COMMUNITY COLLEGE OF SKILL DEVELOPMENT

Sub: **Minutes of 5th meeting of Board of Studies, Community College of Skill Development held on 18.01.2019 at 11.00 AM in the University.**

Present:

1.	Dr. Sanjeev Goyal, Principal, CCSD	: In Chair
2.	Dr. Rashmi Popli, Vice-Principal, CCSD	: Member
3.	Mr Sandeep Dutta, M/s Escorts Ltd	: Outside Member
4.	Mr. Prabhakar Yadav, M/s Durga Threading Tools	: Outside Member
5.	Mrs Sandhya Dixit, JCBUST, Faridabad	: Member
6.	Dr. Anju Gupta, JCBUST, Faridabad	: Member
7..	Mr. Virendra Vats, NSIC, Neemka	: Special Invitee

The following members could not attend the meeting:-

1. Mr.Pankaj Munjal

2. Dr.Sandhya Chintala

3. Mr.Anand Kumar Singh

4. Ms Richie

At the outset, Dr.Sanjeev Goyal, Principal-CCSD and Chairman of Board of Studies warmly welcomed all the members of the Board. The Chairman also appreciated the interest and the presence of outside members, who took pain to attend this meeting for the healthy discussion on the development of the College.

The Agenda Items taken up and after detailed deliberation/discussion, the following decisions were taken.

Item No. 05/01: **To consider and approve the modified syllabus of Diploma in Electrician Trade**

The Board considered and approved the proposal for modification of syllabi of Certificate and Diploma courses of Electrician Trade, as per requirement.

Item No. 05/02: **To consider and approve the modified syllabus of Diploma in in RAC Trade.**

The Board considered and approved the proposal for modification of syllabi of Certificate and Diploma courses of RAC Trade, as per requirement.

Item No. 05/03: **To note the matter of starting of new course Diploma in computer software, Hardware & Networking and also consider and approve the modified syllabus of Diploma in computer software, Hardware & Networking.**

The Board noted the matter regarding the starting of the course Diploma in computer software, Hardware & Networking and also considered and approved the scheme and syllabi of this course.

Item No. 05/04: To note the matter of starting of new course Diploma in Web Designing and also consider and approve the modified syllabus of Diploma in Web Designing.

The Board noted the matter regarding the starting of the course Diploma in Web Designing and also considered and approved the scheme and syllabi of this course.

Item No.05/05: To note the matter of starting of new course B.Voc in Electrical and also consider and approve the syllabus of first year B.Voc Electrical. (Annexure – A)

The Board noted the matter regarding the starting of the course B.Voc in Electrical and after detailed discussion, board considered and approved the scheme and syllabi of this course.

Item No. 05/06: To note the matter of starting of new course B.Voc in Web Development and also consider and approve the syllabus of first year B.Voc Web Development. (Annexure – B)

The Board noted the matter regarding the starting of the course B.Voc in Web Development and after detailed discussion, board considered and approved the scheme and syllabi of this course.

Item No. 05/07: To note the matter of starting of new course B.Voc in Automobile and also consider and approve the syllabus of first year B.Voc Automobile. (Annexure – C)

The Board noted the matter regarding the starting of the course B.Voc in Automobile and after detailed discussion, board considered and approved the scheme and syllabi of this course.

Item No. 05/08: To note the matter of starting of new course B.Voc in Manufacturing and also consider and approve the syllabus of first year B.Voc Manufacturing. (Annexure – D)

The Board noted the matter regarding the starting of the course B.Voc in Manufacturing and after detailed discussion, board considered and approved the scheme and syllabi of this course.

Item No. 05/09: To consider and approve the internal and external evaluation system of Community College of Skill Development.

The Board considered and approved the internal and external evaluation system for Certificate, Diploma and Degree courses along with the following guidelines: -

(1) The scheme of examination for internal and external evaluation system.

(2) It was resolved that the maximum attempts to clear the B.Voc course should be 5 years and for Diploma course should be 3 years.

(3) The passing marks for subjects should be 40%.

Item No. 05/10: To consider and approve list of teachers for taking classes of Community College.

The Board considered and approved the list of following teachers engaged/appointed for taking classes of Community College: -

S. N	Name	Designation	Institute
1	Mr. Vimlesh Kumar Ojha	Assistant Professor	Community College
2	Mrs. Poonam	Assistant Professor	Community College
3	Mrs. Meenu	Assistant Professor	Community College
4	Mrs. Kanchan	Assistant Professor	Community College

Item No. 05/11: To consider and approve the issuance of certificates to the students of Batch 2018-19

The Board considered and approved the proposal regarding issuance of certificates to the students admitted in certificate, Diploma and B.Voc courses under CCSD by J C Bose University of science and Technology, Faridabad.

Item No. 05/12: To consider and approve 75% as a minimum attendance for appearing in final exams. of CCSD.

The Board considered and approved the following Attendance Rules for the students of CCSD on the pattern of JCB UST, Faridabad: -

1. 75% Normal

2. 10% deficiency can be condoned by the Chairperson/Principal concerned i.e. upto 65% on account of Medical Ground, Sports & other extracurricular activities etc.

3. Those students having below 65% attendance will be detained. Such cases are to be approved by the Hon'ble Vice-Chancellor on the recommendation of concerned Chairperson/Principal.

Item No. 05/13: To consider and approve the Promotion Rules from one level to next level of the specific program.

After detailed deliberations, the Board approved the new Promotion Rules for the promotion of student from one level to next, as placed before it.

Item No. 05/14: To consider and approve the Academic Calendar.

The Board considered and approved the Academic Calendar for Community College of Skill Development for the session 2018-19.

Item No. 05/15: To consider and approve code of conduct and punishment.

After detailed discussion on the issue, the Board approved the Code of Conduct & Punishment Rules for the CCSD students, as placed before it.
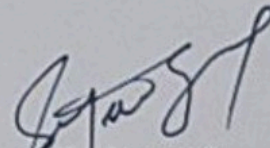
Item No.05/16: **To consider and approve the format of question paper for semester examination.**

The Board considered and approved the format of question paper for semester examination of CCSD students.

Item No.05/17: **To consider and approve the list of examiners for conducting examinations of Community College students.**

The Board considered and approved the list of examiners for conducting the examination of Community College students, as proposed in the agenda item

The meeting ended with a vote of thanks to the Chair.

(Chairman)
Board of Studies (CCSD)

New Courses Introduced 2018-2019

Program Name	Name of the Course	Course Code
B.VOC WEB DEVELOPMENT	COMMUNICATION SKILLS	BSC-101
B.VOC WEB DEVELOPMENT	BASICS OF OPERATING SYSTEM	PCC-WD-101
B.VOC WEB DEVELOPMENT	FUNDAMENTALS OF COMPUTER PROGRAMMING	PCC-WD-102
B.VOC WEB DEVELOPMENT	BASICS OF IT	PCC-WD-103
B.VOC WEB DEVELOPMENT	FUNDAMENTALS OF NETWORK AND SAFETY	PCC-WD-104
B.VOC WEB DEVELOPMENT	MATHEMATICAL FOUNDATION OF COMPUTING	PCC-WD-105
B.VOC WEB DEVELOPMENT	COMPUTER WORKSHOP	PCC-WD-106
B.VOC WEB DEVELOPMENT	COMMUNICATION SKILLS-II	BSC-201
B.VOC WEB DEVELOPMENT	ENGINEERING CALCULATIONS-II	BSC-202
B.VOC WEB DEVELOPMENT	MANAGEMENT INFORMATION SYSTEM	PCC-WD-201
B.VOC WEB DEVELOPMENT	SOFTWARE PROJECT MANAGEMENT	PCC-WD-202
B.VOC WEB DEVELOPMENT	WEB DESIGNING-HTML &CSS	PCC-WD-203
B.VOC WEB DEVELOPMENT	COMPUTER WORKSHOP	PCC-WD-204
B.VOC ELECTRICAL	COMMUNICATION SKILLS	BSC-101

B.VOC ELECTRICAL	ENGINEERING CALCULATIONS	BSC-102
B.VOC ELECTRICAL	FUNDAMENTALS OF COMPUTERS	BSC-104
B.VOC ELECTRICAL	INDUSTRIAL SAFETY	PCC-AM-102
B.VOC ELECTRICAL	ELECTRICAL MACHINE - I	PCC-EL-101
B.VOC ELECTRICAL	ELECTRICAL DRAWING	PCC-EL-102
B.VOC ELECTRICAL	ELECTRICAL TESTING AND INSTALLATION	PCC-EL-103
B.VOC ELECTRICAL	ELECTRICAL WORKSHOP	PCC-EL-104
B.VOC ELECTRICAL	COMMUNICATION SKILLS	BSC-201
B.VOC ELECTRICAL	ENGINEERING CALCULATIONS	BSC-202
B.VOC ELECTRICAL	FUNDAMENTALS OF COMPUTER LAB	BSC-203L
B.VOC ELECTRICAL	ELECTRICAL MACHINE - II	PCC-EL-201
B.VOC ELECTRICAL	ELECTRICAL WIRING	PCC-EL-202
B.VOC ELECTRICAL	INSTALLATION MAINTENANCE AND REPAIRING	PCC-EL-203
B.VOC ELECTRICAL	ELECTRICAL WORKSHOP	PCC-EL-204
B.VOC AUTOMOBILE	COMMUNICATION SKILLS	BSC-101
B.VOC AUTOMOBILE	ENGINEERING CALCULATIONS	BSC-102
B.VOC AUTOMOBILE	FUNDAMENTALS OF COMPUTERS	BSC-104

B.VOC AUTOMOBILE	FUNDAMENTALS OF COMPUTERS LAB	BSC-104L
B.VOC AUTOMOBILE	MANUFACTURING PROCESS-I	PCC-AM-101
B.VOC AUTOMOBILE	INDUSTRIAL SAFETY	PCC-AM-102
B.VOC AUTOMOBILE	WORKSHOP	PCC-AM-103
B.VOC AUTOMOBILE	ENGINEERING DRAWING	PCC-AM-104
B.VOC AUTOMOBILE	COMMUNICATION SKILLS-II	BSC-201
B.VOC AUTOMOBILE	ENGINEERING CALCULATIONS-II	BSC-202
B.VOC AUTOMOBILE	MANUFACTURING PROCESS-II	PCC-AM-201
B.VOC AUTOMOBILE	QUALITY INSPECTION AND SAFETY	PCC-AM-202
B.VOC AUTOMOBILE	ELEMENTS OF AUTOMOBILE ENGINEERING	PCC-AM-203
B.VOC AUTOMOBILE	MACHINING WORKSHOP-II	PCC-AM-204
B.VOC MANUFACTURING	COMMUNICATION SKILLS	BSC-101
B.VOC MANUFACTURING	ENGINEERING CALCULATIONS	BSC-102
B.VOC MANUFACTURING	FUNDAMENTALS OF COMPUTERS	BSC-103
B.VOC MANUFACTURING	FUNDAMENTALS OF COMPUTER LAB	BCS-104
B.VOC MANUFACTURING	MANUFACTURING PROCESS-I	PCC-AM-101
B.VOC MANUFACTURING	INDUSTRIAL SAFETY	PCC-AM-102

B.VOC MANUFACTURING	WORKSHOP	PCC-AM-103
B.VOC MANUFACTURING	ENGINEERING DRAWING	PCC-AM-104
B.VOC MANUFACTURING	COMMUNICATION SKILLS-II	BSC-201
B.VOC MANUFACTURING	ENGINEERING CALCULATIONS-II	BSC-202
B.VOC MANUFACTURING	MANUFACTURING PROCESS-II	PCC-AM-201
B.VOC MANUFACTURING	QUALITY INSPECTION AND SAFETY	PCC-AM-202
B.VOC MANUFACTURING	ELEMENTS OF AUTOMOBILE ENGINEERING	PCC-AM-203
B.VOC MANUFACTURING	MACHINING WORKSHOP	PCC-AM-204

Annexure – "A"

J.C.BOSE UNIVERSITY OF SCIENCE & TECHNOLOGY ,YMCA
FARIDABAD-121006
Community College of Skill Development

Scheme And Curriculum

B.Voc Electrical

1st Semester

Session-w.e.f. 2018-19

B. VOC ELECTRICAL
SEMESTER – I

Paper Code	Paper	L	T/P	Credits
PCC-EL-101	ELECTRICAL MACHINE - II	3	0	3
PCC-AM-102	INDUSTRIAL SAFETY	3	0	3
BSC-101	COMMUNICATION SKILLS	3	0	3
BSC-102	ENGINEERING CALCULATIONS	3	0	3
BSC-104	FUNDAMENTALS OF COMPUTERS	3	0	3
PCC-EL-102	ELECTRICAL DRAWING	0	3	3
PCC-EL-103	ELECTRICAL TESTING AND INSTALLATION	3	0	3
PCC-EL-104	ELECTRICAL WORKSHOP	0	9	9

J.C BOSE UNIVERSITY OF SCIENCE & TECHNOLOGY, YMCA FARIDABAD
Community college of skill development
Electrical Machine
Paper Code- PCC-EL-101

Semester 1st	Sessional – 25 Marks
Stream– Electrical	Theory – 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Course Objectives:
1. To learn about basics of Machines.
2. To learn about different types of machine.
3. To understand working mechanism of machines.

Course Contents

Unit 1: DC Machines: Introduction to DC Machine, Construction of DC Machine, working principle of DC Generator,E.M.F. Equation of DC generator,Introduction to DC Motors, Back E.M.F., Torque Equation , Types of DC Motors, Application of DC Motors.

Unit 2: Electrical circuits : Concepts of electrical circuits which includes(Purely Resistive,Purely Inductive,purely Capacitive,R-L, R-C,R-L-C) ,DC Circuits.

Unit 3:Transormer : Working principle of different types of transformers, connections (star- star, delta-delta, delta-star) and application of respective transformers.

Unit 4: Earthing: Different methods of earthing including measurement of earth resistance by earth tester, testing of earth Leakage by ELCB and relay, etc.
Use of MCB, RCCB and ELCB in equipment, their principles &power ratings.

Course Outcomes:
1. Understands the concept of operation of machines
2. Learns basics of electrical circuits
3. Have knowledge of basic electrical terms

Text/Reference books:
1. Basics of Electrical Engineering By K.UMA RAO.
2. Electric Machines by Ashfaq Husain.
3. Engineering Thermodynamics by PK Nag; Tata McGraw Hill, Delhi.
4. Basic Engineering Thermodynamics by Roy Chaudhary; Tata McGraw Hill, Delhi.
5. Fundamentals of Electrical Engineering by Sahdev, Uneek Publication, Jalandhar.

J.C BOSE UNIVERSITY OF SCIENCE & TECHNOLOGY, YMCA FARIDABAD
Community college of skill development
Industrial Safety I
PCC- AM-102

Semester 1st	Sessional – 25 Marks
Stream– Electrical	Theory – 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Course Objectives:
1. To learn about basic concept of Safety
2. To learn how to reduce workplace hazards.
3. To provide knowledge on various safety devices.
4. To learn safety measures during industrial as well as environmental hazards.

Course Contents

Unit-I: Safety Principles- Safety Rules and Principles**,** Accidents,Types of hazards involved in construction sites,Types of hazards involved in electrical.

Unit II: Safety Control: Emergency safety control measures and actions to be taken under emergency situation, First Aid ,Fire extinguisher, Safety drills, Types and use of PPEs as per general and electrical safety norms

Unit III: Process Safety Management- Process safety management (P.S.M) as   per OSHA& Standard procedure of handling, storing and stacking material, electrical fixtures and accessories ,What is safe disposal of waste, type of waste and their disposal

Unit-IV: Protective Devices Type of electrical protective devices, their power ratings and area of application ,Basic ergonomic principles as per applicability.

Course Outcomes:
1. Illustrate and familiarize the basic concepts and scope of industrial safety.
2. Understand the standards of professional conduct that are published by professional safety organizations and certification bodies
3. Illustrate the importance of safety of employees while working with machineries.
4. Learns safety in various industrial hazard zones.

Text/Reference books:
1. Industrial safety management by L.M. Deshmukh, Tata Megraw Hill publication ,New Delhi, 2006.
2. Industrial safety health and environment Management system by R.K. Jain & Sunil S. Rao, Khanna Publications , 2008 .

J.C BOSE UNIVERSITY OF SCIENCE & TECHNOLOGY, YMCA FARIDABAD
Community college of skill development
Paper: Communication Skills I
BSC-101

Semester 1st	Sessional: 25 Marks
Stream: Electrical	Theory: 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3Hours

Course Objectives:
1. To discuss types of communication and their forms.
2. To improve comprehension.
3. To improve spoken English and ability to articulate ideas
4. To improve formal writing skills

Course Contents:

Unit 1: **Introduction to Communication**- Meaning, Importance and Function of Communication, Types of communication, language of communication, verbal/ non-verbal, formal/informal, visual; advantages and disadvantages

Unit 2: **Grammar**- Parts of speech, Articles, Tenses, Formation of Sentences, Active and Passive Voice, Direct and Indirect speech

Unit 3: Comprehension, Composition, Translation, Paraphrasing, Letter writing

Unit 4: 7 Cs of Communication; Grice's Cooperative Principle; Group Discussions; Public Speaking; Facing Interviews

Course Outcome:
1.To learn about communication process, and ways to make communication effective by giving attention to all elements involved.
2.To improve grammar and gain confidence by enhancing their abilities to articulate their ideas.
3.To acquire better writing skills in formal communication.
4.To be able to revise documents for fruitful reading and comprehension.

Recommended Reference Reading:
1. Wren and Martin. *High School English Grammar and Composition.* New Delhi: RRP, 2007
2. Murphy, Raymond. *Essential English Grammar*. New Delhi: Cambridge, 2017 Malhotra, Prerna and Halder, Deb. *Communication Skills: Theory and Practice.* New Delhi: M.S. Indian

J.C BOSE UNIVERSITY OF SCIENCE & TECHNOLOGY, YMCA FARIDABAD
Community college of skill development
Engineering Calculations
BSC-102

Semester 1st					Sessional: 25 Marks
Stream– Electrical					Theory: 75 Marks
L	T	P	Total Credits		Total: 100 Marks
3	0	0	3		Duration of Exam: 3 Hours

Course Objectives
1. To familiarize the prospective engineers with Basics of mathematics.
2. To understand fundamental arithmetical operations.
3. To learn Unit systems, Fractions and Decimals, roots, percentage.
4. To have Knowledge of ratio and proportion, factorization and mensuration.

Course Contents

Unit-I Basic Aptitude- Fundamental Arithmetical Operation- Addition, Subtraction, Multiplication and Division. Applied Workshop Problems Involving Addition, Subtraction, Multiplication and Division, System Of Units – Definition, Different Types & System Of Units i.e.(C.G.S. & SI Units For Length, Mass, Area, Volume, Capacity, Time) HCF , LCM, Square Root Cube Root.

Unit-II: Trigonometory – Introduction, Trigonometric Identities, Quadrant Rule, Trigonometric Ratios Of Some Specific Angles, Ratios Of Complementary Angles, Introduction

Unit-III: Differentiation-Introduction to Derivatives, Product Rule, Quotient Rule, Chain Rule. Derivatives of Algebraic Function, Derivative Of Trigonometric Functions.

