

B. Tech. (Electronics and Communication Engineering)

The details of experiential learning are described in this document. Kindly refer to the respective pages as shown in the tables below for the courses offered in various academic sessions.

Year 2018-2019

Course Title	Year of Offering	Name of Students	Page No
PROJECT – I	2018	All the Students of 7 th semester	04
PROJECT – II	2019	All the Students of 8th semester	05
INDUSTRIAL TRAINING	2018	All the students of 2nd year	06
INDUSTRIAL TRAINING VIVA	2018	All the Students of 3rd Year	07
WIRELESS AND MOBILE COMMUNICATION	2019	Jatin Batra, Gaurav Dhiman, Mayank Rohilla	08-09
TRANSDUCERS AND THEIR APPLICATIONS	2019	Neha Madan, Ankur Jain, Shresth Saxena, Neha Mokhriya	10-11
MICROCONTROLLER EMBEDDED SYSTEM DESIGN	2018	Raunak Tomer, Hitesh Sharma, Sidhant Tomer	12
MICROPROCESSOR & INTERFACING	2018	Arman, Harshit, Heena , Neha	14

Year 2017-2018

Course Title	Year of Offering	Name of Students	Page No
Minor Project	2017	All the students of 7 semester	04
Major Project	2018	All the Students of 8th semester	05
INDUSTRIAL TRAINING VIVA	2017	All Students of 2nd year	06
Practical Training Report	2017	All the Students of 3rd Year	07
WIRELESS AND MOBILE COMMUNICATION	2018	Yash Mangla, Gurpreet, Ashtha Jindal	08
TRANSDUCERS AND THEIR APPLICATIONS	2018	Deepak Kundu, Kamal Dahiya, Vimal Singh , Vivek Rai	10
EMBEDDED SYSTEM DESIGN	2018	Rahul , Vaibhav, Yash	12-13
ADVANCE MICROPROCESSORS	2017	Astha Jindal, Palak Gupta	14-15
MICROCONTROLLERS	2017	Rahul , Vaibhav, Yash	12
MICROPROCESSOR & INTERFACING	2017	Rahul , Vaibhav, Yash	14-15

Year 2016-2017

Course Title	Year of Offering	Name of Students	Page No
Minor Project	2016	All the students of 7th semester	04
Major Project	2017	All the Students of 8th semester	05
INDUSTRIAL TRAINING VIVA	2016	All the Students of 2nd Year	06
Practical Training Report	2016	All the students of 3rd year	07
TRANSDUCERS AND THEIR APPLICATIONS	2017	Ankit Rahi, Ankit and Arun Kumar	10
EMBEDDED SYSTEM DESIGN	2017	Gaurav, Himanshu, Jyoti	12
MICROCONTROLLERS	2016	Kunal, Megha, Yogesh	12

Year 2015-2016

Course Title	Year of Offering	Name of Students	Page No
Minor Project	2015	All the Students of 7th semester	04
Major Project	2016	All the Students of 8th semester	05
Training Report	2015	All the Students of 5th semester	06
Practical Training Report	2015	All the Students of 7th semester	07
WIRELESS AND MOBILE COMMUNICATION	2016	Abbass, Abhishek Narang, Aditya Kumar, Akshay Tuli	08
TRANSDUCERS AND THEIR APPLICATIONS	2016	Rashmi, Raveena Devi, Sachin Kumar, Sakshi Shukla	10
EMBEDDED SYSTEM DESIGN	2016	Sarita, Renu	12
MICROCONTROLLERS	2015	Sarita, Renu	12
ADVANCE MICROPROCESSORS	2015	Vishal Tiwari, Aman Rattan, Ankur	14
OPTICAL COMMUNICATION	2015	Sachin Kumar, Sakshi Skukla	16
LINEAR IC APPLICATIONS	2015	Aditya Kumar, Akshay	18-19

