KALINGA UNIVERSITY
RAIPUR | INDIA

SCHEME OF EXAMINATION & DETAILED SYLLABUS

For
Bachelor of Vocational Studies
(B. Voc.)
(Farm Equipment & Machinery)

NAAC GRADE B+ Accredited University

nirf RANKING 2022 Ranked in Top 101-150 Universities

Kalinga University, Naya Raipur, Chhattisgarh

KALINGA UNIVERSITY
RAIPUR | INDIA

B.VOC (FARM EQUIPMENT AND MACHINERY)

Semester I						
Code No	**Paper**	**Category**	**Credits**	**End Semester Exam**	**Internal Marks**	**Total Marks**
BVFEM101	Principles Of Agriculture	Gen	3	70	30	100
BVFEM102	English For Communications	Gen	3	70	30	100
BVFEM103	Workshop Calculation & Science I	Gen	3	70	30	100
BVFEM104	Engineering Drawing-I	Gen	3	70	30	100
BVFEM105	Farm Power and Machinery	Skill	3	70	30	100
BVFEM106	Operation and Maintenance of Farm Machinery-I	Skill	4	70	30	100
BVFEM107	Principle of Electric Motor And Pumps	Skill	3	70	30	100
BVFEM108P	Basic Workshop	Skill	2	30	20	50
BVFEM109P	In plant training I	Skill	6	100	50	150
	Total		**24**	**620**	**280**	**900**

Semester II						
Code No	**Paper**	**Category**	**Credits**	**End Semester Exam**	**Internal Marks**	**Total Marks**
BVFEM201	Computer Fundamentals and Office Automation	Gen	4	70	30	100
BVFEM202	Workshop Calculation & Science II	Gen	3	70	30	100
BVFEM203	Engineering Drawing-II	Gen	3	70	30	100
BVFEM204	Engineering Survey	Gen	2	35	15	50
BVFEM205	Farm Engine and Tractor Systems	Skill	3	70	30	100
BVFEM206	Operation and Maintenance of Farm Machinery-II	Skill	4	70	30	100
BVFEM207	Principle of Irrigation and Water Management	Skill	3	70	30	100
BVFEM208	Operation and Maintenance of Micro Irrigation Systems	Skill	3	70	30	100
BVFEM209P	In plant training II	Skill	6	100	50	150
	Total		**31**	**625**	**725**	**900**

Semester III						
Code No	**Paper**	**Category**	**Credits**	**End Semester Exam**	**Internal Marks**	**Total Marks**
BVFEM301	Environmental Studies	Gen	3	70	30	100
BVFEM302	Universal Human Values	Gen	3	70	30	100
BVFEM303	Workshop Calculation & Science – III	Gen	3	70	30	100
BVFEM304	Engineering Drawing – III	Gen	3	70	30	100
BVFEM305	Operation and Maintenance of Tillage Machineries	Skill	3	70	30	100
BVFEM306	Operation and Maintenance of Soil Forming and Land Shaping Equipments	Skill	3	70	30	100
BVFEM307	Repair & Overhauling of Tractor Engine	Skill	6	70	30	100
BVFEM308P	In plant training – III	Skill	6	100	50	150
	Total		**30**	**590**	**260**	**850**

Semester IV						
Code No	**Paper**	**Category**	**Credits**	**End Semester Exam**	**Internal Marks**	**Total Marks**
BVFEM401	Internet and Web Technology	Gen	4	70	30	100
BVFEM402	Soft Skills and Personality Enhancement	Gen	3	70	30	100
BVFEM403	Workshop Calculation & Science – IV	Gen	3	70	30	100
BVFEM404	Engineering Drawing-IV	Gen	3	70	30	100
BVFEM405	Operation and Maintenance of Sowing and Weeding Equipments	Gen	3	70	30	100
BVFEM406	Operation and Maintenance of Plant Protection Equipments	Skill	3	70	30	100
BVFEM407	Repair and Overhauling of Tractor Transmission System & Controls	Skill	6	70	30	100
BVFEM408P	In plant Training - IV	Skill	6	100	50	150
	Total		**31**	**590**	**260**	**850**

