

**SETHU INSTITUTE OF TECHNOLOGY**  
**DEPARTMENT OF MECHANICAL ENGINEERING**  
**ACADEMIC YEAR 2021 - 2022 (ODD) – INNOVATIVE TEACHING LIST**  
**2<sup>nd</sup> YEAR – 3<sup>rd</sup> SEMESTER**

Class	Course Code	Course name	Course Instructors	Name of the topic(for each unit)	Innovation methodology employed	Web link
II Year	19UME302	Fundamentals of Manufacturing Process	Dr. K. Vinayagar Dr. G. Venkatesan Mr. K. Amirtharaj Mr. K. Amirtharaj	Design of Riser system	Visualization	<a href="https://www.youtube.com/watch?v=NDEC_sGRNaM">https://www.youtube.com/watch?v=NDEC_sGRNaM</a>
				Arc Welding Processes	Virtual Lab Visit	<a href="http://www.nitttrkol.ac.in/vlab-me-mtl-exp-1.php#top">http://www.nitttrkol.ac.in/vlab-me-mtl-exp-1.php#top</a>
				Deformation Processing	Visualization	<a href="https://www.youtube.com/watch?v=5l6taZ2rLp8">https://www.youtube.com/watch?v=5l6taZ2rLp8</a>
				SHEET METAL PROCESSES	Virtual Lab Visit	<a href="https://msvs-dei.vlabs.ac.in/SheetMetal_Experiment.php?https://www.youtube.com/embed/SJStL4uRDYk">https://msvs-dei.vlabs.ac.in/SheetMetal_Experiment.php?https://www.youtube.com/embed/SJStL4uRDYk</a>
				Injection	Visualization	<a href="https://www.youtube.com/watch?v=SoTfSOF">https://www.youtube.com/watch?v=SoTfSOF</a>

				Molding		<a href="#">j6q0</a>
II Year	19UME303	Engineering Thermodynamics	Mr. M. Pasumpon Mr. M. Pasumpon Mr. C. Shravan Kumar Mr. C. Shravan Kumar	Steady Flow Energy Equation and its application	Animated video	<a href="https://youtu.be/qnJmFdTLMpQ">https://youtu.be/qnJmFdTLMpQ</a>
				Heat pump	NPTEL	<a href="https://youtu.be/L_TxVkdvlRM">https://youtu.be/L_TxVkdvlRM</a>
				Rankine cycle	Animated video	<a href="https://youtu.be/QFZN71MY71o">https://youtu.be/QFZN71MY71o</a>
				Maxwell Relations	NPTEL	<a href="https://youtu.be/mnp2hOVhwYE">https://youtu.be/mnp2hOVhwYE</a>
				Psychrometric process	Mind Mapping	-
II Year	19UME304	Fluid Mechanics and Machinery	Mr. V. Ramachandran Mr. V. Ramachandran Dr. C. Muthusamy Mr. V. Ananda Natarajan	Properties of fluids	Visualization	<a href="https://youtu.be/zqLicugjwZE">https://youtu.be/zqLicugjwZE</a>
				Euler's equation and Bernoulli's energy equation	Visualization	<a href="https://youtu.be/oK8UxWI-85Y">https://youtu.be/oK8UxWI-85Y</a> and <a href="https://youtu.be/9I4o3-vrm98">https://youtu.be/9I4o3-vrm98</a>
				Buckingham's $\pi$ theorem	Visualization	<a href="https://youtu.be/6VeCQeb7TZk">https://youtu.be/6VeCQeb7TZk</a>
				Hydraulic Turbines	Virtual Lab Visit Visualization	Virtual Lab Visit <a href="https://youtu.be/9jAZ2eWy-Q4">https://youtu.be/9jAZ2eWy-Q4</a>