Year 2014-2015

Course Title	Year of Offering	Name of Students	Page No
Minor Project	2014	All the Students of 7th semester	04
Major Project	2015	All the Students of 8th semester	05
Training Report	2014	All the Students of 5th semester	06
Practical Training Report	2014	All the Students of 7th semester	07
WIRELESS AND MOBILE COMMUNICATION	2015	Rashmi Kukreja, Aakash Arora, Aditi Soni, Akanksha Chaudhary	08
TRANSDUCERS AND THEIR APPLICATIONS	2015	Shafali, Shubham Talwar, Shruti Madan, KundalDudeja	10
EMBEDDED SYSTEM DESIGN	2015	Nishant Sharma, Lokesh Gaur, Aditya Bhardwaj	12
MICROCONTROLLERS	2014	Nishant Sharma, Lokesh Gaur, Aditya Bhardwaj	12
ADVANCE MICROPROCESSORS	2014	Ekta, Mandeep Sharma, Gunjan Kumari	14
OPTICAL COMMUNICATION	2014	Aditya Tuagi, Annupura Bhardwaj, Mayank Popli, Pooja Dahiya	16-17
LINEAR IC APPLICATIONS	2014	Sumit Saroha, Neeraj Kumar, Hemant Sharma	18

PROJECT – I (ECE-411N)/ MINOR PROJECT (ECE-411E): Student Projects offered in curriculum provide major opportunity for experiential learning where they work on a live research or industrial project. Under the category of project type courses, students can do a Study Project, a Lab project or a Design project. Students are supervised by faculty and accessed via components chosen on the nature of the project: literature survey and summarization, presentation (written and oral), design, development / implementation, and research contribution.

Bachelor of Technology (Electronics & Communication Engineering)
Scheme of Studies/Examination
Semester VII

S.No.	Course No.	Subject	L:T:P	Hours/Week	Examination Schedule (Marks)				Duration of Exam (H)
					Theory	Sessionals	Practical	Total	
1	ECE-401N	Microcontroller & Embedded Systems Design	3:0:0	3	75	25	0	100	3
2	ECE-403N	Digital Image Processing	4:0:0	4	75	25	0	100	3
3	ECE-405N	Power Electronics	3:0:0	3	75	25	0	100	3
4		Core Elective -I**	3:0:0	3	75	25	0	100	3
5		Core Elective -II**	3:0:0	3	75	25	0	100	3
6	ECE-407N	Microcontroller & Embedded Systems Design Lab	0:0:3	3	0	40	60	100	3
7	ECE-409N	Digital Image Processing Lab	0:0:3	3	0	40	60	100	3
8	ECE-411N***	Project-I	0:0:10	10	0	100	100	200	3
9	ECE-413N*	Industrial Training Viva	2:0:0	2	0	100	0	100	
		Total		34	375	405	220	1000	

PROJECT – II (ECE-406N)/ MAJOR PROJECT (ECE-412 E): Student Projects offered in curriculum provide major opportunity for experiential learning where they work on a live research or industrial project. Under the category of project type courses, students can do a Study Project, a Lab project or a Design project. Students are supervised by faculty and accessed via components chosen on the nature of the project: literature survey and summarization, presentation (written and oral), design, development / implementation, and research contribution.

Bachelor of Technology (Electronics & Communication Engineering)

Scheme of Studies/Examination

Semester VIII

S.No.	Course No.	Subject	L:T:P	Hours/Week	Examination Schedule (Marks)				Duration of Exam (Hrs)
					Theory	Sessionals	Practical	Total	
1	ECE-402N	Wireless & Mobile Communication	4:0:0	4	75	25	0	100	3
2	ECE-404N	Microwave Engineering	3:0:0	3	75	25	0	100	3
3		Core Elective -III**	3:0:0	3	75	25	0	100	3
4		Core Elective -IV**	3:0:0	3	75	25	0	100	3
5	ECE-406N***	Project-II	0:0:14	14	0	100	100	200	3
6	ECE-408N	Wireless & Mobile communication	0:0:3	3	0	40	60	100	3
7	ECE-410N	Microwave Engineering Lab	0:0:3	3	0	40	60	100	3
8	ECE-412N*	Seminar & Report Writing	2:0:0	2	0	100	0	100	3
		Total		35	300	380	220	900	
9	ECE-440N****	General Fitness & Professional Aptitude						100	3

