

COURSE CODE: 1152EE144	COURSE TITLE: <b>WEARABLE ELECTRONICS</b>	L	T	P	C
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**COURSE CATEGORY:**

Program Elective

**PREAMBLE :**

Wearable Electronics mainly deals with the fundamentals of electronics and their applications in textiles and clothing product development.

**PREREQUISITE COURSES:**

Basic Electrical Engineering

**COURSE EDUCATIONAL OBJECTIVES :**

1. To learn about wearable technology and different interfacing technologies.
2. To understand about electrostatically generated nanofibres
3. To describe about sensing fabric and understand smart fabric for health care etc.
4. To discuss strain sensor in wearable devices
5. To study the different applications of wearable technologies

**COURSE OUTCOMES :**

Upon the successful completion of the course, students will be able to:

CO Nos.	Course Outcomes	Knowledge Level (Based on revised Bloom's Taxonomy)
CO1	Know the concept of wearable technology and different interfacing methodologies	K2
CO2	Discuss about production of nanofibres	K2
CO3	Understand about sensing fabric, actuating fabrics etc.	K2
CO4	Discuss about strain sensors used in wearable devices	K2
CO5	Understand about application of wearable technology in different fields	K2

**CORRELATION OF COs AND POs**

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H				L						L	
CO2	L	H	L	H	H	H	H				L	
CO3	H		H					M	L	M		
CO4	L							M	M	M		
CO5	L		M		M			H	M	M		

<b>COURSE CONTENT:</b>		
<b>UNIT I</b>	<b>INTRODUCTION</b>	<b>9</b>
Introduction-Current and Future Wearable technology -Interfacing Technologies-Communication Technologies-Data Management Technologies-Energy Management Technologies-Applications- Implications		
<b>UNIT II</b>	<b>ELECTROSTATICALLY GENERATED NANOFIBRES</b>	<b>9</b>
Introduction-Electrospinning process-Background- Controlling the diameter of the fibre-Formation of yarns and fabrics- Electroactive nanofibers - Inherently conductive polymers and blends- Nanocomposites- Pyrolysis and coating of nanofibres		
<b>UNIT III</b>	<b>ELECTROACTIVE FABRICS AND WEARABLE MAN-MACHINE INTERFACES</b>	<b>9</b>
Introduction- Sensing Fabrics – Actuating fabrics- Smart Fabrics for Health care- Smart Fabric for motion capture- Smart textiles for kinesthetic interfaces.		
<b>UNIT IV</b>	<b>STRAIN SENSORS IN WEARABLE DEVICES</b>	<b>9</b>
Introduction- Textile Based Strain Sensors for Wearable Devices- Fabrication of Textile Based Sensors- Applications of Textile Based Strain Sensors		
<b>UNIT V</b>	<b>APPLICATIONS</b>	<b>9</b>
Soldiers Status Monitoring Software - Design and Development of Flexible Solar Tent -Optical fibre fabric display-Communication apparel, Protection and Safety aspects of using electronic gadgets		
		<b>TOTAL: 45 PERIODS</b>
<b>TEXT BOOKS:</b>		
<ol style="list-style-type: none"> <li>1. Xiaoming Tao, "Wearable electronics and photonics", CRC Press, 2005</li> <li>2. Subhas C. Mukhopadhyay, "Wearable Electronics Sensors: For Safe and Healthy Living", Springer International Publishing, 2015</li> </ol>		