ul>

## **Alumni Survey**

### **EXECUTIVE SUMMARY**

#### **Preliminary Report**

14<sup>th</sup> December 2018

#### **Background**

A survey of DEI Alumni was conducted recently covering the Alumni of all Faculties, Technical College and Distance Education, and all those who graduated pre and post 1981. This report provides a preliminary summary and analysis of responses received till date.

#### **Objective of Survey**

The objective of the survey was to collect feedback from DEI Alumni in order to:

- Identify areas of possible improvement; and
- Gauge extent of progress made since the last such Alumni survey in 2003, as part of the overall agenda to continue to enhance the quality of education at DEI.

#### **Survey Methodology**

1. Design the Alumni Feedback Form (AFF) along the same pattern as the last Survey.
2. Make the AFF available on “Google Forms” to be completed and submitted on-line.
3. Encourage participation by sharing of the “Google Link” through various communication channels:
  - DEI website and Alumni networks
  - Email and Social media (WhatsApp & Twitter)
  - Word of mouth.
4. Collect and gather responses received on “Google Forms”.
5. Create database of submissions, perform analysis and comparison with prior survey.
6. Compile findings and prepare report.

#### **Survey Time-frame**

The communication of survey to the Alumni community started early in April 2018, with a planned deadline of July 2018. Most responses were received during the months of June & July 2018, but due to poor response in some faculties, informal follow-up activity continued during August & September 2018. The portal was finally closed on 4th November. Preliminary results have been analysed and completed in November & December 2018.

## Summary of Questions

- Feedback and inputs taken from Alumni, both in quantitative (numerical, scale of 1-5) and qualitative (written) terms.
- The 64 questions used last time were increased to 75 this time.
- Additional 11 questions were designed to capture certain key developments at DEI since 2003 (e.g., DHAs, Distance Education, Skill based training, etc.).

All questions were categorised in the same 8 Dimension as before, as follows:

S. No.	Dimension	Number of Questions	
		2018	2003
1	Teaching/Teachers	17	16
2	Evaluation	13	10
3	Curriculum	8	7
4	Resources	4	4
5	Library	5	5
6	Infrastructure	6	6
7	Other Areas	13	6
8	Values & Innovation	9	10
<b>Total Questions</b>		<b>75</b>	<b>64</b>

**Other Areas**  
includes new seven questions on Skills & Competencies

## Summary of Coverage

Alumni from six Faculties and Technical College from last time were covered again, and this time, Alumni from Distance Education was also included:

S. No	COUNTS (NOS)
1	ARTS
2	COMMERCE
3	EDUCATION
4	ENGINEERING
5	SCIENCE
6	SOCIAL SCIENCES
7	TECHNICAL COLLEGE
8	DISTANCE EDUCATION
9	OTHER

- NOTE ON "OTHER"**
- This includes REI (pre'81), WTC (Pre'81), Women's Polytechnic, etc.
  - Where the response did not mention any faculty or mentioned more than one faculty, it was captured in "Other Faculty".

DE Includes ICT Centres



## Rating Scale

Each question was rated on a scale of 1 through 5, as follows:

Rating	Explanation	%
1	Disagree	None
2	Somewhat Disagree	25%
3	Neutral	50%
4	Somewhat Agree	75%
5	Agree	All

Scale for Overall Rating of DEI was as follows:

Rating	Explanation
1	Below Average
2	Satisfactory
3	Good
4	Very Good
5	Excellent

## Overall Summary of Responses

S. No	COUNTS (NOS)	2018 TOTAL Responses	2018 MALES	2018 FEMALES	YEAR OF PASSING OUT			
					2010-2018	2003-2009	1981-2002	Pre 1981-
1	ARTS	23	2	21	11	4	7	1
2	COMMERCE	51	31	20	30	8	12	1
3	EDUCATION	16	1	15	4	3	7	2
4	ENGINEERING	166	160	6	79	32	42	13
5	SCIENCE	85	28	57	40	13	30	2
6	SOCIAL SCIENCES	137	53	84	81	28	27	1
7	TECHNICAL COLLEGE	143	136	7	79	40	23	1
8	DISTANCE EDUCATION	68	29	39	52	11	4	1
9	OTHER	21	0	21	11	5	2	3
	<b>TOTAL</b>	<b>710</b>	<b>440</b>	<b>270</b>	<b>387</b>	<b>144</b>	<b>154</b>	<b>25</b>
		<b>100%</b>	<b>62%</b>	<b>38%</b>	<b>55%</b>	<b>20%</b>	<b>22%</b>	<b>4%</b>
	<b>% of TOTAL</b>							
1	ARTS	3%	0%	8%	3%	3%	5%	4%
2	COMMERCE	7%	7%	7%	8%	6%	8%	4%
3	EDUCATION	2%	0%	6%	1%	2%	5%	8%
4	ENGINEERING	23%	36%	2%	20%	22%	27%	52%
5	SCIENCE	12%	6%	21%	10%	9%	19%	8%
6	SOCIAL SCIENCES	19%	12%	31%	21%	19%	18%	4%
7	TECHNICAL COLLEGE	20%	31%	3%	20%	28%	15%	4%
8	DISTANCE EDUCATION	10%	7%	14%	13%	8%	3%	4%
9	OTHER	3%	0%	8%	3%	3%	1%	12%
	<b>OVERALL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

- A total of 710 Alumni responses were received, majority (62%) from male participants.
- Majority (62%) of overall responses and (67%) of male responses, are from Alumni of:
  - Faculty of Engineering
  - Technical College.
- Majority (52%) of female responses are from Alumni of Faculties of:
  - Science
  - Social Sciences.
- More than 55% of the responses are from recent graduate Alumni (last 8-year pass-outs).
- Overall participation from Alumni of Faculties Arts and Education was not encouraging.

## Comparison of Responses to Prior Survey

		2018 TOTAL Responses	2003 TOTAL Responses	2018 MALES	2003 MALES	2018 FEMALES	2003 FEMALES
S. No	COUNTS (NOS)						
1	ARTS	23	63	2	0	21	63
2	COMMERCE	51	30	31	18	20	12
3	EDUCATION	16	31	1	2	15	29
4	ENGINEERING	166	102	160	102	6	0
5	SCIENCE	85	86	28	31	57	55
6	SOCIAL SCIENCES	137	56	53	24	84	32
7	TECHNICAL COLLEGE	143	31	136	31	7	0
8	DISTANCE EDUCATION	68	0	29	0	39	0
9	OTHER	21	53	0	9	21	44
	<b>TOTAL</b>	<b>710</b>	<b>452</b>	<b>440</b>	<b>217</b>	<b>270</b>	<b>235</b>
		<b>100%</b>	<b>100%</b>	<b>62%</b>	<b>48%</b>	<b>38%</b>	<b>52%</b>
	% of TOTAL						
1	ARTS	3%	14%	0%	0%	8%	27%
2	COMMERCE	7%	7%	7%	8%	7%	5%
3	EDUCATION	2%	7%	0%	1%	6%	12%
4	ENGINEERING	23%	23%	36%	47%	2%	0%
5	SCIENCE	12%	19%	6%	14%	21%	23%
6	SOCIAL SCIENCES	19%	12%	12%	11%	31%	14%
7	TECHNICAL COLLEGE	20%	7%	31%	14%	3%	0%
8	DISTANCE EDUCATION	10%	0%	7%	0%	14%	0%
9	OTHER	3%	12%	0%	4%	8%	19%
	<b>OVERALL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>48%</b>	<b>100%</b>	<b>52%</b>

- Overall participation is up 57% (from 452 to 710), and excluding Distance Education, is up 42%.
- Distance Education comprised 10% of total in 2018.
- Most of the increase in participation is from Alumni of:
  - Faculty of Engineering
  - Faculty of Social Sciences
  - Technical College.
- Majority of decline in participation (down to 5% from 21%) is from Alumni of:
  - Faculty of Arts
  - Faculty of Education.
- Male participation increase is from Technical College, while female participation increase, from Social Sciences.

**Note:** Of the 710 respondents in 2018, 113 (or 16%) had also participated in the 2003 Survey.

## Frequency Distribution

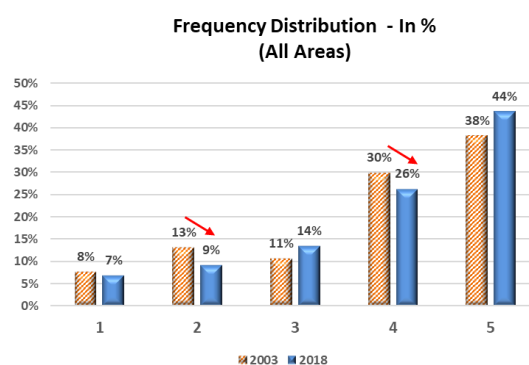
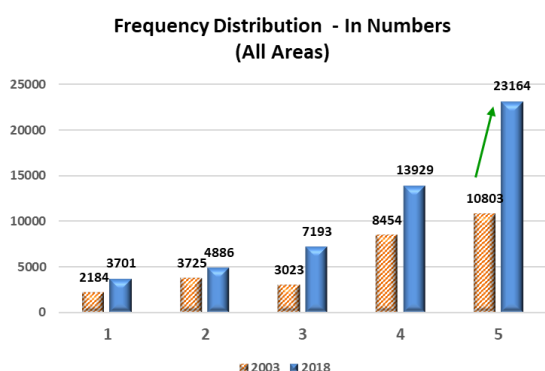
Each of the 710 participants responded to 75 questions, as a result of which a database of approximately 53,000 (75 x 710) responses were collected for further analysis.

This chart shows the count of responses to each of the 1-5 scale ratings (number represents the response count).

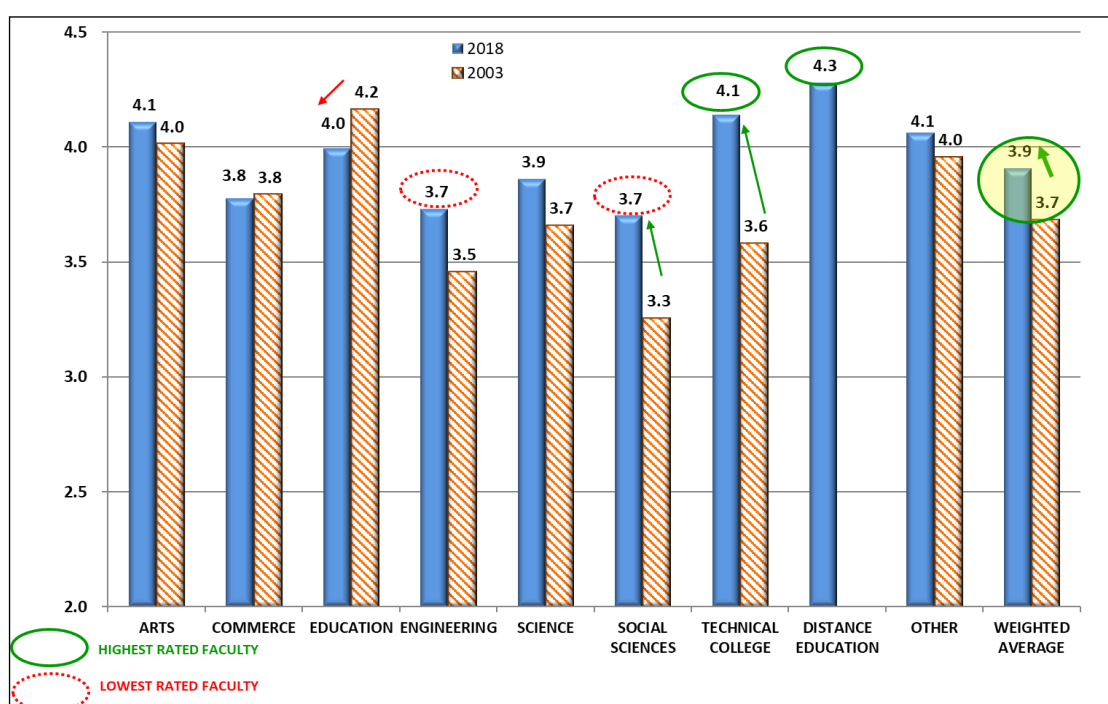
This chart shows the % of responses to each of the 1-5 scale ratings (number represents % of total).

Rating of 5 shows a steep increase in 2018.

Rating of 2 & 4 shows a slight decline in 2018.



**CHART 1: Mean Faculty Scores (All Dimensions)**

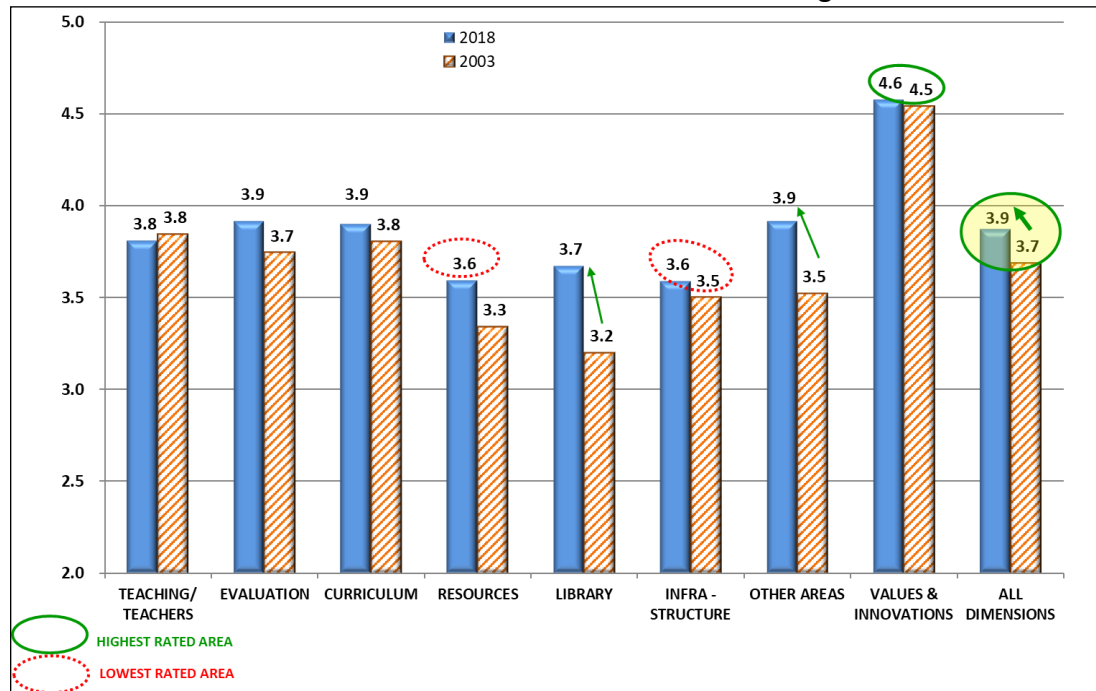


- Overall Score for all Faculties combined has gone up to 3.9 in 2018 from 3.7 in 2003.
- Increase is mainly because of a significant improvement in Social Sciences and Technical College.
- There is a slight decline in the score of Education (although the sample size is too small to be representative)
- Distance Education and Technical College are rated the highest.
- Engineering and Social Sciences Faculties continue to trail in overall rating, compared to others.

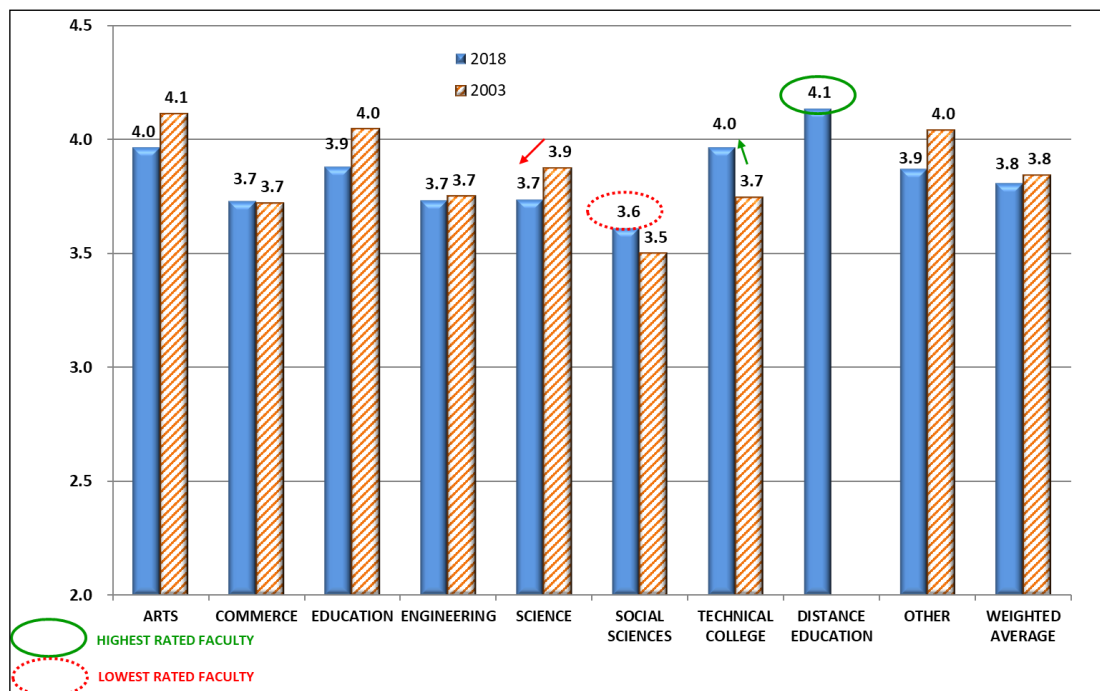
**CHART 2: Mean Dimension Scores (All Faculties)**

- Overall Score for all Dimensions combined has gone up to 3.9 in 2018 from 3.7 in 2003.
- Increase is mainly because of a significant improvement in Library and Other Areas.
- Values & Innovations continues to be the highest rated area.

- Resources and Infrastructure continue to trail in overall rating.

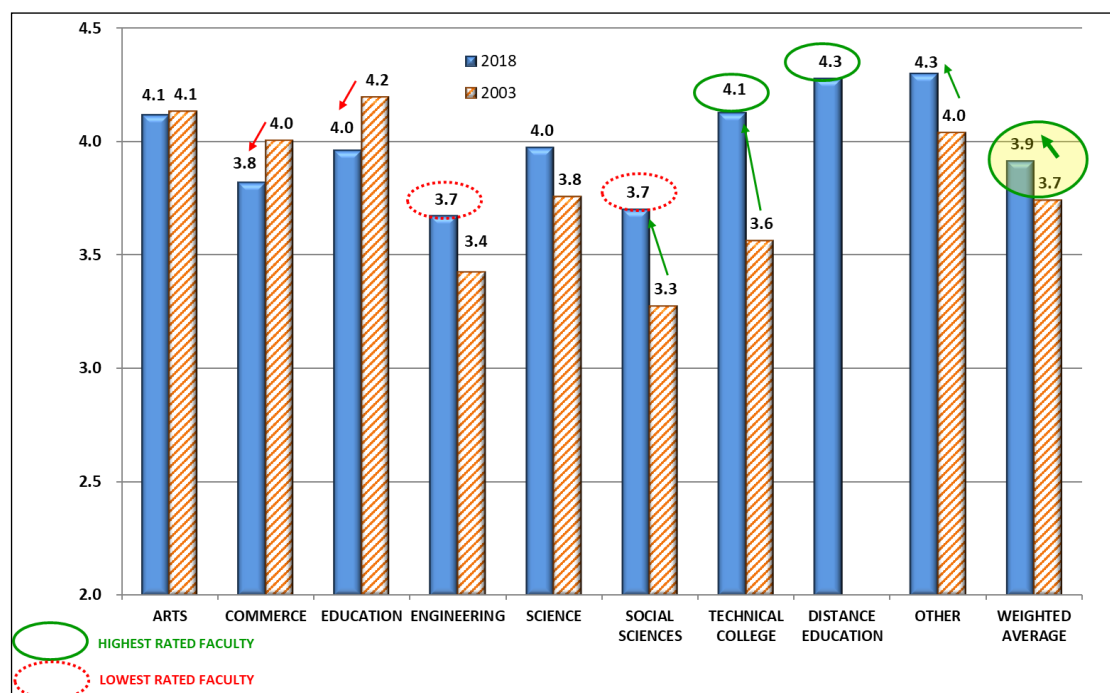


**CHART 3: Mean Faculty Scores (Teachers/Teaching)**



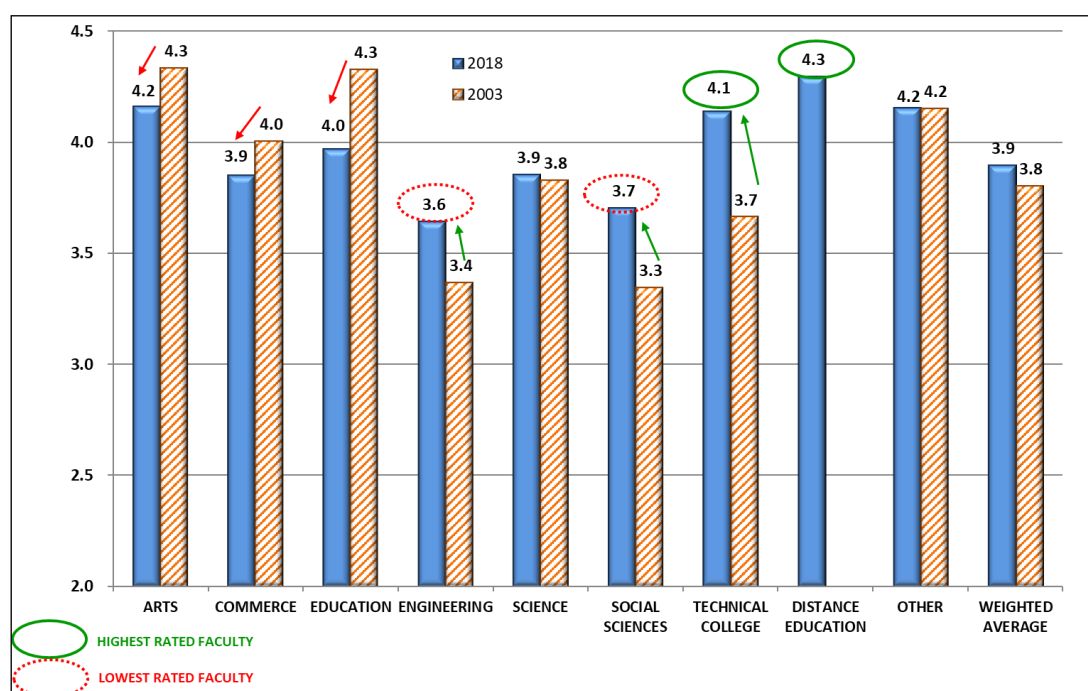
- While Overall Score is stable at 3.8, there are slight changes in some Faculties.
- Technical College shows a slight increase while Science Faculty a small decrease.
- Distance Education is rated highest, while Social Sciences the lowest.