				Hydraulic Pumps	Virtual Lab Visit Visualization	Virtual Lab Visit <a href="https://youtu.be/H1AsPLYCyWk">https://youtu.be/H1AsPLYCyWk</a>
II Year	19UME305	Engineering Mechanics	Mr. S. Saravanan Mr. J. Arul Jeeva Nijanthan Mr. J. Arul Jeeva Nijanthan Mr. T. Gangadharan	Laws of Mechanics	Visualization	NPTEL VIDEO <a href="https://www.youtube.com/watch?v=LG0YzGeAFxk">https://www.youtube.com/watch?v=LG0YzGeAFxk</a>
				Equilibrium , Varignon's theorem	Visualization	<a href="https://www.nptelvideos.com/engineering_mechanics/">https://www.nptelvideos.com/engineering_mechanics/</a> , <a href="https://www.youtube.com/watch?v=6eK8bKbJwFo">https://www.youtube.com/watch?v=6eK8bKbJwFo</a>
				Parallel axis theorem and perpendicular axis theorem	Visualization	<a href="https://www.youtube.com/watch?v=nmhhayBU1bc">https://www.youtube.com/watch?v=nmhhayBU1bc</a>
				Work Energy Equation of particles	Visualization	<a href="https://www.nptelvideos.com/video.php?id=1501&amp;c=16">https://www.nptelvideos.com/video.php?id=1501&amp;c=16</a>
				Motion of particles with friction	Visualization	<a href="https://www.nptelvideos.com/video.php?id=1496&amp;c=16">https://www.nptelvideos.com/video.php?id=1496&amp;c=16</a>

II Year	19UME306	Materials Engineering	Mr. T.P. Balaji Dr. I. Vijay Arasu Mr. J. David Gnanaraj Mr. J. David Gnanaraj	Phase Diagrams	Video presentation- NPTEL Video	<a href="https://www.youtube.com/watch?v=BJrTZ07bHm4&amp;list=PLfIFNJ1DPG4lENg4VUTWYKxxB911aHu">https://www.youtube.com/watch?v=BJrTZ07bHm4&amp;list=PLfIFNJ1DPG4lENg4VUTWYKxxB911aHu</a>
				TTT & CCR Diagram	Video presentation- NPTEL Video	<a href="https://www.youtube.com/watch?v=-YN7nP6KwTs">https://www.youtube.com/watch?v=-YN7nP6KwTs</a>
				Hardness testing machines	Lab visit	
				HSLA Steels	Video presentation- NPTEL Video	<a href="https://www.youtube.com/watch?v=EVqUuaK6c9A&amp;t=649s">https://www.youtube.com/watch?v=EVqUuaK6c9A&amp;t=649s</a>
				Types of ceramics	Video lecture (Youtube)	<a href="https://www.youtube.com/watch?v=YJITp7dwrPk">https://www.youtube.com/watch?v=YJITp7dwrPk</a>

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**3<sup>rd</sup> YEAR – 5<sup>th</sup> SEMESTER**

Class	Course Code	Course name	Course Instructors	Name of the topic(for each unit)	Innovation methodology employed	Weblink
III Year	19UME501	Heat and Mass Transfer	Mr. V. Ananda Natarajan Mr. V. Ananda Natarajan Dr. K. Arun Balasubramanian Mr. C. Shravan Kumar	One Dimensional Steady State Heat Conduction.	NPTEL VIDEO	<a href="https://www.youtube.com/watch?v=o7Mq4Rdyd1k">https://www.youtube.com/watch?v=o7Mq4Rdyd1k</a>
				Introduction to boiling and condensation	NPTEL VIDEO	<a href="https://www.youtube.com/watch?v=6OGnB9tywtI">https://www.youtube.com/watch?v=6OGnB9tywtI</a>
				Basic Concepts and Laws of Radiation	NPTEL VIDEO	<a href="https://nptel.ac.in/courses/112103276/">https://nptel.ac.in/courses/112103276/</a>
				Heat exchanger Classification.	NPTEL VIDEO	<a href="https://www.youtube.com/watch?v=3t-Pk9aiUtE">https://www.youtube.com/watch?v=3t-Pk9aiUtE</a> <a href="https://www.youtube.com/watch?v=TzFZ49h6Yx0">https://www.youtube.com/watch?v=TzFZ49h6Yx0</a>
				Convective Mass	NPTEL	<a href="https://www.youtube.com/watch?v=a9CACg_iiCo">https://www.youtube.com/watch?v=a9CACg_iiCo</a>