INDUSTRIAL TRAINING VIVA (ECE-317 N) & TRAINING REPORT (ECE-317 E): The industrial training program is important for engineering students as brings real life learning from industry. Summer Training and Industrial Visit are the backbone for engineering students to improve and enhancing technical knowledge and skill set. It boosts the performance of students and helps them to meet career objectives. It helps them to update and master their skills. If they are not aware of new concepts and technology, the industrial training program lets them master the latest advancements. It not only builds confidence but also helps in taking up complicated projects easily. It is a comprehensive learning platform for students where they could improve their employability skills. They would become prepared for the job and get sufficient real corporate exposure. The industrial training program improves students' awareness in single particular technology. The learners can obtain hands-on experience and know the real job scenario. It cultivates the leadership ability of the students and gives them the responsibility to execute and perform the given task. It helps in increasing self-confidence and identifying their proficiency. The students should obtain industrial training in latest and new technologies with a blend of practical and theory classes.

Bachelor of Technology (Electronics & Communication Engineering)
Scheme of Studies/Examination
Semester V

S. No.	Course No.	Subject	L:T:P	Hours/Week	Examination Schedule (Marks)				Duration of Exam (Hrs)	
					Theory	Sessional	Practical	Total		
1	ECE - 301N	Microprocessors & Interfacing	3:1:0	4	75	25	0	100	3	
2	HS- 303N	Business Intelligence & Entrepreneurship	3:0:0	3	75	25	0	100	3	
3	ECE- 303N	Antenna & Wave Propagation	3:1:0	4	75	25	0	100	3	
4	ECE- 305N	VLSI Technology	3:1:0	4	75	25	0	100	3	
5	CSE- 304N	Essentials of Information Technology	3:0:0	3	75	25	0	100	3	
6	ECE- 307N	Control Systems Engineering	3:1:0	4	75	25	0	100	3	
7	ECE- 309N	Microprocessors & Interfacing Lab	0:0:3	3	0	40	60	100	3	
8	ECE- 311N	Design Automation Lab	0:0:3	3	0	40	60	100	3	
9	ECE- 313N	Antenna & Wave Propagation Lab	0:0:3	3	0	40	60	100	3	
10	ECE- 315N*	Personality & Soft Skills Development	2:0:0	2	0	100	0	100	3	
Total					33	450	370	180	1000	

* The student will be evaluated on the basis of technical training seminar and technical writing/reading skills out of 50 marks for each.

INDUSTRIAL TRAINING-II (ECE-413N)/Practical Training Report (ECE-413 E):The industrial training program is important for engineering students as brings real life learning from industry. Summer Training and Industrial Visit are the backbone for engineering students to improve and enhancing technical knowledge and skill set. It boosts the performance of students and helps them to meet career objectives. It helps them to update and master their skills. If they are not aware of new concepts and technology, the industrial training program lets them master the latest advancements. It not only builds confidence but also helps in taking up complicated projects easily. It is a comprehensive learning platform for students where they could improve their employability skills. They would become prepared for the job and get sufficient real corporate exposure. The industrial training program improves students' awareness in single particular technology. The learners can obtain hands-on experience and know the real job scenario. It cultivates the leadership ability of the students and gives them the responsibility to execute and perform the given task. It helps in increasing self-confidence and identifying their proficiency. The students should obtain industrial training in latest and new technologies with a blend of practical and theory classes.