Unit-IV: Algebra- Algebraic Expressions and Identities, Terms Coefficients And Factors, Monomials Binomials And Polynomials, Multiplication And Division Of Algebraic Expressions, Standard Identities And Their Applications.

Course Outcomes:
1. To apply the arithmetical operations and conversion of units.
2. To solve Ratio and proportion, square roots and cube roots
3. To convert in Fraction and decimals, Percentage.
4. To deal with Factorisation and algebraic problems
5. To learn about area and perimeter of different shapes and volume of solid.

Reference books:

1. A basic course in mathematics by Nabjyoti Dutta.
2. Skills in nmathematics by Amit M Agarwal.
3. Applied mathematics for polytechnics by H.K. Dass
4. Advanced Engineering Mathematics by Jain RK.
5. Mathematics book by R.D Sharma

J.C BOSE UNIVERSITY OF SCIENCE & TECHNOLOGY, YMCA FARIDABAD
Community college of skill development
Fundamentals of computer
BSC – 103

Semester 1st	Sessional: 25 Marks
Stream– Electrical	Theory: 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Course Objectives:

1. Give students an in-depth understanding of why computers are essential components in business, education and society.
2. Introduce the fundamentals of computing devices and reinforce computer vocabulary, particularly with respect to personal use of computer hardware and software.
3. Provide hands-on use of Microsoft Office applications Word, Excel, Access and PowerPoint.
4. Provide basic knowledge of internet.

Course Contents:

Unit 1: Basics of Computer- Introduction to Computers, Generations of Computers, Types of Computers, Input-Output Devices, Computer Organisation, Advantages and Disadvantages of Computer, BIOS, Booting.

Unit 2: Introduction to Software - Computer Software, Types of Software, Security, Computer Viruses, Number System.

Unit 3: Computer Memory and Operating System- Introduction to Memory Unit, Types of Primary Memory, Secondary Memory; Definition, Types and Functions of Operating System

Unit 4: Internet Services – Introduction, History, Working, Uses, Advantages, Disadvantages of Internet, E-mail.

Course Outcomes:

1. Describe the usage of computers and why computers are essential components in society.
2. Identify categories of programs, system software and applications. Organize and work with files and folders.
3. Completion of the assignments will result in MS Office applications knowledge and skills.
4. Describe the usage of Internet and E-mail.
   Reference books

 Reference books:

1. Yashwant Kanetkar, Let Us C.
2. A K Sharma, Computer Fundamentals and Programming in C.
3. Brain W.Kernighan & Dennis M. Ritchie, The C Programming Language.
    Peter van der Linden, Expert C Programming

J.C BOSE UNIVERSITY OF SCIENCE & TECHNOLOGY, YMCA FARIDABAD
Community college of skill development
Electrical Testing And Installation
Paper Code-PCC-EL-103

Semester 1st	Sessional – 25 Marks
Stream–Electrical	Theory – 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Course Objectives:
1. To learn safety measures from Electrical hazards.
2. To have Basic knowledge of Electrical Instruments.
3. To familiarize with the Electrical Machines.
4. To study Electrical Accessories and wiring techniques.

Course Contents

Unit I: Introduction: Ohm's Law Kirchhoff's Laws and applications, Magnetism Electrostatics: Capacitor

Unit II: Electrical Works: Introduction to applicable Indian standards code of practice(Electrical Works) **,**Introduction to wiring symbols used in single and three phase electrical diagrams ,Concept regarding correct techniques of interpreting electrical diagrams regarding electrical circuits, Voltage Gradient of different types of Insulators, Temp Rise permissible.

Unit III: Cable installation: Standard methods of electrical cable laying at construction site .Checking and selection of materials, fixtures, tools equipments to be deployed Acceptance criteria to be followed while selecting materials, fixtures or tools for cable laying& Method of selecting cable laying path& Activities involved in cable laying and their sequence,Key organizational procedures to be undergone prior and after cable laying activity such as filling of permits, checklists etc .

Unit IV: Electrical Circuits & Wiring: Standard method of electrical isolation and its necessity in electrical installation work ,Selection and adoption of standard method of termination of cables at power source and equipment power terminals ,Selection and use of cable lugs, cable jointers and other electrical accessories used for laying, terminating and joining cables ,Required dimensions and safety parameters to be checked for poles or trenches to be used for laying of cable & Types of cables (single/ 3 phase) used as per electrical load ,Selection of method and type of

Selection of method and type of electrical earthing to be adopted for installed electrical equipment., Sequence to be followed while undertaking cable laying work in a construction site. Selection and use of electrical fixtures such as circuit breakers, starters, relays etc. and their power rating as per circuit voltage requirement

Course Outcomes:
1. Learns the basics of first aid.
2. Understands the concept of electric motor and transformer.
3. Have knowledge of basic electrical machines
4. Learns circuit series in electric home appliances.
5. Have knowledge of various wiring techniques used.

Text/Reference books:
1. NFPA® 70E, "Electrical Safety Requirements for Employee Workplaces" 2000 Edition
2. Electrcical machine by Ashfaq Hussain.
3. Ertugrul, Nesimi. LabVIEW for electric circuits, machines, drives, and laboratories, Prentice Hall PTR, 2002.
4. Nilsson, James William. Electric circuits. Pearson Education India, 2008.

J.C BOSE UNIVERSITY OF SCIENCE & TECHNOLOGY, YMCA FARIDABAD
Community college of skill development
Electrical Drawing I
Paper Code- EL-107

Semester 1st   Sessional – 25 Marks

Stream– Electrical   Theory – 75 Marks

L   T   P   Total Credits   Total: 100 Marks

3   0   0   3   Duration of Exam: 3 Hours

Course Objectives:
1. To learn about basic engineering instruments.
2. To have knowledge of sheet layout.
3. To learn dimensioning and reading of sketches.
4. To learn orthographic and isometric views of drawing.

Course Contents

Unit I: Symbols - Various Electrical Symbols used in Domestic and Industrial   Installation and Power System(Generation Transmission and Distribution including substation)

Unit II: Electrical Wiring: Wiring diagram of light, fan, bell and alarm circuit, Staircase and go down wiring

Unit III: House Wiring: Concept of standard house wiring procedure and best practices.

Unit IV : Electrical Fixtures: Right procedure of handling of electrical fixtures ,Use of ladders, scaffolds, PPEs, shock resistance gloves during working/ performing tests in a live circuit Use of power drill machine and selection of drill bit for drilling works, ,Use of different common electrical hand and power tools.

Course Outcomes:
1. Have knowledge of engineering instruments.
2. Learns lines and symbols of drawing.
3. Learns freehand sketching.
4. Understands projections of drawing.

Text/Reference books:
1. Engineering Drawing by KK Dhiman, Ishan Publications, Ambala, Haryana.
2. Elementary Engineering Drawing (in first angle projection) by ND Bhatt, Charotar Publishing House, Anand, Gujrat.
3. A Text Book of Engineering Drawing by Surjit Singh published by Dhanpat Rai and Co., Delhi.
4. Engineering Drawing by PS Gill published by SK Kataria and sons, Delhi.
5. Engineering Drawing by RB Gupta published by Satya Prakashan, New Delhi.

J.C BOSE UNIVERSITY OF SCIENCE & TECHNOLOGY, YMCA FARIDABAD
Community college of skill development
Electrical Workshop I
Paper Code- EL- 108

Semester 1st

Stream– Electrical

L   T   P   Total Credits

0   0   19   19

Course Objectives:
1. To verify basic electrical laws.
2. To have knowledge of Wiring Circuit.
3. Grasp the concept of transformer in detail.
4. Understands the concept of safety.
5. To know Symbols and electrical machines.
6. To have knowledge of electrical connections, meters and instruments.

Course Contents:

1. Verification of ohm's law.

2. To trace the magnetic field of two bar magnets with like poles and unlike poles kept nearby with the help of magnetic needle.

3. To trace the magnetic field of a current carrying conductor in both directions and verify the right hand rule and cork screw rule.

4. To verify Kirchoff's 1st and 2nd Law.

5. General wiring.

6. To study & find the specifications of various types of wires and cables.

7. To measure the gauge of a given wire with the help of wire gauge.

8. To connect the wires with different electrical accessories.

9. To assemble a regulated power supply.

10. Testing of various accessories used for tube light circuit.

11. Transformer winding & calculations.

12. Study various types of transformers.

13. Study the various parts of small & power transformers.

14. Finding of high voltage and low voltage terminal of transformer.

15. Testing of low voltage transformer with and without load.

16. Assembly and testing of the above transformer.

17. Fire prevention and protection, causes of industrial fire, prevention and remedies types and use of fire fighting equipments.

18. Safety use in electricity, shock treatment methods, safety precautions.

19. Symbols used in electrical circuits.

20. To measure the power of an electric motor by wattmeter.

21. To verify the characteristic of 3 phase balance star and delta connection.

22. To verify the characteristic of 3 phase unbalance star system and to measure current in neutral.

23. To verify the characteristic of 3 phase balance delta connection system

24. To fix the electrical accessories on the board and blocks

25. Connection of voltmeter and ammeter and to measure voltage and current.

26. To make a main switch board for house wiring

27. To test the single & three phases supply for all phase, neutral & earth with help of test lamp and by neon tester.

28. Measure the voltage current and resistance of an electric heater.

29. Demonstrate electrical circuit diagrams related to electrical equipment

30. Calculate/ interpret electrical power rating of electrical circuits installed in the equipments

31. Carry out the earthing of the installed electrical circuit s per standard practice

32. Carry out the earthing of the installed electrical circuit s per standard practice.

33. Practice Cable laying through conduits

Course Outcomes:
1. Learns to verify electrical laws.
2. Have working knowledge of Wiring and installations.
3. Have hands on experience about various machines and electrical Connections
4. Obtain practical skills of basic instruments and working of circuits used in the workshop.

SEMESTER – II

Paper Code	Paper	L	T/P	Credits
PCC-EL-201	ELECTRICAL MACHINE – II	3	0	3
BSC-201	COMMUNICATION SKILLS	3	0	3
BSC-202	ENGINEERING CALCULATIONS	3	0	3
BSC-203L	FUNDAMENTAL OF COMPUTER LAB	0	3	3
PCC-EL-203	INSTALLATION MAINTENANCE AND REPAIRING	3	0	3
PCC-EL-204	ELECTRICAL WIRING	0	3	3
PCC-EL-205	ELECTRICAL WORKSHOP	0	12	12

J.C BOSE UNIVERSITY OF SCIENCE & TECHNOLOGY, YMCA FARIDABAD
Community college of skill development
Installation Maintenance and Repairing
Paper Code- PCC-EL-203

Semester 2nd	Sessional – 25 Marks
Stream– Electrical	Theory – 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Course Objectives:
1. To Learn and Practicing installation on electrical works.
2. To Know the Monitoring Methods Of Electrical works.
3. To know the basics of Maintenance.

Unit 1 Electrical Devices: Electrical Fixtures, Method of calculation of load on Circuits, Method of Material estimation, Area of application & specification of electrical protective devices.

Unit 2 Electrical Circuits: Advantages of three phase system over single phase sytem,Star Delta connections of three phase supply system,3 phase connection of AC and DC circuits, their properties and area of application,

Unit 3:Monitoring Methods: Method of resource planning and Methods of preparation of work schedule, Monitoring procedure of ongoing works and inspection of completed works to
ensure compliance with all electrical safety and quality parameters.

Unit4 :Electrical Tools: Hand Tools, Materials and Fixtures Screw drivers, wire cutters, wire strippers, pliers, hammers,Hacksaws, Chisels, Spanners (Set), Wrenches, File, Marking tools, table vice, Stock and die set, Pipe cutter to cut pipes,Wire cutters, Wire strippers, Spanners (set), wrenches, Trowel,pointing Trowel, Shovel, mortar Pan, spade, pick axe GI bucket 5L capacity, wheel Barrow, lime powder, wooden pegs, hammer, hard broom, source of water, ladder, Cables,wires, sockets, switches, lights, conduits (flexible and rigid),
raceways, clamps for conduits, screws.

Course Outcomes:
4. Understands the concept of Maintenance of machines
5. Learns basics of electrical circuits
6. Have knowledge of basic electrical terms.

Text/Reference books:
6. Madhvi Gupta,Installation ,Maintenance and Repair of Electrical Machines and Equipments.
7. Tarlok Singh,Installation ,Commissioning and Maintenance of Electrical Engineering.
8. Patrick Mitchell,Central Heating :Installation ,Maitenance and Repair

J.C BOSE UNIVERSITY OF SCIENCE & TECHNOLOGY, YMCA FARIDABAD
Community college of skill development
Paper: Communication Skills I
BSC-201

Semester 2nd	Sessional: 25 Marks
Stream: Electrical	Theory: 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Course Objectives:

5. To discuss types of communication and their forms.
6. To improve comprehension.
7. To improve spoken English and ability to articulate ideas
8. To improve formal writing skills

Course Contents:

Unit 1:Reading Skills: Translation, Unseen Passages, Annotations, Vocabulary.

Unit 2: **Grammar:** Jumbled words(PQRS),Tenses, Narration, Idioms, Prepositions ,Subject –Verb-Concord

Unit 3: Writing Skills: Composition ,Writing Short Paragraph , Reports, , Advertisements, Poster Making,

Unit 4: Professional Skills: Presentation, Emails, Business Letters, CV Writing, Cover Letters.

Course Outcome:

1. To learn about communication process, and ways to make communication   effective by giving attention to all elements involved.

2.To improve grammar and gain confidence by enhancing their abilities to articulate their ideas.

3.To acquire better writing skills in formal communication.

4.To be able to revise documents for fruitful reading and comprehension.

Recommended Reference Reading:

1. Wren and Martin. High School English Grammar and Composition. New Delhi: RRP, 2007.
2. Murphy, Raymond. Essential English Grammar. New Delhi: Cambridge, 2017 Malhotra, Prerna and Halder, Deb. Communication Skills: Theory and Practice. New Delhi: M.S. Indian

J.C BOSE UNIVERSITY OF SCIENCE & TECHNOLOGY, YMCA FARIDABAD
Community college of skill development
Engineering Calculations
BSC-202

Semester 2nd	Sessional: 25 Marks
Stream– Electrical	Theory: 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Course Objectives
5. To familiarize the prospective engineers with Basics of mathematics.
6. To understand fundamental arithmetical operations.
7. To learn Unit systems, Fractions and Decimals, roots, percentage.
8. To have Knowledge of ratio and proportion, factorization and mensuration.

Course Contents

UNIT-I Complex number: Definition of Complex Number, Operations on Complex Number (Add., Sub., Multiplication, Division), Conjugate Complex Number, Modulus and Amplitude of a Complex Number, Polar form of a Complex Number.

Unit -II Matrices and Determinants: Definition and Properties of Determinants, Definition and Types of Matrix, Transpose of a Matrix, Symmetric, Skew Symmetric Matrices, Orthogonal matrices, Hermitian and Skew Hermitian, Minors and Cofactors, Adjoint and Inverse of a Matrix, Cramer's Rule, Solution of Simultaneous Linear Equations by Inverse Matrix Method, Characteristic Matrix, Characteristic Equation, Eigen Values & Vectors, Cayley Hamilton Theorem (verification only).

Unit - III Differentiation: Introduction to Derivatives, Product Rule, Quotient Rule, Chain Rule, Derivatives of Algebraic Function, Derivative of Trigonometric Functions, partial derivative.

Unit - IV Integration: Concepts of integration, integration of trigonometric, exponential and logarithmic functions, integration by parts.

Course Outcomes:

1. Students will learn about complex number.
2. Students will learn about matrix and determinants.
3. Students will able to deal with derivative Problems.
4. Students will able solve and learn integration.

Reference Books:
1. Mathematics Book by R.D Sharma
2. Advanced Engineering Mathematics By Jain Rk.
3. A Basic Course in Mathematics By Nabjyoti Dutta.

J.C BOSE UNIVERSITY OF SCIENCE & TECHNOLOGY, YMCA FARIDABAD
Community college of skill development
Electrical Machines -II
Paper Code-PCC-EL-201

Semester 2nd	Sessional – 25 Marks
Stream–Electrical	Theory – 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Course Objectives:
5. To learn safety measures from Electrical hazards.
6. To have Basic knowledge of Electrical Instruments.
7. To familiarize with the Electrical Machines.
8. To study Electrical Accessories and wiring techniques.

Course Contents

Unit I:Electrical Panels: Working principle and components of electrical panels ,transformers and generators, operational characteristics of electrical panels and power distribution through the same advance troubleshooting in electrical panels, transformers and generators

Unit II: Electric Motors: Working principle and connection of AC single phase and AC three phase motors ,submersible pumps and their maintenance selection and use of starters such as DOL, Star Delta, Step down Transformer starter etc..

Unit III:Three Phase Supply System: Advantages of three phase supply over single phase line and phase voltage, current and power in a 3 phase circuits with balanced and unbalanced,
.
Unit IV: Heavy Machineries: Detailed concept of electrical installation sequence of electrical panels, transformers, DGs, cables,cranes and electrification of Machineries, Method of erection of an electrical panel and Tower Crane.

Course Outcomes:
6. Learns the basics of first aid.
7. Understands the concept of electric motor and transformer.
8. Have knowledge of basic electrical machines
9. Learns circuit series in electric home appliances.
10. Have knowledge of various wiring techniques used.

Text/Reference books:

1. Basic Engineering Thermodynamics by Roy Chaudhary; Tata McGraw Hill, Delhi.
2. Fundamentals of Electrical Engineering by Sahdev, Uneek Publication, Jalandhar.
3. Basic Electrical Engineering by PS Dhogal, Tata McGraw Hill Education Pvt. Ltd., New Delhi.

J.C BOSE UNIVERSITY OF SCIENCE & TECHNOLOGY, YMCA FARIDABAD
Community college of skill development
Electrical Wiring
Paper Code- PCC-EL-204

Semester 2nd

Stream– Electrical

L	T	P	Total Credits
3	0	0	3

Sessional – 25 Marks

Theory – 75 Marks

Total: 100 Marks

Duration of Exam: 3 Hours

Course Objectives:
1. To learn about basic engineering instruments.
2. To have knowledge of sheet layout.
3. To learn dimensioning and reading of sketches..

Course Contents

Unit I: Introduction: Guidelines provided in Indian Standard code of practice applicable to electrical wiring works, Method of determining use of 3phaseand single phase connections

Unit II: Electrical Wiring: Concept of specification, color coding of cables to be used in wiring system according to load on circuit,Concept of properties of different components used in electrical earthing work
- Size and shape of battens
- Size and shape of raceways
- Size of conduits (Flexible/rigid)
- of cable laying through conduits

Unit III ElectricalTools: Use of different common electrical hand and power tools like different pliers, earth tester, tong tester,voltage tester, multimeter, etc.

Unit IV:Wiring Standards:SLDs related schematics for single and three phase wiring system , Indian Standard code of practice applicable for establishing and inspecting electrical wiring works. Common electrical wiring Accessories and their specifications in line with NEC –Explanation of switches, lamp holders,plugs and sockets

Course Outcomes:
5. Have knowledge of engineering instruments.
6. Learns lines and symbols of drawing.
7. Learns freehand sketching.
8. Understands projections of drawing.