Semester V						
Code No	**Paper**	**Category**	**Credits**	**End Semester Exam**	**Internal Marks**	**Total Marks**
BVFEM501	Entrepreneurship Development	Gen	3	70	30	100
BVFEM502	Food processing	Gen	4	70	30	100
BVFEM503	Occupational Safety and Health Education	Gen	3	70	30	100
BVFEM504	Operation & Maintenance of Power Tiller	Gen	3	70	30	100
BVFEM505	Servicing of Auto Electrical & Electronic System	Skill	3	70	30	100
BVFEM506	Maintenance & Servicing of Hydraulic System in Tractor	Skill	3	70	30	100
BVFEM507	Maintenance of Batteries and Wheels	Skill	3	70	30	100
BVFEM508P	In plant training – V	Skill	6	100	50	150
	Total		**28**	**590**	**260**	**850**

Semester VI						
Code No	**Paper**	**Category**	**Credits**	**End Semester Exam**	**Internal Marks**	**Total Marks**
BVFEM601	Agribusiness and Project Management	Gen	4	70	30	100
BVFEM602	Millet processing and Crop residue management equipments	Gen	3	70	30	100
BVFEM603	Custom Hiring of Agriculture Machinery	Gen	3	70	30	100
BVFEM604	Operation and Maintenance of Crop Harvesters	Skill	3	70	30	100
BVFEM605	Operation & Maintenance of Combine Harvester	Skill	3	70	30	100
BVFEM606	Operation and Maintenance of Post Harvesting Equipments	Skill	6	70	30	100
BVFEM607P	Project Work	Skill	9	100	50	150
	Total		**31**	**590**	**260**	**850**

KALINGA UNIVERSITY
RAIPUR | INDIA

1ST SEMESTER
PRINCIPLES OF AGRICULTURE
(BVFEM101)

OBJECTIVE:

To learn different types of soils and climate suitable for raising different agricultural crops. To learn different agricultural practices and the recommendations of inputs for raising the crops.

UNIT–I: INTRODUCTION TO AGRICULTURE: Agriculture – art, science and business – branches of agriculture scope of agriculture in India and Tamil Nadu –History of agricultural development – development of scientific agriculture in world. National and International Institutions / Centers on agriculture research – Agronomy - definition and relationship with other disciplines.

UNIT–II: SOIL PROPERTIES AND MANAGEMENT: Physical Properties of Soils; Physical properties of soils-texture-mechanical components and structure. Physical constants- true and apparent specific gravity, pore space, soil colour, soil air, soil temperature - significance of physical properties in relation to plant growth. Chemical properties of soils; Chemical properties of soils- Chemical composition-Soil reaction-Buffering capacity of soils-Soil colloids-Soil pH – Problem soils their reclamation and management.

UNIT–III: CROP ADAPTATION AND DISTRIBUTION: Origin of crops, crop distribution and production; origin of crop species, agronomic classification of crops – their economic importance – major crops of India and Tamil Nadu – adaptation and distribution. Factors affecting crop distribution and production. Soils and agriculture seasons of India and Tamil Nadu.

UNIT–IV: FARMING SYSTEMS: Systems of farming – wet, irrigated, dry and rain fed farming.
Factors governing choice of crops and varieties. Intensive cropping – crop rotation – advantages. Cropping pattern and cropping systems in India and Tamil Nadu. Concepts and principles of sustainable agriculture – Integrated Farming System (IFS)
– organic farming – Natural farming – Eco-friendly agriculture and conservation agriculture –LESIA.

UNIT–V: BASICS OF AGRICULTURAL OPERATIONS: Principles and practices of agriculture operations. Tillage and tilth – types of tillage – modern concepts of tillage – tools, implements and machineries for different agricultural operations. Seeds and sowing- factors affecting germination – seed rate – seed treatment – methods of sowing – nursery methods and transplanting – plant population and geometry time and methods of application and INM, harvesting – threshing – drying and storage.

