Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
1	1	Theory	Importance of trade Training. General discipline in the Institute	Demonstration of Machinery used in the trade.
	2		Elementary First Aid.Importance of Welding inIndustry	Identification to safety equipment and their use etc.
	3	W/Shop calculation	Classification of Unit System Fundamental and Derived Units F.P.S, C.G.S, M.K.S and SI Units ,Measurement Units and Conversion,Factors, HCF, LCM and Problems	Hack sawing, filing square to dimensions
	4	Engg. Drawing	Engineering Drawing – Introduction Introduction to Engineering Drawing and Drawing Instruments – ->Conventions ->Viewing of engineering drawing sheets. ->Method of Folding of printed Drawing sheet as per BIS SP: 46-2003	Marking out on MS plate and punching
	5	ES	Behavioural Skill-Creating a focused and responsible learning envirnment-Chart paper Activity.	Extra Curricular activity : 2 Hrs Theory : 3 Hrs. Safety precautions in Shielded Metal Arc Welding, and Oxy-Acetylene Welding and Cutting.
	6	ES	Self-awareness and confidence building, display professionalism at the institute and work place	Marking out on MS plate and punching

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
2	1	Theory	Introduction and definition of welding. Arc and Gas Welding Equipments, tools and accessories.	Setting of oxy-acetylene welding equipment, Lighting and setting of flame.
	2		Various Welding Processes and its applications	Perform fusion run without filler rod on MS sheet 2mm thick in flat position
	3	W/Shop calculation	Fractions – Addition, Subtraction, Multiplication and Division ->Decimal Fractions - Addition, Subtraction, Multiplication and Division ->Solving Problems by using calculator	Setting up of Arc welding machine & accessories and striking an arc
	4	Engg. Drawing	Drawing Instrument ->Drawing board, T-square, Drafter (Drafting M/c), Set squares, Protector, Drawing Instrument Box (Compass, Dividers, Scale, Diagonal Scales etc.), pencils of different grades, Drawing pins/ Clips.	Deposit straight line bead on MS plate in flat position.
	5	ES	Increased Social initiations relationships and networks . Acceptance of peers from different cultures and social groups and work with them . Collaboration with team to priroritise the common goal and compromise individual prirorities.	Extra Curricular activity : 2 Hrs Theory : 3 Hrs. . Arc and Gas Welding terms and definitions.
	6	ES	Characteristic of a responsible citizen- Display the same by respecting self, others, environment, care for duty and value for time.	Deposit straight line bead on MS plate in flat position.

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
3	1	Theory	Different process of metal joining methods: Bolting, riveting, soldering, brazing, seaming etc.	Depositing bead with filler rod on M.S. sheet 2 mm thick in flat position
	2		Types of welding joints & its Applications edge preparation & fit up For different thickness	Edge joint on MS sheet 2 mm thick in flat position without filler rod.
	3	W/Shop calculation	Square and Square Root ->Simple problems using calculator ->Application of Pythagoras Theorem and related problems	
	4	Engg. Drawing	Free hand drawing of – ->Lines, polygons, ellipse etc.	
	5	ES	Adopting best practices and aspire to follow success stories of individual for personal development.	Extra Curricular activity : 2 Hrs Theory : 3 Hrs. Surface Cleaning
	6	ES	English literacy:-Importance of learning english	Edge joint on MS sheet 2 mm thick in flat position without filler rod.

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
4	1	Theory	Basic electricity applicable to arc welding and related electrical terms &definitions	Straight line beads on M.S. plate 10 mm thick in flat position
	2		Heat and temperature and its terms related to welding Principle of arc welding. And characteristics of arc.	
	3	W/Shop calculation	Monthly Test WCS	Weaved bead on M. S plate 10mm thick in flat position.
	4	Engg. Drawing	Monthly Test ED	
	5	ES	Monthly Test ES	Monthly Test theory
	6	ES	Different naming words, word used for replacing names, action words, describing people, place and their use.	Monthly Test Practical

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
5	1	Theory	Common gases used for welding & cutting, flame temperatures and uses. Chemistry of oxy-acetylene flame.	Setting up of oxy-acetylene and make straight cuts (freehand)
	2		Types of oxy-acetylene flames and uses	Perform marking and straight line cutting of MS plate 10 mm thick by gas. Accuracy within ±2mm.
	3	W/Shop calculation	Ratio and Proportions ->Direct and Indirect proportion ->Percentage ->Changing percentage to decimal	
	4	Engg. Drawing	Geometrical figures and blocks with dimension	
	5	ES	Introduction to punctuation-comma, full stop, question mark.	Extra Curricular activity : 2 Hrs Theory : 3 Hrs. Beveling of MS plates 10 mm thick, cutting regular geometrical shapes and irregular shapes, cutting chamfers by gas cutting.
	6	ES	Singular plural	Circular gas cutting on MS plate 10 mm thick by profile cutting machine