Text/Reference books:
6. Engineering Drawing by KK Dhiman, Ishan Publications, Ambala, Haryana.
7. Elementary Engineering Drawing (in first angle projection) by ND Bhatt, Charotar Publishing House, Anand, Gujrat.
8. A Text Book of Engineering Drawing by Surjit Singh published by Dhanpat Rai and Co., Delhi.
9. Engineering Drawing by PS Gill published by SK Kataria and sons, Delhi.
10. Engineering Drawing by RB Gupta published by Satya Prakashan, New Delhi.

J.C BOSE UNIVERSITY OF SCIENCE & TECHNOLOGY, YMCA FARIDABAD
Community college of skill development
Electrical Workshop II
Paper Code- PCC-EL- 205

Semester 2nd

Stream– Electrical

L   T   P   Total Credits

0   0   19   19   Duration of Exam: 3 Hours

Course Objectives:
1. To verify basic electrical laws.
2. To have knowledge of Wiring Circuit.
3. Grasp the concept of transformer in detail.
4. Understands the concept of safety.
5. To know Symbols and electrical machines.
6. To have knowledge of electrical connections, meters and instruments.

Course Contents:

1. Load test on dc shunt motor to draw speed – torque and horse power – efficiency characteristics.
2. Field Test on dc series machines.
3. Speed control of dc shunt motor by armature and field control.
4. Swinburne's Test on dc motor.
5. Retardation test on dc shunt motor.
6. Regenerative test on dc shunt machines.
7. Load test on three phase induction motor.
8. No load and Blocked rotor test on three phase induction motor to draw (i) equivalent circuit and (ii) circle diagram. Determination of performance parameters at different load conditions from (i) and (ii).
9. Load test on induction generator.
10. Load test on single phase induction motor to draw output versus torque, current, power and efficiency characteristics.
11. Conduct suitable tests to draw the equivalent circuit of single phase induction motor and determine performance parameters.
12. Conduct an experiment to draw V and Λ curves of synchronous motor at no load and load conditions.
13. To obtain magnetization characteristics of a D.C. Shunt generator. Determine critical field resistance of D.C. Shunt generator using O.C.C.
14. To Join electrical cables using standard cable joining methods.
15. Demonstrate nature of common faults in electrical installations of equipments and possible electrical tests/ inspections.
16. Practice installation of conduits, race ways, switch boards, distribution boards, lights, fans and lighting fixtures
17. Practice cable laying through conduits.

Course Outcomes:
1. Learns to Verify electrical laws.
2. Have working knowledge of Wiring and installations.
3. Have hands on experience about various machines and electrical Connection.
4. Obtain practical skills of basic instruments and working of circuits used in the workshop

BASICS OF COMPUTER APPLICATION LAB

Semester -1st   Sessional – 25 Marks
Stream–Automobile/manufacturing   Theory – 75 Marks
L T P Total Credits   Total: 100 Marks
0 0 6   3   Duration of Exam: 3 Hours

Course Objectives:
1. Give students an in-depth understanding of why computers are essential components in business, education and society.
2. Introduce the fundamentals of computing devices and reinforce computer vocabulary, particularly with respect to personal use of computer hardware and software.
3. Provide hands-on use of Microsoft Office applications Word, Excel, Access and PowerPoint.
4. Provide basic knowledge of internet.

Course Contents:
Unit 1: Basics of Computer- Definition, Characteristics of Computers, Basic Applications of Computer, Components of Computer System: Central Processing Unit (CPU), input/output Devices.

Unit 2: MS Word- Create a new document, Open, save and print a document, Edit and format text, Change the page layout, background and borders, Insert headers and footers, Insert and edit tables, Insert clip art and pictures to documents.

Unit 3: MS Power Point- Create a new presentation, Modify presentation themes, Add and edit text to slides, Add new slides to a presentation, Insert clipart images and shapes to slides, Insert and modify tables and charts, Add sound and video to a slide presentation, Insert and edit animations and slide transitions.

Unit 4: MS Excel- Create, open and view a workbook, Save and print workbooks, Enter and edit data, Modify a worksheet and workbook, Work with cell references, Learn to use functions and formulas, Create and edit charts and graphics, Filter and sort table data, Basics of computer network**,** Internet**,** Search engines**,** Basics of E-mail.

Course Outcomes:
1. Describe the usage of computers and why computers are essential components in society.
2. Identify categories of programs, system software and applications. Organize and work with files and folders.
3. Completion of the assignments will result in MS Office applications knowledge and skills.
4. Describe the usage of Internet and E-mail.

Program B.Voc Electrical (Program Code: 252)
Scheme Course Index of the Year 2018-19 (BOS Dated 18/01/2019)
Mapping of the Courses with the Employability/Entrepreneurship/Skill Development

S.NO	Course Name	Course Code	Skill Development	Entrepreneurship	Employability
1	COMMUNICATION SKILLS	BSC-101	√	√	
2	ENGINEERING CALCULATIONS	BSC-102	√		√
3	FUNDAMENTALS OF COMPUTERS	BSC-104	√		√
4	INDUSTRIAL SAFETY	PCC-AM-102	√	√	√
5	ELECTRICAL MACHINE - I	PCC-EL-101	√	√	√
6	ELECTRICAL DRAWING	PCC-EL-102	√		√
7	ELECTRICAL TESTING AND INSTALLATION	PCC-EL-103	√		
8	ELECTRICAL WORKSHOP	PCC-EL-104	√	√	√
9	COMMUNICATION SKILLS	BSC-201	√	√	
10	ENGINEERING CALCULATIONS	BSC-202	√	√	
11	FUNDAMENTALS OF COMPUTER LAB	BSC-203L	√	√	√
12	ELECTRICAL MACHINE - II	PCC-EL-201	√		
13	ELECTRICAL WIRING	PCC-EL-202	√		
14	INSTALLATION MAINTENANCE AND REPAIRING	PCC-EL-203	√		
15	ELECTRICAL WORKSHOP	PCC-EL-204	√	√	√

Principal, CCSD

Annexure – "B"

J.C BOSE UNIVERSITY OF SCIENCE AND TECHNOLOGY, YMCA FARIDABAD

COMMUNITY COLLEGE OF SKILL DEVELOPMENT

CURRICULAM FOR

B.VOC

WEB DEVELOPMENT

1ST SEMESTER

1. Introduction

All India Council for Technical Education (AICTE) Ministry of HRD, Government of India has introduced Entrepreneurship oriented Skill development courses of B.Voc/D.Voc/Skill Diploma. These courses will be run by AICTE approved institutes by using available infrastructure and facilities. In these courses the institute will conduct general education content and sector specific skills will be imparted by Skill Knowledge Providers/ Training Providers/ Industries.

1.1 Key Features:

1. Objectives

    1. To provide judicious mix of skills relating to a profession and appropriate content of General Education.
    2. To ensure that the students have adequate knowledge and skills, so that they are work ready exit point of the programme.
    3. To provide flexibility to the students by means of pre-defined entry and multiple exit points.
    4. To integrate NSQF within the Diploma, undergraduate level of higher education to enhance employability of the students and meet industry requirements. Such student apart from meeting the needs of local and national industry are also expected to be equipped to become part of the global workforce.
    5. To provide vertical mobility to students admitted in such vocational courses.
    6. The certification levels will lead to Diploma/Advanced Diploma/B. Voc. Degree in Web Development and will be offered by respective affiliating University. Students may be awarded Level Certificate/Diploma/Advance Diploma /Degree as out-lined in the Table below:

Award	Duration after class X	Corresponding NSQF level
Diploma	3 Year	5
Advance Diploma	4 Years	6
B.Voc Degree	5 Years	7

2. Course Objectives

    After successfully completing the vocational course, the student would have acquired relevant appropriate and adequate technical knowledge together with the professional skills and competencies in the field of Web Development so that he/she is properly equipped to take up gainful employment in this Vocation.

    Thus he/she should have acquired Understanding of:

    (a) The relevant basic concepts and principles in basic science subjects (Communication Skills and Mathematics) so that he/she is able to understand the different vocational subjects.
    (b) The basic concepts in networking.
    (c) The concepts, principles of working of basic computing devices and circuits.

3. Course Structure

   The course will consist of combination of practice, theory and hands on skills in the IT sector.

4. Curriculum

   - ➢ The curriculum in each of the years of the programme would be a suitable mix of general education and skill components.
   - ➢ The focus of skill components shall be to equip students with appropriate knowledge, practice and attitude, to become work ready. The skill components will be relevany to the industry as per its requirements.
   - ➢ The curriculam will necssarily embed within itself, National Occupational Standards (NOSs) of specific job roles withon the industry. This would enable the students to meet the learning outcomes specified in the NOSs.
   - ➢ Adequate attention will be given in curriculam design to practical work, on the job training, development of student portfolios and project work.
   - ➢ General Education Component:
   - ➢ The general education component adhere to the normal senior secondary and university standards. It will emphasize and offer courses which provide holistic development. However, it will not exceed 40% of total curriculam. Adequate emphasis is given to language and communication skills.

SEMESTER – I

SCHEME

PAper Code	PAper	L	T/P	Credits
PCC-WD-101	BASICS OF OPERATING SYSTEM	3	0	3
PCC-WD-102	FUNDAMENTALS OF COMPUTER PROGRAMMING	3	0	3
PCC-WD-103	BASICS OF IT	3	0	3
PCC-WD-104	FUNDAMENTALS OF NETWORK AND SAFETY	3	0	3
PCC-WD-105	MATtfEMATICAL FOUNDATION OF COMPUTING	3	0	3
BSC–101	COMMUNICATION SKILLS	3	0	3
PCC-WD-106	COMPUTER WORKStfOP	0	12	12

Detailed Curriculum
J.C BOSE UNIVERSITY OF SCIENCE & TECHNOLOGY, YMCA FARIDABAD

Community college of skill development
Basics of operating system
Paper Code: PCC - WD - 101

Semester: 1st	Sessional : 25 Marks
Stream: Web Development	Theory: 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Course Objectives:

1. To learn the fundamentals of Operating Systems.
2. To learn the mechanisms of OS to handle processes.
3. To learn the mechanisms involved in memory management in contemporary OS.
4. To gain knowledge on file management aspects of Operating systems

Course Content:

Unit 1: Operating Systems: Concept of Operating Systems, Need of operating system, Types of Operating Systems, Services of operating system, Structure of an operating system, Functions of operating system.

Unit 2: Processes: Definition, Different states of a Process, Process Scheduling, Types of Schedulers, and Scheduling criteria: CPU utilization, Throughput, Turnaround Time, Waiting Time, Response Time. Scheduling algorithms, FCFS, SJF, Priority, RR, Multiprocessor scheduling.

Unit 3: Memory & File Management: Logical and Physical address space, Swapping, Contiguous Memory allocation, Virtual Memory, Paging, Segmentation. Concept of File, Access methods, Directory structure, File System structure, Allocation methods.

Unit 4: Study of various Operating Systems: Windows, Dos, Linux etc.

Key Learning Outcomes:

Candidates will be able to:
1.   Create processes.
2.   Develop algorithms for process scheduling for a given specification of CPU utilization, Throughput, Turnaround Time, Waiting Time, and Response Time.
3.   For a given specification of memory organization, develop the techniques for optimally allocating memory to processes by increasing memory utilization and for improving the access time.
4.   Design and implement file management system.

Reference Books:

1. Operating System Concepts by Silberchatz et al, 5th edition, 1998, AddisonWesley.
2. Modern Operating Systems by A. Tanenbaum, 1992, Prentice-Hall.
3. Operating Systems Internals and Design Principles by William Stallings,4th edition, 2001, Prentice Hall.

J.C BOSE UNIVERSITY OF SCIENCE & TECHNOLOGY, YMCA FARIDABAD
Community college of skill development

Fundamentals of Computer Programming
Paper Code: PCC - WD - 102

Semester: 1st	Sessional: 25 Marks
Stream: Web Development	Theory: 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Course Objectives:

1. To have a deep insight of computer languages.
2. To learn about basics of computer programming.
3. To understand the basics and usefulness of an algorithms and flowcharts.
4. To understand the steps involved in designing a program.

Course Contents:

Unit 1 : Programming fundamentals : Definition of programming language, natural language versus computer language, characteristics of good programming language, Computer Languages - Introduction to computer languages, machine language, assembly language, high-level language, language translators, compiler, interpreter, assembler, linker, loader.

Unit 2 : C-Language – I : Introduction to C language, keywords, data types in C, variables, identifiers, constants, pre-processor directive, operators and expressions.

Unit 3 : C-Language – II : Control Flow statements & Functions - If statement, go to, switch statement, loops in c: for loop, do-while loop, while loop, Introduction to functions, pass by value, pass by reference, scope of variables, recursion.

Unit 4 : Problem solving and program design : Algorithms, Implementation of algorithms, Pseudo codes, Flowcharts and its symbols. Logical analysis, test cases: read a test case, execution of test cases and results of testing.

Key Learning Outcomes

Candidates will be able to:
1. Demonstrate aptitude for analysing information and making logical conclusions.
2. Design algorithms to solve problems and convert them into code using the appropriate language constructs.
3. Read and execute a test case and record the outcome in the appropriate template.
4. Demonstrate basic fundamentals of programming.

Reference Books:

1. Yashwant Kanetkar, Let Us C.
2. A K Sharma, Computer Fundamentals and Programming in C.
3. Brain W.Kernighan & Dennis M. Ritchie, The C Programming Language.
4. Peter van der Linden, Expert C Programming.

J.C BOSE UNIVERSITY OF SCIENCE & TECHNOLOGY, YMCA FARIDABAD
Community college of skill development
Basics of Information Technology
Paper Code: PCC – WD - 103

Semester: 1st	Sessional: 25 Marks
Stream: Web Development	Theory: 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Course Objectives:

1. To learn about the basics of a computer.
2. To learn about the various formats of providing data/information.
3. To learn the basic concepts of database management system and data design.
4. To know and understand the various software engineering approaches in software development.

Course Contents:

Unit 1 : Basics of Computers : Definition, Components, Characteristics, Functions, Uses, Types, Advantages, Disadvantages of Computer, Booting Process, Input Devices (Keyboard, Mouse, Scanner etc.) Output Devices(Monitors, Printers, Projectors, Plotters) Computer Software: System Software and Application Software.

Unit 2 : Data Management: Data formats and templates, their purpose and usage ,Techniques for obtaining data. Process approach.

Unit 3 : Database Skills : Introduction to database, DBMS – Architecture, Data Models and Schemas. CRM database: using CRM database to record and extract information, Data Design: Definition, Importance, Database development lifecycle, Requirements analysis, Database designing, Implementation, Types of database techniques. Queries in DBMS: Introductionto SQL, SQL commands, Data definition language, Data Manipulation Language.

Unit 4 : Software Engineering Approaches : Introduction to Software Engineering, Software Development Life Cycle, Software Design. Software Process and Software process models: Waterfall Model, V-Shaped Model, Spiral Model, Prototyping Model, Iterative and Incremental Model and Agile Model.

Key Learning Outcomes

Candidates will be able to:

1. Demonstrate basic computer including operating a computer, describing its major components and how they work.
2. Learn the purpose and usage of various data/information templates and formats.
3. Learn Database Skills including DBMS, data design and querying table structures for specific data types and CRM database.
4. Understand Software Engineering approaches to develop application and the key processes used for developing application software.

Reference Books:

1. Pradeep K.Sinha and Priti Sinha, Computer Fundamentals, BIB Publications.
2. Anita Goel, Computer Fundamentals, Pearson.
3. Ramez Elmasri, Shamkant B. Navathe, Database Systems
4. Richard T. Watson, Data Management : Databases and Organisations
5. K.K Aggarwal and Yogesh Singh, Software Engineering
6. Pankaj Jalote, Software Engineering: A Precise Approach

J.C BOSE UNIVERSITY OF SCIENCE & TECHNOLOGY, YMCA FARIDABAD
Community college of skill development
Fundamentals of Network and Safety
Paper Code: PCC – WD - 104

Semester: 1st	Sessional: 25Marks
Stream: Web Development	Theory: 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Course Objectives:

1.   To learn about computer networks and its various types.
2.   To learn about underlying areas of web programming.
3.   To learn about basics of internet.
4.   To learn about various health and safety procedures.

Course Contents:

Unit 1 : Basics of Computer Networks : Introduction of computer network, need for networking, advantages of computer network, network topologies. Types of computer networks: LAN, MAN, WAN, (features, advantages and disadvantages), difference between LAN and WAN.

Unit 2 : Introduction to Internet : Introduction to Web browser, WWW, Searching Internet. Services of internet: E- mail, Social Internet Media and its benefits.

Unit 3 : Web Programming : Introduction to web programming, Basics of HTML: HTML tags, page structure, lists, tables, Introduction to CSS and Java Script.

Unit 4 : Managing Health and Safety : Importance of safety, Objectives of safety management, Hazards and its types, Health safety, Different types of breaches, Evacuation procedures, Medical assistance, Security policies and procedures. Government agencies in the areas of safety, health and security and their norms and services.

Key Learning Outcomes

Candidates will be able to:
1.   Demonstrate basic computer networking concepts.
2.   Operating a browser, searching the internet, managing mails and using social internet media.
3.   Understand web programming.
4.   Comply with organization's current health, safety and security policies and procedures.

Reference Books:

1.   Sudhakshina Kundu, Fundamentals of Computer Networks.
2.   Tenenbaum, Computer Networks.
3.   Fundamentals of Web Development by Randy Connolly.
4.   Industrial Safety Management by L.M Deshmukh, Tata Mcgraw Hill Publication.

J.C BOSE UNIVERSITY OF SCIENCE & TECHNOLOGY, YMCA FARIDABAD
Community college of skill development
Mathematical Foundation of Computing
Paper Code: PCC – WD - 105

Semester: 1st
Stream: Web Development
L T P   Total Credits
3 0 0   3

Sessional: 25Marks
Theory: 75 Marks
Total: 100 Marks
Duration of Exam: 3 Hours

Course Objectives:

1. To learn the basic concepts of propositional logic.
2. To understand the basic terminologies and problems related to sets and relations.
3. To learn various concepts related to graphs and trees.
4. To understand the fundamentals of mathematics in computing.

Course Contents:

Unit 1 : Propositional Logic : Propositions, logical operations, Tautologies, contradictions, Logical Implications, Logical Equivalence, Theory of inference and induction.

Unit 2 : Sets : Set, operations on sets, special sets, relations on sets, power set Cardinality, Difficulty with indefinite cardinalities. Cantor's Theorem.

Unit 3 : Relations : Basic terminology: Tuples and the Cartesian product, Cartesian Powers. Relations and Special Binary Relations, Equivalence Relations, Order Relations.

Unit 4 : Graph Theory : Basic Definitions: Graphs, ordered and unordered pairs. Graph Connectivity: Connected components, 2-Edge connected graphs. Trees, properties of trees. Directed connectivity

Key Learning Outcomes:

Candidates will be able to:
1. Learn the mathematical concepts of computing.
2. Learn the impact of mathematical learning .
3. Learn various problem solving techniques and theorems relates to sets, relations, graphs and mathematical logic.

