

**SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE
COMMUNITY COLLEGE**

Diploma in CNC Machine Operator

For Students admitted from 2015-2016 onwards

Semester - I

S.No	COURSE CODE	COURSE TITLE	HRS	CREDITS	MAX MARKS		
					INT/ Theory	EXT/ Practical	TOT
1	G001	Basic English	60	4	50	50	100
2	G002	Basic Mathematics	60	4	50	50	100
3	G003	Computer Fundamentals	60	4	50	50	100
4	CSC/ N 0123	Set Computer numerically controlled vertical machining center to perform a range of operation metal components	270	18	30	70	100
5	CSC/ N 1335	Use basic health and safety practices at the workplace			36	64	100
Total			450	30	-	-	500

Semester - II

S.No	COURSE CODE	COURSE TITLE	HRS	CREDITS	MAX MARKS		
					INT/ Theory	EXT/ Practical	TOT
1	G004	Communicative English	60	4	50	50	100
2	G005	Office Automation	60	4	50	50	100
3	G006	Value Education	60	4	50	50	100
4	CSC/ N 0116	Perform a range of operations on metal components using computer numerical controlled vertical machining center	270	18	25	75	100
5	CSC/ N 1336	Work effectively with others			30	70	100
Total			450	30	-	-	500

**SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE
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Course: Diploma in CNC Machine Operator

Subject Code: G001

Subject: Basic English

Unit-I

Parts of speech
Verb – Auxiliary verbs
Model verbs

Unit-II

Phrase, Clause and Sentence
Present tense
Past tenses.

Unit-III

Future tense
Subject – verb agreement
Sentence patterns

Unit-IV

Note – making
Report writing
Reading comprehension.

Unit-V

Soft skills: Reading loud – conversation – personality development – body language – pronunciation – common errors.

Text Books:

1. High School English Grammar, Wren and Martin, Sultan Chand Publications, New Delhi.
2. Effective English communication for you, Syamala V.

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Course: Diploma in CNC Machine Operator

Subject Code: G002

Subject: Basic Mathematics

Unit-I

SET AND FUNCTIONS: Introduction - Properties of operations on sets - De Morgan's laws- verification examples – Venn diagrams – formula for $n(A \cup B \cup C)$ – Functions.

Unit-II

SEQUENCES AND SERIES OF REAL NUMBERS: Introduction – Sequences – Arithmetic Progression (A.P) – Geometric Progression (G.P.) – Series.

Unit-III

ALGEBRA: Solving Linear Equations – Polynomials – Synthetic division – Greatest Common Divisor (GCD) – Least Common Multiple (LCM) – Rational Expressions – Square root – Quadratic equations.

Unit-IV

MATRICES: Introduction – Types of Matrices – Addition and Subtraction – Multiplication – Matrix equation.

Unit-V

COORDINATE GEOMETRY: Introduction – Revision: division between two points – Section formula, mid point formula, Centroid formula – Area of triangle and quadrilateral – straight line.

Text Books:

1. Basic Mathematics, Science Series Rupa, Rupa Publications, 2011.

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Course: Diploma in CNC Machine Operator

Subject Code: G003

Subject: Computer Fundamentals

Unit-I

MICROSOFT WINDOWS 7: Exploring windows 7 desktop – using the mouse – scrolling, maximizing, minimizing and closing window – using aero snaps, Windows start menu - opening program – displaying and peeking at desktop – switching between programs – managing the windows taskbar.

Unit-II

Working gadgets – managing drives with computer explorer – using menus, toolbars and ribbons – changing desktop theme, color, screensaver, background, slideshow.

Unit-III

WORKING WITH FILES AND FOLDERS: Windows explorer – Changing the way files are displayed – sorting files and folders - navigating folders with navigation pane – creating, renaming, copying, renaming, moving, deleting restoring folders – Working with libraries – creating library – compressing and extracting a file.

Unit-IV

BROWSING THE WEB: Internet Explorer - Surfing the Web with Internet Explorer - Saving Your Favorite Pages - Returning to a Favorite Page - Revisiting History - Searching the Web with Google - Finding News and Other Information Online - Shopping for Bargains at Shopping.com - Bidding for Items on eBay - Buying Items on craigslist - Selling Items on craigslist - Watching Web Videos on YouTube - Uploading Your Own YouTube Videos.