**CHART 4: Mean Faculty Scores (Evaluation)**



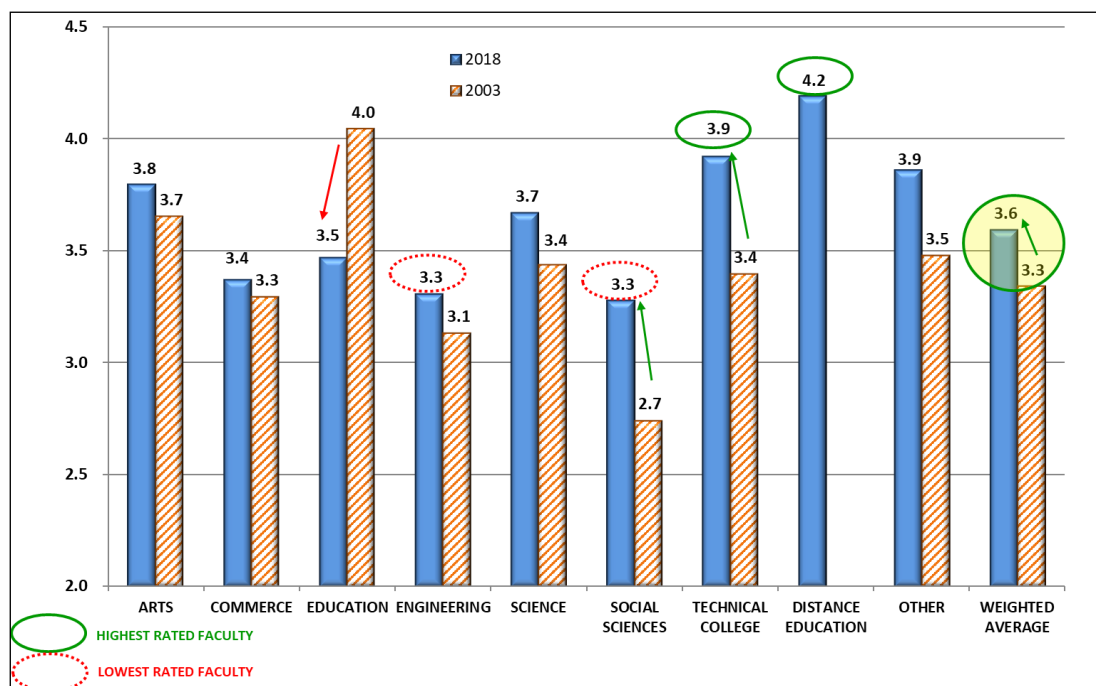
- Overall Score for all Faculties combined has gone up to 3.9 in 2018 from 3.7 in 2003.
- Increase is mainly because of significant improvements in Social Sciences Faculty and Technical College.
- There is a slight decline in the score in Education and Commerce Faculties.
- Distance Education and Technical College are rated the highest.
- Faculties of Engineering and Social Sciences continue to trail in overall rating.

**CHART 5: Mean Faculty Scores (Curriculum)**



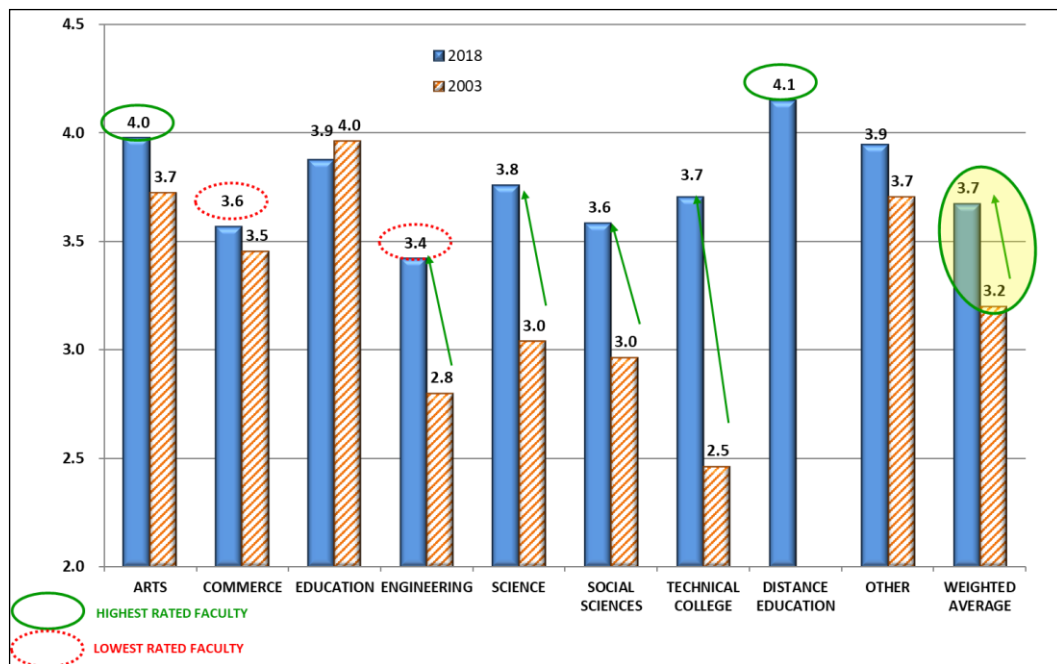
- Overall Score for all Faculties combined has gone up marginally to 3.9 in 2018 from 3.8 in 2003.
- Increase is mainly because of improvements in Faculties of Engineering, Social Sciences and Technical College.
- There is a decline in scores in the Faculties of Arts, Commerce and Education.
- Distance Education and Technical College are rated the highest.
- Faculties of Engineering and Social Sciences continue to trail in overall rating, despite their improvements.

**CHART 6: Mean Faculty Scores (Resources)**



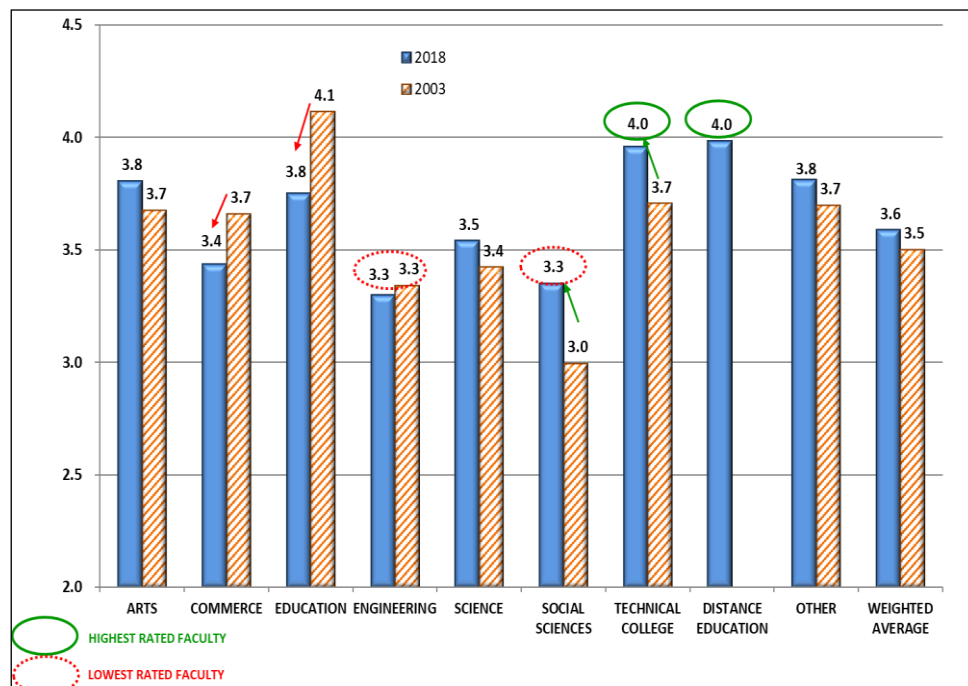
- Overall Score for all Faculties combined has gone up significantly to 3.6 in 2018 from 3.3 in 2003.
- Increase is mainly because of significant improvements in Faculty of Social Sciences and Technical College.
- There is a significant decline in score in the Faculty of Education.
- Distance Education and Technical College are rated the highest.
- Faculties of Engineering and Social Sciences continue to trail in overall rating, despite their improvements.

**CHART 7: Mean Faculty Scores (Library)**



- Overall Score for all Faculties combined has gone up significantly to 3.7 in 2018 from 3.2 in 2003.
- Increase is mainly because of significant improvements in almost all the Faculties.
- There is a slight decline in scores in the Faculty of Education, but its sample size is very small.
- Distance Education and Faculty of Arts are rated the highest.
- Faculties of Commerce and Engineering continue to trail in overall rating.

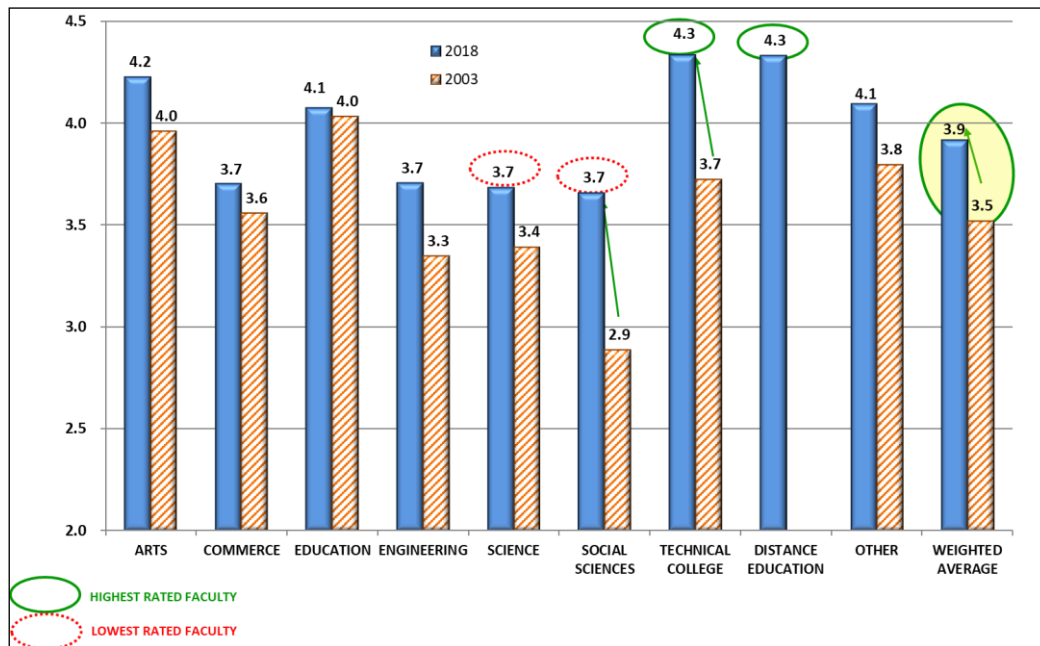
**CHART 8: Mean Faculty Scores (Infrastructure)**





- Overall Score for all Faculties combined has gone up marginally to 3.6 in 2018 from 3.5 in 2003.
- Faculty of Social Sciences & Technical College show a slight increase.
- Faculties of Commerce and Education show a slight decline.
- Distance Education and Technical College are rated the highest.
- Faculties of Engineering and Social Sciences continue to trail in overall rating.

**CHART 9: Mean Faculty Scores (Other Areas)**



- Overall Score for all Faculties combined has gone up significantly to 3.9 in 2018 from 3.5 in 2003.
- Increase is mainly because of a significant improvement in Faculty of Social Sciences and Technical College, along with slight improvements in other Faculties as well.
- Distance Education and Technical College are rated the highest.
- Faculties of Science and Social Sciences continue to trail in overall rating, despite their improvements.

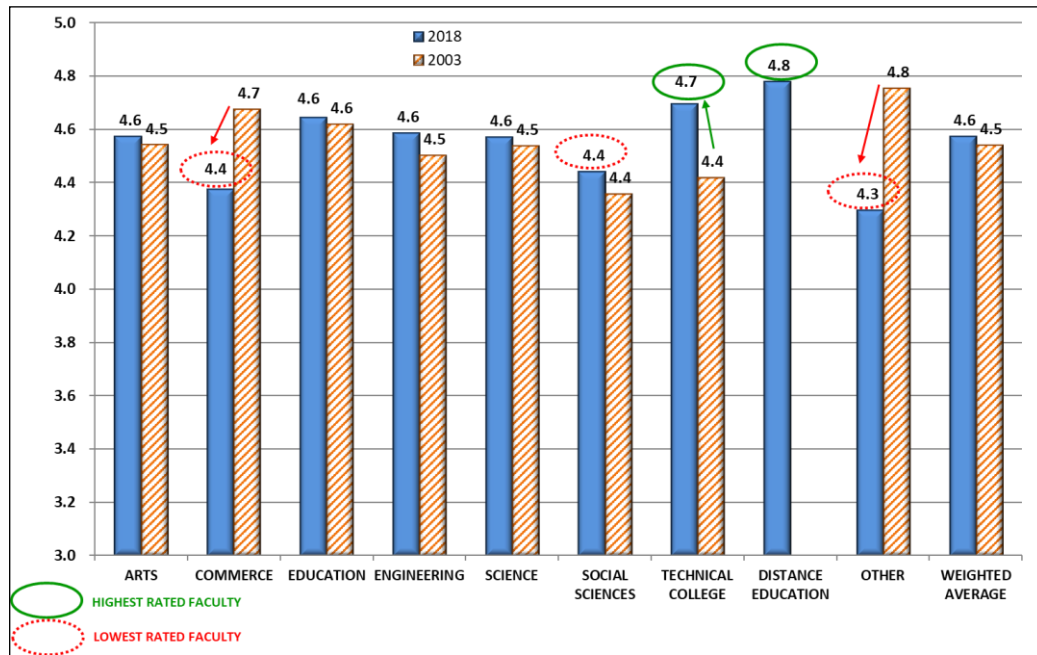
**NOTE:** There were seven new questions added in this area regarding skills and competencies (See [Chart 13](#)).

**CHART 10: Mean Faculty Scores (Values & Innovation)**

- Overall Score for all Faculties combined has gone up marginally to 4.6 in 2018 from 4.5 in 2003.
- Technical College shows a slight increase along with some other Faculties
- A significant decline is noticed in Others category, while the Faculty of Commerce also shows a slight decline.
- Distance Education and Technical College are rated the highest.

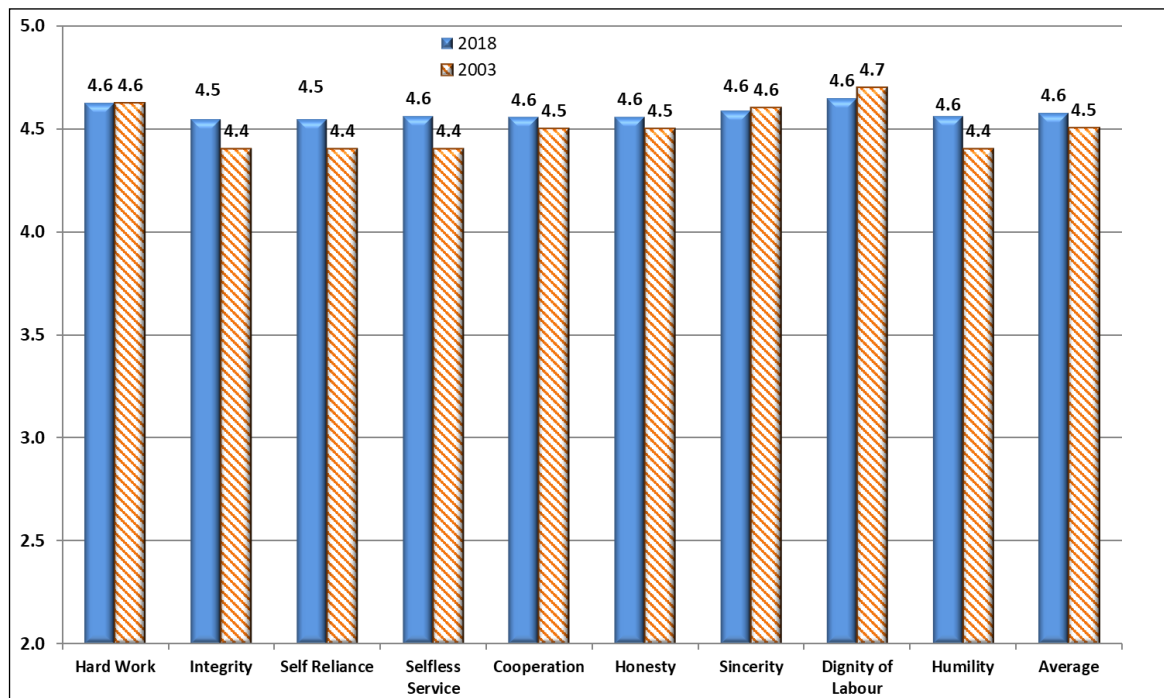


- Faculties of Commerce and Social Sciences are rated the lowest.



**CHART 11: Mean VALUE Scores (Value Attributes)**

QUESTION: In DEI certain values are reinforced in students. Please indicate the extent to which these values have made an impact on your personal and professional life.



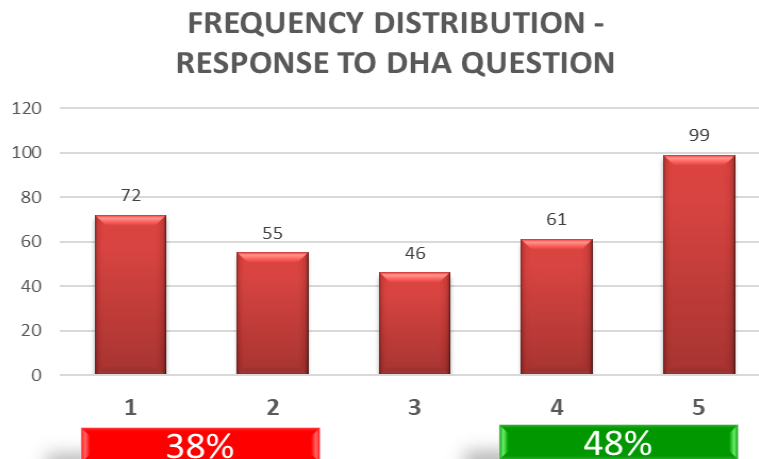
- Overall Score for all Faculties combined has gone up marginally to 4.6 in 2018 from 4.5 in 2003.
- Almost all the attributes of Values are showing a slight increase contributing to the overall increase.

- The Value Scores remain as the highest rated category, with all areas rated above 4.5 (out of 5.0).

#### **CHART 12: Response to new question on DHAs**

QUESTION: Daily Home Assignment (DHA) concept used in DEI is useful for student development.

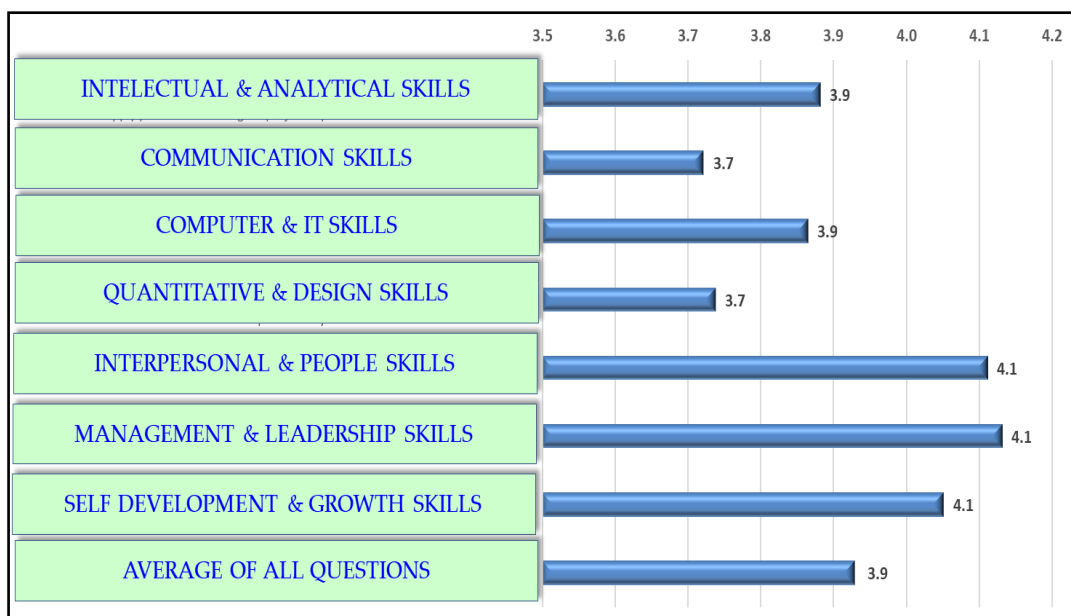
*Please only answer if graduated from DEI after 2014 - 333 or 46% responded.*



- Overall Response is VERY MIXED – 38% DISAGREE, while 48% AGREE.