				Transfer	VIDEO	
III Year	19UME50 2	Design of Machine Elements	Mr. B. Mohmed Fazil Mr. B. Mohmed Fazil Mr. P. R. Rajkumar Mr. P. R. Rajkumar	Direct, bending and torsional stress equation		<a href="https://www.youtube.com/watch?v=ITuWnr13aKI">https://www.youtube.com/watch?v=ITuWnr13aKI</a>
				Design of Couplings, Design of Knuckle Joints	Demonstratio n using Models	
				Design of welded joints	Demonstratio n using welded joint specimens and NPTEL Videos	<a href="https://www.youtube.com/watch?v=7b1bd-lgra0">https://www.youtube.com/watch?v=7b1bd-lgra0</a>
				Design of Helical Springs, Flywheels	Lab demonstration using models	-
				Rolling Contact Bearings	Using Models	-
III Year	19UME50 3	Object Oriented Python Programming (INTEGRATE D)	Mr. P. Meenatchisundaram Mr. P. Meenatchisundaram Mr. S. Devanand Mr. S. Devanand	Variables, I/O method types, Lists, Tuples, Dictionaries	IDLE Python / Jupyter Notebook	-
				If, Else, Elif Loop, While Loop, For	IDLE Python / Jupyter Notebook	-

				Loop, Function		
				Modules, Queue, Numpy	IDLE Python / Jupyter Notebook	-
				Objects and Classes	Online Compiler	<a href="https://www.programiz.com/python-programming/online-compiler/">https://www.programiz.com/python-programming/online-compiler/</a>
				String Formatting – File Handling	IDLE Python / Jupyter Notebook	
III Year	19UME50 4	Measurements and Instrumentation (INTEGRATE D)	Mr. P. Karuppasamy Mr. K.M. Ahamed Sheriff Mr. J. Arul Jeeva Nijanthan Dr. A. Saravana Kumaar	systematic and random errors	NPTEL Video	<a href="https://www.youtube.com/watch?v=Mdn2VbIACA">https://www.youtube.com/watch?v=Mdn2VbIACA</a> U
				Vernier, micrometer, Slip gauges	Lab visit	-
				CMM	Lab visit	-
				Force measuring set up	Lab visit	-
				Selection of Sensors and transducers	NPTEL Video	<a href="https://www.youtube.com/watch?v=1uPTyjxZzyo">https://www.youtube.com/watch?v=1uPTyjxZzyo</a>
III Year	19UME90 3	Applied Hydraulics and Pneumatics (E1)	Mr. P. Karuppasamy (A,B) Dr. I. Vijay Arasu (C,D)	Working of Hydraulic system.	Animation video of Basic Hydraulic system.	<a href="https://www.youtube.com/watch?v=W2t6etPOP-E">https://www.youtube.com/watch?v=W2t6etPOP-E</a>
				Pumps	Model	-

				Different types valves and circuits	Lab visit	-
				Cascade method	Screen cast	<a href="https://youtu.be/8beqN5fUZvA">https://youtu.be/8beqN5fUZvA</a>
				PLC	Video Presentation	<a href="https://youtu.be/mLJoVHwQsFI">https://youtu.be/mLJoVHwQsFI</a>
III Year	19UME910	Unconventional Machining Process (E1)	Mr. S. Paramasamy (A,B) Mr. T. Gangadharan (C,D)	Ultrasonic Machining	NPTEL Video	<a href="https://youtu.be/E4VZ_rFqpG4">https://youtu.be/E4VZ_rFqpG4</a>
				Electro discharge machining	Animated video	<a href="https://www.youtube.com/watch?v=kh4DSOtef4k">https://www.youtube.com/watch?v=kh4DSOtef4k</a>
				Electro chemical machine	Animated video	<a href="https://youtu.be/b1nX7WVIN7U">https://youtu.be/b1nX7WVIN7U</a>
				Electron beam machining	NPTEL Video	<a href="https://youtu.be/Xdu4bSSli5A">https://youtu.be/Xdu4bSSli5A</a>
				Abrasive flow machining	NPTEL video	<a href="https://youtu.be/zu4MG_R8-KA">https://youtu.be/zu4MG_R8-KA</a>



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**4<sup>th</sup> YEAR – 7<sup>th</sup> SEMESTER**

Course code	Course name	Course Instructors	Name of the topic(for each unit)	Innovation methodology employed	Weblink
15UME701	Project Management and Finance	Dr. A. Perumal Dr. A. Saravana Kumar Mr. S.A. Sethu Raaman Dr. A. Perumal	UNIT -1 Project organizational structure	NPTEL Video Lecture	Weblink: <a href="https://youtu.be/RjOA7AxOVj8">https://youtu.be/RjOA7AxOVj8</a>
			UNIT -2 Developing project network using PERT/CPM	NPTEL Video Lecture	Weblink: <a href="https://youtu.be/LsH3ABRICqk">https://youtu.be/LsH3ABRICqk</a>
			UNIT -3 Resources and critical chain scheduling	Video Lecture	Weblink: <a href="https://youtu.be/mpc_FdAt75A">https://youtu.be/mpc_FdAt75A</a>
			UNIT -4 Tools and techniques used in quality management	Mind mapping procedure	---
			UNIT -5 Construction and evaluation of balance sheet	Case study	---