Bachelor of Technology (Electronics & Communication Engineering)
Scheme of Studies/Examination
Semester VII

S.No.	Course No.	Subject	L:T:P	Hours/Week	Examination Schedule (Marks)				Duration of Exam (H)
					Theory	Sessionals	Practical	Total	
1	ECE-401N	Microcontroller & Embedded Systems Design	3:0:0	3	75	25	0	100	3
2	ECE-403N	Digital Image Processing	4:0:0	4	75	25	0	100	3
3	ECE-405N	Power Electronics	3:0:0	3	75	25	0	100	3
4		Core Elective -I**	3:0:0	3	75	25	0	100	3
5		Core Elective -II**	3:0:0	3	75	25	0	100	3
6	ECE-407N	Microcontroller & Embedded Systems Design Lab	0:0:3	3	0	40	60	100	3
7	ECE-409N	Digital Image Processing Lab	0:0:3	3	0	40	60	100	3
8	ECE-411N***	Project-I	0:0:10	10	0	100	100	200	3
9	ECE-413N*	Industrial Training Viva	2:0:0	2	0	100	0	100	
		Total		34	375	405	220	1000	

WIRELESS AND MOBILE COMMUNICATION (ECE-402N, ECE-402 E): Wireless technology has changed the way we connect to the world. Offering constant access to the network without the fuss of thick cables and heavy set up, wireless is the most trending technology these days. The Internet has become the part and parcel of our life where imagine a day without it seems creepy. Where for teenagers, wireless connectivity is a boon to connect with their friends and exploring the way to educate them better; those who are grown up are utilizing it to expand their businesses and professional connections. Internship gives experience learning of wireless and mobile communication to students when they execute their summer training/internship from telecoms industry for example Airtel, Voda-Idea, Reliance Jio, BSNL, MTNL and many more. During internship in telecom industry students practically learn GSM Network Architecture and Specifications, various types of signaling and way to process the signal, handoff concept, billing procedures, security, radiation effect and various propagation models used for communications. **Besides students learn comparative network performance analysis of various technologies like 2G, 3G & 4G Mobile Communication, Networking Concepts, TCP/IP & MPLS which are experiential in nature.**

Experiential Activity: Project Development

Sr. No	Project Title	Year	Student Name
1	Password Based Door Lock System	2019	Jatin Batra,Gaurav Dhiman, Mayank Rohilla
2	YOLO Smart Electricity Saving System	2018	Yash Mangla,Gurpreet, Ashtha Jindal
3	IOT Dumpster	2016	Abbass, Abhishek Narang, Aditya Kumar, Akshay Tuli
4	IOT Based Smart Security and Smart Home Automation	2015	Rashmi Kukreja, Aakash Arora, AditiSoni, Akanksha Chaudhary

The sample of project title **“Password Based Door Lock System”** is attached below.

**PANIPAT INSTITUTE OF ENGINEERING &
TECHNOLOGY SAMALKHA, PANIPAT- 132102**



CERTIFICATE

Certified that this project **"Password Based Door Lock System"** is the bona fide work of **"Jatin Batra"**, **"Gaurav Dhiman"**, **"Mayank Rohilla"** who carried out the project work in the partial fulfillment for the award of Bachelor of Technology in Electronics & Communication Engineering from Panipat Institute of Engineering & Technology, Kurukshetra University, and Kurukshetra during the academic year 2015-19



SIGNATURE

Ms. SWATI GUPTA

HEAD OF DEPARTMENT, ECE



SIGNATURE

(VINAY DAWAR)