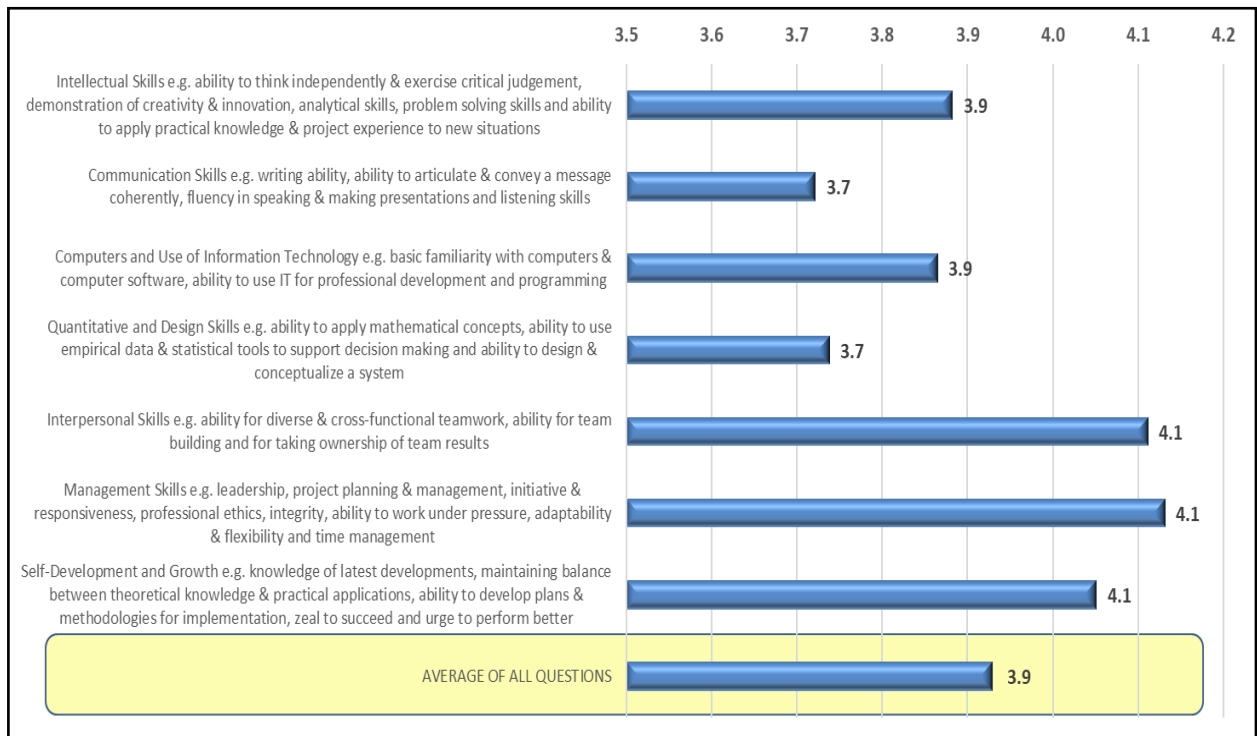
#### **CHART 13: Response to new questions on SKILLS (Other Areas)**

QUESTION: Please assess the preparedness of a DEI student in the following skills / competencies when he / she passes out- 564 or 79% responded.



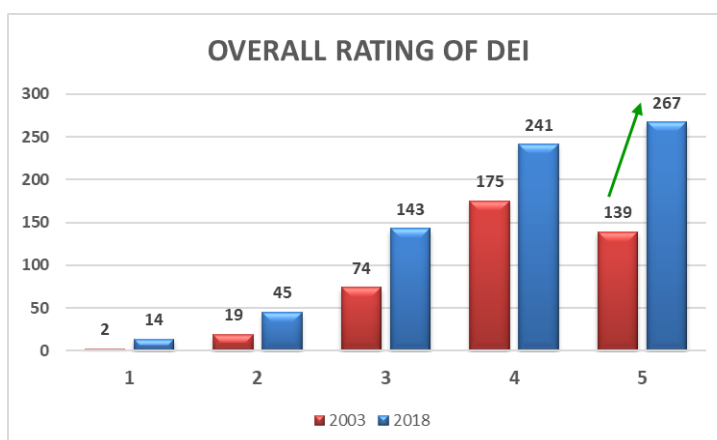
- Overall Average Rating at 3.9 is low due to subdued ratings in two areas (Communication Skills & Quantitative & Design Skills).
- Interpersonal and Management & Leadership Skills are rated high.

**Details of the specific questions posed in the Survey Form for the above-mentioned skills are as follows:**



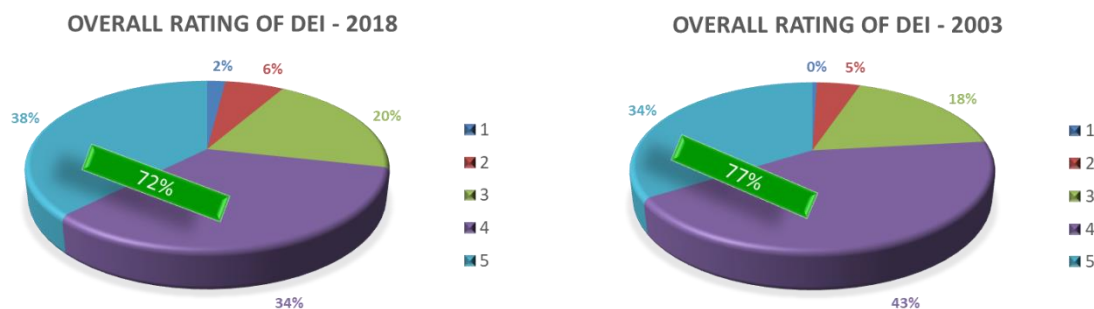
#### **CHART 14: Overall Rating**

Summary of responses to the Question asking for an overall rating of DEI.



THE TOTAL NUMBER OF RESPONSES IN 2018 WAS 710 vs 409 IN 2003.

THERE IS A MARKED INCREASE IN THOSE RATING DEI AS A "5" IN THE OVERALL RATING.



### CHART 15: Would you recommend DEI

There is an increase of 1% (from 5% to 6%) in those who would NOT recommend DEI.

S. No.	FACULTY	2018				2003			
		TOTAL Responses	Yes	NO	NO %	TOTAL Responses	Yes	NO	NO %
1	ARTS	23	22	1	4%	63	60	3	5%
2	COMMERCE	51	44	7	14%	30	28	2	7%
3	EDUCATION	16	14	2	13%	31	31	0	0%
4	ENGINEERING	166	155	11	7%	102	97	5	5%
5	SCIENCE	85	78	7	8%	86	84	2	2%
6	SOCIAL SCIENCES	137	129	8	6%	56	47	9	16%
7	TECHNICAL COLLEGE	143	139	4	3%	31	30	1	3%
8	DISTANCE EDUCATION	68	67	1	1%				
9	OTHER	21	20	1	5%	53	53	0	0%
	<b>TOTAL</b>	<b>710</b>	<b>668</b>	<b>42</b>	<b>6%</b>	<b>452</b>	<b>430</b>	<b>22</b>	<b>5%</b>

- Vast majority (**94%**) continue to recommend DEI. Only small decline from prior.
- Largest increase is in the Faculties of Education and Commerce, while Social Science shows some improvement.

### ANALYSIS OF EXPLANATION GIVEN BY THOSE WHO SAID "NO"

45%	Teachers/Teaching methodology/Education system
21%	Poor Career counseling/Placements support
11%	General/Miscellaneous/Vague reasons
8%	Poor Infrastructure
5%	Bias/Partiality in the staff etc.
5%	Unique Issue /problem which went unaddressed
5%	Other/irrelevant response

NOTE: Verbatim inputs received to qualitative questions are analyzed at Faculty level.

### Overall Highlights

- Overall Score for all Faculties across all Dimensions has gone up to a respectable 3.9 in 2018 (from 3.7 in 2003).

- Similarly, the Overall Score for all Dimensions across all Faculties has gone up to a respectable 3.9 in 2018 (from 3.7 in 2003).
- The areas of Values continue to command a very respectable overall rating of 4.6 (up slightly from 4.5)
- Overall response is Mixed to a new question on DHA – whether it's useful for students' development – with close to 38% of respondents disagreeing and 48% agreeing.
- Overall rating for new questions on Skills & Competencies is highest in the following areas:
  - Interpersonal and People Skills
  - Management and Leadership skills
  - Self-Development and Growth skills.
- Responses to overall rating of DEI indicates that a vast majority (72%) regard it above average (4 or 5 rating), although slight decline from last survey (77%).
- An overwhelming number of respondents (94%) would recommend DEI to others, although slight decline from last survey (95%).

Based on the feedback of the students, the total marks obtained are calculated by adding marks for each point (10 for scale 10, 9 for 9, 5 for 5 etc.). Then the Dean communicates the same to the concerned teacher personally and warns him in case the total is less than 50%.

Teachers do take the personal feedback to understand the problems of the students and improve their own performance.

Different teachers do prepare their sheets differently. Two such sheets are as follows:

**Sample 1:**

DAYALBAGH EDUCATIONAL INSTITUTE

Date

**Review of the Course**

Please take a few moments to answer the questions below. Your responses will greatly assist me in improving my learning processes and provision.

**Course:** - xxx-xxx**Tutor:** - \_\_\_\_\_**Session:** - July-December 2008

TEACHERS SELF EVALUATION SURVEY	ALWAYS EXCELLENT	MOSTLY/ V. GOOD	FREQUENTLY / GOOD	NEVER/BELOW GOOD	NOT APPLICABLE
DESCRIPTION OF TEACHER	1	2	3	4	
1. Well prepared and organized					
2. Knowledgeable about the subject					
3. Presentations are clear and understandable					
4. Make the subject interesting					
5. Conveys enthusiasm					
6. Is open to student opinions					
7. Allows questions and answer clearly and understandably					
8. Show genuine interest in and concern for the students in the class					
9. Available and helpful outside the class					
10. Requires students to think					
11. High overall level of teaching					
12. Exercises good control over the class					
13. Regularity in conducting classes					
14. Teaches all the units					
15. Completes the course in time					
16. Substantiate the lecture with practical examples					
17. Legible writing					
18. Encourage discussions					
<b>DESCRIPTION OF THE COURSE</b>					
1. Objectives and procedure were made clear					
2. Testing is fair, gives a good indication of student achievement					
3. Tests were challenging and worthwhile					
4. I have learnt a great deal from this course					

FURTHER COMMENTS ON:

Mannerisms

Voice/Speech

Suggestions for improvement

**Sample 2:**

D.E.I. Faculty of Engineering

**Student's Feed Back Form**

In order to improve teaching-learning process you are required to give your objective observations concerning the course teacher on the items given below. This will be kept secret and will have no negative consequences upon you.

Semester: \_\_\_\_\_ Batch: \_\_\_\_\_ Date: \_\_\_\_\_

Course: \_\_\_\_\_ Course Teacher: \_\_\_\_\_

S.N.	Mark Tick (✓) in the column which is most appropriate in your opinion.				
1.	Well prepared and organised	Always	Mostly	Rarely	Never
2.	Knowledge of the subject matter	Excellent	V. Good	Good	Below Average
3.	Clarity in presentations	Excellent	V. Good	Good	Below Average
4.	Ability to explain the subject matter	Excellent	V. Good	Good	Below Average
5.	Ability to create interest in the subject	Excellent	V. Good	Good	Below Average
6.	Allows questions in the class and answers clearly and understandably	Always	Mostly	Rarely	Never
7.	Deviates from the subject matter	Never	Rarely	Mostly	Always
8.	The questions asked test the understanding of the student	Always	Mostly	Rarely	Never
9.	Shows genuine interest and concern for the students in the class	Always	Mostly	Rarely	Never
10.	Motivates the students to study	Always	Mostly	Rarely	Never
11.	Sense of humour	Excellent	V. Good	Good	Below Average
12.	Conducts classes regularly	Always	Mostly	Rarely	Never
13.	Maintenance of discipline in the class	Excellent	V. Good	Good	Below Average
14.	Completes the course in time	Always	Mostly	Rarely	Never
15.	Audibility of voice	Excellent	V. Good	Good	Below Average
16.	Legibility of handwriting	Excellent	V. Good	Good	Below Average

17.	Fair in evaluation	Always	Mostly	Rarely	Never
18.	Evaluation done in time	Always	Mostly	Rarely	Never
19.	Evaluation helps the students to improve	Always	Mostly	Rarely	Never
20.	Tests are challenging and worthwhile	Always	Mostly	Rarely	Never
21.	Available and helpful outside the class	Always	Mostly	Rarely	Never
22.	Would you like to be taught by him in future	Always	Normally	Not often	Not at all
23.	Overall level of teaching	Excellent	V. Good	Good	Below Average

#### **Internal Quality Assurance Cell**

The Internal Quality Assurance Cell of the Institute was constituted on 16 September, 1995. It performs the following tasks on regular basis:

1. Improvement in quality of teaching and research by regular inputs to all concerned based on feedback from students.
2. Providing inputs for best practices in administration for efficient resource utilization and better services to students and staff.
3. Providing inputs for Academic and Administrative Audit and analysis of results for improvement in areas found weak.

#### **Academic and Administrative Audit Committee (AAAC)**

An Academic and Administrative Audit Committee constituted as per the norms of UGC, regularly visits the department every semester, conducts meeting with students individually and takes feedback. Then the committee holds meeting with staff and conveys the shortcomings if any about the courses and the teachers. In case of critical cases, the chairman warns the concerned teacher to improve.

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

The Feedback on facilities is taken during the Class committee meetings held quarterly. Students submit their report through Class Committee members and Class Proctors to the HOD for immediate attention towards a problem. Following is the format of feedback report:



Students, faculty and staff are motivated to provide feedback and help the institute to identify and fill the gaps. Please find below the links for Institute Feedback Forms for all stakeholders: (Internal) <http://10.2.0.60/deifedback/index.htm>

#### REVIEW REPORT: STUDENTS FEEDBACK TO THEIR PROCTORS

<b>TO BE SUBMITTED</b>			
<b>BY: CLASS COMMITTEE MEMBERS</b>	<b>Name:</b>	<b>TO: CLASS PROCTORS</b>	
<b>FACULTY:</b>	-	<b>DEPTT.:</b>	-
<b>CLASS:</b>	-		
<b>DATE:</b>			
<b>1</b>	<b>Topic Taught</b>		
<b>2</b>	<b>Copy of DHA</b>		
<b>3</b>	<b>Quality of Teaching</b>		
<b>4</b>	<b>Improvements if any</b>		
<b>5</b>	<b>Conditions:</b>		
	<b>a</b>	<b>Toilet</b>	
	<b>b</b>	<b>Classrooms</b>	
	<b>c</b>	<b>General Facilities</b>	
	<b>d</b>	<b>Uniform</b>	
<b>6</b>	<b>Effectiveness of the Core Courses</b>		

In addition to the above, the AAAC also enquires the students thoroughly about the facilities and in case of any problem, warns the person concerned to rectify the problem urgently during the meeting with staff.

#### 9.4. Self-Learning (5)

The curriculum include compulsory institute core courses for all UG students that are designed for overall development of student to evolve into a complete human being, and all of these components are not strictly restricted to prescribed syllabus but give freedom to student to pursue topics of interest. These include

- Compulsory Co-curricular courses
- Games
- Work-experience courses
- Comparative study of religions
- Cultural Education
- Rural Development
- Agricultural Operations
- Non-departmental Half Courses
- Social Service
- Scientific methodology, General Knowledge and Current Affairs

The students have to pursue following curricular components which require them to expand the boundaries of learning and exercise self-learning. These components include

- Major Project
- Minor Project
- Projects during internship programs during summer terms after I year (30 days), II year (40 days) and III year (180 days)
- Rural Engineering Project
- Design Engineering and Theme Development project
- Product manufacturing project
- Seminars and Group discussion
- Assignments that require knowledge of software tools
- Lab courses that uses software tools for simulation

Further, students are encouraged to participate in student competitions, hackathons, technical paper presentations etc. which provide scope for learning beyond the prescribed syllabus.

The institute provide following facilities for the students for supporting self-learning

### **VidyaPrasar**

Institutes' on-line collaborative learning, live web cast and content management system VidyaPrasar, in its present state of development, provides course web publishing, file storage and sharing facilities through a web based connection to the Internet thus providing with full portability.

VidyaPrasar hosts course websites and material and Wiki for courses in Computer Science and Engineering. Live streaming services, interactive seminars, e-Books, on-line self-examination facilities, and video-on-demand services etc are its main features. Sponsored by the National Mission on Education through Information and

Communication Technology (NMEICT) this project is part of a tri-institute collaborative initiative coordinated by the Indian Institute of Technology, Bombay, and with the Amrita University as the third partner.

### **SWAYAM**

SWAYAM is a programme initiated by Government of India and designed to achieve the three cardinal principles of Education Policy viz., access, equity and quality. The objective of this effort is to take the best teaching learning resources to all, including the most disadvantaged. Students are taking advantage of Swayam portal regularly.

### **NPTEL**

Students do take the advantage of NPTEL courses beyond class room lectures for enhancing knowledge and strengthening their understanding.

Teaching-Learning in DEI follows a student-centric process employing experiential, participative, problem solving and constructivist methodologies, through (a) Teaching Methodology, (b) Experience-Based Courses, (c) Different Modes of learner-centered teaching (d) a wide range of co-scholastic components and (e) Specialized Centres of Learning.

(a) **Experiential and Participatory Teaching-Learning** methods used include:

1. Seminar cum Group Discussions
2. Individual and Group Projects
3. Self-Study and Dissertations
4. Field work
5. Case Analysis
6. Presentations
7. Term Papers
8. Self-Study Courses
9. Active Learning: Flipped Classroom, Team work, Students as teachers
10. Video viewing cum discussions
11. Research Colloquia

(b) **Experience-based/ Practice-oriented courses**

Based on the principle of '*Learning by Doing*' a large proportion of courses in each programme have a high practical component to provide hands on learning experience to the students:

1. *Work-Based training*
2. *Co-operative Industrial Internship*
3. *Performing Arts Courses*

4. *Vocational and Skill courses*
5. *ICT courses*
6. *Rural Development Core course with focus on Agricultural Operations*
7. *Scouting and Guiding Programme*
8. *Student Centred Online Teaching-Learning System (SCOTLS) for B.Ed. and M.Ed. Internship at remote locations (incorporating Tablet-based teaching in collaboration with Microsoft, India.)*
9. *Teaching Internship in adopted tribal villages and neighbouring community schools.*
10. *Vocational and Skill courses*

### **(c) Learner-Centred Modes of Education**

Learner-Centred modes of teaching-learning are used that make learning self-paced and self-regulated:

- (i) **Vidyaprasar**([www.vidyaprasar.dei.ac.in](http://www.vidyaprasar.dei.ac.in)), an ***on-line collaborative learning, live web cast and content management system*** with state-of-the-art interactive learning resources. MOOCS developed by DEI and under e-PG-Pathshala and SWAYAM.
- (ii) **e-DEI-de** program of DEI for certification through on-line modular courses for open and distance learners.
- (iii) **Ten Virtual and Remote Triggered Laboratories**
- (iv) **MOOCS**, especially for online vocational courses. DEI has created the first skillpedia in regional languages named, Massive Online Courseware Skilling and Entrepreneurship Network for India (MOOCSKENE-Bharat). The network offers free on-line learning in multiple languages across the country.
- (v) Variety of Elective courses.

### **(d) Co-Scholastic Learning Components**

A wide range of compulsory co-scholastic learning components cater to varied learner interests and potentialities that include co-curricular activities, games and sports, yoga, community outreach, field and industrial visits, creative and problem-solving contests and Field and Industry experience. A Business Advisory Clinic provides free consultancy to Business firms and Industries facing difficulties. Faculty members and students take up real life case studies and offer appropriate guidance. More than 6,000 cases have been taken up and resolved satisfactorily.

### **(e) Specialized Centres of Learning**

The advanced centres of learning include:

1. **Multi-disciplinary Quantum and Nano Systems and the Consciousness Studies Virtual Centers**
2. The Virtual Advanced Lab for Interactive Design, Analyze, and Test in Electronics – eVALIDATE.
3. **The iNFORMATION-cOMMUNICATION-nEURO-cOGNITIVE- Technologies Assisted Language Lab(I-c-n-c-TALL)**

4. **2G to 5G, IOT, AI and Robotics Laboratories**
5. **Quantum Jugaad Centre and Entrepreneurship and Virtual Incubation Centre**

The above teaching learning modalities ensure experiential and participatory learning leading to a holistic development of students within and beyond the classroom.

#### **9.5. Career Guidance, Training, Placement (10)**

Training, counselling and placement is offered to every graduating student for her to be confident and competitive in her choice of career and for inculcating entrepreneurial skills.

Students of the institution are employed in Financial Institutions, educational institutions, IT companies, automobile industries, central and state government services, textiles industries and core engineering industries. During their course of study a five month Cooperative Education programme is made compulsory. Co-operative education is a structured method of combining classroom-based education with practical work experience in the industry. It entails cooperation between Institute and Industry to produce trained professionals. DEI is collaborating with University of Waterloo (a global leader in the Co-op education model) and has launched its own Co-op model in 2013, suitably adapted to Indian conditions. The model aims at development of 'employability skills' through the introduction of a 6 month industry stint as part of the course requirement.

Indian Industry has lately been very concerned with the lack of requisite technical and soft skills of students entering industry. The recent 'National Employability report' claims that 47% of graduates across India are unemployable for any job<sup>1</sup>. The time and cost of training students after education is becoming a major challenge for industry. Three key reasons why DEI has launched the Co-op model are:

- Global practices
- Need expressed by industry in various interactions and forums in the past
- Need for reducing high rates of attrition amongst fresh graduates due to mismatch in culture and expectations

The Co-op model was launched by DEI in 2013 for its Engineering and MBA programmes. 100% of the students were placed within 5 months of the launch of the programme. The feedback from the first set of returning students has been excellent. 80% of companies paid stipend or provided some non-financial support.

