

<b>RGPV (DIPLOMA WING) BHOPAL</b>		<b>OBE CURRICULUM FOR THE COURSE</b>		<b>FORMAT-3</b>	<b>Sheet No. 1/5</b>
<b>Branch</b>	<b>Electrical Engineering</b>			<b>Semester</b>	<b>4th</b>
<b>Course Code</b>	<b>404</b>	<b>Course Name</b>	<b>Electrical Engineering Drawing using CAD</b>		
<b>Course Outcome - 1</b>	<b>Draw basic engineering drawing.</b>			<b>Teach Hrs</b>	<b>Marks</b>
<b>Learning Outcome E0140411</b>	Select appropriate drawing tool for engineering drawing and prepare scale for given R.F. (Cognitive domain)			<b>6 Hrs</b>	<b>10 Marks</b>
<b>Contents</b>	<ul style="list-style-type: none"> <li>• Drawing instruments- Introduction &amp; application.</li> <li>• Different types of line.</li> <li>• Division of line by parallel line method.</li> <li>• Bisection of angle.</li> <li>• Representative fraction (R.F).</li> <li>• Classification of scale – Plain, diagonal.</li> </ul>				
<b>Method of Assessment</b>	<b>Internal: Mid semester theory examination (Pen paper test) &amp; Viva voce.</b>				
<b>Learning Outcome E0140412</b>	Draw engineering curves and orthographic projection. (Cognitive domain)			<b>6 Hrs</b>	<b>10 Marks</b>
<b>Contents</b>	<ul style="list-style-type: none"> <li>• Ellipse and parabola using rectangle method only.</li> <li>• First and third angle projection.</li> <li>• Projection of point.</li> <li>• Projection of line parallel to one and perpendicular to other plane only.</li> </ul>				
<b>Method of Assessment</b>	<b>External: End semester theory examination (Pen paper test).</b>				
<b>Learning Outcome E0140413</b>	Draw orthographic projection of plane and solid. (Psychomotor domain)			<b>6 Hrs</b>	<b>10 Marks</b>
<b>Contents</b>	<ul style="list-style-type: none"> <li>• Projection of plane - Circle, square only (Parallel to one and perpendicular to other plane only).</li> <li>• Projection of Solid - cylinder, sphere only (Axis parallel to one and perpendicular to other plane only).</li> </ul>				
<b>Method of Assessment</b>	<b>External: Laboratory observation and viva voce.</b>				

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Branch	Electrical Engineering			Semester	4th
Course Code	404	Course Name	Electrical Engineering Drawing using CAD		
<b>Course Outcome -2</b>	<b>Draw symbols and wiring diagram of electrical engineering.</b>			<b>Teach Hrs</b>	<b>Marks</b>
<b>Learning Outcome E0140424</b>	Identify symbols for electrical engineering drawing. (Cognitive domain)			<b>5 Hrs</b>	<b>10 Marks</b>
<b>Contents</b>	<ul style="list-style-type: none"> <li>• Symbols of practical units, symbol of decimal multiples and submultiples of unit.</li> <li>• Symbol of supplies-single phase, three phase three wire, three phase four wire, D.C. supply.</li> <li>• Symbol of switches, distribution boards, fan, light fixtures, bell, buzzer, fuse, lighting arrestor.</li> <li>• Symbol of all types of motor starters, electrical instruments, CT/PT, Measuring instruments.</li> <li>• Electronic components- Diode, BJT, Zener diode, SCR, UJT, TRIAC, DIAC, IGBT, Rectifier, Inverter.</li> </ul>				
<b>Method of Assessment</b>	External: End semester theory examination (Pen paper test).				
<b>Learning Outcome E0140425</b>	Prepare wiring diagram for house. (Cognitive domain)			<b>7 Hrs</b>	<b>10 Marks</b>
<b>Contents</b>	<ul style="list-style-type: none"> <li>• Light, fan and power circuit.</li> <li>• Godown/corridor wiring (With &amp; without looping).</li> <li>• Staircase wiring.</li> <li>• Inverter wiring.</li> </ul>				
<b>Method of Assessment</b>	External: End semester theory examination (Pen paper test).				
<b>Learning Outcome E0140426</b>	Interpret electrical wiring of house and commercial application. (Cognitive domain)			<b>6 Hrs</b>	<b>10 Marks</b>
<b>Contents</b>	<ul style="list-style-type: none"> <li>• Electrical and electronic symbols used in house wiring.</li> <li>• Wiring diagram of single phase and three phase service connection comprises fuse, energy meter, MCB and distributor.</li> <li>• Wiring diagram of single and multiple bell circuit.</li> </ul>				
<b>Method of Assessment</b>	Internal: Mid semester theory examination (Pen paper test).				
<b>Learning Outcome E0140427</b>	Make use of CAD for preparing domestic wiring diagram. (Psychomotor domain)			<b>7 Hr</b>	<b>10 Marks</b>

