17. List of Research Projects/ Consultancy Works:

- **Number of projects carried out, funding agency, Grants received**

Research project (received letter in July 2018)**:**

Title of project – Development of Image Quality Improvement Algorithms for Satellite imagery- Radiometric
Project grant under: ISRO-UoP Joint Research Programme
Project duration- 2 years
Sanctioned amount- Rs. 8,70,000/-

- **Publications out of research in last three years out of masters projects**

Presented in 2018 – 20 papers
Presented in 2017 – 12 papers
Presented in 2016 – 16 papers
Total – 48 papers

- **Industry Linkage:**

College has good interactions with various prominent industries, some of which are listed as follows:

- **Cummins India Ltd**. has declared Cummins College under their Signature Project. Under Signature Project, E&TC program has received funding for three areas of development:
  - **Infrastructure development** – Laboratory Instruments / Setups procurement.
  - **Student Development** –
    Students' aptitude tests conduction, Employability Enhancement Program, Sponsorship to participate in various events like SAE INDIA BAJA, Supra and main sponsorship to organize college technical event named 'INNOVATION'.
    Cummins Fellowship Program - Fellowship program at Purdue University for higher studies.
  - **Faculty Development** – Full paid study leave for PhD, registration fees for paper presentation / publication, workshops / training programs etc.
- **EATON** has started Garnishing Talent Program since 2012 to improve employability skills of identified students.
- Institute received sponsorship for the national level inter-collegiate technical event named INNOVATION from different industries viz. **Cummins India Ltd., GE, SAE INDIA, Emerson, Persistent, IBM, TCS, KPIT, Forbes Marshal, NPCIL, Honeywell** etc.

A) Industry supported laboratories

Department is enriched with thirteen Hardware and Software laboratories where few state-of-the-art equipment are supported by the industry.

- Cummins India, has sponsored the development of Advanced VLSI-CMOS Laboratory. Softwares like Cadence Mixed Signal Environment (10 Licenses) and Mentor Graphics HEP1 and HEP2 (25 licenses) and QualNet 6.1 were procured under this project. These laboratories facilitate the students to use industry standard modern tools for their B.E. project development.
- Hardware equipment like 4GHz Spectrum Analyzer, 100 MHz Digital Storage Oscilloscope (4 no.) and 500 MHz Mixed Signal Oscilloscope have also been purchased under 'Signature Project'. These equipment and software are used for regular practical's and project development.
- 10 FPGA trainer kits are purchased under 'Signature Project'.
- Analog circuit design kits (6 numbers) were sponsored by Texas Instrument.

B) Industry involvement in the program design and partial delivery of any regular courses for students

- BoS of SPPU frames the syllabus which is revised every four years.
- Members of BoS discuss the need and requirements of the industry with industry experts while framing the syllabus.
- New courses are added as per industry needs as Open Elective courses. Open Electives are Inter-disciplinary and any student from any branch (Computer, Information Technology, Electrical and Instrumentation) can opt for it. Syllabus for the course 'Automotive Electronics' was proposed to BOS, SPPU with inputs from KPIT Ltd. and the same was approved.
- Under the course Automotive Electronics, 'Subject Matter Expert' (SME) were sent by KPIT to deliver lectures on the topic 'Advanced Driver Assistance Systems'.
- 'Unified Communications and Contact Center Application' course was proposed in collaboration with AVAYA to SPPU. This was added in the curriculum by SPPU as an Open Elective course for B.E.
- Workshop on PIC microcontroller was organized for T.E. students for 'Microcontroller and Applications' course which was delivered by Mr. PrashantShirpurkar from 'Logic Power', Pune.
- To partially cover the contents of the course 'Microcontroller and Applications' a workshop on PIC microcontroller on 'Proteus' Simulation Software was organized for the T.E. students by Mr. AmitRana from 'Vidya Technologies'.
- Experts from industry were invited for partial delivery of regular courses contents. Guest lectures on topics like Practical Issues of FPGA, Insize creative & engineering aspects of PIPEG-4, Applications of Image Processing in Industry, Unified Communication and contact centre Applications and Basics of Linux were conducted.
- To partially cover the contents of the course 'Data Structure' for S.E. students, eminent personalities like SayuSekhar and Manu Batura from Agiliad Technologies and Sushil Kumar Bora from Packet Design India Pvt. Ltd were invited.

C) Impact analysis of industry institute interaction and actions taken thereof

- College has observed need of improvement in English communication especially for vernacular medium and rural background students. College started 'English communication skills enhancement' program for such students. For this program institute has appointed three faculty members to impart the soft-skills to the students to enhance their communication skills. Further, college requested EATON to conduct soft-skill program. EATON and CCEW under the forum of Confederation of Indian Industry (CII) started 'Garnishing Talent Program' in 2011.
  Under this program, identified students were trained to improve their communication and soft-skills. As an outcome, it has been observed that, the placements of such students are increasing.
- Every year on an average 30% projects are industry sponsored. Students working on industry sponsored projects get acquainted to industry work culture and get the opportunity to work on cutting edge technology.
- Due to the 'Signature Project' initiative, lab resources are enhanced and students are able to get hands-on experience on industry grade equipment.
- Professional development support in the form of reimbursement for the research paper publication and Ph.D. leave for timely and quality research work is granted, thereby improving the quality of instruction and extending the knowledge to students for their progress.
- 'Excel Program' was started in collaboration with Ericsson. It was a web based and Classroom training Certification course for 80 students. Preference was given to these students and in the very first year of the program, Ericsson selected 21 students and offered them placement.
- Under the 'Signature Project', Aptitude test 'AMCAT', for all S.E. and T.E. students was conducted in year 2015. AMCAT test provides the data of students' strengths and weaknesses.
- Fellowship programs were started between Rose-Hulman Institute of Technology (RHIT) University of United States and CCEW. Under this faculty exchange program and full sponsorship for pursuing M.S. for the students commenced. Two students of E&TC program benefited due to this program.
- A MoU with Purdue University, United States and CCEW commenced from 2004 which is an ongoing program till date. Under this the students are fully sponsored for pursuing M.S.

program at Purdue University, which is one of the top ranked University in USA. Fourteen students of E&TC program are benefited by the program.

- BSNL-RTTC program is conducted in selected colleges by BSNL which is an outcome of signing MoU between AICTE and BSNL. Ten toppers of S.E. are selected for this training. The training continues for 3 consecutive semesters (two semesters of T.E. and one semester of B.E.). Placement perspectives are enhanced by inclusion of industry-institute interaction, BSNL-RTTC program which provides silver, gold and platinum certifications.
- A number of industrial visits for students are conducted and this helpsthe students in correlating their theoretical knowledge with the Industrial applications.

- **MoU with Industries (minimum 3):**

College level MoU