Unit-V

COMMUNICATING ONLINE: Gmail - Setting up a Gmail Account - Reading an email message - Replying to an Email message - Composing a new email message - Sending a file via email - Managing Gmail messages - Adding Gmail contacts.

Text Book:

1. Michael Miller, **Easy Computer Basics Windows 7 Edition**, Pearson Publication, First Edition, 2011.

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Course: Diploma in CNC Machine Operator

Subject Code: CSC/ N 0123

Job Role: Set Computer numerically controlled vertical machining center to perform a range of operation metal components

Unit-I

Working Safety – Personal Protective equipment – Hand tools – Cutting tools - Cutting tools materials – Measuring equipments. Preparing for machining activities on VMC – Valid sources – Job Specification documents- Job requirements.

Unit-II

Information pertaining to tapping sizes and thread, feed and speeds, machining symbol and tolerance – Preliminary check – Cutting tools- reference charts – Tables and Graphs – Preliminary check – Description of VMC machine specification.

Unit-III

Critical Parameters- Tooling data – Features of machined components produced work holding device and fixtures- Basic maintenance activities – features and profiles – Symbols used in program – Address characters function – G codes and M codes- identify different parts of the vertical and horizontal milling machine -perform various milling operations to produce various features on metal and non-metal components.

Unit-IV

Milling operations: e.g. milling of flat surfaces; gang and straddle milling; milling of sunk and recessed surfaces, face milling, side milling, angular milling, slotting, slitting, key way cutting, face slot cutting, woodruff cutting, dovetail cutting, etc.

Features: faces (flat, square, parallel, angular); steps/shoulders, slots (enclosed, open ended, tee slots), recesses, holes (drilled, bored), profile forms (such as vee, concave, convex, gear forms), serrations, forms (indexed, rotated, special)

Unit-V

CNC machines – 2 axis CNC m/c – 3 axis m/c centre (VMC,HMC) terms in programming – Checks – CNC Programming operation – Preparing, Loading, storing in appropriate format providing part program, trial runs – Simulation [Command and format] – Reference position – Cutter radius offset – Tool length offset] – Cutter compensation function.

Unit-VI

Engineering drawing-Dimensioning and labeling – Projection – Isometric Projection Part – Programme for relative work – Tool movement of a CNC m/c tool – Co-ordinate positioning (Absolute, Incremental), use of sub routines, macros and canned cycles- Cad/Cam CNC Program –Tool material design.

Unit-VII

Tooling and work holding devices – Carry out setting for CNC VMC m/c – Set up of m/c – Perform the necessary checks before allowing the m/c to operation in full program run mode – Checks – Measure all dimension as per specification – Basic maintenance activities.

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Course: Diploma in CNC Machine Operator

Subject Code: CSC/ N 1335

Job Role: Use basic health and safety practices at the work place

Unit-I

Protective Clothing – Equipments – Hazards – Possible causes of risk and accident – Safe working practices – Method accident prevention – General health and Safety equipments – Ladder faults – Ladder set up-Good house keeping practices – Various areas – Documents.

Unit-II

Fire safety – Types of fires – Demonstrate rescue techniques applied during fire hazard – demonstrate good house keeping in order to prevent fire hazards – Demonstrate the correct use of fire extinguishers.

Unit-III

Emergencies, rescue and first aid procedures – Electrocutation – first aid procedures – Emergency procedure – Incident report includes details etc....,

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Course: Diploma in CNC Machine Operator

Subject Code: G004

Subject: Communicative English

Unit-I

Articles and Determiners
Kinds of Noun and Adjectives
Kinds of Sentences

Unit-II

Transformation of Sentences
1. Direct speech and Indirect speech
2. Active and Passive
3. Degrees of comparison

Unit-III

Message through E-mail and Fax
Advertisement
Notice, Agenda and Minutes
Précis writing

Unit-IV

Letter writing:
Structure – Style – Complaint letter – Job application – Bio data/Curriculum Vitae –
Resume – Informal letter

Unit-V

Conversational English
Greeting – Introducing – Requesting – Inviting – Congratulating – Thanking –
Permission – Apologizing – Asking to repeat – Asking for information

Text Books:

1. High School English Grammar, Wren and Martin, Sultan Chand Publications, New Delhi.
2. Effective English communication for you, Syamala V.