Referece Books:

1. G. Shanker Rao, Mathematical Foundations of Computer Science
2. J. Rajendra Prasad, T. Rama Rao and A. Madana Mohana Rao, Mathematical Foundations of Computer Science
3. Bathul and Shahnaz, Mathematical Foundations of Computer Science

J.C BOSE UNIVERSITY OF SCIENCE & TECHNOLOGY, YMCA FARIDABAD
Community college of skill development
Communication Skills
Paper Code: BSC – 101

Semester: 1st	Sessional: 25Marks
Stream: Web Development	Theory: 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Course Objectives:

1. To discuss types of communication and their forms
2. To improve comprehension
3. To improve spoken English and ability to articulate ideas
4. To improve formal writing skills

Course Contents:

Unit 1 : Introduction to Communication : Meaning of communication, Importance and function of communication, Types of communication; language of communication; advantages and disadvantages, Barriers to Communication.

Unit 2 : Grammar : Parts of speech, Articles, Tenses, Formation of Sentences, Active and Passive Voice, Direct and Indirect speech.

Unit 3 : Writing and Comprehension : Comprehension, Composition, Letter writing, Translation, Paraphrasing.

Unit 4 : Practical Communication : 7 Cs of Communication, Grice's Cooperative Principle, Group Discussions; Public Speaking; Facing Interviews.

Key Learning Outcome:

Candidate will be able to:

1. To learn about communication process, and ways to make communication effective by giving attention to allelements involved.
2. To improve grammar and gain confidence by enhancing their abilities to articulate their ideas.
3. To acquire better writing skills in formal communication.
4. To be able to revise documents for fruitful reading and comprehension.

Reference Books:

1. 1. Wren and Martin. High School English Grammar and Composition. New Delhi: RRP, 2007
2. 2. Murphy, Raymond. Essential English Grammar . New Delhi: Cambridge, 2017
3. 3. Malhotra, Prerna and Halder, Deb. Communication Skill s: Theory and Practice. New Delhi: M.S. Indian

Semester: 1st   Sessional: 25Marks
Stream: Web Development   Theory: 75 Marks
L T P   Total Credits   Total: 100 Marks
0 0 12   12   Duration of Exam: 3 Hours

Course Objectives**:**

1. To have a basic knowledge of MS- Office.
2. To learn about the basic components of a computer and their working.
3. To learn about the internal components of CPU.
4. To have a deep insight of various peripheral devices along with their sub-components and features.
5. To learn how these units are assembled.
6. To be familiar with syntax and structure of C-Programming
7. To learn problem solving techniques using C.
8. To be familiar with different data types, Operators and Expressions in C.
9. To be familiar with formatted and unformatted I/O in C with preprocessor directives.
10. To understand the programming using Loop & nested loop Statements (for, while, do-while).
11. To understand programming using different dimensions of Array.
12. To understand programming with Pointer, String and Function call by reference.

Course Contents:

Computer Hardware and Software

1. To study the basic concepts of MS-Word and its features, creating a word document.
2. To study the basic concepts of MS-Powerpoint and its features, creating presentations in powerpoint.
3. To study the basic concepts of MS-Excel and its features, creating sheets in MS-Excel.
4. To demonstrate History, Generation, classifications and types of Computer.
5. To study and demonstrate Block diagram of Digital Computer System and brief explanation of each unit.
6. Identification of various parts of the computer, Connection of various devices like CPU, Monitor, Keyboard,Mouseetc.
7. To study the shut down procedure, working in Windows, Opening of CPU, Identify the Clock-Section within theCPU.
8. To study Soldering and De-Soldering skills.
9. To study and demonstrate primary memory and secondary memory.
10. Tracing of various primary and secondary memories i.e. RAM and ROM on board and their capacity/size, Connectionof Hard-Disk in the CPU.
11. To Study formatting of Hard-Disk, partitioning of Hard-Disk, disk-defragmentation, disk-cleanup, scan-disketc.
12. To demonstrate CPU Block diagram and Identification of different I/O port in the CPU and their purpose. Identifygraphic and other cards and their function.
13. To study working of various types of Monitors: CRT, LCD and LED.
14. To study Keyboard and Mouse: Wired, Wireless, Scroll & Optical.
15. To study Printers: Dot Matrix Printers, Daisy wheel Printers, Ink-Jet Printers and Laser Jet Printers.
16. To study the various types of Projectors: CRT, DLP and LED.
17. To study the interface of Printers, Scanner, Modem etc., Installation of Printer, Driver, Modemetc.
18. To learn how to set up BIOS, Boot configuration and Boot menu etc.
19. To Study the identification and connection of motherboard, types of motherboard.
20. To study the configuration of motherboard, identifying the internal and external connectors and data cables.
21. To study the system bus and its types, functions and features.
22. Assembly/ Installation Personnel Computer Systems: Practical exercise on assembly of Personnel Computer System, Installation of Windows Operating System, Installation of other Application Softwares and Utility Softwares.
23. To study the installation of Windows and Linux operating system.
24. To study the basic concepts of DBMS, creating tables and querying the tables.
25. To study computer maintenance and security, running of virus protection programme.

C-Programming

1. Write a program to display "hello world" in C.
2. Write a program to add two numbers (5&7) and display its sum.

3. Write a program to multiply two numbers (10&8) and display its product.
4. Write a program to calculate area of a circle having its radius (r=5).
5. Write a program to calculate area of an ellipse having its axes (minor=4cm, major=6cm).
6. Write a program to calculate simple interest for a given P=4000, T=2, R=5.5. (I = P*T*R/100)
7. Write a program to declare two integer and one float variables then initialize them to 10, 15, and 12.6. Also print the variable values in the screen.
8. Write a C program to prompt the user to input 3 integer values and print these values in forward and reversed order.
9. Write a program to calculate simple and compound interest.
10. Write a program to swap two variables values with and without using third variables
11. Write a program to check odd or even number
    (a) using modulus operator
    (b) using bitwise operator
    (c) without using bitwise and modulus operator
    (d) using conditional operator.
12. Print the value of y for given x=2 & z=4 and analyze the output.
    a.   y = x++ + ++x;
    b.   y= ++x + ++x;
    c.   y= ++x + ++x + ++x;
    d.   y = x>z;
    e.   y= x>z? x:z;
    f.   y = x&z;
    g. y= x>>2 + z<<1;
13. Write a program to print the size of char, float, double and long double data types in C.
14. Write a program to produce the output as shown below:

x	y	expressions	results
6	3	x=y+3	x=6
6	3	x=y-2	x=1
6	3	x=y*5	x=15
6	3	x=x/y	x=2
6	3	x=x%y	x=0

15. Demonstrate the differences among getch(), getche(), getchar(). Demonstrate the difference between scanf() & gets(), printf() & puts().
16. Write a program to check whether input alphabet is vowel or not using if-else and switch statement.
17. Write a program that asks a number and test the number whether it is multiple of 5 or not.
18. Write a program to check whether the entered year is leap year or not (a year is leap if it is divisible by 4 and divisible by 100 or 400.)
19. Write a program to input two integer numbers and display the sum of even numbers between these two input numbers.
20. Write a program to find GCD (greates common divisor or HCF) and LCM (least common multiple) of two numbers.
21. Write a program to display Fibonacci series of last term up to 300.
22. Write a program to enter 10 floating numbers in an array and display it.
23. Write a program to initialize one dimensional array of size 8 and display the sum and average of array elements.
24. Write a program to find biggest among three numbers using pointer.
25. Write a program to find the sum of all the elements of an array using pointers.
26. Write a program to swap value of two variables using pointer.
27. Write a program to read a sentence and count the number of characters &words in that sentence.
28. Write a program to copy one string to another string with and without using string handling function.
29. Write a program to concatenate two strings.
30. Write a program to compare two strings.

SEMESTER – II

SCHEME

PAper Code	PAper	L	T/P	Credits
PCC-WD-201	MANAGEMENT INORMATION SYSTEM	3	0	3
PCC-WD-202	SOFTWARE PROJECT MANAGEMENT	3	0	3
PCC-WD-203	WEB DESIGNING : tfTML AND CSS	3	0	3
BSC–201	COMMUNICATION SKILLS	3	0	3
BSC–202	ENGINEERING CALCULATIONS - II	3	0	3
PCC-WD-204	COMPUTER WORKStfOP	0	15	15

<u>**Detailed Curriculum**</u>
J.C BOSE UNIVERSITY OF SCIENCE & TECHNOLOGY, YMCA FARIDABAD
Community college of skill development
Management Information System
Paper Code: PCC-WD-201

Semester: 2nd	Sessional : 25 Marks
Stream: Web Development	Theory: 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Course Objectives:

1. To learn the basic concepts of systems.
2. To learn and understand the various types and characteristics of information systems.
3. To understand the role of information systems in management.
4. To learn the levels and models of management information systems.

Course Content:

Unit-1: Introduction to System and Basic System Concepts, Types of Systems, The Systems Approach, Information System : Definition & Characteristics, Types of Information, Role of Information in Decision-Making, Sub-Systems of an Information System : EDP and MIS Management Levels, EDP/MIS/DSS

Unit-2: An Overview of Management Information System : Definition &Characteristics, Components of MIS, Frame Work for Understanding MIS : Information requirements & Levels of Management, Simon's Model of Decision-Making, Structured Vs Unstructured Decisions, Formal Vs. Informal Systems.

Unit-3: Developing Information Systems : Analysis & Design of Information Systems : Implementation & Evaluation, Pitfalls in MIS Development.

Key Learning Outcomes:

Candidates will be able to:
1. Be familiar with data and information.
2. Use the information systems in the field of management.
3. Learn the implementation of the management information systems.
4. Learn the drawbacks of different systems.

Reference Books:

1. Nirmalya Bagchi, Management Information Systems
2. Waman S Jawadekar, Management Information Systems
3. Kenneth C.Laudon and Jane P.Laudon, Management Information Systems

J.C BOSE UNIVERSITY OF SCIENCE & TECHNOLOGY, YMCA FARIDABAD
Community college of skill development
Software Project Management
Paper Code: PCC-WD-202

Semester: 2nd	Sessional: 25Marks
Stream: Web Development	Theory: 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Course Objectives:

1. To learn the basic concepts of Software Project Management.
2. To learn the management of selection and initiation of individual projects.
3. Conduct project planning activities that accurately forecast project costs, timelines, andquality.
4. Implement processes for successful resource, communication, and riskand change management

Course Contents:

Unit–1: Introduction to Software Project Management (SPM): Definition of A Software Project (SP), SP Vs. other types of projects Activities covered by SPM, categorizing SPs, project As A system, management control, requirement specification, information And control in organization.

Unit–2 Project Planning & Evaluation: Introduction, selecting A project, identifying project scope And objectives, identifying project infrastructure, Analyzing project chARACteristics, identifying project products And Activities

Unit–3: Software Risk Management: Software risks And its types, risk AnAlysis, risk vs problem, risk management, risk projection, RMMM(risk mitigAtion, monitoring And management) , risk identificAtion, documenting risks, risk impAct Assessment.

Unit–4: Software quAlity: Software quAlity definAtion, quAlity chARACteristics, software quAlity chAllenges, reAlising quAlity, quAlity metrics, Reviews(quAlity control Activity)

Key Learning Outcomes

Candidates will be able to:
1. Demonstrate effective project execution and control techniques that result in successful projects.
2. Conduct project closure activities and obtain formal project acceptance.
3. Demonstrate a strong working knowledge of ethics and professional responsibility.
4. Demonstrate effective organizational leadership and change skills for managing projects, project teams, and stakeholders.

Reference Books:

1. S. Mukherjee, Project Management for SoftwareDevelopment
2. Er. Rishabh Anand, Software Project Management
3. Subramanian Chandramouli and Saikat Dutt, Software Project Management

J.C BOSE UNIVERSITY OF SCIENCE & TECHNOLOGY, YMCA FARIDABAD
Community college of skill development
Web Designing - HTML and CSS
Paper Code: PCC-WD-204

Semester: 2nd	Sessional: 25 Marks
Stream: Web Development	Theory: 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Course Objectives:

1. Understand the principles of creating an effective web page
2. Develop skills in analyzing the usability of a web site.
3. Understand how to plan and conduct user research related to web usability.
4. Learn the language of the web: HTML and CSS.

Course Contents:

Unit-I: Web Design Principles : Basic Principles involved in developing a web site, Planning process, Five Golden rules of Web Designing, World Wide Web, Why create a web site, Web Standards

Unit-2: Introduction to HTML : What is HTML, HTML Documents, Basic structure of an HTML document, Creating an HTML document, Mark up Tags, Heading-Paragraphs, Line Breaks, HTML Tags.

Unit-3: Elements of HTML: Introduction to elements of HTML, Working with Text, Working with Lists, Tables and Frames; Working with Hyperlinks, Images and Multimedia; Working with Forms and controls.

Unit- 4: Introduction to Cascading Style Sheets: Concept of CSS, Creating Style Sheet, CSS Properties, CSS Styling(Background, Text Format, Controlling Fonts), Working with block elements and objects, Working with Lists and Tables, CSS Id and Class, Box Model(Introduction, Border properties, Padding Properties, Margin properties), CSS Color, Creating page Layout and Site Designs.

Key Learning Outcomes

Candidates will be able to:
1. Discover how does web works really, what makes web sites work.
2. Employ fundamental computer theory to basic programming techniques.
3. Create an Information Architecture document for a web site.
4. How to and where to start research, planning for website
5. Use fundamental skills to maintain web server services required to host a website.

Reference Books:

1. Satish Jain, Ambrish K. Rai and M. Geetha, Web Designing and Development, BPB Publications.
2. Hirdesh Bhardwaj, Web Designing.
3. Jon Duckett, HTML & CSS: Design and Build Web Sites

J.C BOSE UNIVERSITY OF SCIENCE & TECHNOLOGY, YMCA FARIDABAD
Community college of skill development
Communication Skills-II
Paper Code:BSC-201

Semester: 2nd	Sessional: 25Marks
Stream: Web Development	Theory: 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Course Objectives:
1. To discuss types of communication and their forms.
2. To improve comprehension.
3. To improve spoken English and ability to articulate ideas
4. To improve formal writing skills

Course Contents:

Unit 1:Reading Skills: Translation,Unseen Passages,Annotations,Vocabulary.

Unit 2: Grammar:Jumbled words(PQRS),Tenses,Narration,Idioms,Prepositions,Subject –Verb-Concord

Unit 3:Writing Skills: Composition ,Writing Short Paragraph , Reports, , Advertisements, Poster Making,

Unit 4: Professional Skills:Presentation,Emails,Buisness Letters,CV Writing,Cover Letters.

Course Outcome:
1. To learn about communication process, and ways to make communication effective by giving attention to all elements involved.
2. To improve grammar and gain confidence by enhancing their abilities to articulate their ideas.
3. To acquire better writing skills in formal communication.
4. To be able to revise documents for fruitful reading and comprehension.

Reference Books:
1. Wren and Martin. *High School English Grammar and Composition.* New Delhi: RRP, 2007
2. Murphy, Raymond. *Essential English Grammar*. New Delhi: Cambridge, 2017 Malhotra, Prerna and Halder, Deb.

J.C BOSE UNIVERSITY OF SCIENCE & TECHNOLOGY, YMCA FARIDABAD
Community college of skill development
Computer Workshop
Paper Code:PCC-WD-205

Semester: 2nd	Sessional: 25Marks
Stream: Web Development	Theory: 75 Marks
L T P Total Credits	Total: 100 Marks
0 0 12 12	Duration of Exam: 3 Hours

Course Objectives:

1. To be familiar with the main features of the C++ language.
2. Be able to write a C++ program to solve a well specified problem.
3. Understand a C++ program written by someone else.
4. Be able to debug and test C++ programs;
5. Understand how to read C++ doc library documentation and reuse library code.
6. To understand the features of object oriented principles and be familiar with virtual functions, templates and exception handling.
7. To develop applications using C++.

Course Contents:

1. Write a C++ program to find the largest of three numbers using inline function.
2. Write a C++ program to sort an array of integer in ascending order using a function called exchange( ) whichaccepts two integer arguments by reference.
3. Write a C++ program to implement function overloading in order to compute power(m,n) where
   i)   m is double and n is int
   ii)   m and n are int.
4. Create a 'DISTANCE' class with : - feet and inches as data members - member function to input distance - member function to output distance - member function to add two distance objects Write a main function to create objects of DISTANCE class. Input two distances and output the sum.
5. Create a class called 'EMPLOYEE' that has - EMPCODE and EMPNAME as data members - member function getdata( ) to input data - member function display( ) to output data Write a main function to create EMP, an array of EMPLOYEE objects. Accept and display the details of at least 6 employees.
6. Create a class called 'TIME' that has - three integer data members for hours, minutes and seconds - constructor to initialize the object to zero - constructor to initialize the object to some constant value - member function to add two TIME objects - member function to display time in HH:MM:SS format Write a main function to create two TIME objects, add them and display the result in HH:MM:SS format.
7. Create a class 'COMPLEX' to hold a complex number. Write a friend function to add two complex numbers. Writea main function to add two COMPLEX objects.
8. Create a 'MATRIX' class of size mX n. Overload the '+' operator to add two MATRIX objects. Write a main function to implement it.
9. Derive a class 'MAT' from MATRIX class created in programNo. 8. Add a member function to overload '*' operator to multiply two objects. (Single Inheritance)
10. Write a c++ program to illustrate multilevel inheritance.
11. Write a c++ program to illustrate multiple inheritance
12. Create a 'STRING' class which overloads ' = = ' operator to compare two STRING objects.
13. Write a C++ program to illustrate 'this' pointer and pointers to derived classes.
14. Create a base class called 'SHAPE' having - two data members of type double - member function get-data( ) to initialize base class data members - pure virtual member function display-area( ) to compute and display the area of the geometrical object. Derive two specific classes 'TRIANGLE' and 'RECTANGLE' from the base class. Using these three classes design a program that will accept dimension of a triangle / rectangle interactively and display the area.
15. Write a C++ program to read a list containing item name, item code and cost interactively and display the data ina tabular format as shown below:

NAME	CODE	COST

16. Design your own manipulator to provide the following output specification for printing money value:
    1) 10 columns width

17. Write a C++ program that uses a single file for both reading and writing the data.
18. A file contains a list of names and telephone numbers in the following form:

     Name   Tel. No.

    Write a C++ program to read the file and output the list in the tabular format. The name should be left-justified and numbers right-justified. Use a class object to store each set of data.
19. Write an interactive, menu-driven program that will access the file created in program No.17 and implement the following tasks:
     i)   To determine the telephone numbers of the specified person.
     ii)   To determine the name if a telephone number is given.
     iii)   To update the telephone number whenever there is a change.
20. Write a C++ program that displays the size (in bytes) of a given file. The name of the file is specified as command line argument.
21. Define a function template for finding the minimum value contained in an array. Write main( ) function to find the minimum value of integer array and minimum value of floating point numbers in an array.
22. Write a class template to represent a generic vector. Include member functions to perform the following tasks:
     1) To create the vector.
     2) To modify the value of a given element.
     3) To multiply the vector by a scalar value.
     4) To display the vector in the form (10, 20, 30,…..)