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
6	1	Theory	Arc welding power sources: Transformer, Motor Generator set, Rectifier	Square butt joint on M.S. sheet 2 mm thick in flat Position.
	2		Inverter type welding machines and its care & maintenance.	Fillet "T" joint on M.S. Plate 10 mm thick in flat position.
	3	W/Shop calculation	Types of metals ->Physical and Mechanical Properties of metals	
	4	Engg. Drawing	Transferring measurement from the given object to the free hand sketches.	
	5	ES	Change of tense-simple present, past; present, past progressive	Extra Curricular activity : 2 Hrs Theory : 3 Hrs. Advantages and disadvantages of A.C. and D.C. welding machines
	6	ES	Construction of simple senteces-kinds of sentences	Open corner joint on MS sheet 2 mm thick in flat Position

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
7	1	Theory	Welding positions as per EN &ASME	Fillet lap joint on M.S. plate 10 mm thick in flat position. (1F)
	2		: flat, horizontal, vertical and over head position.	
	3	W/Shop calculation	Types of ferrous and non-ferrous metals ->Introduction of iron and cast iron	Fillet “T” joint on MS sheet 2 mm thick in flat position.
	4	Engg. Drawing	Solid objects – Cube, Cuboids, Cone, Prism, Pyramid, Frustum of Cone with dimensions.	Fillet “T” joint on MS sheet 2 mm thick in flat position.
	5	ES	Usege of appropriate words to express themselves	Extra Curricular activity : 2 Hrs Theory : 3 Hrs. Advantages and disadvantages of A.C. and D.C. welding machines
	6	ES	Greetings & self indroduction	Open Corner joint on MS plate 10 mm thick in flat position

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
8	1	Theory	Arc length – types – effects of arc length. Polarity: Types and applications.	Fillet Lap joint on MS sheet 2 mm thick in flat position
	2		Weld quality inspection, common welding mistakes and appearance of good and defective welds. Weld gauges & its uses	Single “V” Butt joint on MS plate 12 mm thick in flat position (1G) .
	3	W/Shop calculation	Monthly Test WCS	Testing of weld joints by visual inspection
	4	Engg. Drawing	Monthly Test ED	Inspection of welds by using weld gauges
	5	ES	Monthly Test ES	Monthly Test theory
	6	ES	Asking & self indtroduction	Monthly Test Practical

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
9	1	Theory	Calcium carbide properties and uses.	Square Butt joint on M.S. sheet. 2 mm thick in Horizontal position
	2		Acetylene gas properties generating methods.	
	3	W/Shop calculation	Difference between iron and steel, alloy steel and carbon steel ->Properties and uses of rubber, timber and insulating materials	Straight line beads and multi layer practice on M.S. Plate 10 mm thick in Horizontal position.
	4	Engg. Drawing	Free hand drawing of hand tools and measuring tools, simple fasteners (nuts, bolts, rivets etc.) trade related sketches	Fillet " T" joint on M.S. plate 10 mm thick in Horizontal position.
	5	ES	Asking & responding to question	Extra Curricular activity : 2 Hrs Theory : 3 Hrs. Acetylene gas Purifier, Hydraulic back pressure valve and Flash back Arrestor
	6	ES	Sharing information with others	Fillet " T" joint on M.S. plate 10 mm thick in Horizontal position.

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
10	1	Theory	Oxygen gas and its properties. Production of oxygen by Air liquefaction.	Fillet Lap joint on M.S. sheet 2 mm thick in horizontal position
	2		Charging process of oxygen and acetylene gases And	
	3	W/Shop calculation	Mass, volume, density, weight & specific gravity	Fillet Lap joint on M.S. plate 10 mm thick in horizontal position.
	4	Engg. Drawing	Lines ->Definition, types and applications in drawing as per BIS: 46-2003 ->Classification of lines (Hidden, centre, construction, extension, Dimension, Section)	
	5	ES	Formal and informal communication	Extra Curricular activity : 2 Hrs Theory : 3 Hrs. Oxygen and Dissolved Acetylene gas cylinders and Color coding for different gas cylinders. Gas regulators, types and uses.
	6	ES	Speak and provide information about workplace	Fillet Lap joint on M.S. plate 10 mm thick in horizontal position.

