

<b>Course code</b>		<b>INDUSTRY 4.0 : AUGMENTED REALITY</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>Core/Elective/Supportive</b>		Core / Elective	<b>3</b>		<b>1</b>	<b>4</b>
<b>Pre-requisite</b>		<b>Nil</b>	<b>Syllabus Version</b>			
<b>Course Objectives:</b>						
The main objectives of this course are to:						
<ol style="list-style-type: none"> <li>1. To introduce Augmented Reality, the tool of Industry 4.0</li> <li>2. To describe the history and recent developments of AR</li> <li>3. To provide the technological components needed for AR</li> <li>4. To impart the importance of augmented reality in Industry 4.0 with real-time examples</li> <li>5. To discuss the revolution and impact of AR</li> <li>6. To understand the applications of AR and VR</li> </ol>						
<b>Unit:1</b>	<b>Introduction to Augmented Reality</b>					<b>12-- hours</b>
History of AR - Augmented reality characteristics – Difference between Augmented Reality and Virtual Reality – AR technological components – Technologies used in AR – Feature Extraction – Hardware components – AR devices – Importance of AR - Real world uses of AR – AR types – Software tools available for AR						
<b>Unit:2</b>	<b>Technologies needed for Augmented Reality</b>					<b>12-- hours</b>
Hardware technology – virtual scenes – 3D objects – AR components – Display – HMD – Eyeglasses – Contact Lenses – significance of AR – AR powered devices – AR application development drawbacks – Compatibility – Performance – AR libraries – Motion tracking – Environmental understanding – Anchors						
<b>Unit:3</b>	<b>Technology Integration and Implementation of AR</b>					<b>12-- hours</b>
Technology use and integration in industrial settings – Assistive training to faculty members – Planning and administration for implementation – AR implications – Practical data – AR labs – Platforms to form AR content – Coordinated utilization of AR application s – Hands-on preparation -						
<b>Unit:4</b>	<b>Augmented Reality and Virtual Reality for Micro Learning</b>					<b>12-- hours</b>
Micro learning techniques – Utilizing VR for learning – VR for Practical online assessment – VR info graphics – Virtual case considerations - Utilizing AR for learning – Accessible learning – sensible data – elevated learner engagement - VR technology – Components of VR – VR Hardware – VR applications – Civil Engineering – Real Estate – Biology and Medicine – Virtual Mall – VR in Education – Virtual Laboratory – Factory Planning – Automobile Industry						
<b>Unit:5</b>	<b>Tools and Applications of Augmented Reality</b>					<b>12-- hours</b>
Tools available for Augmented Reality and Recognition – Software Tools – Google Poly – Unity – software approaches – recognition types – native software solutions – ARKit – ARCore – software development kit - Cloud services - AR business applications – weather prediction – market prediction – smart cities - AR application for Education - AR application for Healthcare sector – Agriculture – Civil Engineering – Architecture – Archaeology – Crime and Security – Games – IoT - – Use cases – Social Media – Gaming – Education – Healthcare – Shopping and Business						
					<b>Total Lecture hours</b>	<b>60-- hours</b>

**Reference Book**

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| 1 | Kaliraj, P., Devi, T. (2021). Innovating with Augmented Reality: Applications in Education and Industry (P. Kaliraj, Ed.) (1st ed.). CRC Press, Taylor & Francis Group, Boca Raton, ebook ISBN 9781003175896 Auerbach Publications. <a href="https://doi.org/10.1201/9781003175896">https://doi.org/10.1201/9781003175896</a> |
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Course Designed by : Ms. Lissa and Prof. T. Devi