<b>Contents</b>	<ul style="list-style-type: none"> <li>• Introduction to general purpose graphics software (CAD screen layout, Drawing area, Menu, toolbar &amp; status bar, Save a CAD file, Unit and dimension in CAD).</li> <li>• Plotting techniques, coordinate systems, line drawing, use command for drawing of circle, polygon and dimensional drawing using CAD.</li> <li>• To draw electrical and electronic symbols and create library using CAD.</li> <li>• To draw wiring diagram of one lamp, one fan with regulator and socket each controlled by individual switches using CAD.</li> </ul>
<b>Method of Assessment</b>	External: Laboratory observation and viva voce.

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<b>Branch</b>	<b>Electrical Engineering</b>		<b>Semester</b>	<b>4th</b>	
<b>Course Code</b>	<b>404</b>	<b>Course Name</b>	<b>Electrical Engineering Drawing using CAD</b>		
<b>Course Outcome - 3</b>	<b>Draw winding and schematic of electrical machine.</b>			<b>Teach Hrs</b>	<b>Marks</b>
<b>Learning Outcome E0140438</b>	Develop simple winding diagram for DC machine. (Cognitive domain)			<b>6 Hrs</b>	<b>10 Marks</b>
<b>Contents</b>	<ul style="list-style-type: none"> <li>• Simplex lap winding of dc machine.</li> <li>• Simplex wave winding of dc machine.</li> </ul>				
<b>Method of Assessment</b>	External: End semester theory examination (Pen paper test).				
<b>Learning Outcome E0140439</b>	Sketch the assembly diagram of transformer. (Psychomotor domain)			<b>5 Hrs</b>	<b>10 Marks</b>
<b>Contents</b>	<ul style="list-style-type: none"> <li>• Schematic of single phase and three phase transformer showing HT/LT winding.</li> <li>• Assembly drawing of three phase power transformer showing conservator, cooling tube, fan, breather, pressure gauge, temperature gauge, LT &amp; HT bushing.</li> </ul>				
<b>Method of Assessment</b>	Internal: Laboratory observation and viva voce.				
<b>Learning Outcome E01404310</b>	Interpret panel diagram of alternator. (Cognitive domain)			<b>6 Hrs</b>	<b>10 Marks</b>
<b>Contents</b>	<ul style="list-style-type: none"> <li>• Panel diagram for parallel operation of alternator with circuit breaker, isolator, measuring instruments, synchro-scope, over current and earth fault protection, voltage selector switch.</li> </ul>				
<b>Method of Assessment</b>	Internal: Assignment and quiz.				

<b>Learning Outcome E01404311</b>	Use CAD for winding diagram of electrical machine and prepare panel diagram of alternator. (Psychomotor Domain)	<b>6 Hrs</b>	<b>10 Marks</b>
<b>Contents</b>	<ul style="list-style-type: none"> <li>To draw Simplex lap winding of dc machine using CAD.</li> <li>To draw Simplex wave winding of dc machine using CAD.</li> <li>To draw panel diagram for parallel operation of alternator with circuit breaker, isolator, measuring instruments, synchro-scope, over current and earth fault protection, voltage selector switch using CAD.</li> </ul>		
<b>Method of Assessment</b>	Internal: Laboratory observation and viva voce.		