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
11	1	Theory	Oxy acetylene gas welding Systems (Low pressure and High pressure).	Fusion run with filler rod in vertical position on 2mm thick M.S sheet.
	2		Difference between gas welding blow pipe(LP & HP) and gas cutting blow pipe Gas welding techniques. Rightward and Leftward techniques.	
	3	W/Shop calculation	Related problems for mass, volume, density, weight & specific gravity	Square Butt joint on M.S. sheet. 2 mm thick in vertical position
	4	Engg. Drawing	Drawing lines of given length (Straight, curved) ->Drawing of parallel lines, perpendicular line ->Methods of Division of line segment	
	5	ES	Discussions on current happenings. Self, Work, Environment	Extra Curricular activity : 2 Hrs Theory : 3 Hrs. Gas regulators, types and uses.
	6	ES	Simple writing skills	Single Vee Butt joint on M.S. plate 12 mm thick in horizontal position

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
12	1	Theory	Arc blow – causes and methods of controlling	Weaved bead on M.S Plate 10mm in vertical position.(
	2		Distortion in arc & gas welding and methods employed to minimize distortion	
	3	W/Shop calculation	Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	Fillet “T” joint on M.S sheet 2 mm thick in vertical position.
	4	Engg. Drawing	Drawing of Geometrical figures: Definition, nomenclature and practice of –	
	5	ES	Communication Skills:-Interview Skill/Confidence Building	Extra Curricular activity : 2 Hrs Theory : 3 Hrs. Arc Welding defects, causes and Remedies.
	6	ES	Professionalism and display of same at the institute and work place	Fillet “T” joint on M.S. plate 10 mm thick in vertical position

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
13	1	Theory	Specification of pipes, various types of pipe joints,	Structural pipe welding butt joint on MS pipe Ø 50 and 3mm WT in 1G position
	2		, pipe welding all positions, and procedure. Difference between pipe welding and plate welding.	
	3	W/Shop calculation	Quarterly Test WCS	Fillet Lap joint on M.S. Plate 10 mm in vertical position
	4	Engg. Drawing	Quarterly Test ED	
	5	ES	Quarterly Test ES	Quarterly Test theory
	6	ES	Understand the usage of appropriate words to express themselves communicate effectively on telephone.	Quarterly Test Practical

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
14	1	Theory	Pipe development for Elbow joint,	Open Corner joint on MS plate 10 mm thick in vertical position.
	2		, “T” joint, Y joint and branch joint	
	3	W/Shop calculation	Related problems on speed and velocity	Pipe welding - Elbow joint on MS pipe Ø 50 and 3mm WT. (1G)(
	4	Engg. Drawing	Triangle: different types	
	5	ES	Manage personal hygiene and presentation positive body language:adopt and use it appropriately to build a positive impression	**Theory : 3 Hrs. Revision Parents instructor meeting**: 2 hrs
	6	ES	Different spatial zones: Understanding and need to maintain it, create safe zones for communication	Manifold system

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
15	1	Theory	Gas welding filler rods,specifications and sizes. Gas welding fluxes – types and functions.	Pipe welding “T” joint onMS pipe Ø 50 and 3mm WT.
	2		Gas Brazing & Soldering : principles, types fluxes & uses.	
	3	W/Shop calculation	Potential energy, Kinetic Energy and related problems with related problems	Single “V” Butt joint on MS plate12 mm thick in vertical position (3G).
	4	Engg. Drawing	Rectangle, Square, Rhombus, Parallelogram	
	5	ES	Maintainig appropriate eye-contact in building trust and confidence	Extra Curricular activity : 2 Hrs Theory : 3 Hrs. Gas welding defects, causes and remedies.
	6	ES	Impact of touch in a formal environment. Acceptable and unacceptable touch.	Single “V” Butt joint on MS plate12 mm thick in vertical position (3G).

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
16	1	Theory	Electrode : types, functions of flux, coating factor, sizes of electrode	Pipe welding 45 ° angle joint on MS pipe Ø 50 and 3mm WT.
	2		Coding of electrode as per BIS, AWS. Effects of moisture pick up.	
	3	W/Shop calculation	Work, power, energy, HP, IHP, BHP and efficiency	
	4	Engg. Drawing	Circle and its elements	Straight line beads on M.S. plate 10mm thick in over head position
	5	ES	Time mangagement and planning skills interview skills its phases & ways to crack interview	Extra Curricular activity : 2 Hrs Theory : 3 Hrs. Storage and baking of electrodes. Special purpose electrodes and their applications.
	6	ES	Handing setbacks/rejection and recover from it with an action plan.	Straight line beads on M.S. plate 10mm thick in over head position