Key Learning Outcomes

Candidates will be able to:
1.   Understand And use the bAsic progrAmming constructs of C/C++

2.   MAnipulAte vArious C/C++ dAtAtypes, such As ArrAys, strings, And pointers

3.   IsolAte And fix common errors in C++ progrAms

4.   Use memory AppropriAtely, including proper AllocAtion/deAllocAtion procedures

5.   Apply object-oriented ApproAches to softwAre problems in C++

6.   Write C++ progrAms using the Above skills

COMMUNITY COLLEGE OF SKILL DEVELOPMENT (CCSD)

Program B.Voc Web Development (program Code: 251)

Scheme Course Index of the year 2018-2019(BOS Dated 18/01/2019)

Mapping of the course with the employability/Entrepreneurship/Skill Development

S.No	Course	Code	Skills Development	Entrepreneurship	Employability
1	BASICS OF OPERATING SYSTEM	PCC-WD-101	✓		✓
2	FUNDAMENTALS OF COMPUTER PROGRAMMING	PCC-WD-102	✓		✓
3	BASICS OF IT	PCC-WD-103	✓		✓
4	FUNDAMENTALS OF NETWORK AND SAFETY	PCC-WD-104	✓		✓
5	MATHEMATICAL FOUNDATION OF COMPUTING	PCC-WD-105	✓	✓	
6	COMMUNICATION SKILLS	BSC–101	✓	✓	
7	COMPUTER WORKSHOP	PCC-WD-106	✓	✓	✓
8	MANAGEMENT INORMATION SYSTEM	PCC-WD-201	✓		✓
9	SOFTWARE PROJECT MANAGEMENT	PCC-WD-202	✓		✓
10	WEB DESIGNING :HTML AND CSS	PCC-WD-203	✓	✓	✓
11	COMMUNICATION SKILLS	BSC–201	✓	✓	
12	ENGINEERING CALCULATIONS –II	BSC–202	✓	✓	
13	COMPUTER WORKSHOP	PCC-WD-204	✓	✓	✓

Principal, CCSD

Annexure – "C"

SCHEME OF EXAMINATION

And

SYLLABUS

For

BACHELOR OF VOCATION

In

AUTOMOBILE

1st SEMESTER

Offered by

Community college of skill development

J C Bose University of Science & Technology YMCA

Sector-6, Mathura Road, Faridabad, Haryana, India

2018-19

Machining Technician/CNC Operator L4
SECTOR: AUTOMOTIVE
SUB-SECTOR: MANUFACTURING
OCCUPATION: MACHINING
REF ID: ASC/Q3503

NSQF LEVEL: 4

Bachelor of vocation
Automobile

First semester examination
(NSQF Level 4)

Paper Code	Paper	L	T/P	Credits
PCC-AM-101	Manufacturing process-1	3	0	3
PCC-AM-102	Industrial Safety	3	0	3
BSC-101	Communication skills	3	0	3
BSC-103	Fundamental of Computers	3	0	3
BSC-102	Engineering Calculations	3	0	3
PCC-AM-104	Engineering Drawing	3	0	3
BSC-104	Fundamental of Computer lab	0	6	3
PCC-AM-103	Workshop-1	0	18	9
TOTAL		18	24	30

MANUFACTURING PROCESS-1

(Covering NOS ASC/N3507, ASC/N3508, ASC/3509)

Semester 1st   Sessional – 25 Marks
Stream– automobile/manufacturing   Theory – 75 Marks
L T P Total Credits   Total: 100 Marks
3 0 0   3   Duration of Exam: 3 Hours

Course objectives:

1. To study the various manufacturing processes.
2. To understand the working of various cutting tools.
3. To understand measurement and measuring instruments.
4. To introduce about NC and CNC machines.

Unit-1 Pre-machining activities:

does and don'ts of the manufacturing process, Metal properties/ metallurgy, coolant and lubricants, Selection of proper coolant and lubricant required for machining the required component, use of machine guards, acceptance requirements/ limits of machining e.g. surface finish, specific orientation, gauge inspection etc., introduction to jigs and fixtures, different holding fixtures, gears, stops, Introduction to Measuring devices: micrometers, vernier calipers, gauges, rulers.

Unit-2 Metal Cutting

Introduction to metal cutting, orthogonal and oblique cutting, types of chips, cutting tools, introduction to different types of tools used in the machining process, single point and multi point cutting tools, single point tool geometry, ASA tool signature, material removal rate.

Unit- 3 Machining

Different types of machining processes, basic fundamentals of machines and mechanics, introduction and operations of lathe, turning, milling, shaping, boring, broaching, hobbing, facing and shaping, blanking and piercing processes, special purpose machine for operations.

grinding, grinding procedure, balancing and dressing of wheels, abrasive, Post machining activities: Impact of presence of burrs, edges, chips on the final product performance, de burring, use of chisels, scrapers to Trim, scrape or de burr objects or parts.

Unit- 4 Introductions to NC and CNC machines

NC machines, components of NC and CNC machines, difference between NC and CNC, G-codes and M codes, right command in the CNC machine, Introduction to quality, 7 quality tools, company policy.

Course outcomes:

1. Students will able to differentiate between various manufacturing processes.
2. Students will able to use different measuring instruments.

3. Students will learn about different machining operation.
4. Students will understand about NC and CNC machines.

Reference books:

1. Manufacturing technology by P. N. Rao
2. Production technology- R. K. Jain
3. Manufacturing Science- Amitabha Ghosh & Ashok Kumar Malik, - East- West Press.
4. Workshop Technology Vol I & II –Hazra & Chaudhary, Asian Book Comp., New Delhi.

INDUSTRIAL SAFETY-1
(Covering NOS ASC/N0006, ASC/N0021)

Semester -1st	Sessional – 25 Marks
Stream–Automobile/Manufacturing	Theory – 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Course objectives:

1. To understand the importance of safety, health and environment.
2. To classify different types of accidents.
3. To study different types of hazards.
4. To study about 5S at workplace.

UNIT-1: Importance of Safety, health and environment

Safety, Health and Environment, cleaning of work area, tools, equipment and materials, Importance of safety, objectives of safety management, personal protective equipment like safety gloves, safety glasses, safety shoes and safety helmet, contents of the first aid kit, instructions of equipment manual.

UNIT-2: Accidents

Classification of accidents, causes of accidents, accident investigations/reporting, approaches to prevent accidents, Firefighting.

UNIT -3: Safety in hazardous area

Hazards and risks, difference between hazard and risk, Hazard in industrial zones, physical, chemical, environmental, biological, ergonomics and psycho-social hazards, Introduction to OSHMS, OSHAS 18001 and OSHA.

UNIT-4: 5S in safety

The basic principles of 5 S in manufacturing and workplace – Cleaning, sorting etc , sorting of materials, tools and equipment's and spare parts, standards, procedures and policies related to 5S, importance of waste disposal, segregation of waste into Hazardous and Non Hazardous waste, disposal the waste as per SOP, labeling procedures, storage procedures.

Course outcomes:

1. Student will aware about safety and health.
2. Student will able to differentiate different types of accidents.
3. Student will able to differentiate different types of risks.
4. Student will learn about 5S at workplace.

Reference books:
1. Industrial Safety and Health Management by C Ray Asfahl, pearson publications.

2. Industrial Safety Management by N. K. Tarafdar
3. Industrial Safety (Safety Management) by D S S Ganguly & C S Changeriya

ENGINEERING DRAWING

Semester 1st	Sessional – 25
Stream–Automobile/manufacturing	Theory – 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Course objective:

1. To introduce about engineering drawing.
2. To understand geometric dimensioning.
3. To learn about different types of projections.
4. To study about sections of solids.

Detailed Syllabus

1.0. Introduction
1.1. Scope and objective of the subject
1.2. Importance of engineering drawing as a communication medium
1.3. Drawing instruments and their uses
1.4. Scales : Recommended scales, reduced & enlarged
1.5. Sheet sizes : A0, A1, A2, A3, A4, A5. Layout of drawing sheet sizes of title block and its contents
1.6. Simple exercises on the use of drawing instruments.

2.0. Lettering and Dimensioning
2.1. Types of Lettering
2.2. Guide Lines for lettering
2.3 Recommended sizes of letters and numbers
2.4. Single stroke letters.
2.5. Dimensioning - rules and systems of dimensioning – dimensioning a given drawing

3.0 Geometric Construction
3.1. Bisecting a line - perpendiculars - parallel lines - division of a line
3.2. Angles - bisection, trisection
3.3. Tangent lines touching circles internally and externally
3.4. Polygons - Regular polygons - circumscribed and inscribed in circles.
3.5. Conic sections - Definitions of focus, directrix, eccentricity
(i) Construction of Ellipse by Concentric circles method.
(ii) Construction of parabola by rectangular method.
(iii) Construction of Hyperbola when given the position of point from X-axis and Y-axis.

4.0 Orthographic Projection
4.1. Definition - Planes of Projection - Four quadrants – Reference line.
4.2. First angle projection - Third angle projection
4.3. Projections of points
4.4. Projections of straight lines
4.5. Projections of planes
4.6. Projections of solids
4.7. Conversion of pictorial views into orthographic views

5.0. Isometric Projection
5.1. Definition - Isometric axes, lines and planes
5.2. Isometric Scale - Isometric view
5.3. Drawing of isometric views of plane figures
5.4. Drawing of isometric views of prisms and pyramids
5.5. Drawing of isometric view of cylinders and cones

6.0. Sections of Solids
6.1. Need for drawing sectional views - section planes - true shape of a section
6.2. Sections of prisms and pyramids
6.3. Sections of cones and cylinders.

Course outcomes:

1. Student will learn about engineering drawing.
2. Student will understand geometric dimensioning.
3. Student will learn about different types of projections.
4. Student will study about sections of solids.

Reference books:

1. Engineering drawing by N D Bhatt
2. Engineering drawing by K.Venugopal
3. A Textbook of Engineering Drawing by Ramakant Rana and Roop Lal

WORKSHOP –I

*(Covering all the practicals of **ASC/Q3503**)*

Semester -1st	Internal – 25 Marks
Stream–Automobile/manufacturing	External – 75 Marks
L T P Total Credits	Total: 100 Marks
0 0 18 9	Duration of Exam: 3 Hours

Course objective:

1. To understand the safety measures of mechanical workshop.
2. To learn the functions of various conventional machines and unconventional machines.
3. To prepare different jobs by different machining operation.
4. To learn about CNC machine.

Course contents:

1. **To Conduct all pre- machining operations:**

a) Measure and mark reference points/ cutting lines on the work pieces, using compasses, callipers, rulers and other measuring tools

b) Understand the does and don'ts of the manufacturing process as defined in SOPs/ Work Instructions

c) Set of machine stops or guides as per the specified lengths indicated through scales or work instructions

d) Set-up, adjust machine tools, fixtures/ jigs and cutting tools in order to perform machining operations

e) Check the centering and facing of the work pieces and check for alignment of the work pieces as per the final product output specifications

f) Gain knowledge on gear changing techniques and minor maintenance as per checklist

g) Check the working of different holding fixtures, gears, stops.

h) Brush or spray lubricating material on work pieces where applicable

i) Operate hand wheels or valves in order to feed the component and allow cooling and lubricating to the tool.

2. To understand various safety measures, working principle & specifications of various conventional machines (lathe, milling, shaper, grinder etc).

3. To study elements of single point cutting tools and multiple point cutting tools.

4. To prepare single point brazed tool with carbide tip on a mild steel shank involving milling and brazing operation.

5. To prepare a job involving centering, facing, plain turning and step turning.

6. To prepare a job by machining on milling/ shaper machine.

7. To prepare a job by surface grinding on surface grinder and perform dressing and balancing of wheels

8. To study and use boring/ broaching/ hobbing / facing/ shaping tools in different applications.

9. To prepare a job by using blanking/ piercing and special purpose machines.

10. To prepare a job on CNC machine and ensure that the right command is entered in the CNC machine as defined machining parameters.

11. To conduct all post machining operations:

   a. Use files, hand grinders, wire brushes, or power tools for performing de burring operations.

   b. Use chisels, scrapers, and other hand tools and equipment to Trim, scrape, or de burr objects or parts

   c. Clean the hydraulic tank/ Gauge/ Tools/ Fixtures as per the cleaning schedule and the process mentioned in the Work Instruction/ SOP manual

   d. Perform minor repairs and adjustments to the machine and notify supervisor/maintenance team when major service/ repair is required

   e. Measure the specifications of the finished component and verify conformance as per Control Plan/ Work Instruction

   f. Use devices like micrometers, vernier calipers, gauges, rulers and any other inspection equipment for measuring specifications with valid calibration status.

   g. Note down the observations of the basic inspection process and identify pieces which comply with the specified standards

   h. Organize changing different worn out machine accessories

   i. Ensure that the blunt tool is timely and safely replaced by a new tool

   j. Replace machine part as per work instructions, using hand tools or notify supervisor/ engineering personnel for taking corrective actions

   k. Ensure that the zero offset value is chosen at the time of tool changing process.

12. To maintain 5S at the work premises:

a. Ensure the work area, tools, equipment and materials are clean

b. Carry out storage of cleaning material and equipment in the correct location and in good condition

c. Ensure self-cleanliness - clean uniform, clean shoes, clean gloves,

d. Follow the daily cleaning standards and schedules to create a clean working environment

e. Carry out sorting of materials, tools and equipment's and spare parts

f. Follow proper labeling procedures

g. Follow proper storage procedures

h. Carry out segregation of waste into Hazardous and Non Hazardous waste and dispose the waste as per SOP

i. Follow the floor markings/ area markings used for demarcating the various sections in the plant

j. Follow 5S at workplace.

Course Outcomes: After studying this course the students will be able to:

1. Understand the safety measures of mechanical workshop.

2. Learn the functions of various conventional machines and unconventional machines.

3. Prepare different jobs by different machining operation.

4. Learn about CNC machine.

Reference books:

1. A course in workshop technology: manufacturing processes by B.S. Raghuwanshi.
2. Textbook of workshop technology by R S Khurmi and J k gupta.

COMMUNICATION SKILLS

Semester -1st	Sessional – 25 Marks
Stream–Automobile/manufacturing	Theory – 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Course Objectives:

1. To discuss types of communication and their forms
2. To improve comprehension
3. To improve spoken English and ability to articulate ideas
4. To improve formal writing skills

Unit 1: Introduction to Communication: Meaning, Importance and Function of Communication, Types of communication, language of communication; advantages and disadvantages; Barriers to Communication; Organizational Communication

Unit 2: Grammar: Parts of speech, Articles, Tenses, Formation of Sentences, Active and Passive Voice, Direct and Indirect speech

Unit 3: Writing and Comprehension: Comprehension, Composition, Translation, Paraphrasing, Letter writing

Unit 4: 7 Cs of Communication; Grice's Cooperative Principle; Group Discussions; Public Speaking; Facing Interviews

Course Outcome:

1. To learn about communication process and ways to make communication effective by giving attention to all elements involved.
2. To improve grammar and gain confidence by enhancing their abilities to articulate their ideas.
3. To acquire better writing skills in formal communication.
4. To be able to revise documents for fruitful reading and comprehension.

Reference books:

1. Wren and Martin. *High School English Grammar and Composition.* New Delhi: RRP, 2007
2. Murphy, Raymond. *Essential English Grammar*. New Delhi: Cambridge, 2017

FUNDAMENTALS OF COMPUTER

Semester -1st	Sessional – 25 Marks
Stream–Automobile/manufacturing	Theory – 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Course Objectives:

1. To learn about the basic components of a computer.
2. To have a deep insight of various peripheral devices along with their sub-components and features.
3. To learn the fundamentals of Operating Systems.
4. To understand the concept of Internet.

Course Contents:

Unit 1: Basics of Computer- Introduction to Computers, Generations of Computers, Types of Computers, Input-Output Devices, Computer Organization, Advantages and Disadvantages of Computer, BIOS, Booting.

Unit 2: Introduction to Software - Computer Software, Types of Software, Security, Computer Viruses, Number System.

Unit 3: Computer Memory and Operating System- Introduction to Memory Unit, Types of Primary Memory, Secondary Memory; Definition, Types and Functions of Operating System

Unit 4: Internet Services – Introduction, History, Working, Uses, Advantages, Disadvantages of Internet, E-mail.

Course Outcomes:

1. Students will learn the basics of computer.
2. Student will acquire knowledge of various input and output devices connected to computer.
3. Student will learn about the computer organization and its components.
4. Student will understanding Operating System, Computer Software and basics of Internet.

Reference Books:

1. Pradeep K.Sinha and Priti Sinha, Computer Fundamentals, BIB Publications.
2. Anita Goel, Computer Fundamentals, Pearson.
3. D.P Nagpal, Computer Fundamentals, S.Chand.
4. B.Ram, Computer Fundamentals, New Age International Publishers.

ENGINEERING CALCULATIONS

Semester 1st	Sessional – 25 Marks
Stream–Automobile/manufacturing	Theory – 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Course Objectives
1. To familiarize the prospective engineers with Basics of mathematics
2. To understand fundamental arithmetical operations.
3. To learn Unit systems, Fractions and Decimals, roots, percentage.
4. To have Knowledge of differential quantities

Course Contents

Unit-I: Basic Aptitude- Fundamental Arithmetical Operation- Addition, Subtraction, Multiplication and Division. Applied Workshop Problems Involving Addition, Subtraction, Multiplication and Division, System Of Units – Definition, Different Types & System Of Units i.e.(C.G.S. & SI Units for Length, Mass, Area, Volume, Capacity, Time) HCF, LCM, Square Root Cube Root.

Unit-II: Trigonometry – Introduction, Trigonometric Identities, Quadrant Rule, Trigonometric Ratios of Some Specific Angles, Ratios of Complementary Angles, Introduction

Unit-III: Differentiation- Introduction to Derivatives, Product Rule, Quotient Rule, Chain Rule, Derivatives of Algebraic Function, Derivative of Trigonometric Functions.

Unit-IV: Algebra- Algebraic Expressions and Identities, Terms Coefficients and Factors, Monomials Binomials and Polynomials, Multiplication and Division of Algebraic Expressions, Standard Identities and Their Applications.

Course Outcomes:
1. To Apply the Arithmetical Operations And Conversion Of Units.
2. To Convert in Fraction And Decimals, Percentage.
3. To Solve HCF, LCM , Square Roots And Cube Roots.
4. To Deal With Differential Problems.
5. To Learn About Trigonometric Ratios.

Reference Books:
1. Mathematics Book by R.D Sharma
2. Advanced Engineering Mathematics By Jain Rk.
3. A Basic Course in Mathematics By Nabjyoti Dutta.
4. Skills in Mathematics By Amit M Aggarwal.
5. Applied Mathematics For Polytechnics By H.K. Dass.

BASICS OF COMPUTER APPLICATION LAB

Semester -1st   Sessional – 25 Marks
Stream–Automobile/manufacturing   Theory – 75 Marks
L T P Total Credits   Total: 100 Marks
0 0 6   3   Duration of Exam: 3 Hours

Course Objectives:
1. Give students an in-depth understanding of why computers are essential components in business, education and society.
2. Introduce the fundamentals of computing devices and reinforce computer vocabulary, particularly with respect to personal use of computer hardware and software.
3. Provide hands-on use of Microsoft Office applications Word, Excel, Access and PowerPoint.
4. Provide basic knowledge of internet.