While the cost of recruiting, training and developing a fresh graduate can be upwards of one year's salary, most fresh graduates leave the organisation within 2 years due to non-fitment with culture and working environment. The Co-op model allows organisations to observe the candidate closely for an extended period of time thus

allowing a deeper understanding of the competencies and fit of the student. The students bring fresh ideas and perspectives to the organisation and they can be assigned routine duties or special projects. Students on the other hand gain immensely through an extended on-the-job understanding of how academic principles are applied in real situations and an opportunity to test the skills learnt in the classroom. The interaction and feedback from re-turning students and participating organisations allows the University to enhance and improve its curriculum. With a deeper understanding of the industry, which grows with each passing year, the faculty are able to relate practice to theory better.

Summer Training process is of a short duration and primarily aimed towards exposing students to industry practices. By the time students learn about the organisation and its processes, the training period is close to completion. Co-op model on the other hand is a partnership between the industry and the institute. Assignments (routine as well as special) are given with a view to

let the student face real situations with intensive supervision by the project guide and supported by the faculty of the institute. The longer period also allows the organisation to understand the personality and motivation of the student and use this information at the time of recruitment. The stipend or some other non-financial support provided by the organisation helps motivate the trainee to deliver his or her best performance and industry also gets involved in overseeing the trainee's work. A request letter in the following format is sent to the industries for training.



**DAYALBAGH EDUCATIONAL INSTITUTE**

(Deemed University)

DAYALBAGH, AGRA – 282005, U.P., INDIA

Phone: (0562)-2801545; Fax: (0562)-2801226

Web: <http://www.dei.ac.in/>

January 20, 2018

To,  
Manager (HR)  
Cadence Design Systems  
NOIDA

Dear Sir/Madam,

Greetings from Dayalbagh Educational Institute!

DEI is a Deemed University located in Dayalbagh, Agra, well known for its academic ascendancy and extramural excellence. DEI has been accredited by the National Assessment and Accreditation Council (NAAC) and has been awarded an 'A' grade in October 2013. In 2009, a Committee set up by the Ministry of Human Resource Development (MHRD) under Professor P.N.Tandon placed DEI in 'A' category, third in rank and 8<sup>th</sup> among all 130 Deemed Universities under review. Recent overall NIRF ranking of the Institute is **63** and the **All India NIRF Ranking** of the DEI Faculty of Engineering is **69**.

From the year 2013, the DEI Faculty of Engineering introduced a compulsory 5-month Co-operative Education Internship Program for B.Tech. students after completion of their 6<sup>th</sup> semester of study. This unique internship program is one of very few such available in the country that offers a structured method of combining classroom-based education with practical work experience in the industry. It entails cooperation between Institute and Industry to produce trained professionals to meet current industry needs/skills. You will be happy to note that this initiative has been very well received by industry and over 60 companies / institutions have already participated in the program.

A brief introduction to the Co-operative Program (Co-op Program) is attached along with this email for your kind perusal. For B.Tech. students, the program is scheduled to run from **April 01, 2019 till August 31, 2019**.

Towards this end, we earnestly solicit your help and support by accommodating some of our B.Tech. (Electrical) students for the Co-op internship training in your esteemed organization as was being done in the past. I am enclosing the CVs of the following students who wish to undergo internship in your esteemed organization.

2.

I request you to kindly provide necessary facilities for the same at your works. The students may be allotted focused projects for the benefit of your organization under the joint supervision of an expert from your organization as well as faculty from our institute. We eagerly await your response to this email so that we can take the Co-op Program forward.

Thanking you and looking forward to hearing from you,

Sincerely,

Prof. Ajay Kumar Saxena

Head, Electrical Engineering

### Measures initiated by the institution for student support and progression

- Introduction of need and skill based courses.
  - Offering Innovative, Add on and Certificate Courses.
  - Remedial coaching for slow learners.
  - Industrial and field visits
  - Internship / Cooperative Training for experiential learning.
  - Inclusion of students in various committees, departmental association and club meets
  - Making NSS /NCC mandatory for sensitizing the towards nation building activities.
  - Career Guidance and Placement Cell
  - Music and yoga classes
  - Participation in Corporate Social Responsibility
  - DEI has a programme of study which is designed to make a person “complete”. The core courses such as Agricultural Operations, Social Service, Comparative Study of Religion, Cultural Education, NSS, Games & Sports etc. help in developing the overall personality of the student. The classes for Career Guidance in particular start from third year onwards. During the four semesters (III – VIII), a compulsory slot is provided in the Time table for career Guidance activity.
- 
- ICT Continuing Education Centre
  - In addition to the above, ICT Continuing Education Centre of D.E.I. regularly prepares students for a good career. For students with Hindi background, the cell conducts Spoken English Classes. Under the Career Guidance classes students are trained for Resume writing, Interview preparation, Co-op Training etc. Mock Interviews are conducted for practice.

The following table shows the activities conducted during last three years:

Data 2016-2018 (June)ICT Continuing Education Centre						
	Dates	2018 continuing	Dates	2017	Dates	2016
<b>Soft Skills</b>	Jan-March March-April	4+20+32=56	Jan-April Aug-Nov Dec.	11+8+22 + 20+Winter Camp 48=116	Feb-April July-Aug Sept.-Oct. Jan-May	14+7+20+43 +58 UPSDM 100=242



<b>Spoken English</b>	Jan-April	20+ 42= <b>62</b>	Aug'17-April'18	15+90= <b>105</b>	Jan-April, Aug-Nov 2016	30 students, cont., 100+230= <b>330</b>
<b>Career Guidance</b>	Jan-March 12th Jan-April 17 <sup>th</sup>	B. Tech Co-Op <b>260</b> students	Aug - December 17, Jan-April'17	<b>260</b> Co-Op (B. Tech) students	Aug-March, Jan-April	190 Co-Op(B. Tech) students
<b>Placement Preparation Interview /Workshop Resumes/ Mocks/ GD's</b>	(Jan-April), Feb 11th, April 1st, March 18th, April 8th, April 11th	Resumes <b>100+</b> Workshop <i>Personal Effectiveness</i> <b>1 =189</b> students,  Mocks <b>30</b> students, GD's <b>30</b> students, Mocks <b>67</b> students, GD <b>25+50</b> students Total= <b>491</b>	21/01/17, 19/02/17 17/09/17 24/09/17 29/10/17, 5/11/17 Aug-Nov, Oct 14th , December —	Mocks- <b>49</b> students GD's - <b>118</b> students attended <b>220</b> resumes checked, Co-Op guest lectures <b>190</b> students	Jan-April, March 11, Sept.- Nov 2016, July-Aug Aug-Nov'16, 13th Nov	<i>Seminar-Career In Public Relations, 100 attended, GD's 54 +100=154, Mocks 115+8=123, Co-Op Guest Lectures, GD Sahai70 MukulSahai, 19</i>
<b>Basic IT</b>	Jan-Feb	<b>6 students</b> for PPTmodule,	JAN-APRIL, Aug-Nov	12+3 = <b>15</b> for WORD	Feb-May, Aug-Nov	60+30+15= <b>105</b>
<b>Excel</b>			March-April, Oct 19-26-2nd(modular)	30+51= <b>81</b>	April, Nov 27th	22+53= <b>75</b>
<b>C-Prog</b>			JAN-APRIL	<b>11</b>	AUG-NOV	<b>11</b>

### AADEIs Training Programmes

Alumni Association of Dayalbagh Educational Institutions organizes Training programmes in collaboration with the Industry-Institute Partnership Cell and ensures the placement of the students of Engineering.

WRITE NAME IN BLOCK LETTERS FOR CERTIFICATES

1. Name: \_\_\_\_\_ M / F

2. SC \_\_\_\_\_ ST \_\_\_\_\_ OBC \_\_\_\_\_ GEN \_\_\_\_\_

3 STUDYING IN FACULTY \_\_\_\_\_

ROLL NO. \_\_\_\_\_

Subject /Class \_\_\_\_\_

SEMESTER \_\_\_\_\_

Contact Info. \_\_\_\_\_

**For Jobseekers/Enhancers** \_\_\_\_\_

Branch \_\_\_\_\_ Qualifications \_\_\_\_\_

Contact Info: \_\_\_\_\_

Please circle:

MODULES: WORD EXCEL POWERPOINT

Signature of Applicant: \_\_\_\_\_

Date \_\_\_\_\_

For Office Use:

Date: \_\_\_\_\_

Amount: \_\_\_\_\_ Due: \_\_\_\_\_



## ICT Continuing Education Centre,



We support  
YOU

Office Located in rear verandah, Central Office,  
Administrative Block, DEI.  
Phone: 999-793-3440, 9808632807, 9634555217  
Contact: Punam Prakash  
Email: punam.prakash@gmail.com

## Training Programs In Collaboration With Industry Institute Partnership Cell for DEI Students ITS 301 (2017-18)

### DEI Courses for Enhancing Job-Placement

**Aims:** Prepare and assist current and past DEI students for  
placements, including the following:

- Train students in resume writing
- Develop interview and communication skills
- Practice group discussions
- Enhance IT skills and Vocational skills

**Methodology: Distance Education Mode:**

Teaching is conducted using pre-recorded audio or  
video instructions, facilitated by mentors at the  
locations where the course is run.

### Calendar 2017-8, ITS 301 ICT Continuing Education Centre DEI, Dayalbagh

Aug	Sept	Oct	Nov	

Course Title: ITS 301

### Course Description:

Developing skills in: understanding basic hardware, and software,  
how to operate computers & Learning basics of Word, Excel, Power  
point and Internet (Microsoft Office Tools) to prepare documents,  
data tables and presentations, and use of internet

### Dates/Class Timings:

**When:** July – Nov, Sundays/weekdays

**Where:** Commerce Faculty/Computer Centre

**Time:** 8:00, 9:30 AM Weekdays  
2:00-3:30PM Sundays **Tuition:** Rs. 250/  
with study materials per module  
4 classes per module

**Registration From:**

**11:00 AM – 4:30 PM NOW**

**Office (in the rear verandah at Central Office)**



Location: Central Office (rear verandah)

Office Phone: 10:30-4:30 - 9364555217, 9997933440/  
9808632807 Email: aadeisictec.dei@gmail.com

**Office Notes:**

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AADEIs ICT Continuing Education Centre,  
DEI Dayalbagh-6  
Industry Institute Partnership Cell  
DAYALBAGH EDUCATIONAL INSTITUTE  
DAYALBAGH, AGRA  
REGISTRATION FORM FOR DEI STUDENTS  
(Fill in block letters)



1. Name: \_\_\_\_\_ M / F

2. STUDYING IN FACULTY \_\_\_\_\_

ROLL NO. \_\_\_\_\_

Subject/Field \_\_\_\_\_

SEMESTER \_\_\_\_\_

Contact Info. \_\_\_\_\_

3. NAME OF COURSE :

☐ PERL

Signature of Applicant: \_\_\_\_\_

Date \_\_\_\_\_

For Office Use:

Received from: \_\_\_\_\_ Date: \_\_\_\_\_

Amount: \_\_\_\_\_ Due: \_\_\_\_\_

Office Located in rear verandah, Central Office,  
Administrative Block, DEI  
Phone: 9808632807, 9634555217  
Contact: Punam Prakash  
Email: punam.prakash@gmail.com  
aadeisictcec.dei@gmail.com

**AADEIs**



**AADEIs Training Programs**  
In Collaboration With  
Industry Institute Partnership Cell  
for DEI Students  
ITS 305 (2015-16)  
An Introduction to Perl

DEI -APAC Courses for Enhancing  
Job-Placement

Aim: Prepare and assist current and past DEI students for  
placements, including the following:

- Train students in resume writing
- Develop interview and communication skills
- Practice group discussions
- Enhance IT skills and Vocational skills

Methodology: Distance Education Mode:

Teaching is conducted using pre-recorded audio or  
video instructions, facilitated by mentors at the  
locations where the course is run.



INDUSTRY INSTITUTE PARTNERSHIP CELL  
DAYALBAGH EDUCATIONAL INSTITUTE  
ICT Continuing Education Centre DEI Dayalbagh  
ANNOUNCES

**Placement Simulation (Free)**

**Last session this semester**

➤ **GD's 12 PM**

➤ **Aptitude Tests 12:45 PM**

➤ **Mock Interview- 2 PM**

➤ **For Soft Skills Classes (Electrical  
& Civil 5<sup>th</sup> Sem)**

**& final semester students of B. Tech,**

**B. Tech 7<sup>th</sup>sem, Diploma 5<sup>th</sup>sem, all streams**

**Sunday, 19<sup>th</sup> November**

**College Uniform, Bring 2 copies of your  
checked resumes for the mock interview!**

**Registration and Resume check : NOW**

**Improve YOUR Communication Skills and  
Technical knowledge for interviews, polish your  
Personality to prepare for Placement....**

**Where: Multimedia Hall/Commerce Faculty  
at ICT CEC OFFICE in CAO**

ICT Continuing Education Centre DEI Dayalbagh (Office)  
Located in Central Administrative Office  
Contact Information: **Punam Prakash**  
(M) 9808632807, Office Phone: 9634555217

### 9.6. Entrepreneurship Cell (5)

Since its inception in 1981, the Dayalbagh Educational Institute (Deemed University) has envisioned and successfully implemented an innovative, comprehensive, flexible and value based education system with the mission objective of evolving a complete man ("Total Quality Person"). In pursuance of this objective, the Entrepreneurship Virtual Incubation Cell (EVIC) seeks to engender within students an intense entrepreneurial drive by fostering innovation with a social relevance.

The EVIC aims to adopt an inter-disciplinary systemic approach, whereby initiatives taken are institute-wide, without regard to departmental barriers. These initiatives are incubated in-house with the objective of nurturing social entrepreneurs who will focus on providing low cost solutions in the following primary domains: Education (Culture, Values and Quality), Energy, Health, Water and Waste Management. The EVIC provides all possible assistance to promote creative thinking and an entrepreneurial mindset among the students so as to help convert socially relevant innovative ideas into market accepted products.

As part of TEQIP activities, the faculty has established DEI SUCCEED, startup cell to encourage startup activities in the faculty.



DEI Start Up Commencing Centre for Emerging Entrepreneurs of Dayalbagh

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#### Introduction:

Skill development and entrepreneurship has been an integral part in the Education system of DEI, since its inception in 1917. In accordance with the lofty goal of Government of India for promoting vocational skill education, DEI has started several vocational courses to participate in Nation building through skill education and eventually imparting impetus to entrepreneurship. The modern age tools of tinkering labs, living labs and mobile labs imbibe general awareness and induce interest among students at school level. The values of rich Indian culture are sowed in young children through school of Art and Culture, Music School and School of Languages.

Besides the conventional education system, students have opportunity to learn and promote their hobbies as skill through Modular Courses starting from class VII onwards. Centre for Applied Rural Technology and Deen Dayal Upadhyay Kaushal Kendra serve as skill

infusing organizations. Even students with prior learning and basic school level qualifications can be benefitted by lateral and diagonal transitions possible from Modular Course level to Graduation level to PhD.

DEI took a quantum leap in entrepreneurship development benefitting masses from tribal belts to international level through well established Labs and skill parks namely Automotive workshops, Apparel and toy manufacturing association and Agro& Dairy business avenues. Community entrepreneurship and societal contribution are imbibed in values and teachings of Dayalbagh. Entrepreneurial avenues like agricultureDairy, Textile Manufacturing etc. has gained popularity in no time among students seeking skill development and entrepreneurial guidance. Unique schemes like earn while you learn are providing financial support while pursuing education to needy students and provides them better learning with concept of disposal of duties and shouldering responsibilities for self reliance. A super intelligent marketing network, connecting rural economic zones to state economic zones to international markets laid a sturdy foundation for deprived rural masses to sell their products, nationally and internationally. E-portals and business advisory clinics help in organized operation and establishment of entrepreneurial avenues for novices and young entrepreneurs. The Curriculum has Village Industries and Entrepreneurship, Agriculture Operations and Social Service as integral part and are compulsory core courses for students of all branches. The institute has already implemented schemes like Earn-while-you-learn, EVIC-Entrepreneurship Virtual Incubation Cell. All these facts make the Institute a fertile ground for advanced entrepreneurial activities.

To enhance the effectiveness of above mentioned endeavors and to provide need specific support to those with entrepreneurial aspirations, DEE SUCCEED has been established as a pre-incubating startup cell. Through the Cell, it is intended to build a strong eco-system for nurturing innovation and entrepreneurship and thus contribute to sustainable economic growth and generate large scale employment opportunities.

**Vision Objective:**

*Augment entrepreneurial culture among the faculties and students of the institute and promote new ideas, innovations and subsequently to convert these innovative ideas/problems to feasible business models and possible entrepreneurial venture.*

**Mission Specific Objectives:**

1. To develop a critical mass of motivated students & faculties with entrepreneurial orientation & skill
2. To build infrastructure support for innovation & early stage enterprise development and enabling access to resource & facilities at institute
3. To enhance in-house competency development to serve potential and early stage entrepreneurs and student innovators at the institute.
4. To provide platform for the budding entrepreneurs to interact with industrialists, professionals and alumni for motivation and guidance
5. To strengthen the inter department and inter-institutional linkage, incubators and other

ecosystem enablers at different levels,

**Activities:**

For realizing the objectives following activities are planned

- 1) To develop a critical mass of motivated students & faculties with entrepreneurial orientation & skill
  - a) Sensitization of target groups by organizing ice breaking sessions, motivational talks, interaction sessions with Alumni and successful entrepreneurs
  - b) Conduct General Entrepreneurial Tendency Test for students and staff for identification of dreamers and Dreamer Mentors
  - c) To organize Workshops on Design Innovation/ Problem Identification/ Rapid Prototyping / Idea generation hackathons and encourage students to participate
  - d) To encourage students and faculty to pursue and earn e-learning certificates on Entrepreneurship and Innovation
  - e) To arrange for interested students to undertake internship in Start-ups
- 2) To build infrastructure support for innovation & early stage enterprise development and enabling access to resource & facilities at institute
  - a) To prepare and display Service Chart for Students to avail services
  - b) Design and Print Promotion Material for Start-up Cell
  - c) To start Idea Club, Innovation Club and Start-up Club, establish organizational hierarchy in each of these and organize activities through these student clubs
  - d) Create provision for seed money support for major and minor projects of the students
  - e) To provide seed money support to projects for student competitions
- 3) To enhance in-house competency development to serve potential and early stage entrepreneurs and student innovators at the institute.
  - a) Conduct Mentor Training/FDP/EDP /capacity development Programs
  - b) Provide trainings to in-house Experts
  - c) Reward outstanding mentors, student members for their contributions
  - d) Encourage faculty to carry out research on Entrepreneurship
- 4) To provide platform for the budding entrepreneurs to interact with industrialists, professionals and alumni for motivation and guidance
  - a) To arrange for alumni meet at campus
  - b) To arrange for interaction sessions with local entrepreneurs
  - c) Organize Tech-fest, competitions, hackathons

- d) To organize visits, training to other institutions
- 5) To strengthen the inter department and inter-institutional linkage, incubators and other ecosystem enablers at different levels.
  - a) Conduct GETT for student and faculty of other departments of the Institute to extend the base of the Cell
  - b) Conduct Inter-Department Interaction Sessions to identify Current Industry & Societal problem & Entrepreneurship opportunity
  - c) Encourage Students to team up with Inter disciplinary representation to develop the Proof of Concepts (POC) for the proposed Solutions.
  - d) Encourage Students to participate and present their Ideas/Start-up models in various B-Plan Competitions/Events/ Workshops organized by other Lead institutes.

#### Events Planned

1. Conducting General Entrepreneurial Tendency Test for students, Staff for identification of dreamers and Dreamer Mentors
2. Organizing ice breaking sessions, motivational talks, interaction sessions with Alumni and successful entrepreneurs for students
3. To organize Workshops on Design Innovation, Problem Identification, Rapid Prototyping, Idea generation hackathons and encourage students to participate
4. Conducting activities through Idea Club, Innovation Club and Start-up Club
5. Conduct Mentor Training/FDP/EDP /capacity development Programs
6. Conduct GETT for student and faculty of other departments of the Institute to extend the base of the Cell

Conduct Inter-Department Interaction Sessions to identify Current Industry & Societal problem & Entrepreneurship opportunity

#### Report of activities of DEISUCCEED

1. Startup Cell is formed and core team is constituted.

Team Members	Designation	Discipline	Role	Email	Contact
DR. G.S. SAILESH BABU	Associate Professor	Electrical Engineering	Coordinator	<a href="mailto:babu.sailesh@gmail.com">babu.sailesh@gmail.com</a>	7060185804
DR. ASHOK YADAV	Assistant Professor	Mechanical Engineering	Member	<a href="mailto:ashok Yadav@gmail.com">ashok Yadav@gmail.com</a>	9412893447
ANURAG GUPTA	Assistant Professor	Mechanical Engineering	Member	<a href="mailto:deianuraggupta@gmail.com">deianuraggupta@gmail.com</a>	8979555250
K. PRITAM SATSANGI	Assistant Professor	Electrical Engineering	Member	<a href="mailto:pritamsk@gmail.com">pritamsk@gmail.com</a>	9412159166

PROF. PRAVEEN SAXENA	Professor	Accountancy & Law	Member	<a href="mailto:pravinsaxenadei@yahoo.co.in">pravinsaxenadei@yahoo.co.in</a>	9897136483
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- General Entrepreneurship Tendency Test (GETT) was conducted for about 400 B.Tech. students and about 50 dreamers were identified. Detailed List of dreamers is attached as Annexure 1.
- Four Motivational Lectures and Technical Lectures were organized

#### **Motivational Lectures Organized:**

- Lecture-cum-Interaction Session organized on 28th November, 2017 on "Career Opportunities for Engineering Students: is Entrepreneurship a Viable Option?" by **Drs. Ajay Sharma, CEO at ASR Ventures & President Rotary International Hague, Netherlands**
- Student Interaction Session organized on 8th December, 2017 on "Internship, Choices, Career", **Rajendra SPawar, Chairman & Managing Director, NIIT**

#### **Lecture-cum-interaction sessions Organized:**

- Lecture-cum-Interaction Session organized on 7th December, 2017 on "Jugaad Innovation" by **Navi Rajdou, Author, Jugaad Innovation**
- Lecture-cum-Interaction Session organized on 1st January, 2018 on "Self-powered and ultra-low-power circuits and system " by **Prof. Aatmesh Shrivastava, Department of Electrical and Computer Engineering, Northeastern University in Boston, MA, USA.**

Details are attached as Annexure 2.