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
17	1	Theory	Weldability of metals, importance of pre heating	Pipe Flange joint on M.S plate with MS pipe Ø 50 mm X 3mm WT
	2		, post heating and maintenance of inter pass temperature.	
	3	W/Shop calculation	Monthly Test WCS	Fillet "T" joint on M.S. plate 10 mm thick in over head position. (4F)(
	4	Engg. Drawing	Monthly Test ED	
	5	ES	Monthly test ES	Monthly Test theory
	6	ES	Developing strongs professional contract/network to gain support inl learining process and career as a whole	Monthly Test Practical

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
18	1	Theory	Classification of steel	Pipe welding butt joint on MS pipe Ø 50 and 5 mm WT. in 1G position
	2		Welding of low medium and high carbon steel and alloy steels.	
	3	W/Shop calculation	Concept of heat and temperature, effects of heat, difference between heat and temperature ->Scales of temperature, Celsius, Farenhieght,Kelvin and Conversion between scales of temperature	
	4	Engg. Drawing	Different polygon and their values of included angles. Inscribed and circumscribed polygons	Fillet Lap joint on M.S. plate 10 mm thick in over head position. (4G).
	5	ES	Literacy:- Indtroduction to computers and its applications hardware and periphersal, srarting and shutting down of computer, basic ofn computer networks.	Extra Curricular activity : 2 Hrs Theory : 3 Hrs. Welding of low medium and high carbon steel and alloy steels.
	6	ES	Basics of Operating System, Types of operating systems, user interface of widows OS/ latest create, copy move and delete files and folders, use of external memory like pen drive, CD,DVD etc, introduction toinbuilt windows apps, tools and features.	Fillet Lap joint on M.S. plate 10 mm thick in over head position. (4G).

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
19	1	Theory	Effects of alloying elements on steel	Single "V" Butt joint on MS plate 10mm thick in over head position(4G)
	2		Stainless steel types	
	3	W/Shop calculation	Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	
	4	Engg. Drawing	Lettering & Numbering – ->Single Stroke	Pipe butt joint on M. S. pipe Ø 50mm WT 6mm (1G Rolled)
	5	ES	Basic operating of word processing, creating, opening and closing documents, use of shortcuts, creating and editing of text, formatting the text	Extra Curricular activity : 2 Hrs Theory : 3 Hrs. weld decay and weldability.
	6	ES	Creating simple documents like resum, letter writing, job application etc., printing document	Pipe butt joint on M. S. pipe Ø 50mm WT 6mm (1G Rolled)

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
20	1	Theory	Brass – types	Square Butt joint on S.S. sheet. 2 mm thick in flat position
	2		– properties and welding methods.	
	3	W/Shop calculation	Co-efficient of linear expansion and related problems with assignments	Square Butt joint on S.S. Sheet 2 mm thick in flat position
	4	Engg. Drawing	Lettering & Numbering – Double Stroke	Square Butt joint on Brass sheet 2 mm thick in flat position.
	5	ES	Basic of excel worksheet and its importance creating simple worksheets adding and average function, printing of simple excel sheet.	Extra Curricular activity : 2 Hrs Theory : 3 Hrs. Copper – types – properties and welding methods.
	6	ES	Indroduction to world wide web. (www) usefull websides web browser-usege, search engine etc. Using popular sites like bharat skills, skill traing related govt. portals, nokari.com, and other job portals.	Square Butt joint on Brass sheet 2 mm thick in flat position.

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
21	1	Theory	Aluminium and its alloys, properties and weldability,	Square Butt & Lap joint on M.S. sheet 2 mm thick by brazing in flat position
	2		Welding methods Arc cutting & gouging	
	3	W/Shop calculation	Monthly Test WCS	Single “V” butt joint C.I. plate 6mm thick in flat position. (1G)
	4	Engg. Drawing	Monthly Test ED	Extra Curricular activity : 2 Hrs Theory : 3 Hrs. Arc gouging on ms plate 10 mm thick
	5	ES	Monthly Test ES	Monthly Test theory
	6	ES	Cits Applications , apprenticeship portal (naps), resize images, singing up, online fund transfer, using UPI gateway	Monthly Test Practical

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
22	1	Theory	Cast iron and its properties types.	Square Butt joint on Aluminium sheet. 3 mm thick in flat position.
	2		Welding methods of cast iron.	
	3	W/Shop calculation	Problem of Heat loss and heat gain with assignments ->Thermal conductivity and insulators	
	4	Engg. Drawing	Lettering & Numbering – Inclined.	Bronze welding of cast iron (Single “V” butt joint) 6mm thick plate (1G).
	5	ES	Creating and using an email account like gmail, and any other, usages of cc and bcc, attaching documents checking email and composing email	Extra Curricular activity : 2 Hrs Theory : 3 Hrs. Revision
	6	ES	Scaning QR/AR code, sharing bast prictices and downloading trade Related videos using Wi-Fi, fund Transfer through app like BHIM.	Bronze welding of cast iron (Single “V” butt joint) 6mm thick plate (1G).(