ASST. PROFESSOR, ECE



SIGNATURE

Mr. ARUN RANA

Project Coordinator

TRANSDUCERS AND THEIR APPLICATIONS (ECE-420N, ECE-430 E): Transducers are the devices that convert energy in one form into another form. Generally the energy is in the form of a signal. Transducer is a term collectively used for both sensors and actuators. The words sensors and transducers are widely used in association with measurement systems. The sensor is an element that produces signals relating to the quantity that is being measured. Actuators are devices that work opposite to sensors. A sensor converts a physical event into an electrical signal, whereas an actuator converts electrical signal into a physical event. **After going through this course, students are enriched with hands on experiences in domain of different types of sensors and actuators and how sensors are integrated with Internet of Things (IoT) and how interfaced with software.** In our daily life different types of sensors are used like temperature sensor, humidity sensor, pressure sensor and many more. From this course students learned how sensors transmit data (Temperature, Pressure and Humidity) to cloud using IoT and how to retrieve this data from cloud anywhere in the world using IoT. These days IoT and sensors have tremendous significance in our daily life.

Experiential Activity: Project Development

Sr. No	Project Titles	Year	Student Name
1	Autonomous Car	2019	Neha Madan, AnkurJain, Shresth Saxsena, Neha Mokhriya
2	ASSISTANT ROBOT	2018	Deepak Kundu, Kamal Dahiya, Vimal Singh, Vivek Rai
3	“Smart Garbage Monitoring System Using Internet of Things (IOT)”	2017	Ankit Rahi, Ankit and Arun Kumar
4	IoT based Smart Irrigation with Raspberry Pi	2016	Rashmi, Raveena Devi, Sachin Kumar, Sakshi Shukla
5	IoT based Smart Blind Stick	2015	Shafali, Shubham Talwar, Shruti Madan, Kundal Dudeja

The sample of project title “**Autonomous Car**” is attached below.

**PANIPAT INSTITUTE OF ENGINEERING &
TECHNOLOGY SMALKHA, PANIPAT- 132102**



CERTIFICATE

Certified that this project “Autonomous Car” is the bonafide work of “Neha Madan”, “Ankur Jain”, “Shresth Saxsena”, “Neha Mokhriya” who carried out the project work in the partial fulfillment for the award of Bachelor of Technology in Electronics & Communication Engineering from Panipat Institute of Engineering & Technology, Kurukshetra University, Kurukshetra during the academic year 2015-19.


SIGNATURE

Ms. SWATI GUPTA

HEAD OF DEPARTMENT, ECE


SIGNATURE

(Mr. Arun Rana)

ASST. PROFESSOR, ECE


SIGNATURE

Mr. Arun Rana

Project Coordinator

MICROCONTROLLER, EMBEDDED SYSTEM DESIGN (ECE-401N, ECE-415 E, and ECE-424 E):

Embedded systems are vital to modern society. Given that they are purpose-built for specific applications, they enable designs and optimizations that make it possible for us to enjoy the benefits of technology while minimizing cost and power consumption. Without embedded systems, our world would look vastly different than it does today. This course has great impact on our daily life and in fact we are surrounded with huge numbers of embedded system. Today's every system based on microcontroller and microprocessor. Typically an MCU uses on-chip embedded Flash memory in which to store and execute its program. Storing the program this way means the MCU having a shorter start-up period and executing code quickly. MPUs do not have memory constraints in the same way. They use external memory to provide program and data storage. The program is typically stored in non-volatile memory, such as NAND or serial Flash. **The experiential learning of this course is to develop smart system in our society which eases our daily life.** minor and major projects like water level controller using 8051, Propeller LED display, Automatic Railway Gate Controller with High Speed Alerting System, Metal detector robot, Biometric attendance system, etc. so that living standard becomes easy. As technologies and movements like the Internet of Things, Industry 4.0, and "smart" homes & vehicles continue to gain traction, embedded systems will become more and more important. Understanding how embedded devices work and the myriad of applications where they can be used will make you better equipped to understand the world around you and leverage the benefits of embedded systems.