- A two day workshop on Matlab and Simulink in Engineering Education was organized for B.Tech. students on 27-28 March, 2018 and experts from Industry delivered lectures. Details are attached as Annexure 3.
- A Campus Hackathon titled "**#buildwithDEI**" was organized from April 6 to April 8, 2018 to explore and address Societal problems. Details are provided as Annexure 4.

## **Annexure 1: Student Dreamers Identified**

Number of students who scored above 40 in Gen. Entrepreneurial Tendencies Test : 54

S.No	Roll No.	Name	Sem	Branch	Score			Contact
1.	154061	Aashi Gupta	6	Electrical	49	GN	F	9410832218
2.	126188	Devashish Chauhan	8	Electrical	47	GN	M	7983436218
3.	144101	Rupal Mittal	8	Electrical	47	GN	F	9359288589
4.	154172	Shubhra Tyagi	6	Mechanical	47	GN	F	9410003676
5.	154175	Stuti Agarwal	6	Electrical	47	GN	F	8791411592
6.	154156	Pratyush Priyadarshi	6	Mechanical	46	GN	M	7417631661
7.	164016	Divya Gupta	4	Civil	46	GN	F	9412750283
8.	144079	Manasvi Pourush	8	Electrical	45	GN	M	9412850139
9.	144034	Prateek Jain	8	Electrical	44	GN	M	9897766136
10.	146459	Shivani Sharma	6	Mechanical	44	GN	F	9458283650



11.	154065	Amit Kumar	6	Electrical	44	SC	M	9927719025
12.	154173	Shuchita Mahajan	6	Mechanical	44	GN	F	9997184284
13.	1700845	Aman Agarwal	2	Mechanical	44	GN	M	8410755787
14.	144085	Mehar Verma	8	Electrical	43	GN	F	9319053512
15.	154081	Isha Saxena	6	Electrical	43	GN	F	9720041666
16.	154177	Sumiran Barnwal	6	Mechanical	43	BC	F	08235357527
17.	164045	Sanket Upman	4	Civil	43	GN	M	7500112282
18.	164113	Nitish Singh	4	Electrical	43	SC	M	9411964642
19.	144026	Mohit Rajput	8	Civil	42	BC	M	9758191055
20.	144072	Komalchitt Juneja	8	Electrical	42	GN	F	8954808447
21.	144114	Vasim Ali	8	Electrical	42	BC	M	9926335955
22.	144191	Ankit Yadav	8	Footwear	42	BC	M	
23.	154150	Netrapal Singh	6	Mechanical	42	GN	M	7037315375
24.	154167	Sarita Rawat	6	Mechanical	42	ST	F	9412256434
25.	164074	Aditi Chaturvedi	4	Electrical	42	GN	F	9451074561
26.	164080	Ambika Bhardwaj	4	Electrical	42	GN	F	8439588085
27.	164096	Ishita Saraswat	4	Electrical	42	GN	F	9410251040
28.	164111	Mohit Kumar	4	Electrical	42	SC	M	8650269007
29.	1700897	Shivesh Vikramaditya	2	Mechanical	42	GN	M	8279557250
30.	1700900	Shubhangi	2	Mechanical	42	GN	F	9412169979
31.	136021	Kirti Mishra	8	Civil	41	GN	F	9528828916
32.	144032	Prakher Gupta	8	Civil	41	BC	M	9927094591
33.	144103	Sankalp Rai Bhalla	8	Electrical	41	GN	M	9997980777
34.	154014	Dishani Singhal	6	Civil	41	GN	F	9358509899
35.	154092	Mamta Khimyani	6	Electrical	41	GN	F	8445923069
36.	154157	Punarvasu Sharma	6	Mechanical	41	GN	M	8889025385
37.	164078	Aman Singhal	4	Electrical	41	GN	M	9897248233
38.	1700644	Kapil Srivastava	2	Civil	41	GN	M	9540063650
39.	1700737	Rishabh Singhal	2	Electrical	41	GN	M	9719290305
40.	1700854	Bhanu Pratap Saini	2	Mechanical	41	BC	M	9456635351
41.	144031	Poornima Mathur	8	Civil	40	GN	F	9927058269
42.	144050	Suyash Goyal	8	Civil	40	GN	M	9045871198
43.	144074	Kunal Kumar	8	Electrical	40	SC	M	8439259209
44.	144095	Prateek Badhautia	8	Electrical	40	BC	M	9536075818
45.	146757	Rajiv Kumar	6	Mechanical	40	BC	M	8979738641
46.	154110	Shivam Khandelwal	6	Electrical	40	GN	M	8650701033
47.	154131	Arvind Singh	6	Mechanical	40	SC	M	9045659512
48.	154178	Tarun Agarwal	6	Electrical	40	GN	M	9897001167
49.	156421	Sachin Yadav	4	Mechanical	40	BC	M	9639954962
50.	164089	Bharat Dubey	4	Electrical	40	GN	M	9411963363
51.	164231	Kamal Kishor	4	Mechanical	40	BC	M	8744972287
52.	1700741	Sanmukh Sinha	2	Electrical	40	GN	M	919718997901
53.	1700817	Sumit Kumar	2	Footwear	40	ST	M	8630402977
54.	1700901	Siddharth Jain	2	Mechanical	40	GN	M	9837026708

## Annexure 2: Lectures/talks Organized

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### Details of Motivational Lectures organized

Motivational Lecture-cum-Interaction Session organized a on 28<sup>th</sup> November, 2017 on  
**“Career Opportunities for Engineering Students: is Entrepreneurship a Viable Option?”**

*Drs. Ajay Sharma , CEO at ASR Ventures & President Rotary International Hague, Netherlands*

Ajay is accomplished Board member, international speaker, social entrepreneur, Impact investor and executive for business development in European, Asian and Middle-East markets. Before becoming independent investor and consultant, he worked in corporations like TechMahinda, Huawei, Alcatel-Lucent and Escotel. He studied Diploma in Electrical Engineering in 1993 in DEI. Ajay now holds Engineering, MBA and LLM and studied at universities like Harvard Business School, University-Liverpool, University-of-Bradford and DEI. Ajay speaks at multiple international forums and universities in technologies BLOCKCHAIN and Cyber security and entrepreneurship.



Ajay holds following positions and delivers values in world.

- CEO and Founder ASR Ventures – Invest in impact innovations
- Chief Regulatory and investments officer – TOBLOCKCHAIN (BLOCKCHAIN Powerhouse)
- President – Rotary Club The Hague Metropolitan (First English international club of Netherlands with 20 plus nationalities)
- Global Advisor and director– Sampoorna Global (Social enterprise- Augmenting menstrual hygiene for young girls)
- European Director– E2Labs– Critical Infrastructure Cybersecurity Solutions.
- Partner– Exasun (Innovative Solar panels)
- Partner– BSS Holland (Defense Security Solutions)
- Mentor in World Startup Factory

A Lecture-cum-Interaction Session was organized a on 28<sup>th</sup> November, 2017 on  
**“Career Opportunities for Engineering Students: is Entrepreneurship a Viable Option?”**

During the interaction, Mr. Ajay explained the importance of balanced outlook towards career opportunities that includes conventional Jobs as well as entrepreneurial opportunities. He cited his own experience and growth as an example to lay emphasis on the view that- jobs provide level growth but more security. On the other hand, entrepreneurial activities provide more growth opportunities although involve more risk factors.

He explained that the best compromise of the two options has to be person specific and each

individual must take his call on the basis of his comfort level. He also stressed on introducing guarded entrepreneurial opportunities in educational institutions to inculcate suitable mindset in the students without actually exposing them to the risk factors.

Students were motivated by speaker and hand fruitful interaction and an impromptu session on innovations that they want to convert into a Start-up.

Motivational lecture and Interaction Session organized a on 8<sup>th</sup> December, 2017 on  
**“Internship, Choices, Career”**

*Rajendra S Pawar*

*Chairman & Managing Director, NIIT Ltd.*

Rajendra S Pawar is the Chairman and Co-Founder of NIIT Group that encompasses NIIT Limited, a leading Global Talent Development Corporation, and NIIT Technologies Limited, the software and services arm. As a co-founder of the NIIT Group, Pawar has not only revolutionized the IT training industry, but is also recognized as a global technology thought leader.

As the Chairman of India's IT industry body- National Association of Software and Service Companies (NASSCOM), Pawar has led several ICT industry initiatives, giving voice to the sector's aspirations and goals. Earlier during 1990-92, as President of MAIT (Manufacturers' Association for Information Technology), Pawar integrated MAIT's activities with other leading industry associations in India.

A Fellow member of the Computer Society of India (CSI) and the Institution of Electronic and Telecommunication Engineers (IETE), Pawar was awarded an Honorary Doctoral Degree by Rajiv Gandhi Technical University (MP) in 2005.

### **Awards and Accomplishments**

- Acknowledging his contribution to the IT industry in India, Pawar has been awarded the country's prestigious civilian honour, **Padma Bhushan** by the President of India in 2011
- Pawar is a member of the Prime Minister's National Council on Skill Development and has served the Prime Minister's National Task Force (1998) commissioned to develop India into an IT Superpower
- An advisor to the Hunan Province of China, he has also been a member of PIAC (Presidential International Advisory Council) of the Government of South Africa for IT
- As a founding member of the International Business Council of the World Economic Forum, Pawar is deeply engaged in addressing issues of global significance
- Global Business Intelligence firm, Ernst & Young conferred Pawar with its prestigious "Master Entrepreneur of the Year" award, in 1999. He has also been named as the "IT Man of the Year" by IT industry journal, Dataquest
- Pawar has been awarded 'The Global India Splendor Award' on the occasion of the 60th year of Indian independence, for his work in developing human resource potential
- He has received 'Distinguished Alumnus Award' from IIT Delhi in 1995 and 'Madhav Award' from The Scindia School
- Pawar has also been honoured with the prestigious 'Nayudamma Award' in 2012, for his continued contribution to the IT industry in India

Mr. Pawar referred to historical developments in human society and how they resulted in agrarian,

scientific, industrial and information revolutions. He said that the current century is the period of knowledge revolution. The industrial revolution was driven by innovations that reduce, and if possible remove, human intervention, whereas the knowledge revolution is driven by products having human being as the centre of the theme. This resulted in decline of conventional job careers and germination of altogether new paradigms of jobs, entrepreneurial objectives and innovations.

He also explained that the current generation professionals has better opportunities to explore and take risks as their typical career is spanned over 70 – 80 years. He urged the students to take a plunge in whatever endeavour they deem suitable without worry as they have ample time to switch. The session ended with a prolonged interaction with students. The impromptu session was highly appreciated and enjoyed by the students

Lecture-cum-Interaction Session organized a on 7<sup>th</sup> December, 2017 on  
**"Jugaad Innovation"**

*Navi Rajdou*

*Author, Jugaad Innovation*

Radjou was born in India with French-American dual citizenship. He earned a diploma in technical studies (DEST) from the National Conservatory of Arts and Crafts (CNAM) in Paris, France and an MS degree in information systems from Ecole Centrale Paris. He started his career with IBM at its Toronto Software



Lab and eventually served as Vice President and Principal Analyst at Forrester Research, a US-based technology research and consulting firm. Till 2011, he served as the Executive Director of the Centre for India & Global Business at Judge Business School, University of Cambridge. Radjou is a Fellow at Judge Business School and a World Economic Forum (WEF) faculty member. He is a member of WEF's Global Future Council on Innovation & Entrepreneurship. For several consecutive years, he has served on the international panel of judges for The Economist's Innovation Awards. Navi also served as a judge for Fast Company's 2017 World Changing Ideas Awards.

Mr Rajdou presented the idea that with tighter budgets and dwindling natural resources, along with new technologies and environmentally conscious consumers, innovation with lesser inputs and greater impact the effective way is added as a new paradigm to business and social organizational models. With an estimated trillion-dollar global market for frugal products and potentially huge cost savings to be gained, frugal innovation is revolutionizing business and reshaping management thinking. He explained that amalgamation of disruptive technologies and innovation will result in to phenomenal results. His talk was appreciated by the audience.

Lecture-cum-Interaction Session organized a on 1<sup>st</sup> January, 2018 on  
**" Self-powered and ultra-low-power circuits and system "**

*Prof. Aatmesh Shrivastava*

*Department of Electrical and Computer Engineering, Northeastern University in Boston, MA, USA.*

Aatmesh Shrivastava did his BS in Electronics and Communications Engineering, Birla Institute of Technology, India in 2006 and PhD in Electrical Engineering, University of Virginia, Charlottesville in 2014.

He is an expert on Self-powered and ultra-low-power circuits and system; energy-harvesting and power-first system/computer architecture; internet-of-things; ultra- low power bio-medical and neural circuits and systems; exascale computing; high-reliability system design.

Atmesh delivered a talk on Self-powered and ultra-low-power circuits and system in which he discussed about technologies employed to reduce power requirements of circuits. He explained about issues that will crop up at ultra low powers and possible remedies that can be employed. He advised students about opportunities for pursuing higher studies abroad. He also encouraged the students for trying for Research Assistance in the US universities. The talk was well appreciated by all.

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## **Annexure 3: Two day Workshop on MATLAB & Simulink in Engineering Education**

Speakers:

1. Dheeraj Pandey ( B.tech , M.tech from IIT Bombay ) Math Works MATLAB
2. Akhilesh kumar ( M.tech from MMM Gaziabad ,B.tech from IMS Gaziabad) Design Tech Systems .

Total Number Of 2nd Year Students -45 & Final Year -30







## Annexure 4: Hackathon- #buildwithDEI

**Dates: April 6 - April 8, 2018 Total Students: 30 Teams: 7**

<b>Team Name</b>	<b>Team Members</b>	<b>Faculty</b>
Hackers	Divya Gupta Ayushi Pandey Anami Prasad Agam Singhal Priyanka Chauhan	Faculty of Engineering
Masterminds	Apar Singhal Akash Baranwal Tamanna Srivastava	Faculty of Engineering
Spartans	Shashank Shekhar Upadhyay Vikas Gaur Rohit Upadhyay Rishabh Singhal	Faculty of Engineering
Prohackers	Mukul Kaushik Shivam Singh Rahul Sharma Avinash Govind Kushwah	Faculty of Science
Freelancers	Shweta Kumari Khushboo Singh Divya Singh Kritika Gupta Shruti Jain	Faculty of Engineering
Badlaav	Aaditya Sharma Akhil Goel Chhavi Nagpal Ambika Bhardwaj Akanksha Agarwal	Faculty of Engineering
IOTians	Antas Jain Mohit Gautam Arpit Yadav	Faculty of Engineering

### **Expert**

Ms. Niti Prasad

- B.Sc. in Computer Science and minor in finance from **Michigan State University**.
- Assistant Vice President of IT Strategy at Synchray Financial.
- Teacher with Girls who Code.
- Member of Society of women Engineers.

### **Teacher Coordinator**

Mr. Amol Gupta, Assistant Professor, Faculty of Engineering, DEI.

**Judge** Dr. G.S. Sailesh Babu, Associate Professor, Faculty of Engineering, DEI.

### **Student Coordinator**

Ms. D. Arti, Final Year, B.Tech. in Electrical Engineering with specialization in Electronics

## Problem Statements



To resolve Exam paper leaking we rely on the honesty and judgment of individual people to disseminate the question papers and that in itself bears the key to the problem

The Education Board wants a solution where using technology this problem can be resolved



- QR code based encoding
- Mobile monitoring and verification system
- Enhanced security solutions
- Crowd-sourced whistle-blower solutions
- The solution needs to be practical and easy to implement in a national scale.

91% of the girls aged 10-18 years have experienced sexual harassment. Studies show that due to social oppression and fear of retaliation the reported number is far less than the real number.

We need a solution where victims of sexual harassment can safely report the crimes committed against them.

- Ensure personal safety
- Connects women to safety networks
- Crowd sourced complain system
- Awareness for violence against women

Non-communicable diseases include heart disease, stroke, most cancers, asthma, diabetes, chronic kidney disease and more. They are the leading cause of death in the world, representing over 60% of all deaths.

- Awareness Solutions
- Health Awareness Apps
- Fitness Apps and tools
- NCD Risk Tracking

Corruption is rampant in public procurement, in tax and customs collection and in regulatory authorities. Awards of public and private tenders are frequently marred by corruption allegations.

- Crowd-sourced solutions
- Beyond the scope of whistle blowing
- Can bring in the culprits under proper inspection
- Solutions that provide information related to corruption-prone transaction
- Make the public aware of the pitfalls

Overloaded or un-roadworthy vehicles, worsening road condition, blind contortions, lack of awareness of safe road use, poor traffic management and poor driver training are among many reasons for the high levels of road traffic accidents.

- Traffic safety awareness
- GPS enabled accident reporting app
- Black-spot mapping
- Crowd-sourced complain app against bad drivers
- personal accident safety apps
- Black-spot alarm
- Route declaration app





Students participating in Hackathon

### 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.)*

The following co-curricular and extra-curricular activities are conducted on regular basis apart from a compulsory credit based evaluation for all students. For each year of study there is a three credit course on CCA and is compulsory for all students. Students are evaluated on the basis of their participations in voluntary services, performance in games and sports, performance in literary activities, performance in cultural activities and their participation in District/Regional/State/National and International level events. In the past our students have excelled in Youth Parliament at National Level, Youth Festival in International Level and have also won several awards in various Technical Events. The following activities are regularly conducted in the Institute and/or participated by students outside the institute.

- NSS Camps and Cleanliness Drives throughout the year.
- Special Annual Winter Camp.
- Sports, Cultural, Literary Activities,
- NCC,
- Annual Intra-Faculty and Inter-Faculty Cultural and Sports Competitions,
- Inter-University Youth Festivals,
- Model Parliament etc.
- Bi-monthly DEI News,
- Annual DEI Magazine,
- Student technical Newsletter.
- Wall magazines.
- Yoga and Karate Classes for girls.
- Inter-University English Drama Festival,
- Inter-University Hindi Drama Festival,
- Celebration of National Days,
- Open day (31<sup>st</sup> January),
- Founder's Day (20<sup>th</sup> December)
- Bhakti Sangeet,
- Yoga Day,
- Science Day
- Engineers Day
- Army Flag Day
- Communal Harmony Day
- Value Day (on Deepavali)
- Student Systems Conference
- Sci-Hi
- Teacher's Day
- Special events are organised on birth anniversary of renowned persons

The Institute organizes Cultural Activities regularly throughout the year for the all-round development of students. In addition to the compulsory component, competitions are organized at Faculty, Institute and Inter-Institute levels in different categories viz. Literary, Fine Arts, Dance, Dramatics and Music.

Students of the Institute have participated in several Zonal and National Youth Festivals and have won laurels for the Institute.

The Institute organizes Youth Parliament competition under the aegis of the Ministry of Parliamentary Affairs (Govt. of India). DEI has the honour of being National Winner two times and Runners-up one time in the competition.

**The Co-curricular and Extra-curricular activities in which the students participated during last three years are as follows:**

S. No.	Item
A	Competitions at Faculty Level
B	Competitions at Institute Level
C	Competitions at Inter-Institute Level on the theme "Quality & Values in Education"
D	Hindi and English Drama Festivals (Inter-Institute)
E	Teachers' day
F	Faculty Level and Institute Level Annual Prize Distribution Functions
G	Winter Training Camp
H	Youth Festivals (Competitions outside the Institute)

The calendar of Cultural, Literary, Dance, Theatre and Fine Arts Activities for the sessions 2018-19, 2017-2018 and 2016-17 are as follows:

**A. COMPETITIONS AT FACULTY LEVEL**

S. No.	Event	2018-19	2017-18	2016-17
1	Essay <b>Writing</b> (Hindi/English)	27.8.2018	09.8.2017	24.8.2016
2	Poster making & Cartooning	28.8.2018	12.8.2017	27.8.2016
3	Elocution (Hindi)	29.8.2018	16.8.2017	31.8.2016
4	Elocution (English)	30.8.2018	19.8.2017	3.9.2016
5	Mime & Mimicry	31.8.2018	23.8.2017	7.9.2016

<b>6</b>	Debate (Hindi)	6.9.2018	26.8.2017	10.9.2016
<b>7</b>	Debate (English)	7.9.2018	30.8.2017	14.9.2016
<b>8</b>	Skit	10.9.2018	6.9.2017	17.9.2016
<b>9</b>	On the Spot Painting & Collage	11.9.2018	9.9.2017	21.9.2016
<b>10</b>	Clay Modelling & Rangoli	12.9.2018	9.10.2017	24.9.2016
<b>11</b>	General Knowledge Quiz (Written)	17.9.2018	13.9.2017	28.9.2016
<b>12</b>	Spot Photography & One Act Play (Hindi/ English)	18.9.2018	4.10.2017	1.10.2016
<b>13</b>	Light & Classical Vocal Solo	19.9.2018	7.10.2017	19.10.2016
<b>14</b>	Bhakti Sangeet	24.9.2018	11.10.2017	22.10.2016
<b>15</b>	Light Vocal (Group), Classical Instrumental Solo (Percussion & Non-Percussion), Folk Orchestra	25.9.2018	14.10.2017	26.10.2016
<b>16</b>	Theatrical Script Writing (H/E)	26.9.2018	18.10.2017	29.10.2016
<b>17</b>	Western Vocal (Solo & Group)	3.1.2019	21.10.2017	7.1.2017
<b>18</b>	Folk/Tribal Dance (Solo & Group), Classical Dance (Solo)	4.1.2019	6.1.2018	11.1.2017
<b>19</b>	Satirical Creative Writing (Hindi/English/ Sanskrit) & Translation (English-Sanskrit, Sanskrit-English)	5.1.2019	10.1.2018	14.1.2017
<b>20</b>	Poetry Recitation (Self Composed) – (Hindi/English/ Sanskrit)	10.1.2019	13.1.2018	18.1.2017
<b>21</b>	Antakshari (Hindi/English/ Sanskrit)	11.1.2019	17.1.2018	21.1.2017
<b>22</b>	Dumb Charades	12.1.2019	27.1.2018	25.1.2017
<b>23</b>	Crazy Ideas (Hindi/English)	14.1.2019	3.2.2018	28.1.2017
<b>24</b>	Street Play (Hindi/English)	16.1.2019	5.2.2018	8.2.2017
<b>25</b>	Youth Parliament	17.1.2019	7.2.2018	10.2.2017

**B. COMPETITIONS AT INSTITUTE LEVEL**

S. No.	Event	2018-19	2017-18	2016-17
1	<u>Inter-Faculty Competitions Phase-I</u> Elocution, Essay, Debate, GK Quiz-Oral, Mime, Mimicry, Fine Arts, Theatrical Script Writing, One Act Play (Hindi)	29.10.2018	29.10.2017	6.11.2016
2	<u>National Education Day</u> Competitions on the occasion of Birthday of Maulana Abul Kalam Azad	11.11.2018	11.11.2017	11.11.2016
3	<u>Inter-Faculty Competitions Phase-II</u> Indian & Western Music Items, Dance, Dumb Charades, Satirical Creative Writing, Translation, Poetry, Crazy Ideas, Street Play and Antakshari	17.2.2019	11.2.2018	19.2.2017

**C. COMPETITIONS AT INTER-INSTITUTE LEVEL ON THE THEME "QUALITY & VALUES IN EDUCATION"**

S. No.	Event	2018-19	2017-18	2016-17
1	Poster Making & Cartooning	8.9.2018	21.8.2017	16.9.2016
2	Bhakti Sangeet (Devotional Music)	27.10.2018	16.10.2017	26.9.2016
3	Elocution (Hindi/English) (Quality & Values Day )	7.11.2018	19.10.2017	30.10.2016

**D. INTER-INSTITUTE HINDI AND ENGLISH DRAMA FESTIVALS**

S. No.	Event	2018-19	2017-18	2016-17
1	English Drama Festival	12.11.2018 to 14.11.2018	10.11.2017 to 12.11.2017	10.11.2016 to 12.11.2016
2	Hindi Drama Festival	29.10.2018 to 31.10.2018	27.10.2017 to 29.10.2017	14.11.2016 to 16.11.2016

#### **E. TEACHERS' DAY**

Event	2018-19	2017-18	2016-17
Felicitation of Retired Teachers of DEI	5.9.2018	5.9.2017	5.9.2016

#### **F. FACULTY LEVEL AND INSTITUTE LEVEL ANNUAL PRIZE DISTRIBUTION FUNCTIONS**

Event	2018-19	2017-18	2016-17
Faculty Level Annual Function	4.2.2019	13.3.2018	27.2.2016
Institute Level Annual Function	2.3.2019	24.3.2018	9.3.2016

#### **G. WINTER TRAINING CAMP**

A number of students of the faculty of Engineering participated enthusiastically in the Winter Training camp organized in the Institute from 19<sup>th</sup> December 2017 to 25<sup>th</sup> December 2017. Some of them also played a key role as a member of the organizing team.