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
23	1	Theory	Types of Inspection methods.	Dye penetrant test.
	2		Classification of destructive and NDT methods	Magnetic particle test
	3	W/Shop calculation	Boiling point and melting point of different metals and Nonmetals ->Concept of pressure and its units in different system	Nick- break test.
	4	Engg. Drawing	Dimensioning and its Practice ->Definition, types and methods of dimensioning (functional, non-functional and auxiliary) ->Position of dimensioning (Unidirectional, Aligned)	Free bend test.
	5	ES	Enterpreneur skills:- Need of becoming entrepreneur	Extra Curricular activity : 2 Hrs Theory : 3 Hrs. Welding economics and Cost estimation.
	6	ES	Ways to becoming a good entrepreneur	Fillet fracture test

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
24	1	Theory	Safety precautions in Gas Metal Arc Welding and Gas Tungsten Arc welding.	Introduction to safety equipment and their use etc.
	2		Introduction to GMAW -equipment	
	3	W/Shop calculation	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC, DC and their comparison, voltage , resistance and their units	Setting up of GMAW welding machine & accessories and striking an arc.
	4	Engg. Drawing	Types of arrowhead ->Leader line with text ->Symbols preceding the value of dimension and dimensional tolerance.	Depositing straight line beads on M.S Plate.
	5	ES	Enabling environment available to vecome an entrepreneur	Extra Curricular activity : 2 Hrs Theory : 3 Hrs. – accessories. Various other names of the process. (MIG/MAG/CO2 welding.)
	6	ES	Different Govt. institutions/schemes promoting entreprenur viz., Gramin bank, PMMY-MUDRA loan, DIC, SIDA SISI, NSIC, SIDO.	Fillet weld – "T" joint on M.S plate 10mm thick in flat position by Dip transfer.

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
25	1	Theory	Advantages of GMAW welding over SMAW , limitations and applications. Process variables of GMAW.	Fillet weld – Lap joint on M.S. sheet 3mm thick in flat position byDip transfer
	2		Modes of metal transfer – dip or short circuiting transfer	Fillet weld – "T" joint on M.S. sheet 3mm thick in flat position by Dip transfer
	3	W/Shop calculation	Conductor, Insulator, types of connections- Series and Parallel, ->Ohm's Law, relation between VIR & related problems	
	4	Engg. Drawing	Sizes and layout of drawing sheets ->Selection of sizes ->Title Block, its position and content ->Item Reference on Drawing Sheet (Item list)	Fillet weld – corner joint on M.S. sheet 3mm thick in flat position by Dip transfer. (1F)
	5	ES	Day to day monitoring mechanism for maintaing an enterprise.	Extra Curricular activity : 2 Hrs Theory : 3 Hrs. spray transfer (free flight transfer) and globular transfer (intermittent transfer) and Pulsed metal transfer.
	6	ES	Different Government shcems supporting entrepreneurship.	Butt weld – Square butt joint on M.S sheet 3mm thick in flat position (1G)

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
26	1	Theory	Wire feed system – types – care and maintenance.	Butt weld – Single "V" butt joint on M.S plate 10 mm thick by Dip transfer in flat position. (1G)
	2		Welding wires used in GMAW, standard diameter and codification as per AWS.	
	3	W/Shop calculation	Quarterly Test WCS	
	4	Engg. Drawing	Quarterly Test ED	Fillet weld – 'T' joint on M.S plate 10mm thick in Horizontal position by Dip transfer. (2F)
	5	ES	Quarterly Test ES	Quarterly Test theory
	6	ES	Examples of successful and unsuccessful entreprenurs.	Quarterly Test Practical

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
27	1	Theory	Types of shielding gases and gas mixtures used in GMAW and its applications.	Fillet weld – corner joint on M.S plate 10mm thick in Horizontal position by Dip transfer.
	2		Flux cored arc welding	
	3	W/Shop calculation	Electrical power, energy and their units, calculation with assignments	
	4	Engg. Drawing	Method of presentation of Engg. Drawing ->Pictorial View ->Orthographic View ->Isometric View	Fillet weld – corner joint on M.S plate 10mm thick in Horizontal position by Dip transfer.
	5	ES	Maintaning efficiency at workplace:- Factors affecting productivity	Theory : 3 Hrs. – description, advantage, welding wires, coding as per AWS. **Parents instructor meeting**: 2 hrs
	6	ES	Improving productivity	Fillet weld – corner joint on M.S plate 10mm thick in Horizontal position by Dip