Experiential Activity: Project Development

Sr. No	Project Title	Year	Student Name
1	IOT Based Fire Departmental alerting System	2018-2019	Raunak Tomer, Hitesh Sharma, Sidhant Tomer
2	IOT Based Trash car	2017-2018	Rahul , Vaibhav, Yash
3	Vehicle Theft Detection with Notification Remote Engine Locking	2016-2017	Kunal, Megha, Yogesh
4	Anti Loss Device Pair using Arduino	2015-2016	Sarita , Renu
5	Anti Car Jack System	2014-2015	Nishant Sharma, Lokesh Gaur, Aditya Bhardwaj

The sample of project title "IOT Based Fire Departmental alerting System" is attached below.

PANIPAT INSTITUTE OF ENGINEERING & TECHNOLOGY

SMALKHA, PANIPAT- 132102



CERTIFICATE

Certified that this project “IoT based fire department alerting system” is the bonafide work of “Raunak Tomar, Hitesh Sharma and Sidhant Tomar” who carried out the project work in the partial fulfillment for the award of Bachelor of Technology in Electronics & Communication Engineering from Panipat Institute of Engineering & Technology, Kurukshetra University, Kurukshetra during the academic year 2015-19.


29/04/19.

SIGNATURE

Ms. SWATI GUPTA

HEAD OF DEPARTMENT, ECE



SIGNATURE

Mr. ARUN RANA

ASST. PROFESSOR, ECE

SIGNATURE

Mr. VISHAL JAIN

ASST. PROFESSOR, ECE


29/04/19

MICROPROCESSOR & INTERFACING (ECE-301 N)/ADVANCE MICROPROCESSORS (ECE-423

E): Embedded systems are vital to modern society. Given that they are purpose-built for specific applications, they enable designs and optimizations that make it possible for us to enjoy the benefits of technology while minimizing cost and power consumption. Without embedded systems, our world would look vastly different than it does today. This course has great impact on our daily life and in fact we are surrounded with huge numbers of embedded system. Today's every system based on microcontroller and microprocessor. Typically an MCU uses on-chip embedded Flash memory in which to store and execute its program. Storing the program this way means the MCU having a shorter start-up period and executing code quickly. MPUs do not have memory constraints in the same way. They use external memory to provide program and data storage. The program is typically stored in non-volatile memory, such as NAND or serial Flash. **The experiential learning of this course is to develop smart system in our society which eases our daily life.** minor and major projects like water level controller using 8051, Propeller LED display, Automatic Railway Gate Controller with High Speed Alerting System, Metal detector robot, Biometric attendance system, etc. so that living standard becomes easy. As technologies and movements like the Internet of Things, Industry 4.0, and "smart" homes & vehicles continue to gain traction, embedded systems will become more and more important. Understanding how embedded devices work and the myriad of applications where they can be used will make you better equipped to understand the world around you and leverage the benefits of embedded systems.

Experiential Activity: Project Development

Sr. No	Topics	Year of Offering	Student Name
1	Face Detection Using Open CV	2018	Arman, Harshit, Heena , Neha
2	Fire Fighting Robot	2017	Shubham, Lovekush, Hemant
3	IOT Based Fire Department Alerting System	2015	Vishal Tiwari, Aman Rattan, Ankur
4	Real Time Face Detection Using MATLAB	2014	Ekta, Mandeep Sharma, Gunjan Kumari

The sample of project title "**Face Detection Using Open CV** " is attached below.

PANIPAT INSTITUTE OF ENGINEERING TECHNOLOGY

SAMALKHA, PANIPAT



CERTIFICATE

Certified that this project **"Face Detection Using OpenCV"** is the bonafide work of **"Arman, Harshit, Heena, Neha"** who carried out the project work in the partial fulfillment for the award of Bachelor of Technology in Electronics & Communication Engineering from Panipat Institute of Engineering & Technology, Kurukshetra University, Kurukshetra during the academic year 2015-19.