Event	2018-19	2017-18	2016-17
Winter Training camp	19.12.2018 to 24.12.2018	19.12.2018 to 24.12.2018	19.12.2018 to 24.12.2018

#### **H. YOUTH FESTIVALS**

Students of the Faculty of Engineering represented the Institute in various events in the North Zone Youth Festival and National Youth Festival during the last three sessions and bagged awards.

##### **Some of the awards won by the students of Faculty of Engineering**

##### **2018-19**

##### **Inter-University North Zone Youth Festival**

Western Instrumental (Non-percussion) – I

##### **Inter-University National Youth Festival**

Western Instrumental (Non-percussion) – II

##### **2016-17**

##### **Inter-University North Zone Youth Festival**

Instrumental Solo Non-percussion - III

##### **Inter-University National Youth Festival**

Instrumental Solo Non-percussion - III

### **2015-16**

#### **Inter-University Group Level Youth Parliament Competition**

Divyanshi Malhotra - III

Harpreet Kaur - IV

Disha Saxena - IV

#### **Inter-University National Youth Parliament Competition**

Harpreet Kaur - I

Disha Saxena - II

Divyanshi Malhotra III

#### **Inter-University North Zone Youth Festival**

Spot Photography) - I

#### **Inter-University National Youth Festival**

Spot Photography - II

### **NSS Activities**

The NSS unit of the Institute organizes a variety of programs/ campaign for making campus and surroundings clean and green. These programs are organized in Regular NSS Classes, One Day NSS Camps and Special Programs e.g., Seven Day NSS Camps. The highlights of these Programs are as follows.

1. The NSS Volunteers of the Institute enthusiastically participate in regular scheduled NSS classes organized for making campus and surroundings clean.
2. A number of activities under the NSS and Cleanliness drives are organized throughout the year. One week NSS camp is organized every year in the Institute during the month of December for the purpose of serving the society. During the camp, students perform several activities such as cleaning the Institute and nearby villages, awareness creation among the villagers about social evils and their eradication etc. A number of cultural and literary competitions are also conducted during the camps.
3. The NSS Wing of the Institute organizes One Day NSS Camps (compulsory for all first and second year students, enrolled as NSS Volunteers) for special cleaning drive. In these camps students make sincere efforts to make campus clean.
4. Special Tree Plantation Drive is organized during July – August every year to make campus and surroundings green.
5. All First Year NSS Volunteers, during Mid Semester Break (December every year) participate in Seven Day Special Camp. In these Camps they organize Special Cleaning Campaign to ensure Campus and surroundings clean.
6. The NSS Volunteers also participate in Special Cleaning drive under “Swacchh Rail Swacchh Bharat” at Agra Cantt Railway Station every year.
7. DEI under its NSS program holds **free Medical** and Assistance Camps for nearby Villages and People of Neighborhood Community every fortnight with the help of Dayalbagh Medical Relief Society.

During the Medical Camp, a program “**Hole in the Wall**” is conducted for the village children. In this program, village children are allowed to play with a computer and learn in a natural way. A mentor remains available for guidance. This program has become very popular in the nearby villages.

In these camps apart from free medical aid and other services, NSS Volunteers also organize Awareness Programs on various issues, e.g., Cleanliness (Swachhta), Health, Hygiene, Malnutrition, Sanitation, Pollution and Environmental issues, Social Issues, Family Planning, Literacy, Women Empowerment, Beti-Bachao-Beti-Padhao, Voting Rights, Ill-effects of Parthenium, Evils of Tobacco, Smoking, Drug Addiction, Critical health issues, e.g. Tuberculosis, AIDS, STD etc. through Discussion, Posters, Banners and Pamphlets.

### **Alumni Meet**

Faculty of engineering and alumni of the Institute jointly organize a silver jubilee reunion meet every year in the month of December/January. The alumni, teachers and students share their experience, knowledge and ideas.

### **Games**

The Institute organizes various sports and games at different levels. Students participate in various games such as Football, Hockey, Cricket, Volley ball, Basket Ball, Lawn Tennis, Table Tennis, Badminton, Cricket, Kho-Kho etc. Gymnastic facilities are available in Hostels. Games are the part of a compulsory core course of the Institute and therefore, slots are provided in the Time Table for Games and students compulsorily take part in these activities every week. Football practice starts in July and goes up to September. Cricket and Hockey practice is held from November to March. Volley Ball and Basket Ball are open throughout the year. Intra-Faculty and Inter-Faculty competitions are regularly organized in all games every year. Prizes and certificates are awarded to the winners on the Annual Day.

### **Sports**

All sports like races (100 m race, 200 m race, 400 m race, 800 m etc.), jumps (long jump, high jump, hop step & jump etc.) and throws (javelin throw, discuss throw, shot put etc.) are conducted every year. Sports competitions are held in during the period of December to February. Best performers of Intra-Faculty competitions represent the Faculty at the Institute level. The winners are awarded prizes on the annual sports day.

Basant Sports competitions are very popular. Final Basant Sports are held on the Basant Day every year with pomp and show.

### **National Unity Day**

National unity day is celebrated on 31<sup>st</sup> October. Various activities such as special lecture, debates, poster presentations, essay writing and others are performed on this occasion.

### **SadbhavnaDiwas**

The birthday of former prime minister Late Mr. Rajiv Gandhi is celebrated on 20<sup>th</sup> August every year as Sadbhavna Diwas. On this occasion oath taking ceremony is performed by ever person of the Faculty mentioning that “I will keep the humanity always on the topmost by neglecting the cast, religion, area and language”.

### **National Education day**

National Education Day is celebrated every year on 11<sup>th</sup> November in remembrance of first education minister Mr. Maulana Abul Kalam Azad. Various activities such as fine arts, debates, sketches etc. are performed on his life journey.

### **National Youth day**



The birthday of Revered Swami Vivekananda, 12<sup>th</sup> January, is celebrated as National Youth Day in the Faculty of engineering. The ideas, thoughts, visions etc. are discussed with the students. The students are also encouraged with the messages of Swami Vivekananda.

### **Founder's Day**

On the occasion of the birth anniversary of the founder of DEI, Revered Dr. M.B. Lal Sahab, Founder's Day is celebrated every year on 31<sup>st</sup> January. All the labs, workshops, departments are open for all including general public to witness the progress of the Institute in different areas. Also, on this occasion a photo cum poster exhibition is organized depicting the various general activities and special activities carried out.

### **Independence Day Celebrations**

15<sup>th</sup> August is celebrated as Independence Day. A variety of activities such cultural activities, social activities and others are performed. Students are also motivated by the telling them various stories of our freedom fighters.

### **Republic Day Celebrations**

26<sup>th</sup> January is celebrated as Republic Day. Several cultural activities and social activities are performed. Students are also informed with the visions of the makers of our Constitution.

### **Hindi Diwas**

Hindi Diwas is celebrated on 14<sup>th</sup> September every year in the Institute. Various activities such as poetry recitation, prose recitation, essay writing, plays etc. are performed on this occasion.

### **Earn while you learn**

Economically weaker students of the institute are encouraged by awarding free ships/scholarships from the '**Earn while you learn scheme**' of the institution implemented from the year 2014. The needy and interested students are given an opportunity to work in the institute at various places in library, automobile, canteen, hostels, accounts section, administrative sections, solar system maintenance etc. part time and paid basis. Students are engaged in conducting Lab. classes and paid conveyance charges depending upon the number of hours spent. Institution provides higher education to all with disabilities at all levels from U.G to Ph.D. Mildly differently-abled are admitted along with the regular students without any discrimination.

### **Work in Dayalbagh Agricultural Farms**

Students are made to till the soil by working in the agricultural fields during the Agriculture Operations class (a compulsory core course). This certainly makes them understand the importance of "dignity of labor" and helps in imbibing in them the feeling of "service to humanity".

### **DEI Magazine and News Letter**

Bi-monthly DEI News Letter makes everyone aware of the activities and the progress going on in the Institute. Annual DEI Magazine gives opportunity to the students to bring out their literary talent and express their ideas on one or the other topic.

### **Green eco-friendly Campus**

DEI has become an eco-University by full solar power and other eco-friendly acts which avoid pollution in all its forms.

### **Energy conservation**

There is no culture of installing ACs in the Office rooms. The buildings are designed to be airy and cool to reduce the need for Air conditioning. Energy efficient lighting is used every where including Hostels. Cycling is preferred in the campus. Seven Solar power Generation plants of total capacity of 700 kWp have been installed meeting the entire needs of the campus, thus making DEI to be a Green Campus. Solar Cooking and Solar Hot water facilities have been provided in the Hostels.

### **Use of Renewable Energy**

Institute has a policy to make the campus eco-friendly and accordingly installed Solar Power Plants and Solar cooking to avoid dependence on fossil fuels. Students have designed and built a Solar van which is used for commuting of staff. Institute Mechanical Engineering Dept is engaged in Research on Biodiesel. Chemistry Dept of DEI is chosen as a member of Solar Energy mission of Government of India.

### **Water Harvesting**

Extensive water harvesting facilities have been installed in the campus. The Institute bore wells get water at 100 to 120 ft depth while general level in Agra lies between 200 ft. to 250 ft.

### **Innovative e-waste management**

The Institute has come up with several ideas to utilize e-waste by converting it into some Art objects.

### **Efforts for Carbon Neutrality**

Campus has drastically reduced Carbon emissions. The waste leaves are not burnt but are converted into organic fertilizer. The solar photo voltaic panels used in the Solar power plant of DEI, Solar Hot water and cooking in Hostels, Development of Bio-fertilizers, Bio-fuels, Solar driven vehicles, Research on Hydrogen fuels are some of the contributions of this academic Institution to teach the public methods to attain Carbon neutrality at the national level.

### **Plantation**

Campus is made Green by extensive plantation by NSS volunteers. Institute works in collaboration with the NGO, "SPHEEHA" which is committed to preserve the Ecology and Heritage of Agra region. DEI is collaborating with 'SPHEEHA' on projects aimed at preserving the water table in Agra. SPHEEHA also helps in planting Trees in DEI Campus

### **Workshops**

The Centre for Quantum and Nano-Systems, Centre for Core Courses and the Centre for Consciousness Studies regularly organize workshops and seminars for the benefit of faculty and students.

<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 Statement of the Institute**

To provide education, more education, education made perfect, which is the only “panacea for our country’s ills and evils”. DEI aims to serve as an exemplary model of education, covering the entire spectrum of knowledge and wisdom, to selflessly serve mankind by evolving a race of supermen, who possess the virtues to resolve the grave global challenges and establish a more humane and enlightened society.

#### **Mission Statement of the Institute**

The mission objective of DEI is to provide value-based, comprehensive and inter-disciplinary education to evolve a ‘complete person’, i.e., a well-rounded total quality person, whose hallmarks are intellectual strength, emotional maturity, truthfulness, simple living, high moral character, scientific temper, general awareness, interdisciplinary outlook and one who discharges duties and obligations and is capable of giving a fuller response to social and environmental challenges.

### **10.1.2. Availability of the Institutional Strategic Plan and its Effective Implementation and Monitoring (25)**

DEI has formulated a comprehensive and progressive two-decade strategic plan (VISION-2031), in tune with its Vision and Mission, to become a leading teaching-cum-research Institute through an exemplary system of education, after an exhaustive self-examination by all its stakeholders, including external experts from prestigious institutes in India and abroad.

DEI has been awarded the ISO 9001:2015 certification whose scope is provision for academic administration, management and administrative support services for conducting educational programmes with the award of credits and grades. Detailed quality manuals mapping processes with key performance indicators have been prepared and deployed. Certification for ISO:2100 has already been initiated.

A desirable outcome of the strategic plan is the Infusion of ICT into all aspects of Education. DEI successfully implemented this important aspect of the Strategic Plan through the following initiatives:

1. Vidyaprasar: The DEI Open Course Portal, an on-line collaborative learning, live web cast and content management system.
2. e-DEI-de (e-DEI distance education): A non-profit modular on-line mentored programme offering a variety of short 2-4 week Certificate Courses in diverse subject areas, to provide, (i) opportunities for working professionals and (ii) for skill-set enhancement and live training.
3. Student Centred Online Teaching-Learning System (SCOTLS): Simultaneous online interactive teaching in diverse locations, as part of B.Ed. and M.Ed. internship programmes.

4. SWAYAM@DEI: A Postgraduate Course in Visual Arts that includes portrait and landscape studies.
5. Digitization of all courses by Department of Management: for professional courses such as BBA and MBA.
6. Virtual Laboratories: Establishment of 11 remote triggered labs. in Physical and Chemical Sciences, Electrical, Mechanical and Electronics and Communication Engineering.
7. Quantum and Nano Computing Virtual Centre: A multidisciplinary centre in partnership with IIT Kanpur, IIT Delhi and IIT Madras, besides several international collaborators that include, Univ. of Waterloo, Canada and Univ. of Maryland, College Park, USA.
8. Educational Resource Planning (EDRP) Software for Admission, Course Registration, Examination and Result Processing, Optical Mark Recognition (OMR) Evaluation, Online Quiz and Project Planning.
9. Library Automation and e-journal services.
10. Dayalbagh Adivasi Education (Academics, Vocation and Entrepreneurship) at Rajaborari Tribal Area in M.P.: Established basic infrastructure, communication network to provide education and socio-economic initiatives to empower the underprivileged. Virtual classes integrated with LMS accessed by school students on mobile devices such as tablets.
11. Information-Communication-Neuro-Cognitive-) Technologies Assisted Language Lab, (I-C-N-C-) Tall: for teaching and learning and interdisciplinary research in the realms of consciousness, literature and languages.
12. 2G to 5G and Internet of Things Laboratories to groom graduate students in emerging technologies in communication.
13. Hole in the Wall: To spread computer literacy among village children by providing access to multimedia computers.
14. Telemedicine: providing expert medical opinion via e-consultation integrated with medical camps at remote locations: Rajaborari Forest Area, MP and Murar in District Buxar, Bihar.  
ICT-enabled Vocational Courses and Translation to Regional Languages: The Center for Applied Rural Technology (CART) designed and developed courses in English and translated into Hindi and Tamil.

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

List the governing, senate, and all other academic and administrative bodies; their memberships, functions, and responsibilities; frequency of the meetings; and attendance therein, in a tabular form. A few sample minutes of the meetings and action-taken reports should be annexed.

The published rules including service rules, policies and procedures; year of publication shall be listed. Also state the extent of awareness among the employees/students.

DEI has a well-defined organizational structure to ensure efficient governance and management through effective decision making. The main bodies that have been constituted under its Memorandum of Association to formulate and execute policies and strategic plans based on its Vision and Mission and manage all activities of the Institute are the following:

1. *The Primary Body*
2. *The General Body*
3. *Board of Management (Governing Body)*
4. *The Holding Trustees*
5. *Planning & Monitoring Board*
6. *The Academic Council*

7. *The Faculty Boards*
8. *The Finance Committee*
9. *The Managing Council for Technical Educational Institutions*
10. *The Managing Council for General Educational Institutions*

The Institute MoA and Bye-Laws provide policy framework and direction for the functioning of the Institute. The roles and responsibilities of various bodies are also clearly defined to ensure transparency and accountability to achieve its objectives. Details are presented in *Annexure - Members of committees*

#### **1. Planning & Review**

- *Institute IQAC*
- *Planning & Monitoring Board*
- *Finance Committee*
- *Building Committee*
- *AAAC*

#### **2. Admission**

- *Prospectus Committee*
- *Central Admissions Committee*
- *Arbitration Committee*

#### **3. Course Curriculum Development**

- *Department Board of Studies (BoS)*
- *Faculty Board of Studies*
- *Academic Council*
- *Standing Committee of Academic Council*

#### **4. Examinations**

- *Panel of Examiners*
- *Institute and Faculty Examination Committees*
- *Results Committee*
- *Grade Moderation Committee*

#### **5. Research**

- *Department Research Advisory Committee (RAC)*
- *Research Degree Committee*
- *Institute R & D Committee*

#### **6. Awards and Scholarship**

- *Distinguished Alumni Award Committee*
- *Founder's Medal Committee*

#### **7. Placement**

- *Training and Placement Cell*
- *Faculty Placement Cell*
- *Alumni Placement Assistance Cell*

#### **8. Finance**

- *University IQAC*
- *Finance Committee*
- *Executive Committee*

## **9. Discipline**

- *Anti-Ragging Committee*
- *Faculty Discipline Committee*
- *Faculty Proctorial Committee*
- *Proctorial Board*
- *Institute Discipline Committee*

## **10. Grievance**

- *Grievance Redressal Committee*
- *Harassment of Women at Workplace Committee*

## **11. Cultural Activities**

- *Faculty and Institute Cultural Committees*

## **12. Sports**

- *Faculty and Institute Sports Committees*

## **13. Core Course Advisory Committee**

## **14. NSS**

- *Faculty and Institute NSS Committees*
- *Scouting and Guiding Committee*

## **15. Library Committee**

- *Institute and Faculty Library Committees*

In addition, each Faculty has a number of sub-committees and groups including students and staff members for carrying out various activities to ensure efficient functioning through decentralized management. External expert members are part of all-important bodies to provide an unbiased broader perspective, transparency and experience. DEI follows all rules and regulations concerning service, career advancement, research promotion, staff welfare and grievance redressal as laid down by various statutory regulatory authorities, such as, MHRD, UGC, AICTE, CoA and NCTE. The Institute accords due recognition to the achievements of staff and students with suitable incentives.

DEI is an inclusive organization that accepts diversity and inclusion as a way of life. Students and staff represent varied cultures, traditions, beliefs, languages, and lifestyles and work in harmony. The healthy work culture, extensive involvement of its members in various activities and organizational setup ensures timely redressal of grievances if any, at an early stage itself.

It is a matter of great pride that in its 37 years of existence, the Institute has been successful in this endeavour, has a very high retention of staff members and has had no disruptions in its academic calendar. The General Body and Planning and Monitoring Board meet at least once a

year, but more often as and when required, Finance Committee twice a year, Governing Body Meetings are held more than six times a year and the Academic Council, and Board of Studies at least three times a year for taking important academic decisions. A sample minutes of meetings are attached in *Annexure - Minutes of Meetings*

The dates of various Governing Body Meetings of the Institute held is given below:

2014	2015	2016	2017	2018	2019
8.3.2014	30.3.2015	5.3.2016	11.1.2017	27.1.2018	10.1.2019
3.5.2014	25.5.2015	20.5.2016	4.3.2017	19.3.2018	
23.8.2014	22.8.2015	30.7.2016	29.3.2017	20.4.2018	
1.11.2014	26.9.2015	19.9.2016	15.5.2017	31.7.2018	
27.12.2014	27.11.2015	25.10.2016	29.6.2017	10.11.2018	
			20.7.2017 (by Circ.)		
			16.9.2017		
			2.11.2017		

#### **10.1.4. 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.

#### **Grievance Committee**

The Grievance Committee of the Institute shall comprise the following Members with immediate effect:-

1. Dean, Faculty of Arts
2. Dean, Faculty of Commerce
3. Dean, Faculty of Education
4. Dean, Faculty of Engineering
5. Dean, Faculty of Science
6. Dean, Faculty of Social Sciences
7. Principal, DEI Technical College
8. Principal, DEI PV Girls' Intermediate College
9. Principal, REI Intermediate College
10. Prof. K. Shanti Swarup, Dean of Student Affairs--- Convener

Students and staff members of the Institute who feel aggrieved on any account may address their grievances either through the concerned Head of the Department/Dean/Principal or directly to the Convener of the Grievance Committee. The Committee will send its recommendations to the Institute (Registrar) for appropriate action.