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
28	1	Theory	Edge preparation of various thicknesses of metals for GMAW.	Fillet weld – "T" joint on M.S. sheet 3mm thick in Horizontal position by Dip transfer.
	2		GMAW defects,	
	3	W/Shop calculation	Magnetic induction, self and mutual inductance and EMF generation ->Electrical Power, HP, Energy and units of electrical energy	Fillet weld – corner joint on M.S. sheet 3mm thick in Horizontal position by Dip transfer. (2F)
	4	Engg. Drawing	Symbolic representation – different symbols used in the trades ->Fastener (Rivets, Bolts and Nuts)	
	5	ES	Personal finance literacy planning, saving, tax govt. shcems for financial safety e.g. Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY) etc.	Extra Curricular activity : 2 Hrs Theory : 3 Hrs. causes and remedies
	6	ES	Occupational Safety, Health and environment Educaiton:-Introduction ton occupational safety & health at work place, occupational hygiene. Basuc Hazards, chemical, physical (elecrical. Temperature, illumination) ergonomic, biological, vibro acoustic, mechanical, psychoscial hazards, prevention of hazards	Fillet weld – corner joint on M.S. sheet 3mm thick in Horizontal position by Dip transfer. (2F)

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
29	1	Theory	Heat input and techniques of controlling	Fillet weld – "T" joint on M.S plate 10mm thick in vertical position by Dip transfer. (3F)
	2		controlling heat input during welding. Heat distribution	
	3	W/Shop calculation	Area and perimeter of square, rectangle and parallelogram ->Area an Perimeter of Triangle	Fillet weld – corner joint on M.S plate 10mm thick in vertical position by dip transfer. (3F)
	4	Engg. Drawing	Bars and profile sections ->Weld, Brazed and soldered joints	
	5	ES	Different types of personal protective eauipment (PPE), Accident prevention techniques	Extra Curricular activity : 2 Hrs Theory : 3 Hrs. effect of faster cooling
	6	ES	Care of injured & sick at the workplace first-acid & transportation of sick person Basic provisions of safety & health	Fillet weld – corner joint on M.S plate 10mm thick in vertical position by dip transfer. (3F)

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
30	1	Theory	Pre heating & Post Weld Heat Treatment	Fillet weld – Lap joint on M.S. sheet 3mm thick in vertical position by Dip transfer. (3F)
	2		Use of temperature indicating crayons	
	3	W/Shop calculation	Monthly Test WCS	
	4	Engg. Drawing	Monthly Test ED	Fillet weld – corner joint on M.S. sheet 3mm thick in vertical position by Dip transfer. (3F)
	5	ES	Monthly Test ES	Monthly Test theory
	6	ES	Introduction to environment, ecosystem and factors causing imbalace, polution and pollutant including liquid, gageous, solid and hazardous waste, protecting the environment-energy , conservation,ground water, global warming, responsibility about the environment, segregation and disposal of waste	Monthly Test Practical

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
31	1	Theory	Submerged arc welding process	Fillet weld – Lap and “T” joint on M.S sheet 3mm thick inover head position by Dip transfer.
	2		principles, equipment,	Fillet weld – Lap and “T” joint on M.S sheet 3mm thick inover head position by Dip transfer.
	3	W/Shop calculation	Area and Perimeter of Circle, Semi-circle , circular ring, sector of circle, hexagon and ellipse	Fillet weld – Lap and “T” joint on M.S sheet 3mm thick inover head position by Dip transfer.
	4	Engg. Drawing	Electrical and electronics element ->Piping joints and fitting	Fillet weld – Lap and “T” joint on M.S sheet 3mm thick inover head position by Dip transfer.
	5	ES	Different actions people that affect other and the environment.	Extra Curricular activity : 2 Hrs Theory : 3 Hrs. advantages and limitations
	6	ES	Types, causes & effects, areas in india that are prone to be affected, preparedness & mitigation, dos and don'ts-before, during and after any disaster, how to reduce man-made disasters.	Fillet weld – Lap and “T” joint on M.S sheet 3mm thick inover head position by Dip transfer.