15UME702	Finite Element Analysis	Mr. C. Tamilarasan Mr. J. David Gnanaraj Mr. R. Jayaprakash Mr. R. Jayaprakash	Weighted residual methods and Rayleigh Ritz method.	NPTEL Videos	<a href="https://www.youtube.com/watch?v=rFztdZ7-b2M&amp;list=PLSGws_74K018SmggufD-pbzG3thPIpF94&amp;index=18">https://www.youtube.com/watch?v=rFztdZ7-b2M&amp;list=PLSGws_74K018SmggufD-pbzG3thPIpF94&amp;index=18</a> <a href="https://www.youtube.com/watch?v=_k3KcWQuwQA&amp;list=PLSGws_74K018SmggufD-pbzG3thPIpF94&amp;index=19">https://www.youtube.com/watch?v=_k3KcWQuwQA&amp;list=PLSGws_74K018SmggufD-pbzG3thPIpF94&amp;index=19</a>
			1-D Linear bar element, quadratic element and nodal approximation	Simulation in ANSYS	-
			Two dimensional finite element analysis	Online Quiz	<a href="https://forms.gle/wDNwRnxMFur3bpV37">https://forms.gle/wDNwRnxMFur3bpV37</a>
			Transverse vibration of beams ,Vibration of Continuous Systems	NPTEL Videos	<a href="https://www.youtube.com/watch?v=NJiS3g-Ovqw">https://www.youtube.com/watch?v=NJiS3g-Ovqw</a>
			One-dimensional heat transfer problems, Scalar variable problems in 2-Dimensions	Simulation in ANSYS	-
15UME703	Mechatronics	Dr. B. Muthu Chozha Rajan Dr. B. Muthu Chozha Rajan Mr. S. Saravanan Mr. S. Saravanan	Sensors and Transducers – Performance Terminology	NPTEL Video Lectures	<a href="https://youtu.be/xHPZ0jK6-u8">https://youtu.be/xHPZ0jK6-u8</a>
			Pneumatic and Hydraulic Systems	Animated videos	<a href="https://youtu.be/YImRa-9zDF8">https://youtu.be/YImRa-9zDF8</a>
			PID Controllers –	NPTEL video	<a href="https://youtu.be/9CHZu81Iqhw">https://youtu.be/9CHZu81Iqhw</a>

			Digital Controllers	lectures	
			Programmable Logic Controllers – Basic Structure	Lab Visit	---
			Case Studies of Mechatronics Systems - Pick and place robot	Case study	---
15UGM952	Automation in Agriculture Engineering (E5)	Dr. K. Vinayagar (A,B) Dr. G. Nagaraj (C,D)	Introduction -Agriculture Automation	Visualization	<a href="https://www.youtube.com/watch?v=ixjXjyJlbtK">https://www.youtube.com/watch?v=ixjXjyJlbtK</a> <a href="https://www.youtube.com/watch?v=Qmla9NLFvU&amp;t=272s">https://www.youtube.com/watch?v=Qmla9NLFvU&amp;t=272s</a>
			Tillage implements	Visualization	<a href="https://www.youtube.com/watch?v=FjgTX8vFLc4">https://www.youtube.com/watch?v=FjgTX8vFLc4</a> <a href="https://www.youtube.com/watch?v=DsipD8fLjuU">https://www.youtube.com/watch?v=DsipD8fLjuU</a>
			Pneumatic System and its application	Visualization	<a href="https://www.youtube.com/watch?v=ixjXjyJlbtK">https://www.youtube.com/watch?v=ixjXjyJlbtK</a> <a href="https://www.youtube.com/watch?v=LuJD0rlStZM">https://www.youtube.com/watch?v=LuJD0rlStZM</a>
			IoT based Smart Irrigation	Visualization	<a href="https://www.youtube.com/watch?v=RzUlllX7zyY">https://www.youtube.com/watch?v=RzUlllX7zyY</a> <a href="https://www.youtube.com/watch?v=fzP9Q-N_jg">https://www.youtube.com/watch?v=fzP9Q-N_jg</a> <a href="https://www.youtube.com/watch?v=j4HBIOf5ZDA">https://www.youtube.com/watch?v=j4HBIOf5ZDA</a>
			Agricultural robots	Visualization	<a href="https://www.youtube.com/watch?v=Rl77FVobxVI">https://www.youtube.com/watch?v=Rl77FVobxVI</a> <a href="https://www.youtube.com/watch?v=Q">https://www.youtube.com/watch?v=Q</a>