The institution has a Grievance committee for timely redressal of the student grievances relating to infrastructural facilities, academics and all other needs. The Dean of Student Affairs is the Nodal Officer for the Grievance Committee. At the Department level the student grievances are sorted out in an informal way by the involvement of the faculty and the student representatives. The Students committee elected every year takes part in Redressal of student issues. The Dean, Student affairs works closely with the Student Council members on such situations to guide them. The Appeals Committee in the Examination Section looks into the appeals made by the students about aspects related to examination and evaluation. Issues related to hostel accommodation and related aspects are addressed by the student elect of the hostel in coordination with the warden. Transparency and smooth functioning of the system nullifies situations of complaints. If ever they occur, they are addressed immediately. Periodical Tutor – ward meeting ensures problem solving at immediate student level.

‘SC/ST complaints’ portal in the Institution website specially caters to the grievance of reserved community. Online students’ grievance cell has been created so that students can directly send their grievances online to the Nodal Officer. There are no grievance cases registered during this assessment period.

The Grievance Committee of the Faculty is given below:-

1. Prof. Rahul Swarup Sharma; Chief Proctor
2. Prof. C. Patvardhan
3. Prof. D. K. Chaturvedi
4. Prof. V Soami Das
5. Prof. D. Bhagwan Das
6. Prof. D. G. Rao
7. Sh. K. Janardhan
8. Ms. Karishma Yadav
9. Prof. Vibha Rani Satsangi
10. Prof. Gur Pyari

Students and staff members of the Institute who feel aggrieved on any account may address their grievances either through the concerned Head of the Department/Dean or directly to the Convener of the Grievance Committee. The Committee will send its recommendations to the Institute (Registrar) for appropriate action. The institution has an Grievance committee for timely redressal of the student grievances relating to infrastructural facilities, academics and all other needs. The Dean of Student Affairs is the Nodal Officer for the Grievance Committee.

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directly send their grievances online to the Nodal Officer. There are no grievance cases registered during this assessment period.

#### **10.1.5. 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.

The institute has well established Financial Rules in accordance with GFR-2017 and are given below:

##### **(i) General**

- a. These rules cover all matters relating to the finances of the Institute including Non-University Educational Institutions, other than financial matters already covered by existing bye-laws, viz. bye-law No. 12 (Procedure for writing off of the unserviceable/obsolete articles) and No. 18 (Provident Fund).
- b. These rules should be read subject to the provisions of the Memorandum of Association and the Rules of the Institute, the directions of the Governing Body, and the administrative instructions issued by the authorities of the Institute from time to time.
- c. Unless otherwise provided, the powers delegated to the various authorities and functionaries in Appendix-I shall not be delegated further without the express authority of the Governing Body.
- d. The exercise of financial powers by the various functionaries of Faculties and Non-university educational institutions shall be subject to the budgetary allocations made under the relevant heads of expenditure and no expenditure in excess of such allocations shall be incurred without prior sanction of the Director within the limits laid down in Clause (viii)(b).
- e. All expenditure under the various grants is subject to the guidelines and other directions received from the grant-giving agencies.
- f. The powers delegated to a lower authority/functionary shall be automatically exercisable by the higher authority/ functionary.
- g. No powers of expenditure delegated to any functionary shall be exercised by it in its own favour.

##### **(ii) Funds**

The funds of the Institute shall consist of:

- a. grants received from the University Grants Commission and Central and State Governments,
- b. fees from students,
- c. subscriptions and donations from individuals, trusts, societies and other bodies,
- d. income from investments,
- e. miscellaneous income and receipts, and

- f. borrowings and loans.

**(iii) Receipts**

- a. All amounts due to the Institute shall be received by the staff of the Accounts Department as authorised by the Treasurer.
- b. Cheques, Demand Drafts and Postal Orders etc., received shall be examined by the Assistant Registrar (Accounts)/ Internal Auditor, before being lodged with the bank, to see that they are in order in all respects.
- c. All amounts received shall be deposited in the bank without delay the same day or latest by the next working day.
- d. Pay-in-slips for monies, cheques, etc., to be deposited in the bank shall be prepared by the Accounts Department staff and entered on the receipt side of the Cash Book. The entry shall be attested by the Assistant Registrar (Accounts) by reference to the counterfoil returned by the bank duly stamped, and the credit in the bank account watched through the bank statement. Delay in collection of over 3 days in respect of local cheques, demand drafts etc., and over a fortnight in respect of outstation cheques, demand drafts, etc., shall be immediately enquired into.
- e. Official receipts for amounts above Rs. 1,000/- shall be signed by the Treasurer/Registrar. Receipts for amounts not exceeding Rs. 1,000/- may be signed by the Assistant Registrar (Accounts) and those for amount not exceeding Rs.100/= may be signed by the Accounts Department staff as authorised by the Treasurer.

**(iv) Payments**

- a. No payment shall be made unless-
  - (1) there is a budget provision or a grant has been received for meeting the expenditure, and
  - (2) the expenditure has been authorised by the proper authority as per statement of Delegation of Financial Powers (Appendix I).
- b. Bills and other vouchers presented for payment shall be examined by the Assistant Registrar (Accounts)/Internal Auditor to see that these have pay order mentioning the amount in words and figures, and are otherwise in order in all respects.
- c. All payments other than those made out of imprest money shall normally be made by crossed 'account payee' cheques/bank drafts after the relative bills, vouchers have been pre-checked by the Assistant Registrar (Accounts)/ Internal Auditor. Normally all salaries shall be paid by bank transfer to the accounts of the payees.
- d. Each cheque issued shall be entered in the Cash Book on payment side and signed as per details given under clause (vi) Banking Operations.
- e. Each voucher shall be stamped "paid by cheque no. \_\_\_\_\_ dated \_\_\_\_ for Rs. \_\_\_\_" and shall be passed by one of the officers signing the cheques.
- f. Each voucher shall be given a serial number with an identifying code. All vouchers shall be filed along with their receipts in chronological order.
- g. All entries on the payment side of the Cash Book shall be attested by the Assistant

Registrar (Accounts) on the day of issue of the cheques and all cheques issued shall be accounted for in the Cash Book at the end of the day.

h. The Assistant Registrar (Accounts) shall on each day of transaction verify the entries in the Cash Books and check their totals.

i. The Treasurer shall verify the Cash Book balances as at the end of each month by reference to the Bank reconciliation statement.

**(v) Accounts Books**

a. Proper books of accounts shall be kept with respect to:

- (1) all sums of money received and expenditure incurred, and
- (2) the assets and liabilities of the Institute.

b. The books/registers to be maintained are listed in Appendix- II.

c. All Cash Book entries and/or totals shall be posted in the Ledger under the appropriate heads at the end of each month.

d. All credit and adjustment transactions shall be posted in the Cash Book on the day of the transactions.

e. At the end of each month, the following statements shall be prepared by the Accounts Department staff, checked by the Assistant Registrar (Accounts) and submitted to the Treasurer:

- (1) Statements of staff salaries and Provident Fund deductions to be sent to the bank.
- (2) Statement of staff premiums to be sent to Life Insurance Corporation.
- (3) Statement of staff 'Cumulative Time Deposits' to be sent to the Post Office.
- (4) Monthly return of tax deducted at source from staff salaries to be submitted to Income Tax Officer.
- (5) Bank reconciliation statement.
- (6) Trial Balance and a progressive statement of income and expenditure.

f. The books of accounts shall be closed at the end of each financial year, that is 31st March.

**(vi) Banking operations**

a. Bank accounts shall be opened under the authority of the Governing Body, which will also prescribe the procedure for the operations thereon.

b. All bank accounts of the Institute shall be operated by the Treasurer, (or the Assistant Registrar (Accounts) for amounts not exceeding Rs. 1,000/-) jointly with the Registrar (or the Assistant Registrar (Administration) for amounts not exceeding Rs. 1,000/-) or the Director. (GBR-14 dated 1.11.2014).

c. Signature of any one of the authorised persons shall be sufficient for the purpose of endorsement of negotiable instruments paid into the bank account of the Institute, including non-university educational institutions, for collection or discount or negotiation by the bank.

**(vii) Annual Accounts and Budget Estimates**

- a. The Treasurer will be responsible for the preparation of the Institute's annual accounts and budget estimates and for their presentation to the Governing Body after these have been considered by the Finance Committee. In the case of non-university educational institutions, the annual accounts and the budget estimates will first be considered by the respective Managing Council before submission to the Finance Committee.
- b. The following budget calendar shall be followed:
  - (1) Deans/Principals shall prepare and submit to the Treasurer by the end of August each year the revised estimates for the year and budget estimates for the following year for their respective Faculties/ Institutions in the form prescribed by the Treasurer.
  - (2) Estimates to be placed before Finance Committee by 30th September.
  - (3) Estimates to be placed before Governing body by 15th October.
  - (4) Estimates to be submitted to Government/U.G.C. by 31st October.
- c. No expenditure, other than that provided in the budget, shall be incurred by the Institute without the prior approval of the Finance Committee.
- d. The budget is not to be taken as any sanction or authority in the matter of seniority, pay and allowances or in any matter requiring separate administrative and/or financial sanction.
- e. If during a financial year any scheme not included in the budget is sanctioned by the Government or University Grants Commission, it shall be reported to the Finance Committee and Governing Body at their next meeting.
- f. The Finance Committee shall fix the limits of the total recurring and the total non-recurring expenditure for the year, based on the income and resources of the Institute including those of non-university educational institutions. No expenditure shall be incurred by the Institute in excess of the limits so fixed, without the prior approval of the Finance Committee and the Governing Body.

**(viii) Appropriation and Re-appropriation**

- a. Based on the experience of last five years, amounts should be so appropriated to the various heads in the budget that there may not normally be any need for re-appropriation (i.e. transfer of funds from one head of expenditure to another) beyond 10 percent.
- b. Re-appropriation of funds from one head to another to the extent of 10% or Rs. 10,000/- (GBR-8 dated 6.4.90) whichever is more, may be sanctioned by the Director on the recommendation of the Treasurer. Re-appropriation of funds beyond this limit shall require the approval of the Governing Body.
- c. Re-appropriation of funds for expenditure on any new item shall require the prior sanction of the Governing Body.
- d. A statement showing the original allotments under the various heads of expenditure in the budget, as modified subsequently by re-appropriations sanctioned by the competent authority, actual expenditure up to January 31 and estimates for the remaining months of the financial year, shall be submitted to the Governing Body in February/March each year.

**(ix) Audit of Accounts**

Arrangements shall be made by the Institute for the yearly audit of the accounts of the Institute including non-university educational institutions by a Chartered Accountant.

**(x) Investments**

- a. All investments shall be held in the name of the Institute and relative receipts, documents, etc. kept in the custody of the Treasurer/Assistant Registrar (Accounts).
- b. Funds not required for immediate disbursal shall be deposited in short-term deposits/saving bank accounts. Interest earned thereon shall be credited to revenue of the Institute.

**(xi) Borrowings**

- a. The Institute shall not borrow any money without the prior sanction of the Governing Body.
- b. Temporary overdrafts from the bank or transfers of funds from one account to the other for payment of salaries or making urgent payments may be authorised by the Director on the recommendation of the Treasurer. Such overdrafts and transfers shall be reported to the Governing Body at its next meeting and adjusted as early as possible .

**(xii) Custody and Accounts of Stocks/Stores**

- a. Stocks/Stores shall be kept in the custody of officials duly authorised by the Dean/Principal/Registrar in the case of C.A.O. In addition, a permanent register will be maintained at the Central Administrative Office for non-consumable items costing Rs. 1,000/- or more.
- b. Proper accounts of Stocks/Stores shall be maintained to prevent losses through theft, fraud or otherwise and to make it possible at any time to check the actual balance with the book balance.
- c. Separate accounts shall be kept for:
  - (1) consumable stores
  - (2) other assets like buildings, plant, machinery, equipment, furniture, fixtures, etc.
- d. Receipts and issues of stores shall be entered in the Stock Register without delay, both quantities and values shall be shown in the accounts, and a balance struck immediately.
- e. Stores shall not be held in excess of the requirements of a reasonable period.
- f. Stores shall be inspected atleast once a month by an official authorised by the Registrar, the Dean or the Principal, as the case may be.
- g. Physical verification of Stocks/Stores shall be made at least once in a year latest by 31 August. The verification shall be conducted by a responsible official conversant with the classification, nomenclature etc. of the particular class of stocks/stores to be verified, to be nominated by the Director, the Dean or the Principal, as the case may be. The verifying officer shall submit his report to the Director within fifteen days after completion of the verification.
- h. Losses due to theft and fraud, and damage due to neglect or any other causes shall be immediately reported by the concerned official and/or the verifying official to the Director, the Dean, or the Principal, as the case may be.

- i. The previous sanction of the competent authority shall be obtained before writing of the losses stated in (h) above.

**(xiii) Miscellaneous**

- a. Payment of salaries to staff shall not be made earlier than the last working day of the month, except on special occasions with the written permission of the Director.
- b. Members of staff handling cash/stores/other valuables shall be covered by a fidelity guarantee policy taken out by the Institute in their names.

**STATEMENT OF DELEGATION OF FINANCIAL POWERS**

Item No.	Nature of powers	Authority empowered	Extent of Delegation
<b>I. <u>CIVIL WORKS</u></b>			
<b>A. <u>Civil Works- Major</u> (above Rs.1,00,000/-)</b>			
1.	Administrative approval of all new civil works or major additions to existing ones; setting of financial limits for all such works.	Governing Body	Full powers
2.	Sanction of excess expenditure over estimates beyond 25% (GBR-7/7.8.2010) of approved civil works or major additions to the existing ones.	-do-	-do-
3.	Technical sanction of the detailed plans and estimates of new building; unless decided otherwise by the Building Committee, the schedule of rates as prescribed by the CPWD for the time in force shall be followed in preparing the estimates for the Institute's work, and where the schedule does not make any mention of rates, the Building Committee shall fix them.	Building Committee	-do-
4.	Approval of the construction of new buildings and alterations to existing buildings and inviting and approval of tenders for the purpose.	-do-	-do-
5.	Recommending to the Governing Body for sanction of expenditure incidental to the execution of each work, subject to the allotment made for it by the Governing Body.	-do-	-do-
6.	Sanction of day to day expenditure incidental to the execution of each work.	Director	-do-
<b>B. <u>CIVIL WORKS – MINOR</u> (Upto Rs.1,00,000/-)</b>			
7.	Administrative, technical and financial approval of all minor works and repairs to buildings, roads, paths etc. and sanction of day-to-day expenditure.	Director	Upto Rs.1,00,000 /-
<b>C. <u>CIVIL WORKS – MINOR</u></b>			
8.	Repairs and maintenance of buildings, roads, paths etc. including sanitary and	Dean/ Principal/	Upto Rs.5000/-

		electrical works.	Registrar Head of Dept./ Incharge of Centre	Upto Rs.2,500/-
D.	<u>CIVIL WORKS – GENERAL</u>			
	9.	Repayment of security deposits and earnest money of contractors.	Director	Full Powers

## II. PURCHASES

Every authority delegated powers for purchasing/procurement of goods shall have the responsibility and accountability to bring efficiency, economy, transparency in matters of purchase and for fair and equitable treatment of suppliers. The person authorised to purchase goods should satisfy himself that the price is reasonable and consistent with the quality required.

### Procedure for Purchase of Goods

#### (i) Purchase of goods without quotation:

Purchase of goods upto the value of Rs.15,000/- only on each occasion may be made without inviting quotations or bids on the basis of a certificate to be recorded by the Competent Authority in the following format:-

“I..... am personally satisfied that these goods purchased are of the requisite quality and specification and have been purchased from a reliable supplier at a reasonable price.”

#### (ii) Purchase of goods by a Purchase Committee:-

Purchase of goods costing above **Rs.15,000/-** and upto **Rs.1.00 lac** only on each occasion may be made on the recommendations of the Purchase Committee/Equipment Committee which will ascertain the reasonableness of rate, quality and specifications and identify the appropriate supplier. Quotations should be obtained from firms which are registered with Trade Tax Department and under no circumstances from general order supplier. Before recommending placement of the purchase order, the members of the committee will jointly record a certificate as under:-

“Certified that we ....., the members of Purchase Committee/Equipment Committee are jointly and individually satisfied that the goods recommended for purchase are of requisite specification and quality, priced at the prevailing market rate and the supplier recommended is reliable and competent to supply the goods in question.”

#### (iii) For purchase of goods costing more than **Rs.1.00 lac** and upto **Rs.25.00 lacs** Limited Tender (direct invitation to a limited number of firms) method is to be followed.

Limited Tender Enquiry should be issued to past successful suppliers plus all other known manufacturers, sole selling agent, authorised dealers whose details should be ascertained from Trade Directories, Internet, etc. Copies of enquiry should be sent directly by speed post/registered post/courier/e-mail to firms. Tenders shall be opened in the presence of equipment/purchase committee.

#### (iv) For Purchase of goods costing **Rs.25.00 lacs** and above:-

Advertised Tender Enquiry should be used for procurement of goods. It may also be notified on the web site. Ordinarily, the minimum time to be allowed for submission of bids should be three

weeks from the date of publication of the tender notice. Where bids are also obtained from abroad, the minimum period should be kept as four weeks for both domestic & foreign bidders. Advertisement should be given in atleast one national daily having wide circulation.

Provided that purchase through Limited Tender Enquiry may be adopted even where the estimated value of the goods to be purchased is more than Rs.25.00 lacs in the following circumstances:-

- (a) The Director certifies that the demand is urgent and the purchase not through Advertised Tender Enquiry is justified in view of urgency. The nature of urgency and reasons as to why the procurement could not be anticipated should be recorded.
- (b) There are sufficient reasons, to be recorded in writing by the Director indicating that it will not be in the interest of the Institute to procure the goods through Advertised Tender Enquiry.
- (c) The sources of supply are definitely known and possibility of fresh source(s) beyond those being tapped, is remote.

10.	Purchase/hire of Equipment, Furniture and Fixtures:-
Equipment/ Purchase Committee	Full powers provided that in the case of a single item costing above Rs.30,000/- the prior approval of the Governing Body would be necessary.
Director	A single item costing up to Rs.20,000/- and single order not exceeding Rs.1,00,000/-
Dean/ Treasurer/ Registrar	A single item costing up to Rs.12,000/- and single order not exceeding Rs.25,000/-
Head of the Department/	A single item costing up to Rs.8,000/- and single order not exceeding Rs.15,000/-

11. Purchase of office stationery and consumable items including purchase of building materials for works they are competent to sanction under Item-I Civil Works of Appendix-I above Purchase/hire of Equipment, Furniture and Fixtures:-

	Purchase Committee	Full powers
	Director	One time order upto Rs.1,00,000/-
	Dean/ Principal/ Treasurer/ Registrar	One time order upto Rs.25,000/-
	Head of Department / Asstt. Registrar/ Incharge of Centres	One time order upto Rs.8,000/-,
<u>Composition of Purchase Committee</u>		
For Faculties, Central Library, Centres and Non-Univ. Edu. Institutions:		For Central Administrative Office:
1. Director or his nominee 2. Treasurer or his nominee 3. Dean of the concerned faculty/ Principal concerned/ Registrar in all other cases 4. Head of the Department/Chairman,		1. Director or his nominee 2. Treasurer or his nominee 3. Registrar



Lib.Committee / I/c Centres		
<b>Note:-</b>		
1.	In case the Director's nominee chairs the meeting on behalf of the Director, the minutes of the meeting shall be submitted to the Director for his approval before implementation.	
2.	The various offices listed above shall exercise the above powers of purchases within the allocated budget and subject to availability of grant.	
12.	Purchase of books, journals & periodicals including newspapers in the faculties/non-university educational institutions	
Departmental Library Committee consisting of concerned Dean/ Principal, concerned Head / Seniormost teacher of the Department, and Assistant University Librarian/ Faculty Librarian		Upto Rs.20,000/- per order (GBR-7/7.8.2010)
Library Committee or its Working Committee as mentioned in Bye-law No.30 (GBR-7/7.8.2010)		Full Powers
13.	Purchase of books and periodicals including news-papers at the Central Administrative Office and other Centres/Sections	
Registrar/ Treasurer/ Head of the Centre/ Section and Assistant Registrar (Academic)/ Assistant Registrar (Accounts)/ next senior most officer in the Centre/ Section		Full powers, subject to the approval of the Director.