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Course: Diploma in CNC Machine Operator

Subject Code: G005

Subject: Office Automation

Unit-I

BASIC COMPUTER SKILLS: Identifying Major Computer Components - How Computers Work - Turning on the Computer and Logging On - OPERATING SYSTEMS AND SOFTWARE – INTERNET.

Unit-II

WORD: Introduction to Word Processing: Basic features – Full-Featured word processors – starting word – menus and toolbars – creating, editing and saving a word document – using word help – opening a document – moving multiple text selections simultaneously – link documents – creating table – working with graphics – mail merging – previewing and printing document.

Unit-III

EXCEL: electronic spreadsheets – spreadsheet packages – starting excel – navigating in a workbook – create, name and save a new workbook – data entry-manual and automatic – correcting mistakes-spelling checker, undo and redo changes.

Unit-IV

POWERPOINT: Presentation basics – presentation packages – starting PowerPoint – menus and toolbars – opening and saving an existing presentation – presentation using auto content wizard – presentation using design template – creating and saving a presentation using blank presentation.

Unit-V

MS ACCESS: Use of MS Access – Controls – Customization – database design – filtering and sorting - conversation – database basics – import and export – forms – reports.

Text Book:

1. Alexis Leon, Mathews Leon, **Introduction to Computers with MS-Office**, Tata McGraw Hill Publication, 2003.

Unit-V

Cyfnehtffyr; tpgkraf; fyr; t

1. **Cyffwrdd bghj thd tpgkraf;**

mdg[- kffs; ngz y;- gwhff c j t] y;- , awi fts' fi sglghj fhj j y;- gw

2. **Cyf tpgkraj j tsh] j y;**

xdnw Fyk;- kj xUi kgghL – gwh]gz ghl i l g]nghwWj y;

3. **Cyf tpgkraj j g]ghj fhffr] braantz pad;**

kj f; nfhLghLfi s kj j j y;- rhj p kj ntWghl ww ey; Ywt f; bfhssky;- ngrRj ; j th] t
VwgLj j y;- rffg] ; j di k – J}J – xU ehl L tpgkraj j j g]gw ehl t thffg] nghj j j y;
- cyfk; j Gt p a bghj tpgkraf; fyr; tpi ag]nghj j j y;

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Course: Diploma in CNC Machine Operator

Subject Code: CSC/ N 0116

Job Role: Perform a range of operations on metal components using computer numerical controlled vertical machine center

Unit-I

Working safety safe working practices and procedures and other relevant- safety mechanism on the m/c – Hazards Tooling and work holding devices -Different types of cutters used in VMC – ISO carbide tool classification – ISO operations and working condition – Latest types of carbide tipped cutters used in vmc- vmc specification.

Unit-II

Preparing for machining activities on VMC – Valid source – Job requirements – Job specification documents – Information pertaining to tapping feed and speeds – Preliminary check of the VMC – Hand tool and cutting tools – Measuring instrument and gauges preparation – Job setting – Check operation program.

Unit-III

Performing machining operations on VMC – Load and unload components using jigs and fixtures (or) work holding devices – Trial run – Check critical parameters – Tooling data – Features of machined components produced.

Unit-IV

Produce components standards – Dimensional tolerance ± 0.02 mm –Surface finish $1.6 \mu\text{m}$ – Holes H7- screw thread 6G/6H. Angle / Tapers ± 15 sec.

Unit-V

Basic maintenance activities – Replenish coolant, replenish lubrication oil – m/c cleaning perform house keeping task – Range of materials – Selection of tools – Carbide tools – Diamond indexable tips.

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Subject Code: CSC/ N 1336

Job Role: Work effectively with others

- Accurately receive information and information from the supervisor and fellow workers getting clarification.
- Accurately pass on information to authorized person who require it and within agreed times scale and confirm its receipt.
- Give information to others clearly, data a pace and in a manner that helps to understand.
- Display helpful behavior by assisting others in performing tasks in a positive manner where required and possible.
- Consult with and assist others to maximize effectiveness and effectiveness and efficiency in carrying ort tasks.
- Display appropriate communication etiquette while working.
- Display active listening skills while interacting with others at work.
- Use appropriate tone pitch and language to convey politeness assertiveness acre and professionalism.
- Demonstrate responsible and disciplined behaviors at the workplace like punctuality, completing tasks as per given time and standards not gossiping and idling time, eliminating waste, honesty, etc...
- Escalate grievances and problems to appropriate authority as per procedure to resolve them and avoid conflict.