Course Contents:
Unit 1: Basics of Computer- Definition, Characteristics of Computers, Basic Applications of Computer, Components of Computer System: Central Processing Unit (CPU), input/output Devices.

Unit 2: MS Word- Create a new document, Open, save and print a document, Edit and format text, Change the page layout, background and borders, Insert headers and footers, Insert and edit tables, Insert clip art and pictures to documents.

Unit 3: MS Power Point- Create a new presentation, Modify presentation themes, Add and edit text to slides, Add new slides to a presentation, Insert clipart images and shapes to slides, Insert and modify tables and charts, Add sound and video to a slide presentation, Insert and edit animations and slide transitions.

Unit 4: MS Excel- Create, open and view a workbook, Save and print workbooks, Enter and edit data, Modify a worksheet and workbook, Work with cell references, Learn to use functions and formulas, Create and edit charts and graphics, Filter and sort table data, Basics of computer network**,** Internet**,** Search engines**,** Basics of E-mail.

Course Outcomes:
1. Describe the usage of computers and why computers are essential components in society.
2. Identify categories of programs, system software and applications. Organize and work with files and folders.
3. Completion of the assignments will result in MS Office applications knowledge and skills.
4. Describe the usage of Internet and E-mail.

SCHEME OF EXAMINATION

And

SYLLABUS

For

BACHELOR OF VOCATION

In

AUTOMOBILE

2nd SEMESTER

Offered by

Community college of skill development

J C Bose University of Science & Technology YMCA

Sector-6, Mathura Road, Faridabad, Haryana, India

2018-19

AUTO SERVICE TECHNICIAN

SECTOR: AUTOMOTIVE

SUB-SECTOR: AUTOMOTIVE

OCCUPATION: VEHICLE SERVICE TECHINICAL SRVICE & REPAIR

REF ID: ASC/Q1403, VERSION 1.0

NSQF LEVEL: 5

Bachelor of vocation
Automobile

Second semester

(Level 5)

Paper Code	Paper	L	T/P	Credits
BSC-201	Communication skills - 2	3	0	3
BSC-202	Engineering calculations - 2	3	0	3
PCC-AM-203	Elements of automobile engineering	3	0	3
PCC-AM-202	Quality inspection and safety	3	0	3
PCC-AM-201	Manufacturing process – 2	3	0	3
PCC-A-204	Automobile Workshop-2	0	30	15
TOTAL		15	15	30

ELEMENTS OF AUTOMOBILE ENGINEERING

Semester -2nd	Sessional – 25 Marks
Stream– B.Voc	Theory – 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Objectives and Pre-requisites: Student should have studied subjects such as General Science, Physics, Mathematics and have the basic knowledge about automobile to have an enhanced exposure. This subject provides knowledge about the elements of automobile engineering.

UNIT-I

Introduction: Classification of automobiles- according to number of wheels, propulsion systems, transmission drives, type of fuels, application & capacity, study of main specifications. Components of an automobile- functions & layout of frame, frameless construction, axles, steering system, suspension system, braking system, power train & drives, clutch, gear box, final drive, propeller shaft, u-joints, vehicle body, wheels, tyres & tubes.

UNIT-II

Power Unit: Selection of engine for two wheeler, three wheeler & four wheeler vehicles; constructional & working details of two strokes & four stoke petrol & diesel engines, fuel system, ignition system, starting system, charging system, lighting system, cooling system, lubrication system, combustion & combustion chambers.

UNIT-III

Steering System and Suspension System: Steering system- requirements, front axle details & steering geometry, castor, camber, toe in, toe out steering axis inclination, steering linkages, and different types of steering gear boxes, their constructional & working details. Concept and working of power steering, Need, types of suspension systems, constructional details, characteristics of laminated, coil springs, Introduction to independent suspension, front & rear suspension systems of the vehicle, shock absorbers.

UNIT-IV

Wheels, Tyres & Braking System: Wheel requirements, types of wheels, their constructional & working details, rims & tyres, types of tyres, tyre selection, ordinary, radial tyres tubeless tyres, their constructional details, comparison & application, wheel balancing. Need and classification of brakes, drum brakes and disc brakes, constructional & working details, introduction to hydraulic brake, parking brake, vacuum assisted hydraulic brakes, air assisted hydraulic brakes, air brakes, leading & trailing brake shoes, self energizing brakes & ABS, working of master cylinder, wheel cylinders, tandem master cylinder, characteristics of brake fluid.

Learning Outcomes: This knowledge will be helpful to the student in co-relating various systems with each other and understanding the individual system in a better manner.

Text Book(s):

1. K.K. Jain, R.B. Asthana, "Automobile Engineering", Tata McGraw Hill, New Delhi
2. Dr. Kirpal Singh, "Automobile Engineering (Vol-1)", Standard Publisher Distributors.
3. K.K. Ramalingam, "Automobile Engineering", Scitech Publication, Chennai

4. Tom Denton, "Automobile Mechanical and Electrical Systems" Indian Ed., Routledge(T&F Group)Pub.

QUALITY, INSPECTION AND SAFETY

Semester -2nd	Sessional – 25 Marks
Stream– B.Voc	Theory – 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Course objectives:

5. To understand the importance of safety, health and environment.
6. To classify different types of accidents.
7. To study different types of hazards.
8. To study about 5S at workplace.

Unit – 1 Quality: manufacturing defects associated with the machining and related processes and impact of the defects on the final product output, how to visualize the final product output and conduct quality verification tests, different types of defects which may arise due to improper manufacturing and the impact of the defect on product performance, quality norms and standards prescribed in the Quality Manual by the organization for painting, 7QC, Why Analysis, Brain storming

Unit – 2 Inspection: how to measure the correct specifications of the output in the terms of thickness, hardness, durability, tightness, finesse etc. relevant manufacturing standards and procedures followed in the company in detail, different types of defects which may arise due to improper manufacturing

Unit – 3 TQM: TQM process, knowledge of functional processes like Procurement, Store management, inventory management, quality management and key contact points for query resolution

Unit – 4 Safety: about handling of electrical equipment and circuits, rectifiers and control panel etc., 5S and Safety norms practiced in the organization, hazards, fire fighting, first aid, PPEs and their usage, basic knowledge of risks/hazards associated with each occupation in the organization, 5S procedures, 5S checklists, knowledge of labels , signs & colours used as indicators, cleaning & waste disposal, sustainability in 5S, storage norms, understand visual controls, symbols, graphs etc

Course outcomes:

5. Student will aware about safety and health.
6. Student will able to differentiate different types of accidents.
7. Student will able to differentiate different types of risks.
8. Student will learn about 5S at workplace.

Reference books:
4. Industrial Safety and Health Management by C Ray Asfahl, pearson publications.
5. Industrial Safety Management by N. K. Tarafdar
6. Industrial Safety (Safety Management) by D S S Ganguly & C S Changeriya

MANUFACTURING PROCESS – 2

Semester -2nd	Sessional – 25 Marks
Stream– B.Voc	Theory – 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Course objectives:

5. To study the various manufacturing processes.
6. To understand the working of various cutting tools.
7. To understand measurement and measuring instruments.
8. To introduce about NC and CNC machines.

UNIT – 1: Metallurgical and chemical properties of materials - Metallurgical and chemical properties of various metals/ alloys used for die and tool preparation and machining process, raw materials used in the process

UNIT – 2: Basic preparation process of machine and machine settings, operations for various machining related tools, punch setting, operating presses and stoning operations, types of jigs, fixtures and dies used in the tooling process, usage of tri squares, geometry squares to check for perpendiculars in two joining parts, assembly processes like bolting, tightening, bending, jointing, sealing, Uses of lifting tools like hoists, cranes, clamps etc. About tools, jigs and fixtures, their usage and maintenance methods, different types of communication channels practiced by the organization, the method of noting observations, maintaining records and sharing them with the concerned in the required format, knowledge of shift roster norms and guidelines

UNIT – 3: manufacturing processes like milling, grinding, boring, turning etc through manual/ CNC operated machines, process related to welding and assembly of tools, fixtures and dies

UNIT – 4: Operation of the machine in both, automatic and manual mode, wire cut machines and EDM machines used for die making, measuring instruments like vernier calipers, micrometers, dial indicators &gauges, key areas of power consumption/ steam consumption, compressed air consumption etc., Various data entry tools and formats used in the organization, ability to visualize the final product output and hence decide on the key steps and parameters to be followed.

Course outcomes:

5. Students will able to differentiate between various manufacturing processes.
6. Students will able to use different measuring instruments.
7. Students will learn about different machining operation.
8. Students will understand about NC and CNC machines.

Reference books:

5. Manufacturing technology by P. N. Rao
6. Production technology- R. K. Jain
7. Manufacturing Science- Amitabha Ghosh & Ashok Kumar Malik, - East- West Press.

ENGINEERING CALCULATIONS – 2

Semester -2nd	Sessional – 25 Marks
Stream– B.Voc	Theory – 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Course Objectives

1. To familiarize the prospective engineers with Basics of mathematics
2. To understand fundamental arithmetical operations.
3. To learn Unit systems, Fractions and Decimals, roots, percentage.
4. To have Knowledge of differential quantities

Course Contents

UNIT-I Complex number: Definition of Complex Number, Operations on Complex Number (Add., Sub., Multiplication, Division), Conjugate Complex Number, Modulus and Amplitude of a Complex Number, Polar form of a Complex Number.

Unit -II Matrices and Determinants: Definition and Properties of Determinants, Definition and Types of Matrix, Transpose of a Matrix, Symmetric, Skew Symmetric Matrices, Orthogonal matrices, Hermitian and Skew Hermitian, Minors and Cofactors, Adjoint and Inverse of a Matrix, Cramer's Rule, Solution of Simultaneous Linear Equations by Inverse Matrix Method, Characteristic Matrix, Characteristic Equation, Eigen Values & Vectors, Cayley Hamilton Theorem (verification only).

Unit - III Differentiation: Introduction to Derivatives, Product Rule, Quotient Rule, Chain Rule, Derivatives of Algebraic Function, Derivative of Trigonometric Functions, partial derivative.

Unit - IV Integration: concepts of integration, integration of trigonometric, exponential and logarithmic functions, integration by parts.

Course Outcomes:

1. Students will learn about complex number.
2. Students will learn about matrix and determinants.
3. Students will able to deal with derivative Problems.
4. Students will able solve and learn integration.

Reference Books:

6. Mathematics Book by R.D Sharma
7. Advanced Engineering Mathematics By Jain Rk.
8. A Basic Course in Mathematics By Nabjyoti Dutta.
9. Skills in Mathematics By Amit M Aggarwal.
10. Applied Mathematics For Polytechnics By H.K. Dass.

COMMUNICATION SKILLS -2

Semester -2nd	Sessional – 25 Marks
Stream– B.Voc	Theory – 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Course Objectives:

1. To discuss types of communication and their forms.
2. To improve comprehension.
3. To improve spoken English and ability to articulate ideas
4. To improve formal writing skills

Course Contents:

Unit 1: Reading Skills: Translation, Unseen Passages, Annotations, Vocabulary.

Unit 2: **Grammar**: Jumbled words (PQRS), Tenses, Narration, Idioms, Prepositions, Subject –Verb-Concord

Unit 3: Writing Skills: Composition, Writing Short Paragraph, Reports, Advertisements, Poster Making,

Unit 4: Professional Skills: Presentation, Emails, Business Letters, CV Writing and Cover Letters.

Course Outcome:

1. To learn about communication process and ways to make communication effective by giving attention to all elements involved.

2. To improve grammar and gain confidence by enhancing their abilities to articulate their ideas.

3. To acquire better writing skills in formal communication.

4. To be able to revise documents for fruitful reading and comprehension.

Recommended Reference Reading:

1. Wren and Martin. High School English Grammar and Composition. New Delhi: RRP, 2007
2. Murphy, Raymond. Essential English Grammar. New Delhi: Cambridge, 2017
3. Malhotra, Prerna and Halder, Deb. Communication Skills: Theory and Practice.

AUTOMOBILE WORKSHOP - 2

(A) Carry out diagnosis of vehicle for repair requirements
At the end of the module the learner should be able to

1. Understand the auto component manufacturer specifications related to the various components/ aggregates in the vehicle
2. Follow standard operating procedures for using workshop tools and equipment for fault diagnosis or troubleshoot problem in a vehicle
3. Obtain sufficient information from customer/service advisor to make an assessment of service and repair needs of the vehicle
4. Review the job card and understand customer complaints
5. Follow standard operating procedure set out for diagnosing faults (in case of complex faults take the assistance of the senior diagnosis technician/ technical manager)
6. Use checklists and standard OEM operating procedures to understand if the fault is because of improper servicing, or low levels of oils, coolants, grease etc. or poor quality oil/ air filter set.
7. Conduct inspection of the engine and aggregates to diagnose need for repairs or adjustment in various engine aggregates
8. Conduct inspection of mechanical, electrical and electronic systems to diagnose need for repairs, adjustment or part replacement
9. Compare results of diagnostic inspections and tests against vehicle specifications and any regulatory requirements
10. Finalize the list of all the service, repair and replacement requirements for the vehicle post the diagnosis in consultation with service advisor/ supervisor
11. Understand the various precautions to be taken to avoid damage to the vehicle and its components while working on diagnosis or troubleshooting the vehicle for any faults
12. Ensure that trainings organized by the OEM from time-to-time are attended and knowledge levels are upgraded (esp. in case of newly launched products, product refreshes)
13. Drive a relevant 2/3/4 wheeler vehicle which is an important part of the diagnosis of the type of vehicle that is dealt by the relevant OEM

(B) Carry out service and major repairs in mechanical aggregates and overhauling of a vehicle
At the end of the module the learner should be able to

1. Understand the auto component manufacturer specifications related to the various components/ aggregates in the vehicle (including major aggregates like engine. gear box, transmission systems propeller shaft etc.)
2. Follow standard operating procedures for using workshop tools and equipment for service and repairs of various vehicle aggregates
3. Review the job card and understand service and repair work to be carried out in the various aggregates(including overall of various aggregates like engine)
4. Ensure that the correct spare parts, lubricants, tools and other materials required

have been obtained
5. Service, repair and overhaul: - Engines and fuel system (diesel, petrol, electrical, CNG, LPG etc.)
    a. cooling system
    b. radiator
    c. emission and exhaust system
    d. brake system clutch assembly
    e. gearbox, drive-train assembly and transmission systems (manual, automatic etc.)
    f. steering system
    g. suspension system
    h. tyres and wheels
    i. hydraulic   and   pneumatic system
    j. various lubrication systems
6. Dismantle, assess, repair, clean, replace, adjust and reassemble the vehicle mechanical aggregates/ components
7. Identify vehicle components requiring change due to continuous wear and tear(including oil and air filters in the engine aggregate)
8. Ensure all dismantled components and aggregates are cleaned and conditioned prior to reassembly
9. Carry out service, repair and overhauling activities safely to ensure:
    a. no damage to the vehicle or other vehicles
    b. nodamage to vehicle components and systems
    c. no contact with hazardous materials
10. Ensure disposal of materials (including waste oil, scrap of failed parts/ aggregates)in accordance with the organisation's policies
11. Ensure, in consultation with the service advisor, approval of the customer on all repairs carried out
12. Record all service and repairs carried out and ensure completeness of tasks assigned before releasing vehicle for the next procedure
13. Ensure any other repair requirements observed in the other components/ aggregates systems (like engine, gear box etc.) while repairing/ overhauling of braking systems are communicated to service advisor
14. Follow standard operating procedures for using workshop tools and equipment
15. Ensureall workshop tools, equipment and workstations are adequately maintained by carrying out scheduled checks, calibration and timely repairs where necessary
16. Ensure that trainings organized by the OEM from time-to-time are attended and knowledge levels are upgraded (esp. in case of newly launched products, product refreshes)
(C) **Carry out service and repairs of electrical and electronic faults in a vehicle**. At the end of the module the learner should be able to

1. Understand the auto component manufacturer specifications related to the various electrical and electronic components and allied aggregates
2. Follow standard operating procedures for using workshop tools and equipment for repair of electrical/ electronic components in a vehicle

3. Review the job card and understand work to be carried out in the electrical/ electronic aggregates as indicated by the supervisor or service advisor
4. Ensure that the correct spare parts tools and other materials required for service and repair of the electrical/ electronic components have been obtained
5. Repair and overhaul:
    a. stability/steering/ suspension systems (including electronic stability systems, vehicle dynamic control, closed loop electronic steering and multi-class Bus systems)
    b. engine management systems (including fuel cell technology/hydrogen, on line maintenance and remote diagnostics, common rail diesel direct injection, drive by wire, multi-class Bus systems and closed loop diesel engine management systems)
    c. transmission/driveline systems (including clutches, torque converters, mechanical and automatic transmissions, drive and power take-off shafts and differentials, mechatronic modules and multi-class Bus systems)
    d. braking systems (including ABS, engine brakes, electric retarders, electric trailer brakes, brake by wire and multi-class Bus systems)
6. Repair and overhaul of safety systems (including fire suppressing, work load detecting, tyre pressure control, speed/load limiting, traction control, seat belt pre-tensioning, roll over protection, object detection, navigation aids, intelligent transport systems, intelligent SRS systems, adaptive cruise control, multi-class Bus systems, active and passive collision avoidance, infrared vision, lighting and windscreen wipers control)
7. Repair and overhaul of convenience and entertainment systems (including audio and visual units, compact disks, analogue tapes, radio, speaker types, amplifiers, crossovers, balancers, aerials and multi-class Bus systems)
8. Repair and overhaul of electric and hybrid vehicle systems (including battery technology, motor drive systems, motor controllers, air conditioning systems, electronic protection systems and multi-class Bus systems)
9. Repair and overhaul of climate control systems (including air conditioning, heating, blending systems and multi-class Bus systems)
10. Repair and overhaul of gearbox, drive-train assembly and transmission systems (manual, automatic etc.)
11. Repair and overhaul of electrical wire harness, lighting, ignition, electronic and air-conditioning systems etc.
12. Repair and overhaul of electronic active and passive safety, media, comfort and convenience, supplementary restraint systems (SRS), networking and other systems
13. Repair and overhaul of electronic control unit
14. Repair and overhaul of hydraulic and pneumatic system
15. Repair all electrical and electronic faults including direct faults in:
    a. input sensors
    b. output actuators
    c. wiring harnesses
    d. computer systems
    e. calibration/adjustment specifications
    f. component specifications

g. component assembly
h. component damage
i. system modifications

16. Repair indirect faults caused on the major mechanical or other aggregates by the influence of electrical and electronic aggregate (e.g. influence of improper working on the ECU might have damaged the charging of the alternator

17. Remove, refit and test electrical components for normal operation following major/ minor body repair activities

18. Dismantle, assess, repair, clean, replace, adjust and reassemble vehicle electric and electronic units

19. Ensure all dismantled components (other than the electrical or electronic components) are cleaned and conditioned prior to reassembly

20. Ensure disposal of materials (including scrap of failed parts/ aggregates) in accordance with the organisation's policies

21. Understand the various precautions to be taken to avoid damage to other components/ aggregates of a vehicle while working on electrical/ electronic aggregates

22. Record all service and repairs carried out and ensure completeness of tasks assigned before releasing vehicle for the next procedure

23. Ensure all workshop tools, equipment and workstations are adequately maintained by carrying out scheduled checks, calibration and timely repairs where necessary

24. Ensure any malfunctions observed in tools and equipment are reported to the concerned persons

25. Ensure that trainings organized by the OEM from time-to-time are attended and knowledge levels are upgraded (esp. in case of newly launched products, product refreshes)

(D) **Plan and organize work to meet expected outcomes**

At the end of the module the learner should be able to

1. Perform the job within given time as per quality standards/work schedule

2. Identify and manage resource and use it efficiently and effectively

3. Perform in accordance with the organizational policies and procedures

4. Manage his/her time effectively at work Apply best practices to keep workplace clean

5. Acquire knowledge and understanding required for planning & organizing. At the end of the module the learner should be able to

6. Interact & communicate effectively with colleagues including members in the owngroup as well as other groups

7. Use all forms of verbal and non- verbal methods to communicate clearly and effectively with colleagues, supervisors, customers and other stakeholders

8. Judge customers' body language

9. and use an appropriate approach t o deal with them

10. Apply the best practices for grooming to look presentable and make good impression on customers

11. Use proper personal etiquettes at work place

12. Acquire knowledge and understand ding required for team working Perform as per organisation policies & procedures to maintain a safe, secure working environment

13. Maintain safe & secure workplaces

14. Use best practice to remove potential hazards at workplace and prevent accidents
15. Apply appropriate strategies to deal with emergencies and accidents at workplace
16. Apply relevant norms to the vehicles and spare parts to ensure no damage to the environment.