					<a href="#">LFdkiO8Oko</a>
15UGM951	Smart Manufacturing (E5)	Dr. Perumal (A,B,C,D)	New Technologies For Future Manufacturing	Visualization	<a href="https://www.youtube.com/watch?v=rIdoIKukpnU">https://www.youtube.com/watch?v=rIdoIKukpnU</a>
			Introduction To Additive Manufacturing	LAB DEMO	-
			Future Robot Technology And Tasks	Visualization	<a href="https://www.youtube.com/watch?v=zuGzgPRC8Gk">https://www.youtube.com/watch?v=zuGzgPRC8Gk</a>
			Iot Applications	Visualization	<a href="https://www.youtube.com/watch?v=N_z4OaSuoAA">https://www.youtube.com/watch?v=N_z4OaSuoAA</a>
			Types Of Cloud Services	Visualization	<a href="https://www.youtube.com/watch?v=1BMO7YkwR6Y">https://www.youtube.com/watch?v=1BMO7YkwR6Y</a>

**OPEN ELECTIVES****III<sup>rd</sup> Year – V<sup>th</sup> Semester**

<b>Course Code</b>	<b>Course Name</b>	<b>Course Coordinator</b>	<b>Name of the Topic (for each unit)</b>	<b>Innovation Methodology Employed</b>	<b>WEBLINK</b>
19UME97 1	Industrial Psychology and Work Ethics	Mr. K.M. Ahamed Sheriff	Performance Management	NPTEL Video	<a href="https://youtu.be/YV3BjBlcPzM">https://youtu.be/YV3BjBlcPzM</a>
			Organization Culture	NPTEL Video	<a href="https://youtu.be/Bxm3j8JOXs4">https://youtu.be/Bxm3j8JOXs4</a>
			Job Analysis in Industrial Psychology	YouTube Video	<a href="https://www.youtube.com/watch?v=nX1gDP4_WmM">https://www.youtube.com/watch?v=nX1gDP4_WmM</a>
			Industrial Sociology	NPTEL Video	<a href="https://www.youtube.com/watch?v=XiAGKds7_A4">https://www.youtube.com/watch?v=XiAGKds7_A4</a>
			Ethical Decision Making Process	YouTube Video	<a href="https://www.youtube.com/watch?v=fnPEUAnGdEY">https://www.youtube.com/watch?v=fnPEUAnGdEY</a>

**IV<sup>th</sup> Year – VII<sup>th</sup> Semester**

<b>Course Code</b>	<b>Course Name</b>	<b>Course Coordinator</b>	<b>Name of the Topic (for each unit)</b>	<b>Innovation Methodology Employed</b>	<b>WEBLINK</b>
15UME97 4	Principles of Management	Mr. K.M. Ahamed Sheriff	Evolution of Management	NPTEL Video	<a href="https://www.youtube.com/watch?v=yWF4tT6o2mM">https://www.youtube.com/watch?v=yWF4tT6o2mM</a>
			Decision Making Process	NPTEL Video	<a href="https://www.youtube.com/watch?v=pMm5TnupegI">https://www.youtube.com/watch?v=pMm5TnupegI</a>
			Organizational Structure and Culture	NPTEL Video	<a href="https://www.youtube.com/watch?v=MbuIcngKshM">https://www.youtube.com/watch?v=MbuIcngKshM</a>
			Organization Culture	NPTEL Video	<a href="https://www.youtube.com/watch?v=Bxm3j8JOXs4">https://www.youtube.com/watch?v=Bxm3j8JOXs4</a>
			Budgetary and non-budgetary control techniques	NPTEL Video	<a href="https://www.youtube.com/watch?v=0OJ2PIGiwJE">https://www.youtube.com/watch?v=0OJ2PIGiwJE</a>