<b>III.</b>	<b><u>SIGNING OF CONTRACTS, AGREEMENTS AND DOCUMENTS</u></b>		
14.	Execution of documents relating to contracts	Director	Full powers
15.	Execution of service agreements of staff	Registrar	Full powers
16.	Signing of documents relating to sale/transfer of securities, provided the sale/transfer has been approved by the Governing Body.	Director/ Treasurer	Full powers
All actions taken under item 17 shall be reported to the Governing Body.			
<b>IV.</b>	<b><u>SANCTION OF IMPREST CASH &amp; TEMPORARY ADVANCES</u></b>		
18.	Sanction of limits for imprest money (within the limits prescribed by the Governing Body)	Director on the recommendation of the Treasurer	Full powers
		Treasurer, on the recommendation of the	Upto Rs.1000/-

		Dean/ Principal/ Registrar in the case of Central Admn. Office.	
19.	Sanction of temporary advances for the Institute's work.	Director, on the recommendations of the Treasurer	Full powers.
<b>V.</b>	<b><u>MISCELLANEOUS</u></b>		
20.	Expenditure on publications and Printing	Director	Full powers
21.	Expenditure on Advertisements	Director	Full powers
22.	Expenditure on Law suits and other legal matters	Director	Full powers
		Registrar	Upto Rs.500/- per law suit.
23.	Awarding of Fellowships (Visiting & Research Fellows)	Director on the recommendations of the Standing Committee of the Academic Council	Full powers.
24.	Sanction to staff from the un-assigned grant	-do-	Full powers within the UGC guidelines.
25.	Awarding of medals, prizes and other awards etc, for academic achievements.	Governing Body on the recommendations of the Academic Council	Full powers
26.	Payment of honorarium	Director	Full powers
27.	Granting of free ships, stipends and scholarships and aid from poor aid fund to students	Director on the recommendation of the Dean/ Principal	Full powers
28.	Refund of Caution Money	Treasurer	Full powers
29.	Sumptuary expenses: Abolished vide Director's order dt. 14.11.1991.		
30.	Sanction of expenditure on Institutional Hospitality	Director	Full powers
		Treasurer/ Registrar	Upto Rs.25/- per head subject to a maximum of Rs.250/- per meeting and Rs.3000/- per year.(GBR:7/7.8.2010)

		Deans/ Principals	Upto Rs.15/- per head subject to a maximum of Rs.150/- per meeting and Rs.1500/- per year.
		Asstt. Registrar/ Heads of Depts.	Upto Rs.10/- per head subject to a maximum of Rs.100/- per meeting and Rs.600/- per year.
31.	Expenditure on maintenance of Guest House	Director	Full powers
32.	Hiring of motor vehicles, furniture, fixtures and miscellaneous items (GBR-7/7.8.2010)	Director	Full powers

33.	T.A. & D.A. Bills :-		
(i)	Bills conforming to T.A./D.A. rules -		
	(a) At CAO	Treasurer/ Registrar	Full powers
	(b) At faculties/Non. Univ. educational institutions	Dean/ Principal	Full powers
(ii)	Bills not conforming to TA/ DA rules, like travel by a class higher than the admissible class etc.	Director, subject to report to the Governing Body	Full powers.
34.	Sports (GBR-15 dated 21.10.92) :-		
(i)	Power to sanction expenditure on sports activities for all types of items e.g. refreshments, contingencies etc.	Sports Officer	Upto Rs.200/-
(ii)	Power to sanction purchase of sports material where required for emergent use	Sports Officer	Upto Rs.500/-
(iii)	Power to sanction expenditure on sports activities for which prior administrative sanction of the Director has been obtained	Sports Officer	Upto Rs.1000/-
35.	Repair of equipment, furniture, vehicles and appliances based on approval of necessary estimates (GBR-48 dated 22.3.95)		
	Administrative and Financial Powers	Head of the Department/ Chairman, Library Committee/ Incharges, Centres (GBR-7/7.8.2010)	Upto Rs.5000/-
	-do-	Dean/ Principal/	Upto Rs.10,000/-

		Treasurer/ Registrar	(GBR-7/7.8.2010)
	-do-	Director	Upto Rs.20,000/- (GBR-7/7.8.2010)
	-do-	Repair Committee (constitution same as of Equipment Committee: Bye-law No.11)	Upto Rs.50,000/- (GBR-7/7.8.2010)
	-do-	Governing Body	Full powers

#### 10.1.6. 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)

The institute is having a web-committee which will be scrutinizing the program/ institute specific information before uploading on to the web. Because of this mechanism, the ambiguity will be avoided. However, if somebody is in need of further clarification, the same will be addressed by the concerned department/ section. The Institute has a well-established Right to Information cell headed by the information officer Sh. H.K.Khanna. All the relevant information are available on the institute website apart from are included in the institute prospectus. However, the documents are also available at the relevant offices for the stake holders.

YES. All the information are available on Institutes website. DEI maintains complete transparency in its financial, academic, administrative and auxiliary functions by clearly defining its vision, mission, objectives and procedures and disseminating them at all levels.

Proper procedures are strictly followed according to Govt. norms. The annual academic plan, is prepared in advance, communicated and displayed by the respective bodies. The details of various activities are regularly reported to concerned bodies and committees and records and minutes of the meetings maintained meticulously.

##### Transparency in Academic Functioning

DEI strictly adheres to the academic calendar that details the various activities in advance. Admission notifications are made through newspapers and on its website. Admission forms are processed online, with all the relevant details explained in the prospectus and also on the website.

The entire academic plan is clearly explained to all students in a compulsory orientation programme on admission, addressed by the Director, Deans and senior faculty.

The elaborate system of various committees and bodies coupled with a strong multiple-level feedback mechanism from all stakeholders, also ensures the dynamism required to keep pace with the changing educational environment.

The credits of each programme and outcomes are clearly specified.

The internal assessment, comprising various components, ensures that students receive their evaluated answer sheets and monitor their progress, performance and fairness in the evaluation. There is provision for re-evaluation, remedial examinations and grievance redressal system.

The fee is minimal, online and withdrawal and refund as per UGC norms.

DEI allows all applicants to appear for the admission process and selects candidates strictly on merit. It deals directly with students and even helps with filling up forms through help-desks.

#### Transparency in Administrative Functioning

Recruitments and Staff Promotions are also undertaken with utmost transparency. All posts are advertised online and list of candidates screened and called for interview are displayed on the DEI website. Employees can readily discuss and access their records in the various sections of the central administrative office. RTI applications are received and processed promptly. Notices are promptly shared on emails, salary statements sent electronically. Govt. regulations and amendments are promptly placed before the concerned bodies, circulated, displayed on DEI website. Major issues are decided through consensus, for instance, the Institution of Eminence, Vision-2031 strategic Plan and white papers were finalized through involvement and feedback of all stakeholders.

#### Transparency in Financial Functioning

DEI strictly follows all the rules and regulations of the Government of India. It has adopted General Financial rules, 2017. All expenditure proposals undergo strict financial scrutiny at various levels including Finance Committee and Governing Body. All its purchases are made in a transparent manner strictly as per GFR. Its fee collections and staff and vendor payments are through online mode. Its Annual Budget and Annual Accounts are prepared as per MHRD norms and are placed before the Finance Committee and Governing Body. Propriety is ensured at all levels with regular audits by internal auditor, Chartered Accountant, State Government (Through Local Fund Audit) and Central Govt. (through CAG via AG, U.P.). No draft para has ever been issued against the Institute.

### 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

##### For 2018-19(Rs. In Lakhs)

Total Income in 2018-19				Actual expenditure in 2018-19 till 31.12.2018			Total No. of students in 2018-19 7665
Fee	Govt.	Grant(s)	Other Sources (specify)	Recurring including Salaries	Non-recurring	Special Projects/Any other, specify	Expenditure per student
240	461.70	6864.51	428.37	6063.95	157.04	238.59	0.79 (till now)

**For 2017-18(Rs. In Lakhs)**

Total Income in 2017-18				Actual expenditure in 2017-18			Total No. of students in 2017-18 6641
Fee	Govt.	Grant(s)	Other Sources (specify)	Recurring including Salaries	Non-recurring	Special Projects/Any other, specify	Expenditure per student
495.80	226.50	6689.42	1201.01	6895.27	462.73	429.71	0.95

**For 2016-17 (Rs. In Lakhs)**

Total Income in 2016-17				Actual expenditure in 2016-17			Total No. of students in 2016-17 5822
Fee	Govt.	Grant(s)	Other Sources (specify)	Recurring including Salaries	Non-recurring	Special Projects/Any other, specify	Expenditure per student
<b>374.92</b>	354.01	5215.09	918.35	5595.49	692.90	254.37	0.91

**For 2015-16 (Rs. In Lakhs)**

Total Income in 2015-16				Actual expenditure in 2015-16			Total No. of students In2015-16: 4699
Fee	Govt.	Grant(s)	Other Sources (specify)	Recurring including Salaries	Non-recurring	Special Projects/Any other, specify	Expenditure per student
350.72	19.77	4716.17	699.64	4987.64	562.20	354.29	0.97

**Table B.10.a**

Items	Budgeted in 2018-19	Actual expenses 2018-19(till 31.12.18)	Budgeted in 2017-18	Actual Expenses in 2017-18	Budgeted in 2016-17	Actual Expenses in 2016-17	Budgeted in 2015-16	Actual Expenses in 2015-16
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Infrastructure Built-Up	65.00	60.86	-	-	-	-	250.00	242.66
Library	45.00	42.55	5.00	3.87	50.00	46.65	15.00	15.05
Laboratory equipment	65.00	61.03	120.00	113.30	120.00	118.84	135.00	134.30
Laboratory consumables	5.00	2.55	150.00	147.13	160.00	151.24	75.00	74.09
Teaching and non-teaching staff salary	5500.00	5359.24	5800.00	5785.10	4665.00	4660.95	4400.00	4301.40
Maintenance and spares	150.00	134.44	190.00	181.14	250.00	244.53	190.00	187.00
R&D	R & D Grants are received for various Govt. Funding is reported separately							
Training and Travel	19.00	16.49	75.00	70.05	70.00	67.17	30.00	26.84
Miscellaneous expenses *	-	-	-	-	-	-	-	-
Others, specify	575.00	574.15	1100.00	1057.41	1000.00	999.01	575.00	568.41
Total	6424.00	6251.31	7440.00	7358.00	6315.00	6288.39	5670.00	5549.81

**Table B.10.2b**

**\* Items to be mentioned.**

#### **10.2.1. Adequacy of budget allocation (5)**

(The institution needs to justify that the budget allocated over the years was adequate)

The budget allocated over the years for various programs by the institute are adequate and in case there is any deficiency, it is made from Institute's own resources. Apart from regular Budget, the departments are receiving various project grants to meet their expenditure. The budget allocation and utilisation for the last three years is adequate. Formal budget estimates are prepared by each department and are reviewed in HODs meeting with the Dean.

#### **10.2.2. Utilization of allocated funds (5)**

(The institution needs to state how the budget was utilized during the last three years)

The allocated funds are utilized properly and are adequate as per the Academic requirements. The budget funds are utilized on priority basis as per the requirements of each department based on availability of funds. However, all recurring and non-recurring expenditure of departments is met in full (including salaries, lab consumables etc.).

**10.2.3. Availability of the audited statements on the institute's website (5)**

Yes

**10.3. Program Specific Budget Allocation, Utilization (30)**

Total Budget at program level: For CFY, CFYm1, CFYm2&amp; CFYm3

From Faculty Grants Only (expenditure per Students: Institute basis)

For 2018-19

Total Budget in 2018-19		Actual expenditure in 2018-19 (till 31.12.2018):		Total No. of students in 2018-19
Non recurring	Recurring	Non Recurring	Recurring	Expenditure per student
3.20	29.89	2.24	26.42	0.79

For 2017-18

Total Budget in 2017-18:		Actual expenditure in 2017-18:		Total No. of students in 2017-18:
Non recurring	Recurring	Non Recurring	Recurring	Expenditure per student
72.23	45.00	69.75	40.23	0.95

For 2016-17

Total Budget in 2016-17:		Actual expenditure in 2016-17:		Total No. of students in 2016-17:
Non recurring	Recurring	Non Recurring	Recurring	Expenditure per student
10.22	45.00	9.089	33.25	0.91

For 2015-16

Total Budget in 2015-16:		Actual expenditure in 2015-16:		Total No. of students in 2015-16:
Non recurring	Recurring	Non Recurring	Recurring	Expenditure per student
120.22	93.50	110.882	88.64	0.97



**Table B.10.3a**

Items	Budgeted in 2018-19	Actual expenses 2018-19(till 31.12.2018)	Budgeted in 2017-18	Actual Expenses in 2017-18	Budgeted in 2016-17	Actual Expenses in 2016-17	Budgeted in 2015-16	Actual Expenses in 2015-16
Laboratory equipment	110.00	102.64	10.00	8.3	150.00	141.49	15.00	11.29
Software	System software and Application Software cost is included with Equipment cost							
Laboratory consumable	10.00	6.11	20.00	17.53	30.00	26.55	20.00	17.60
Maintenance and spares	Included in Laboratory Consumables							
R & D	Separate R & D Project Grants received and indicated							
Training & Travel	-	-	-	-	-	-	-	-
Miscellaneous expenses *	10.60	8.50	5.55	5.35	8.66	8.62	3.33	3.28
Total	120.60	117.25	35.55	31.18	188.66	176.66	38.33	32.17

**Table B.10.3b**

**\* Items to be mentioned.**

### **10.3.1. Adequacy of budget allocation (10)**

The Head of the department instructs the concerned lab in charges to provide the budget required for the coming academic year. The Lab in charge provides, both, recurring and non recurring expenditure budget required for the lab. based on the budget provided by various lab in charges the a final budget proposal will be prepared with the following items

- Laboratory equipment
- Laboratory consumables
- Maintenance and spares
- Miscellaneous expenses

The budget provided by the institute to the department is adequate to maintain and procure new items for the departments, to meet the academic requirements. The yearly budget is prepared according to the needs & requirements of the departments taking into consideration of annual intake of students, laboratory & infrastructure developments. The budget allocation and utilization for the last four years is adequate.

### 10.3.2. Utilization of allocated funds (20)

The allocated funds are utilized properly and are adequate as per the Academic requirements. In the year 2015-16, the budget proposals involved for procuring major equipment for genetic engineering Lab. It can also be utilized for conducting experiments for other labs. This equipment was purchased in the next year budget after several negotiations with the suppliers. Due to this the budget utilization was not utilized properly for 2015-16. However, in the year 2016-17, the equipment was finally purchased.

### 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)

- Accessibility to students
- Support to students for self-learning activities

Relevance of available learning resources including e-resources:

Institute Library and Faculty Library is made available the following resources for the benefit of the staff and students. All these resources are very much relevant to the course curriculum and are also mandated by AICTE too.

E-Journal Package:

1. Science Direct
2. IEEE All Society Periodicals Package
3. ASME Digital Library
4. ASCE Digital Library
5. McGraw Hill Access Engineering
6. JGate – Engineering & Technology
7. ProQuest
8. EBSCO Business Source Elite
9. J Gate – Social Science and Management Science

In additions to the above mentioned resources, Institute is also providing links to various Open Access resources along with subscribed e-resources through its website. URL : [www.dei.ac.in](http://www.dei.ac.in).

For the easy access, all the online resources are subscribed as IP Based access subscription. This will help the users to access any resource from any computer connected in the CBIT Campus LAN. and also through WiFi enabled devices. In addition to this, Institute is providing Federated Search mechanism through which a user can access all the databases through single search box. This will help the users for searching multiple database at a stretch. Remote off campus access facility is created and this can be used by the users as and when they require with a special request. Support to students for self-learning activities Institute Library & Information Centre is supporting the

students for self-learning activities. In this process it is subscribing multiple online resources, through which student will get an access to variety of resources to study and learn on their own.

Following resources are also accessible to the students:

- 9000 + NPTEL Videos
- 100+ Subjects NPTEL Text Content
- 298 Subjects MIT Open CourseWare
- 1000+ E-Books
- 500+ Projects
- 1500+ Software Tutorial Videos
- 2000+ Universities Information
- 2500+ Companies Information

For the effective use of these self-learning resources Institute Library & Information Centre established an exclusive E-Learning Resource Centre. This centre is having latest HP i7 computer systems with 21 inch monitors and headphones, which helps the users in their self-learning activity by accessing the online lectures of removed experts of their field.

### **Student Mentoring and Support**

**Academic Support :** Remedial Teaching, Peer coaching for weak students, Integrated programs for bright students, flexible choice based credits,

Undergraduate Students Research Awards (UGRA) to encourage bright students to pursue research. Short courses on Soft Skills, Resume writing and Computer Skills by AADEIs throughout the year for unemployed graduates also.

**Vidyaprasar:** Availability of videos of lectures in courses.

**Placement Support:** Alumni Placement Assistance Cell (DEI-APAC) with DEI-TPO. Cell for guiding and mentoring for National Tests- IAS, NET/GATE etc.

**Class Committees and Proctorial System:** Each class has a Proctor and each course has a class committee comprising students and teachers other than the course teacher. Regular Teachers appointed as Wardens in hostels.

#### **Financial Support:**

Cost-effective education, Scholarships, Support through part-time jobs in Projects.

**Alumni Support:** For participation in conferences and training abroad, summer training and co-op internship.

Business Advisory Clinic: Students alongwith faculty offer free services to advise entrepreneurs and ailing businesses.

**Counselling Cell:** The Psychology Dept. offers free counselling services to students.

Entrepreneurship and Incubation Cell: To encourage Entrepreneurship and start-ups Entrepreneurship Development Cell functioning in the Institution. We train students to improve their entrepreneurial skills; so that they become job providers rather than job seekers.

**Students Chapters:** IEEE, IET and SSI Student Chapters to encourage professional activities.

**Paritantra:** Annual Student Conference and Annual Summer School for High School Students in Science.

**Health Centre :** SA Hospital offers medical treatment at nominal cost.

**Earn while you learn:** Students manage daily Canteen services at various locations by preparing food items, serving and selling them. Also students are engaged in conducting lab classes and are trained and paid stipend for these activities.

Facility under MOUs for students to study courses at IIT Delhi, Univ. of Maryland, USA.

**Research Technology Park-Multi-disciplinary Research Centres:** The Centre for Quantum and NanoSystems , and the Centre for Consciousness Studies organize Workshops for the faculty and students

**Any other Support:**

- The welfare of the students is taken care by the Dean of Student Affairs, who is a senior faculty member. Various activities of the students are planned along with the students and staff
- Every class of students has a Captain, Vice Captain, Prefect & Asstt Prefect and teachers as Proctor. Regular class committee meetings are held.
- In order to improve the communication skills, soft skills and leadership skills, training and exposure are provided to the students.
- The Anti-Ragging committee constituted as required with inclusion of faculty from various departments for prevention of ragging and related incidences in the campus

The Lifelong Learning centre conducts short-term courses and vocational training to promote self-employment

- Insurance coverage is provided for students against the contingency of an accident

**Support services to SC/ST students:** A special SC/ST Cell looks into their admission requirements, take care to avoid any discrimination and provide assistance to enhance their communication and soft skills. Several bridge courses for languages and other basic subjects are organised. Additional Remedial coaching, Coaching for entry into civil services, NET/SLET and for competitive examinations and encouragement to apply and avail state, national scholarships for the deserving students.

#### **10.4.2. Internet (10)**

- Name of the Internet provider:
- Available bandwidth:
- Wi Fi availability:
- Internet access in labs, classrooms, library and offices of all Departments:
- Security arrangements: Entire Campus is under 24x7 CCTV surveillance which is also continuously monitored apart from Gents and Ladies Security Guards Deployed at various places within the campus.

DEI continuously strives to provide state-of-the-art technologies and update its ICT facilities to ensure efficient functioning. Extensive infrastructure has been setup during the last five years:

1. IP based Surveillance System
2. IP based Telephony
3. Remote Laboratories
4. Cadence Design Software The infrastructure includes:
  - Desktops (Xeon, Intel i5, Dual Core , AMD processor based with 4 to 32 GB RAM and 500 GB to 8TB HDD)
  - Laptops (i7, i5- 6th generation, Core2Duo based 2.4 GHz with 4 to 8 GB RAM)
  - Total number of systems =15
  - 2 rack servers (Xeon 4.2 GHz, 32 GB RAM)

The IP Surveillance system and phone system was established in 2016 with the following configuration:

- IP camera (1.2 to 12 MP, sony, vivitek, Axis , canon, cp-plus) =300
  - IP phone =200
  - 8 NVR with 156 TB of storage
  - 50 Cisco Switches
  - 20 Km of Fiber Optic Cable. The additional Fiber Optic Cable laid in 2016 also connects various units of DEI such as the International Guest House and Seminar Hall Complex, Outer Boys Hostel, Tannery Campus, Girls Hostel II, Electrical Engineering Laboratory at Faculty of Engineering and Technical College, Library building in Faculty of Engineering, Shatabdi Bhawan, Faculty of Architecture and Psychology Department to the Institute LAN and for Internet access. Associated equipment such as ethernet and fiber switches were also installed at different locations.
- In 2017, WIFI facility was installed with latest Cisco wireless controller 5520 and 30 Cisco Aironet 2802 series Wireless Access Points. All buildings, hostels, Seminar halls, conference rooms and common areas in the campus are now wi-fi enabled. Additional 16Mbps MPLS VPN Connectivity has been taken from BSNL for DEI Dayalbagh. More than 250 desktops have been added to create new laboratories and to replace legacy systems. These systems range from Intel i5 to i7 based systems.

Significant investment has been made to upgrade classrooms to e-classrooms/smart classrooms with the purchase of the following equipment:

- Sony VPL EW 536 With IQ Board
- Sony VPL-SW-536C Interactive Projector with White board
- Sony VPL EW 246 LCD Projector
- Digital Lectern with face plate KPS KPC 900 with Audio System
- Sony SRG-120DH Camera
- Network Controller KP-600U2
- Desktop Computers and Laptops for eClassrooms
- Polycom Real Presence Group 500 Solution
- LED TV 49"/50"
- Video Switcher/ Converters and Distributors

Microsoft MS Dreamspark license has been purchased for licenses to Microsoft products. Site License for Microsoft Office 365 has also been obtained for students and staff of DEI. The base SPSS package has also been purchased.

Tenders for purchase of Cisco ASA Firepower 2140 Firewall and Cisco Core Switch N9K-C9508 to upgrade the networking infrastructure in the Central Computer Center, GPON Network with accessories, BIOVIA Discovery Studio Teaching Suite, Mathematica, Robotmaster Education Bundle, Virtual Classroom solution, Multitouch Interactive Displays and Video Walls have been uploaded.

### **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:**

**Signature & Name**

**Place:**

**Head of the Institution with seal**

## ANNEXURE I (A) PROGRAM OUTCOMES

### Engineering Graduates will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and



write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

#### **(B)PROGRAM SPECIFIC OUTCOMES (PSOs)**

**PSO1** Graduates will be able to analyze, innovate and provide realistic electrical engineering solutions to real life problems.

**PSO 2** The graduates will acquire adequate practical skills in electrical engineering and develop capacity to work with one's own hands in order to imbibe vocational and entrepreneurial traits

**PSO 3** Graduate will be able to specialize in any one of their preferred choice in the area of Electrical Engineering i.e. Electrical Engineering, Electronics and Communications Engineering or Computer Science.

**PSO4** Graduate will be able to demonstrate strong commitment to ethics and moral values through his conduct