COMMUNITY COLLEGE OF SKILL DEVELOPMENT (CCSD)

ANNEXURE-1A

Program Bachelor of vocation Automobile (program Code:253)
Revised Scheme Course Index of the year 2018-19 (BOS Dated 18.01.2019)

Mapping of the course with the employability/Entrepreneurship/Skill Development

S.NO	Course	Code	Skill development	Entrepreneurship	Employability
1	Manufacturing process-1	PCC-AM-101	√		
2	Industrial Safety	PCC-AM-102	√		
3	Communication skills	BSC-101	√	√	√
4	Fundamental of Computers	BSC-103	√		
5	Engineering Calculations	BSC-102	√		
6	Engineering Drawing	PCC-AM-104	√		√
7	Fundamental of Computer lab	BSC-104	√		√
8	Workshop-1	PCC-AM-103	√	√	√
9	Communication skills - 2	BSC-201	√	√	√
10	Engineering calculations - 2	BSC-202	√		
11	Elements of automobile engineering	PCC-AM-203	√		√
12	Quality inspection and safety	PCC-AM-202	√		
13	Manufacturing process – 2	PCC-AM-201	√		
14	Automobile Workshop-2	PCC-A-204	√	√	√

Principal CCSD

Annexure – "D"

SCHEME OF EXAMINATION

And

SYLLABUS

For

BACHELOR OF VOCATION

In

MANUFACTURING

1st SEMESTER

Offered by

Community college of skill development

J C Bose University of Science & Technology YMCA

Sector-6, Mathura Road, Faridabad, Haryana, India

2018-19

Machining Technician/CNC Operator L4

SECTOR: AUTOMOTIVE
SUB-SECTOR: MANUFACTURING
OCCUPATION: MACHINING
REF ID: ASC/Q3503

NSQF LEVEL: 4

Bachelor of vocation

Manufacturing

First semester examination
(NSQF Level 4)

Paper Code	Paper	L	T/P	Credits
PCC-AM-101	Manufacturing process-1	3	0	3
PCC-AM-102	Industrial Safety	3	0	3
BSC-101	Communication skills	3	0	3
BSC-103	Fundamental of Computers	3	0	3
BSC-102	Engineering Calculations	3	0	3
PCC-AM-104	Engineering Drawing	3	0	3
BSC-104	Fundamental of Computer lab	0	6	3
PCC-AM-103	Workshop-1	0	18	9
TOTAL		18	24	30

MANUFACTURING PROCESS-1

(Covering NOS ASC/N3507, ASC/N3508, ASC/3509)

Semester 1st	Sessional – 25 Marks
Stream– automobile/manufacturing	Theory – 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Course objectives:

1. To study the various manufacturing processes.
2. To understand the working of various cutting tools.
3. To understand measurement and measuring instruments.
4. To introduce about NC and CNC machines.

Unit-1 Pre-machining activities:

does and don'ts of the manufacturing process, Metal properties/ metallurgy, coolant and lubricants, Selection of proper coolant and lubricant required for machining the required component, use of machine guards, acceptance requirements/ limits of machining e.g. surface finish, specific orientation, gauge inspection etc., introduction to jigs and fixtures, different holding fixtures, gears, stops, Introduction to Measuring devices: micrometers, vernier calipers, gauges, rulers.

Unit-2 Metal Cutting

Introduction to metal cutting, orthogonal and oblique cutting, types of chips, cutting tools, introduction to different types of tools used in the machining process, single point and multi point cutting tools, single point tool geometry, ASA tool signature, material removal rate.

Unit- 3 Machining

Different types of machining processes, basic fundamentals of machines and mechanics, introduction and operations of lathe, turning, milling, shaping, boring, broaching, hobbing, facing and shaping, blanking and piercing processes, special purpose machine for operations.

grinding, grinding procedure, balancing and dressing of wheels, abrasive, Post machining activities: Impact of presence of burrs, edges, chips on the final product performance, de burring, use of chisels, scrapers to Trim, scrape or de burr objects or parts.

Unit- 4 Introductions to NC and CNC machines

NC machines, components of NC and CNC machines, difference between NC and CNC, G-codes and M codes, right command in the CNC machine, Introduction to quality, 7 quality tools, company policy.

Course outcomes:

1. Students will able to differentiate between various manufacturing processes.
2. Students will able to use different measuring instruments.

3. Students will learn about different machining operation.
4. Students will understand about NC and CNC machines.

Reference books:

1. Manufacturing technology by P. N. Rao
2. Production technology- R. K. Jain
3. Manufacturing Science- Amitabha Ghosh & Ashok Kumar Malik, - East- West Press.
4. Workshop Technology Vol I & II –Hazra & Chaudhary, Asian Book Comp., New Delhi.

INDUSTRIAL SAFETY-1
(Covering NOS ASC/N0006, ASC/N0021)

Semester -1st	Sessional – 25 Marks
Stream–Automobile/Manufacturing	Theory – 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Course objectives:

1. To understand the importance of safety, health and environment.
2. To classify different types of accidents.
3. To study different types of hazards.
4. To study about 5S at workplace.

UNIT-1: Importance of Safety, health and environment

Safety, Health and Environment, cleaning of work area, tools, equipment and materials, Importance of safety, objectives of safety management, personal protective equipment like safety gloves, safety glasses, safety shoes and safety helmet, contents of the first aid kit, instructions of equipment manual.

UNIT-2: Accidents

Classification of accidents, causes of accidents, accident investigations/reporting, approaches to prevent accidents, Firefighting.

UNIT -3: Safety in hazardous area

Hazards and risks, difference between hazard and risk, Hazard in industrial zones, physical, chemical, environmental, biological, ergonomics and psycho-social hazards, Introduction to OSHMS, OSHAS 18001 and OSHA.

UNIT-4: 5S in safety

The basic principles of 5 S in manufacturing and workplace – Cleaning, sorting etc , sorting of materials, tools and equipment's and spare parts, standards, procedures and policies related to 5S, importance of waste disposal, segregation of waste into Hazardous and Non Hazardous waste, disposal the waste as per SOP, labeling procedures, storage procedures.

Course outcomes:

1. Student will aware about safety and health.
2. Student will able to differentiate different types of accidents.
3. Student will able to differentiate different types of risks.
4. Student will learn about 5S at workplace.

Reference books:
1. Industrial Safety and Health Management by C Ray Asfahl, pearson publications.

2. Industrial Safety Management by N. K. Tarafdar
3. Industrial Safety (Safety Management) by D S S Ganguly & C S Changeriya

ENGINEERING DRAWING

Semester 1st | Sessional – 25
Stream–Automobile/manufacturing | Theory – 75 Marks
L T P Total Credits | Total: 100 Marks
3 0 0   3 | Duration of Exam: 3 Hours

Course objective:

1. To introduce about engineering drawing.
2. To understand geometric dimensioning.
3. To learn about different types of projections.
4. To study about sections of solids.

Detailed Syllabus
1.0. Introduction
1.1. Scope and objective of the subject
1.2. Importance of engineering drawing as a communication medium
1.3. Drawing instruments and their uses
1.4. Scales : Recommended scales, reduced & enlarged
1.5. Sheet sizes : A0, A1, A2, A3, A4, A5. Layout of drawing sheet sizes of title block and its contents
1.6. Simple exercises on the use of drawing instruments.
2.0. Lettering and Dimensioning
2.1. Types of Lettering
2.2. Guide Lines for lettering
2.3 Recommended sizes of letters and numbers
2.4. Single stroke letters.
2.5. Dimensioning - rules and systems of dimensioning – dimensioning a given drawing
3.0 Geometric Construction
3.1. Bisecting a line - perpendiculars - parallel lines - division of a line
3.2. Angles - bisection, trisection
3.3. Tangent lines touching circles internally and externally
3.4. Polygons - Regular polygons - circumscribed and inscribed in circles.
3.5. Conic sections - Definitions of focus, directrix, eccentricity
(i) Construction of Ellipse by Concentric circles method.
(ii) Construction of parabola by rectangular method.
(iii) Construction of Hyperbola when given the position of point from X-axis and Y-axis.
4.0 Orthographic Projection
4.1. Definition - Planes of Projection - Four quadrants – Reference line.
4.2. First angle projection - Third angle projection
4.3. Projections of points
4.4. Projections of straight lines
4.5. Projections of planes
4.6. Projections of solids
4.7. Conversion of pictorial views into orthographic views
5.0. Isometric Projection
5.1. Definition - Isometric axes, lines and planes
5.2. Isometric Scale - Isometric view
5.3. Drawing of isometric views of plane figures
5.4. Drawing of isometric views of prisms and pyramids
5.5. Drawing of isometric view of cylinders and cones

6.0. Sections of Solids
6.1. Need for drawing sectional views - section planes - true shape of a section
6.2. Sections of prisms and pyramids
6.3. Sections of cones and cylinders.

Course outcomes:

1. Student will learn about engineering drawing.
2. Student will understand geometric dimensioning.
3. Student will learn about different types of projections.
4. Student will study about sections of solids.

Reference books:

1. Engineering drawing by N D Bhatt
2. Engineering drawing by K.Venugopal
3. A Textbook of Engineering Drawing by Ramakant Rana and Roop Lal

WORKSHOP –I

(Covering all the practicals of **ASC/Q3503***)*

Semester -1st
Stream–Automobile/manufacturing
L T P Total Credits
0 0 18   9

Internal – 25 Marks
External – 75 Marks
Total: 100 Marks
Duration of Exam: 3 Hours

Course objective:

1. To understand the safety measures of mechanical workshop.
2. To learn the functions of various conventional machines and unconventional machines.
3. To prepare different jobs by different machining operation.
4. To learn about CNC machine.

Course contents:

1. **To Conduct all pre- machining operations:**

   a) Measure and mark reference points/ cutting lines on the work pieces, using compasses, callipers, rulers and other measuring tools
   b) Understand the does and don'ts of the manufacturing process as defined in SOPs/ Work Instructions
   c) Set of machine stops or guides as per the specified lengths indicated through scales or work instructions
   d) Set-up, adjust machine tools, fixtures/ jigs and cutting tools in order to perform machining operations
   e) Check the centering and facing of the work pieces and check for alignment of the work pieces as per the final product output specifications
   f) Gain knowledge on gear changing techniques and minor maintenance as per checklist
   g) Check the working of different holding fixtures, gears, stops.
   h) Brush or spray lubricating material on work pieces where applicable
   i) Operate hand wheels or valves in order to feed the component and allow cooling and lubricating to the tool.

2. To understand various safety measures, working principle & specifications of various conventional machines (lathe, milling, shaper, grinder etc).

3. To study elements of single point cutting tools and multiple point cutting tools.

4. To prepare single point brazed tool with carbide tip on a mild steel shank involving milling and brazing operation.

5. To prepare a job involving centering, facing, plain turning and step turning.

6. To prepare a job by machining on milling/ shaper machine.

7. To prepare a job by surface grinding on surface grinder and perform dressing and balancing of wheels

8. To study and use boring/ broaching/ hobbing / facing/ shaping tools in different applications.

9. To prepare a job by using blanking/ piercing and special purpose machines.

10. To prepare a job on CNC machine and ensure that the right command is entered in the CNC machine as defined machining parameters.

11. To conduct all post machining operations:

    a. Use files, hand grinders, wire brushes, or power tools for performing de burring operations.

    b. Use chisels, scrapers, and other hand tools and equipment to Trim, scrape, or de burr objects or parts

    c. Clean the hydraulic tank/ Gauge/ Tools/ Fixtures as per the cleaning schedule and the process mentioned in the Work Instruction/ SOP manual

    d. Perform minor repairs and adjustments to the machine and notify supervisor/maintenance team when major service/ repair is required

    e. Measure the specifications of the finished component and verify conformance as per Control Plan/ Work Instruction

    f. Use devices like micrometers, vernier calipers, gauges, rulers and any other inspection equipment for measuring specifications with valid calibration status.

    g. Note down the observations of the basic inspection process and identify pieces which comply with the specified standards

    h. Organize changing different worn out machine accessories

    i. Ensure that the blunt tool is timely and safely replaced by a new tool

    j. Replace machine part as per work instructions, using hand tools or notify supervisor/ engineering personnel for taking corrective actions

    k. Ensure that the zero offset value is chosen at the time of tool changing process.

12. To maintain 5S at the work premises:

a. Ensure the work area, tools, equipment and materials are clean
b. Carry out storage of cleaning material and equipment in the correct location and in good condition
c. Ensure self-cleanliness - clean uniform, clean shoes, clean gloves,
d. Follow the daily cleaning standards and schedules to create a clean working environment
e. Carry out sorting of materials, tools and equipment's and spare parts
f. Follow proper labeling procedures
g. Follow proper storage procedures
h. Carry out segregation of waste into Hazardous and Non Hazardous waste and dispose the waste as per SOP
i. Follow the floor markings/ area markings used for demarcating the various sections in the plant
j. Follow 5S at workplace.

Course Outcomes: After studying this course the students will be able to:

1. Understand the safety measures of mechanical workshop.

2. Learn the functions of various conventional machines and unconventional machines.

3. Prepare different jobs by different machining operation.

4. Learn about CNC machine.

Reference books:

1. A course in workshop technology: manufacturing processes by B.S. Raghuwanshi.
2. Textbook of workshop technology by R S Khurmi and J k gupta.

COMMUNICATION SKILLS

Semester -1st   Sessional – 25 Marks
Stream–Automobile/manufacturing   Theory – 75 Marks
L T P Total Credits   Total: 100 Marks
3 0 0   3   Duration of Exam: 3 Hours

Course Objectives:

1. To discuss types of communication and their forms
2. To improve comprehension
3. To improve spoken English and ability to articulate ideas
4. To improve formal writing skills

Unit 1: Introduction to Communication: Meaning, Importance and Function of Communication, Types of communication, language of communication; advantages and disadvantages; Barriers to Communication; Organizational Communication

Unit 2: Grammar: Parts of speech, Articles, Tenses, Formation of Sentences, Active and Passive Voice, Direct and Indirect speech

Unit 3: Writing and Comprehension: Comprehension, Composition, Translation, Paraphrasing, Letter writing

Unit 4: 7 Cs of Communication; Grice's Cooperative Principle; Group Discussions; Public Speaking; Facing Interviews

Course Outcome:

1. To learn about communication process and ways to make communication effective by giving attention to all elements involved.
2. To improve grammar and gain confidence by enhancing their abilities to articulate their ideas.
3. To acquire better writing skills in formal communication.
4. To be able to revise documents for fruitful reading and comprehension.

Reference books:

1. Wren and Martin. *High School English Grammar and Composition.* New Delhi: RRP, 2007
2. Murphy, Raymond. *Essential English Grammar*. New Delhi: Cambridge, 2017

FUNDAMENTALS OF COMPUTER

Semester -1st	Sessional – 25 Marks
Stream–Automobile/manufacturing	Theory – 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Course Objectives:

1. To learn about the basic components of a computer.
2. To have a deep insight of various peripheral devices along with their sub-components and features.
3. To learn the fundamentals of Operating Systems.
4. To understand the concept of Internet.

Course Contents:

Unit 1: Basics of Computer- Introduction to Computers, Generations of Computers, Types of Computers, Input-Output Devices, Computer Organization, Advantages and Disadvantages of Computer, BIOS, Booting.

Unit 2: Introduction to Software - Computer Software, Types of Software, Security, Computer Viruses, Number System.

Unit 3: Computer Memory and Operating System- Introduction to Memory Unit, Types of Primary Memory, Secondary Memory; Definition, Types and Functions of Operating System

Unit 4: Internet Services – Introduction, History, Working, Uses, Advantages, Disadvantages of Internet, E-mail.

Course Outcomes:

1. Students will learn the basics of computer.
2. Student will acquire knowledge of various input and output devices connected to computer.
3. Student will learn about the computer organization and its components.
4. Student will understanding Operating System, Computer Software and basics of Internet.

Reference Books:

1. Pradeep K.Sinha and Priti Sinha, Computer Fundamentals, BIB Publications.
2. Anita Goel, Computer Fundamentals, Pearson.
3. D.P Nagpal, Computer Fundamentals, S.Chand.
4. B.Ram, Computer Fundamentals, New Age International Publishers.

ENGINEERING CALCULATIONS

Semester 1st   Sessional – 25 Marks
Stream–Automobile/manufacturing   Theory – 75 Marks
L T P Total Credits   Total: 100 Marks
3 0 0   3   Duration of Exam: 3 Hours

Course Objectives
1. To familiarize the prospective engineers with Basics of mathematics
2. To understand fundamental arithmetical operations.
3. To learn Unit systems, Fractions and Decimals, roots, percentage.
4. To have Knowledge of differential quantities

Course Contents

Unit-I: Basic Aptitude- Fundamental Arithmetical Operation- Addition, Subtraction, Multiplication and Division. Applied Workshop Problems Involving Addition, Subtraction, Multiplication and Division, System Of Units – Definition, Different Types & System Of Units i.e.(C.G.S. & SI Units for Length, Mass, Area, Volume, Capacity, Time) HCF, LCM, Square Root Cube Root.

Unit-II: Trigonometry – Introduction, Trigonometric Identities, Quadrant Rule, Trigonometric Ratios of Some Specific Angles, Ratios of Complementary Angles, Introduction

Unit-III: Differentiation- Introduction to Derivatives, Product Rule, Quotient Rule, Chain Rule, Derivatives of Algebraic Function, Derivative of Trigonometric Functions.

Unit-IV: Algebra- Algebraic Expressions and Identities, Terms Coefficients and Factors, Monomials Binomials and Polynomials, Multiplication and Division of Algebraic Expressions, Standard Identities and Their Applications.