SIGNATURE

Ms. SWATI GUPTA
HEAD OF DEPARTMENT, ECE


SIGNATURE

Mr. ARUN RANA
ASST. PROFESSOR, ECE


SIGNATURE

Dr. Ruchira Aneja (Project Guide)
ASST. PROFESSOR, ECE

OPTICAL COMMUNICATION (ECE-405E): Optical fiber is used by many telecommunications companies to transmit telephone signals, Internet communication and cable television signals. Due to much lower attenuation and interference, optical fiber has large advantages over existing copper wire in long-distance, high-demand applications. From this course students learn different types of losses existed (propagation loss, bending loss), numerical aperture, characteristics of single mode fiber etc. Besides this to give real time exposure to students ECE Department organizes seminar on optical fiber in which students learns various splicing techniques for optical fiber, and how optical fiber connectors and coupler used from expert in the field of optical domain.

Experiential Activity: Project Development


Sr. No	Project Title	Year	Student Name
1	RFID based Universal for bus train and Metro Tracking	2015-2016	Sachin Kumar, Sakshi Skukla
2	Automatic Collage Bell	2014-2015	Aditya Tuagi, Annupura Bhardwaj, Mayank Popli, Pooja Dahiya

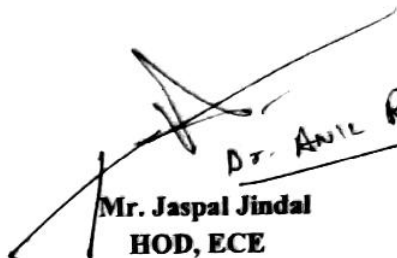
The sample of project title "Automatic Collage Bell " is attached below.

CERTIFICATE

This is to hereby certify that Aditya Tyagi, Annpurna Bhardwaj, Mayank Popli and pooja Dahiya of PANIPAT INSTITUTE OF ENGINEERING & TECHNOLOGY bearing Roll No. 2811971, 2811973, 2811976, 2811978 of Electronics & Communication Department has successfully undergone project session from period February 2014 to June 2014.

During his training duration the regularity and code of conduct was found satisfactory.


Ms. Swati Gupta
(project incharge)


Mr. Jaspal Jindal
HOD, ECE

Dr. Anil Rana

LINEAR IC APPLICATIONS (ECE-307E): An **electronic circuit** is a group of electronic components connected for a specific purpose. A simple electronic circuit can be designed easily because it requires few discrete electronic components and connections. However, designing a complex electronic circuit is difficult, as it requires more number of discrete electronic components and their connections. It is also time taking to build such complex circuits and their reliability is also less. These difficulties can be overcome with Integrated Circuits. If multiple electronic components are interconnected on a single chip of semiconductor material, then that chip is called as an **Integrated Circuit (IC)**. It consists of both active and passive components. Linear Integrated Circuits are solid state analog devices that can operate over a continuous range of input signals. The experience learning of this course is to design various types of circuits like OPAMP as an amplifier, integrator, differentiator, comparator, voltage follower, current follower, Schmitt trigger, BJT as an amplifier, characteristics realization of various circuits using hardware (in laboratory) and software (using Orcad and Multisim). This course gives tremendous learning to students to design wide range of circuits and their application in different domains.

Experiential Activity: Project Development

Sr. No.	Project Title	Year	Student Name
1	Wireless Gesture Controlled car	2015-2016	Aditya Kumar, Akshay
2	A Low Voltage audio amplifier	2014-2015	Sumit Saroha, Neeraj Kumar, Hemant Sharma

The sample of project title "A Low Voltage audio amplifier " is attached below.

Certificate

This is to hereby certify that Sumit Saroha, Neeraj Kumar and Hemant Sharma of Panipat Institute of Engineering & Technology bearing Roll No 2811269,2812776,2812782 respectively of Electronics & Communication Department has successfully undergone project under the guidance of Mr. Satish Saini, Asst. Professor(ECE Department).

During their project duration the regularity and code of conduct was found satisfactory.



**Signature of HOD
Mr. Jaspal Jindal
HOD , ECE**