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
32	1	Theory	Electro slag and Electro gas welding processes	Tee Joints on MS Pipe Ø 60 mm OD x 3 mm WT 1G position – Arc constant (Rolling)
	2		principles, equipments	Tee Joints on MS Pipe Ø 60 mm OD x 3 mm WT 1G position – Arc constant (Rolling)
	3	W/Shop calculation	Surface area and Volume of solids- cube, cuboids, cylinder, sphere and hollow cylinder	Tee Joints on MS Pipe Ø 60 mm OD x 3 mm WT 1G position – Arc constant (Rolling)
	4	Engg. Drawing	Projections ->Concept of axes plane and quadrant	Tee Joints on MS Pipe Ø 60 mm OD x 3 mm WT 1G position – Arc constant (Rolling)
	5	ES	->Concept of axes plane and quadrant	Extra Curricular activity : 2 Hrs Theory : 3 Hrs. advantages and limitations
	6	ES	Self-Awareness, articulating personal values, value-based decision making, dilemma situations.	Tee Joints on MS Pipe Ø 60 mm OD x 3 mm WT 1G position – Arc constant (Rolling)

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
33	1	Theory	Thermit welding process-	Depositing bead on S.S sheet in flat position.
	2		types, principles, equipments, Thermit mixture types and applications.	
	3	W/Shop calculation	Finding lateral surface area , total surface area and capacity in liters of hexagonal, conical and cylindrical shaped vessels	Butt joint on Stainless steel 2 mm thick sheet in flat position by Dip transfer.
	4	Engg. Drawing	Projections ->Concept of axes plane and quadrant	Butt joint on Stainless steel 2 mm thick sheet in flat position by Dip transfer.
	5	ES	Identify sources and types of stress (positive/negative stress)	Extra Curricular activity : 2 Hrs Theory : 3 Hrs. Use of backing strips and backing bars
	6	ES	Managing stress (long term/ short-term)	Butt joint on Stainless steel 2 mm thick sheet in flat position by Dip transfer.

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
34	1	Theory	GTAW process - brief description. Difference between AC and DC welding, equipments, polarities and applications.	Depositing bead on Aluminium sheet 2 mm thick in flat position.
	2		Various other names of the process (TIG, Argonarc). Power sources for GTAW - AC &DC	
	3	W/Shop calculation	Monthly Test WCS	Square butt joint on Aluminium sheet 1.6mm thick in flat position
	4	Engg. Drawing	Monthly Test ED	
	5	ES	Monthly Test ES	Monthly Test theory
	6	ES	Handling rejection and building resilience, identify day wasters.	Monthly Test Practical

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
35	1	Theory	Tungsten electrodes –types & uses, sizes and preparation	Fillet weld – "T" joint on Aluminium sheet 1.6 mm thick in flat position. (1F)
	2		GTAW Torches- types, parts and their functions	
	3	W/Shop calculation	Simple machines, Effort and load, mechanical advantage, velocity ratio, efficiency of machine	Fillet weld – Outside corner joint on Aluminium sheet 2 mm thick in flat position. (1F)
	4	Engg. Drawing	Orthographic projections	
	5	ES	Labour Welfare legislation:-Benefits guaranteed under various acts- Factrories act, apprenticeship act, employees state insurance act(ESI), payment wages act.	Extra Curricular activity : 2 Hrs Theory : 3 Hrs. GTAW filler rods and selection criteria
	6	ES	Employees provident fund act, the workmen's sompensation act, POSH. Interpret applicable labour and industrial laws.	Fillet weld – Outside corner joint on Aluminium sheet 2 mm thick in flat position. (1F)

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
36	1	Theory	Edge preparation and fit up. GTAW parameters for welding of different thickness of metals	Butt weld - Square butt joint on Stainless steel sheet 1.6 mm thick in flat position with purging gas
	2		Pulsed TIG welding - brief description	
	3	W/Shop calculation	relation between efficiency	
	4	Engg. Drawing	Orthographic projections	
	5	ES	Quality management:-Create awareness on introduction of quality concepts.	Extra Curricular activity : 2 Hrs Theory : 3 Hrs. pulse parameters slope up and slope down.
	6	ES	Concept of Quality Management(QMS), PDCA, Fishbone,5s,5d, kaizen.	Butt weld - Square butt joint on Stainless steel sheet 1.6 mm thick in flat position with purging gas

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
37	1	Theory	Argon / Helium gas properties – uses.	Fillet weld – "T" joint on Stainless steel sheet 1.6 mm thick in flat position. (1F)
	2		GTAW Defects, causes and remedy.	
	3	W/Shop calculation	velocity ratio and mechanical advantage	
	4	Engg. Drawing	Method of first angle and third angle projections (definition and difference)	
	5	ES	Indtroducton of ISO	Extra Curricular activity : 2 Hrs Theory : 3 Hrs. pulse parameters slope up and slope down
	6	ES	Preparation to the worid of work:-Identify the difference between job and carrer	Revision