Course Outcomes:
1. To Apply the Arithmetical Operations And Conversion Of Units.
2. To Convert in Fraction And Decimals, Percentage.
3. To Solve HCF, LCM , Square Roots And Cube Roots.
4. To Deal With Differential Problems.
5. To Learn About Trigonometric Ratios.

Reference Books:
1. Mathematics Book by R.D Sharma
2. Advanced Engineering Mathematics By Jain Rk.
3. A Basic Course in Mathematics By Nabjyoti Dutta.
4. Skills in Mathematics By Amit M Aggarwal.
5. Applied Mathematics For Polytechnics By H.K. Dass.

BASICS OF COMPUTER APPLICATION LAB

Semester -1st	Sessional – 25 Marks
Stream–Automobile/manufacturing	Theory – 75 Marks
L T P Total Credits	Total: 100 Marks
0 0 6 3	Duration of Exam: 3 Hours

Course Objectives:
1. Give students an in-depth understanding of why computers are essential components in business, education and society.
2. Introduce the fundamentals of computing devices and reinforce computer vocabulary, particularly with respect to personal use of computer hardware and software.
3. Provide hands-on use of Microsoft Office applications Word, Excel, Access and PowerPoint.
4. Provide basic knowledge of internet.

Course Contents:
Unit 1: Basics of Computer- Definition, Characteristics of Computers, Basic Applications of Computer, Components of Computer System: Central Processing Unit (CPU), input/output Devices.
Unit 2: MS Word- Create a new document, Open, save and print a document, Edit and format text, Change the page layout, background and borders, Insert headers and footers, Insert and edit tables, Insert clip art and pictures to documents.
Unit 3: MS Power Point- Create a new presentation, Modify presentation themes, Add and edit text to slides, Add new slides to a presentation, Insert clipart images and shapes to slides, Insert and modify tables and charts, Add sound and video to a slide presentation, Insert and edit animations and slide transitions.
Unit 4: MS Excel- Create, open and view a workbook, Save and print workbooks, Enter and edit data, Modify a worksheet and workbook, Work with cell references, Learn to use functions and formulas, Create and edit charts and graphics, Filter and sort table data, Basics of computer network**,** Internet**,** Search engines**,** Basics of E-mail.

Course Outcomes:
1. Describe the usage of computers and why computers are essential components in society.
2. Identify categories of programs, system software and applications. Organize and work with files and folders.
3. Completion of the assignments will result in MS Office applications knowledge and skills.
4. Describe the usage of Internet and E-mail.

SCHEME OF EXAMINATION

And

SYLLABUS

For

BACHELOR OF VOCATION

In

MANUFACTURING

2nd SEMESTER

Offered by

Community college of skill development

J C Bose University of Science & Technology YMCA

Sector-6, Mathura Road, Faridabad, Haryana, India

2018-19

Qualifications Pack- Tool Room Supervisor

SECTOR: AUTOMOTIVE

SUB-SECTOR: MANUFACTURING

OCCUPATION: TOOL ROOM

JOB ROLE: TOOL ROOM SUPERVISOR

REFERENCE ID: ASC/Q4102

Bachelor of vocation Manufacturing

Second semester examination (Level 5)

Paper Code	Paper	L	T/P	Credits
BSC-201	Communication skills - 2	3	0	3
BSC-202	Engineering calculations -2	3	0	3
PCC-AM-201	Manufacturing process-2	3	0	3
PCC-AM-202	Quality inspection and safety	3	0	3
PCC- AM-203	Elements of automobile engineering	3	0	3
PCC-M-204	Machining Workshop-2	0	30	15
TOTAL		15	30	30

Semester -2nd   Sessional – 25 Marks
Stream– B.Voc   Theory – 75 Marks
L T P Total Credits   Total: 100 Marks
3 0 0   3   Duration of Exam: 3 Hours

Course objectives:

5. To study the various manufacturing processes.
6. To understand the working of various cutting tools.
7. To understand measurement and measuring instruments.
8. To introduce about NC and CNC machines.

UNIT – 1: Metallurgical and chemical properties of materials - Metallurgical and chemical properties of various metals/ alloys used for die and tool preparation and machining process, raw materials used in the process

UNIT – 2: Basic preparation process of machine and machine settings, operations for various machining related tools, punch setting, operating presses and stoning operations, types of jigs, fixtures and dies used in the tooling process, usage of tri squares, geometry squares to check for perpendiculars in two joining parts, assembly processes like bolting, tightening, bending, jointing, sealing, Uses of lifting tools like hoists, cranes, clamps etc. About tools, jigs and fixtures , their usage and maintenance methods, different types of communication channels practiced by the organization, the method of noting observations, maintaining records and sharing them with the concerned in the required format, knowledge of shift roster norms and guidelines

UNIT – 3: manufacturing processes like milling, grinding , boring, turning etc through manual/ CNC operated machines, process related to welding and assembly of tools, fixtures and dies

UNIT – 4: Operation of the machine in both, automatic and manual mode, wire cut machines and EDM machines used for die making, measuring instruments like vernier calipers, micrometers, dial indicators &gauges, key areas of power consumption/ steam consumption, compressed air consumption etc., Various data entry tools and formats used in the organization, ability to visualize the final product output and hence decide on the key steps and parameters to be followed.

Course outcomes:

5. Students will able to differentiate between various manufacturing processes.
6. Students will able to use different measuring instruments.
7. Students will learn about different machining operation.
8. Students will understand about NC and CNC machines.

Reference books:

5. Manufacturing technology by P. N. Rao
6. Production technology- R. K. Jain
7.   Manufacturing Science- Amitabha Ghosh & Ashok Kumar Malik, - East- West Press.
8. Workshop Technology Vol I & II –Hazra & Chaudhary, Asian Book Comp., New Delhi.

QUALITY, INSPECTION AND SAFETY

Semester -2nd	Sessional – 25 Marks
Stream– B.Voc	Theory – 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Course objectives:

5. To understand the importance of safety, health and environment.
6. To classify different types of accidents.
7. To study different types of hazards.
8. To study about 5S at workplace.

Unit – 1 Quality: manufacturing defects associated with the machining and related processes and impact of the defects on the final product output, how to visualize the final product output and conduct quality verification tests, different types of defects which may arise due to improper manufacturing and the impact of the defect on product performance, quality norms and standards prescribed in the Quality Manual by the organization for painting, 7QC, Why Analysis, Brain storming

Unit – 2 Inspection: how to measure the correct specifications of the output in the terms of thickness, hardness, durability, tightness, finesse etc. relevant manufacturing standards and procedures followed in the company in detail, different types of defects which may arise due to improper manufacturing

Unit – 3 TQM: TQM process, knowledge of functional processes like Procurement, Store management, inventory management, quality management and key contact points for query resolution

Unit – 4 Safety: about handling of electrical equipment and circuits, rectifiers and control panel etc., 5S and Safety norms practiced in the organization, hazards, fire fighting, first aid, PPEs and their usage, basic knowledge of risks/hazards associated with each occupation in the organization, 5S procedures, 5S checklists, knowledge of labels , signs & colours used as indicators, cleaning & waste disposal, sustainability in 5S, storage norms, understand visual controls, symbols, graphs etc

Course outcomes:

5. Student will aware about safety and health.
6. Student will able to differentiate different types of accidents.
7. Student will able to differentiate different types of risks.
8. Student will learn about 5S at workplace.

Reference books:
4. Industrial Safety and Health Management by C Ray Asfahl, pearson publications.
5. Industrial Safety Management by N. K. Tarafdar
6. Industrial Safety (Safety Management) by D S S Ganguly & C S Changeriya

ELEMENTS OF AUTOMOBILE ENGINEERING

Semester -2nd	Sessional – 25 Marks
Stream– B.Voc	Theory – 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Objectives and Pre-requisites: Student should have studied subjects such as General Science, Physics, Mathematics and have the basic knowledge about automobile to have an enhanced exposure. This subject provides knowledge about the elements of automobile engineering.

UNIT-I

Introduction: Classification of automobiles- according to number of wheels, propulsion systems, transmission drives, type of fuels, application & capacity, study of main specifications. Components of an automobile- functions & layout of frame, frameless construction, axles, steering system, suspension system, braking system, power train & drives, clutch, gear box, final drive, propeller shaft, u-joints, vehicle body, wheels, tyres & tubes.

UNIT-II

Power Unit: Selection of engine for two wheeler, three wheeler & four wheeler vehicles; constructional & working details of two strokes & four stoke petrol & diesel engines, fuel system, ignition system, starting system, charging system, lighting system, cooling system, lubrication system, combustion & combustion chambers.

UNIT-III

Steering System and Suspension System: Steering system- requirements, front axle details & steering geometry, castor, camber, toe in, toe out steering axis inclination, steering linkages, and different types of steering gear boxes, their constructional & working details. Concept and working of power steering. Need, types of suspension systems, constructional details, characteristics of laminated, coil springs. Introduction to independent suspension, front & rear suspension systems of the vehicle, shock absorbers.

UNIT-IV

Wheels, Tyres & Braking System: Wheel requirements, types of wheels, their constructional & working details, rims & tyres, types of tyres, tyre selection, ordinary, radial tyres tubeless tyres, their constructional details, comparison & application, wheel balancing. Need and classification of brakes, drum brakes and disc brakes, constructional & working details, introduction to hydraulic brake, parking brake, vacuum assisted hydraulic brakes, air assisted hydraulic brakes, air brakes, leading & trailing brake shoes, self energizing brakes & ABS, working of master cylinder, wheel cylinders, tandem master cylinder, characteristics of brake fluid.

Learning Outcomes: This knowledge will be helpful to the student in co-relating various systems with each other and understanding the individual system in a better manner.

Text Book(s):

1. K.K. Jain, R.B. Asthana, "Automobile Engineering", Tata McGraw Hill, New Delhi
2. Dr. Kirpal Singh, "Automobile Engineering (Vol-1)", Standard Publisher Distributors.
3. K.K. Ramalingam, "Automobile Engineering", Scitech Publication, Chennai

4. Tom Denton, "Automobile Mechanical and Electrical Systems" Indian Ed., Routledge(T&F Group)Pub.

ENGINEERING CALCULATIONS – 2

Semester -2nd	Sessional – 25 Marks
Stream– B.Voc	Theory – 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Course Objectives
 1. To familiarize the prospective engineers with Basics of mathematics
 2. To understand fundamental arithmetical operations.
 3. To learn Unit systems, Fractions and Decimals, roots, percentage.
 4. To have Knowledge of differential quantities

Course Contents

UNIT-I Complex number: Definition of Complex Number, Operations on Complex Number (Add., Sub., Multiplication, Division), Conjugate Complex Number, Modulus and Amplitude of a Complex Number, Polar form of a Complex Number.

Unit -II Matrices and Determinants: Definition and Properties of Determinants, Definition and Types of Matrix, Transpose of a Matrix, Symmetric, Skew Symmetric Matrices, Orthogonal matrices, Hermitian and Skew Hermitian, Minors and Cofactors, Adjoint and Inverse of a Matrix, Cramer's Rule, Solution of Simultaneous Linear Equations by Inverse Matrix Method, Characteristic Matrix, Characteristic Equation, Eigen Values & Vectors, Cayley Hamilton Theorem (verification only).

Unit - III Differentiation: Introduction to Derivatives, Product Rule, Quotient Rule, Chain Rule, Derivatives of Algebraic Function, Derivative of Trigonometric Functions, partial derivative.

Unit – IV Statistics

Measures of Dispersion: Range, Mean deviation, variance and standard deviation of ungrouped/grouped data. Analysis of frequency distributions with equal means but different variances.

Course Outcomes:

1. Students will learn about complex number.
2. Students will learn about matrix and determinants.
3. Students will able to deal with derivative Problems.
4. Students will able solve and learn integration.

Reference Books:
6. Mathematics Book by R.D Sharma
7. Advanced Engineering Mathematics By Jain Rk.

8. A Basic Course in Mathematics By Nabjyoti Dutta.
9. Skills in Mathematics By Amit M Aggarwal.
10. Applied Mathematics For Polytechnics By H.K. Dass.

COMMUNICATION SKILLS -2

Semester -2nd	Sessional – 25 Marks
Stream– B.Voc	Theory – 75 Marks
L T P Total Credits	Total: 100 Marks
3 0 0 3	Duration of Exam: 3 Hours

Course Objectives:

1.   To discuss types of communication and their forms.
2.   To improve comprehension.
3.   To improve spoken English and ability to articulate ideas
4.   To improve formal writing skills

Course Contents:

Unit 1: Reading Skills: Translation, Unseen Passages, Annotations, Vocabulary.

Unit 2: **Grammar**: Jumbled words (PQRS), Tenses, Narration, Idioms, Prepositions, Subject –Verb-Concord

Unit 3: Writing Skills: Composition, Writing Short Paragraph, Reports, , Advertisements, Poster Making,

Unit 4: Professional Skills: Presentation, Emails, Business Letters, CV Writing and Cover Letters.

Course Outcome:

1. To learn about communication process and ways to make communication effective by giving attention to all elements involved.

2. To improve grammar and gain confidence by enhancing their abilities to articulate their ideas.

3. To acquire better writing skills in formal communication.

4. To be able to revise documents for fruitful reading and comprehension.

Recommended Reference Reading:

1.   Wren and Martin. *High School English Grammar and Composition.* New Delhi: RRP, 2007
2.   Murphy, Raymond. *Essential English Grammar*. New Delhi: Cambridge, 2017
3.   Malhotra, Prerna and Halder, Deb. *Communication Skills: Theory and Practice*

WORKSHOP –II

(Covering all the practicals of **ASC/Q4102***)*

Semester -1st   Internal – 25 Marks
Stream–Automobile/manufacturing   External – 75 Marks
L T P Total Credits   Total: 100 Marks
0 0 18   9   Duration of Exam: 3 Hours

Course objective:

5. To understand the safety measures of mechanical workshop.

6. To learn the functions of various conventional machines and unconventional machines.

7. To prepare different jobs by different machining operation.

8. To learn about CNC machine.

Course contents:

1. **To Conduct all pre- machining operations:**

j) Measure and mark reference points/ cutting lines on the work pieces, using compasses, callipers, rulers and other measuring tools

k) Understand the does and don'ts of the manufacturing process as defined in SOPs/ Work Instructions

l) Set of machine stops or guides as per the specified lengths indicated through scales or work instructions

m) Set-up, adjust machine tools, fixtures/ jigs and cutting tools in order to perform machining operations

n) Check the centering and facing of the work pieces and check for alignment of the work pieces as per the final product output specifications

o) Gain knowledge on gear changing techniques and minor maintenance as per checklist

p) Check the working of different holding fixtures, gears, stops.

q) Brush or spray lubricating material on work pieces where applicable

r) Operate hand wheels or valves in order to feed the component and allow cooling and lubricating to the tool.

2. To understand various safety measures, working principle & specifications of various conventional machines (lathe, milling, shaper, grinder etc).

3. To study elements of single point cutting tools and multiple point cutting tools.

4. To prepare single point brazed tool with carbide tip on a mild steel shank involving milling and brazing operation.

5. To prepare a job involving centering, facing, plain turning and step turning.

6. To prepare a job by machining on milling/ shaper machine.

7. To prepare a job by surface grinding on surface grinder and perform dressing and balancing of wheels

8. To study and use boring/ broaching/ hobbing / facing/ shaping tools in different applications.

9. To prepare a job by using blanking/ piercing and special purpose machines.

10. To prepare a job on CNC machine and ensure that the right command is entered in the CNC machine as defined machining parameters.

11. To conduct all post machining operations:

  l. Use files, hand grinders, wire brushes, or power tools for performing de burring operations.

  m. Use chisels, scrapers, and other hand tools and equipment to Trim, scrape, or de burr objects or parts

  n. Clean the hydraulic tank/ Gauge/ Tools/ Fixtures as per the cleaning schedule and the process mentioned in the Work Instruction/ SOP manual

  o. Perform minor repairs and adjustments to the machine and notify supervisor/maintenance team when major service/ repair is required

  p. Measure the specifications of the finished component and verify conformance as per Control Plan/ Work Instruction

  q. Use devices like micrometers, vernier calipers, gauges, rulers and any other inspection equipment for measuring specifications with valid calibration status.

  r. Note down the observations of the basic inspection process and identify pieces which comply with the specified standards

  s. Organize changing different worn out machine accessories

  t. Ensure that the blunt tool is timely and safely replaced by a new tool

  u. Replace machine part as per work instructions, using hand tools or notify supervisor/ engineering personnel for taking corrective actions

  v. Ensure that the zero offset value is chosen at the time of tool changing process.

12. To maintain 5S at the work premises:

k. Ensure the work area, tools, equipment and materials are clean

l. Carry out storage of cleaning material and equipment in the correct location and in good condition

m. Ensure self-cleanliness - clean uniform, clean shoes, clean gloves,

n. Follow the daily cleaning standards and schedules to create a clean working environment

o. Carry out sorting of materials, tools and equipment's and spare parts

p. Follow proper labeling procedures

q. Follow proper storage procedures

r. Carry out segregation of waste into Hazardous and Non Hazardous waste and dispose the waste as per SOP

s. Follow the floor markings/ area markings used for demarcating the various sections in the plant

t. Follow 5S at workplace.

Course Outcomes: After studying this course the students will be able to:

1. Understand the safety measures of mechanical workshop.

2. Learn the functions of various conventional machines and unconventional machines.

3. Prepare different jobs by different machining operation.

4. Learn about CNC machine.

Reference books:

3. A course in workshop technology: manufacturing processes by B.S. Raghuwanshi.

4. Textbook of workshop technology by R S Khurmi and J k gupta.

5. Workshop Technology Vol I & II –Hazra & Chaudhary, Asian Book Comp., New Delhi.

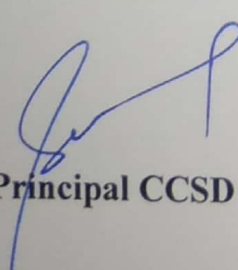## COMMUNITY COLLEGE OF SKILL DEVELOPMENT (CCSD)

ANNEXURE-1A

Program Bachelor of vocation Manufacturing (program Code:254)
Revised Scheme Course Index of the year 2018-19 (BOS Dated 18.01.2019)

Mapping of the course with the employability/Entrepreneurship/Skill Development

S.NO	Course	Code	Skill development	Entrepreneurship	Employability
1	Manufacturing process-1	PCC-AM-101	√		
2	Industrial Safety	PCC-AM-102	√		
3	Communication skills	BSC-101	√	√	√
4	Fundamental of Computers	BSC-103	√		
5	Engineering Calculations	BSC-102	√		
6	Engineering Drawing	PCC-AM-104	√		√
7	Fundamental of Computer lab	BSC-104	√		√
8	Workshop-1	PCC-AM-103	√	√	√
9	Communication skills - 2	BSC-201	√	√	√
10	Engineering calculations - 2	BSC-202	√		
11	Elements of automobile engineering	PCC-AM-203	√		√
12	Quality inspection and safety	PCC-AM-202	√		
13	Manufacturing process – 2	PCC-AM-201	√		
14	Manufacturing Workshop-2	PCC-A-204	√	√	√

Principal CCSD