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<b>Branch</b>	<b>Electrical Engineering</b>		<b>Semester</b>	<b>4th</b>	
<b>Course Code</b>	<b>404</b>	<b>Course Name</b>	<b>Electrical Engineering Drawing using CAD</b>		
<b>Course Outcome - 4</b>	<b>Interpret electrical power transmission &amp; distribution components and their schematic.</b>			<b>Teach Hrs</b>	<b>Marks</b>
<b>Learning Outcome E01404412</b>	Draw cross sectional view of different power cables. (Cognitive domain)			<b>5 Hrs</b>	<b>10 Marks</b>
<b>Contents</b>	<ul style="list-style-type: none"> <li>Single core and three core power cable.</li> <li>Belted cable.</li> <li>XLPE (Cross linked polyethylene cable) power cable.</li> </ul>				
<b>Method of Assessment</b>	External: End semester theory examination (Pen paper test).				
<b>Learning Outcome E01404413</b>	Draw different types of tower with accessories. (Cognitive domain)			<b>6 Hrs</b>	<b>10 Marks</b>
<b>Contents</b>	<ul style="list-style-type: none"> <li>Single circuit and double circuit tower.</li> <li>Distribution poles (RCC, Rail and Tubular type).</li> <li>Arrangement of various types of cross arms with insulators, jumpers.</li> <li>Stay arrangement (wire and stud).</li> </ul>				
<b>Method of Assessment</b>	External: End semester theory examination (Pen paper test).				

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<b>Branch</b>	<b>Electrical Engineering</b>		<b>Semester</b>	<b>4th</b>	
<b>Course Code</b>	<b>404</b>	<b>Course Name</b>	<b>Electrical Engineering Drawing using CAD</b>		
<b>Course Outcome - 5</b>	<b>Illustrate substation and earthing system.</b>			<b>Teach Hrs</b>	<b>Marks</b>
<b>Learning Outcome E01404514</b>	Draw single line diagram of substation and diagram of earthing system. (Cognitive domain)			<b>7 Hrs</b>	<b>10 Marks</b>
<b>Contents</b>	<ul style="list-style-type: none"> <li>33KV/11KV substation with all protective devices.</li> <li>Substation: - Single bus bar arrangement, duplicate bus bar arrangement.</li> <li>Earthing- Plate, Pipe as per I.S.S./B.I.S.</li> </ul>				
<b>Method of Assessment</b>	<b>External: End semester theory examination (Pen paper test).</b>				
<b>Learning Outcome E01404515</b>	Develop single line diagram of substation using CAD. (Psychomotor domain)			<b>6 Hrs</b>	<b>10 Marks</b>
<b>Contents</b>	<ul style="list-style-type: none"> <li>To draw 11KV/415V substation with all protective devices using CAD.</li> <li>To draw substation: - Single bus bar arrangement &amp; duplicate bus bar arrangement using CAD.</li> </ul>				
<b>Method of Assessment</b>	<b>External: Laboratory observation and viva voce.</b>				

#### REFERENCE BOOKS:

S.N.	Title & Publication	Author
1.	Electrical Engineering Drawing (With Estimating and Installation Designs), New Asian Publishers (A Division of Computech Publication Ltd.), New Delhi, ISBN: 9788173180032	C. R. Dargan
2.	Engineering Drawing: Plane and Solid Geometry, Charotar Publishing House Pvt. Ltd., Anand, Gujrat, ISBN: 978-93-80358-96-3	N. D. Bhatt
3.	Electrical Engineering Drawing, Satya Prakashan New Delhi.	B. R. Sharma
4.	Electrical Engineering Drawing, Satya Prakashan, New Delhi, ISBN: 978-8176841504	K. L. Narang
5.	विद्युत अभियांत्रिकी ड्राविंग, दीपक प्रकाशन, ग्वालियर।	एम. एफ. कुरैशी
6.	List of software given by AICTE for CAD software.	