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
38	1	Theory	Friction welding process- equipment and application	Pipe butt joint on Aluminium pipe Ø 50 mm x 3 mm WT in Flat position. (1G)
	2		Laser beam welding (LBW)and Electron beam welding(EBW)	
	3	W/Shop calculation	Lever and its types	
	4	Engg. Drawing	Method of first angle and third angle projections (definition and difference)	
	5	ES	Job roles available in respective traes	Extra Curricular activity : 2 Hrs Theory : 3 Hrs. Laser beam welding (LBW)and Electron beam welding(EBW)
	6	ES	Awareness of industries, and the respective professional pathways.	Pipe butt joint on Aluminium pipe Ø 50 mm x 3 mm WT in Flat position. (1G)

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
39	1	Theory	Plasma Arc Welding (PAW) and cutting (PAC) process Types of Plasma arc, advantages and applications.	"T" Joints on MS Pipe Ø 50 mm OD x 3 mm WT, position – Flat (1F)
	2		equipments and principles of operation.	
	3	W/Shop calculation	Quarterly Test WCS	Straight cutting on ferrous and non ferrous
	4	Engg. Drawing	Quarterly Test ED	
	5	ES	Quarterly Test ES	Quarterly Test theory
	6	ES	Awareness of higher education/educaiton/up skilling (short-term) options Steps involved in online application for instructor course,	Quarterly Test Practical

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
40	1	Theory	Resistance welding process -types, principles	Lap joint on Stainless steel sheet by Resistance Spot welding
	2		power sources and welding parameters.	
	3	W/Shop calculation	Measurement of Angle, Trigonometrical Ratios	MS sheets joining by Resistance Spot welding
	4	Engg. Drawing	Symbol of 1st angle and 3rd angle projection in 3rd angle.	
	5	ES	apprenticeship and different jobs in popular site like the indiagobs.com, naukari.com, monsterindian.com, GOVT.website.	Theory : 3 Hrs. Applications and limitations. **Parents instructor meeting**: 2 hrs
	6	ES	forms of greeting	MS sheets joining by Resistance Spot welding

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
41	1	Theory	Metalizing – types of metalizing principles, equipments, advantages and applications	Square butt joint on Copper sheet 2mm thick in flat position.
	2		Manual Oxy – acetylene powder coating process	
	3	W/Shop calculation	Trigonometric Table	"T" joint on Copper to MS sheet 2mm thick in flat position by Brazing (1F)
	4	Engg. Drawing	Orthographic projection from isometric projection	Silver brazing on S.S Sheet with copper sheet "T" joint
	5	ES	Use of positive body language	Extra Curricular activity : 2 Hrs Theory : 3 Hrs. principles of operation and applications
	6	ES	Handling grievances (Use of ask-listen-repeat technique)	Silver brazing on S.S Sheet with copper sheet "T" joint

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
42	1	Theory	Welding codes and standards. Reading of assembly drawing	Silver brazing on copper tube to tube.
	2		Welding Procedure Specification (WPS)	
	3	W/Shop calculation	Trigonometry-Application in calculating height and distance	Repair welding of broken C.I. machine parts by oxy-acetylene welding with C.I and bronze filler rod.
	4	Engg. Drawing	Orthographic projection from isometric projection	
	5	ES	Relationship building with customers, importance of probing.	Extra Curricular activity : 2 Hrs Theory : 3 Hrs. Procedure Qualification Record (PQR)
	6	ES	Use of open-ended/close-ended questions to guage reuirement.	Repair welding of broken C.I machine parts by C.I. electrode.

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
43	1	Theory	Hard facing/ surfacing necessity,	Repair welding of broken C.I machine parts by C.I. electrode.
	2		, surface preparation, various hard facing alloys and advantages of hard facing	
	3	W/Shop calculation	Quarterly Test WCS	Hard surfacing practice on M.S round rod Ø 25 mm by using Hard facing electrode in flat position.
	4	Engg. Drawing	Quarterly Test ED	
	5	ES	Quarterly Test ES	Quarterly Test theory
	6	ES	Revision	Quarterly Test Practical

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs

Trade - Welder

Syllabus Breakup Daily

Week	Day	Subject	Theory (02 hours)	Practical (05 hours)
44	1	Theory	Revision	In-plant training / Project work
	2		Revision	In-plant training / Project work
	3	W/Shop calculation	Trigonometry-(Simple Applications)	In-plant training / Project work
	4	Engg. Drawing	Reading of fabrication drawing	In-plant training / Project work
	5	ES	Revision	Theory : 3 Hrs. Revision **Parents instructor meeting**: 2 hrs
	6	ES	Revision	In-plant training / Project work

Total Week Hrs : 40 , Theory : 7 Hrs , Practical : 25 hrs , Engg. Drawing : 2 Hrs , W/S Cal Sc : 2 Hrs , ES : 4 Hrs