

Course Code	Course Title	L	T	P	C
1156EC406	Organic Electronic Devices	0	0	0	2

a) Course Category

Independent Learning – Self Learning Course

b) Preamble

c) Prerequisite

Nil

d) Related Courses

e) Course Outcomes

CO Nos.	Course Outcomes	Knowledge Level (Based on Revised Bloom's Taxonomy)
CO1	Explain about functionalities of Organic Semiconductors	K2
CO2	Understand the characterization of Organic Semiconductors	K2
CO3	Describe the charge transport in organic semiconductors	K2
CO4	Identify the operation of organic electronic devices	K2
CO5	Explain the application of Organic Semiconductors	K2

f) Course Content

UNIT I Synthesis of Organic Semiconductors

Introduction to synthesis of small molecule and polymer semiconductors- Controlled polymerization techniques for macromolecular semiconductors-Interpret spectroscopic, chromatographic, and molecular characterization

UNIT II Characterization of Organic Semiconductors

Molecular orbital levels- Optoelectronic properties of organic semiconductors

UNIT III Charge Generation and Transport

Different models for charge transport in organic semiconductors- Charge generation and transport in organic and inorganic semiconductors.

UNIT IV Operation of Organic devices

Organic electronic devices operation - Equations to evaluate device performance

UNIT V Device Application of Organic Semiconductors

Potential for organic electronic materials: supplement or replace inorganic semiconducting devices

g) Learning Resources

Online Resource

1. <https://www.edx.org/course/organic-electronic-devices-purdue-nano515x>
2. <https://www.slideshare.net/MadhushreeGhosh3/organic-electronics-75712076>
3. <https://nanohub.org/courses/OED/01a/asset/5268>
4. https://lmis1.epfl.ch/webdav/site/lmis1/.../NT_conductive%20polymers%20dec.pdf
5. https://lmom.epfl.ch/courses/dass_organic_electronic_materials_1.pdf
6. <https://physics.oregonstate.edu/optoelectronic-properties-organic-semiconductor-materials>