

Course Code	Course Title	L	T	P	C
1156EC405	PLASTIC ELECTRONICS	0	0	0	2

**a) Course Category**

Independent Learning – Self Learning Course

**b) Preamble**

To give an exposure to the basics of Plastic Electronics, a topical field of study, involving electronic and optoelectronic devices those are compatible to the flexible substrates, enabling inexpensive processing techniques, mechanically flexible and less power consumption.

**c) Prerequisite**

Nil

**d) Related Courses**

Organic Electronic Devices

**e) Course Outcomes**

CO Nos.	Course Outcomes	Knowledge Level (Based on Revised Bloom's Taxonomy)
CO1	Understand the basics of plastic electronics	K2
CO2	Understand the carrier transport in organic semiconductors	K2
CO3	Study the optical properties of organic semiconductors and its applications	K2
CO4	Explore the plastic electronic materials	K2
CO5	Explain the application of plastic electronics	K2

## f) Course Content

### UNIT I Introduction to plastic electronics

Introduction to the concept of semiconductor, introduction to plastic electronics – Feature of plastics, Advantages of plastic electronics, Mobility features

### UNIT II Charge carrier transport in organic semiconductors

Charge carrier transport in organic semiconductors, Localisation via polarization, Localisation by disorder

### UNIT III Optical properties of organic semiconductors

Optical properties of organic semiconductors, Optoelectronic properties of Organic Semiconductors, Organic light emitting diodes, Organic Light Emitting Transistors, Organic Solar Cells

### UNIT IV Plastic electronic materials

Plastic electronic materials: Conductors, Semiconductors, Dielectrics, Substrates, Energy levels, Charge carrier injection

### UNIT V Application of Plastic electronics

Application of Plastic electronics: Poly LED, Plastic Transistors, Plastic Solar cells, Plastic LASERS

## g) Learning Resources

### Reference Books

1. <https://www.coursera.org/learn/plastic-electronics>
2. <https://www.slideshare.net/ravinaraiian/plastic-electronic-1>
3. [https://www.slideshare.net/ravinaraiian/plastic-electronic-1?from\\_action=save](https://www.slideshare.net/ravinaraiian/plastic-electronic-1?from_action=save)
4. <https://slideplayer.com/slide/12917481/>
5. <https://slideplayer.com/slide/5862968/>
6. <http://www.123seminaronly.com/EC/Plastics-Electronics.html>