REFERENCES:

1. Balasubramaniyan, P and SP. Palaniappan. 2002. Principles and Practices of Agronomy, Agrobios (India), Jodhpur.
2. Dahama.A.K. 1996. Organic farming for sustainable Agriculture. Agro Botanical Publishers (India), Bikaner.
3. Gopal Chandra De. 1997. Fundamentals of Agronomy. Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi.
4. ICAR. 1996. Handbook of agriculture. Indian Council of Agriculture Research, New Delhi.
5. Morachan, Y.B. 1980. Crop Production and Management. Oxford and IBH Publishing Co.Pvt.Ltd. New Delhi.
6. Reddy. S.R. 1999. Principles of Agronomy. Kalyani publishers, New Delhi.
7. Sankaran, S. and V.T. Subbiah Mudaliar, 1997. Principles of Agronomy. The Bangalore Printing and publishing Company
   Ltd., Bangalore.
8. Singh. S.S. 1998. Principles and Practices of Agronomy. Kalyani publishers, New Delhi.
9. Somasundaram, E and A. Arokiaraj. 2002. Text book on Principles of Agronomy.
   Crystal Printers, Tiruchirappalli, Tamil Nadu.
10. Thakur, C. 1980. Scientific crop production. Vol.I Meteorpolitan Book Co. Pvt, Ltd., New Delhi.

LEARNING OUTCOME

Students know about different types of soils and climate suitable for raising different agricultural crops.

Students know different agricultural practices and the recommendations of inputs for raising the crops.

KALINGA UNIVERSITY
RAIPUR | INDIA

ENGLISH FOR COMMUNICATIONS (BVFEM 102)

OBJECTIVE:

- To improve the English language skills of students with very limited abilities to use the language;
- To focus on the language skills of the learners in a graded manner.

UNIT I – GRAMMAR

- What is grammar?
- The capital letter
- Nouns and pronouns

UNIT II – LISTENING

- Teacher narrations

UNIT III - SPEAKING SKILLS

- Self – introduction
- Descriptions of persons, objects, places

UNIT IV - READING AND VOCABULARY

- Graded reading comprehension passages

UNIT V- WRITING SKILLS

- Sentence construction
- Descriptive Paragraph writing

TEXTBOOK:

1. Course material prepared by the English faculty

REFERENCE BOOK:

1. Seaton, Anne & Y.H. Mew. Basic English Grammar Book 1. Irvine: Saddleback, 2007. Print.

LEARNING OUTCOME

- Students know improve the English language skills with very limited abilities to use the language;
- Students focus on the language skills of the learners in a graded manner.

KALINGA UNIVERSITY
RAIPUR | INDIA

WORKSHOP CALCULATION & SCIENCE I (BVFEM 103)

OBJECTIVE:

- Students will learn to basic engineering mechanics for undertaking skilled agricultural operations efficiently.

UNIT– I: MACHINE : Machine – definition, farm machines – six simple machines – lever, wheel and axle, pulley, inclined plane, screw and wedge – their applications and definitions; mechanical advantage efficiency of the machine and velocity ratio – definition and calculation

UNIT–II: MOTION: Motion translator motion, rotary motion; velocity – uniform velocity and variable velocity; acceleration – uniform acceleration and variable acceleration; laws of motion – calculations

UNIT–III: FORCE: Force – definition of force, types of force Types of force -examples,– Direct forces, Attractive forces, Explosive forces, Describing forces, Graphical representation of a force, Addition of forces, Parallelogram of forces ,Triangle of forces, Resolution of forces, Mass, Equilibrium, Pressure, Pressure in hydraulic systems, Hooke's law, Practical applications.

UNIT–IV: WORK: Work energy, power– Definition and calculation of Work, Power and Work done by a torque, Definition and calculation of Energy -Potential energy, Chemical energy, Conservation of energy, Energy equation, Kinetic energy, Energy of a falling body, Kinetic energy of rotation.

UNIT–V: ENGINE POWER: Engine power – terminology used – bore, stroke, stroke bore ratio, swept volume, compression ratio; power – indicated power, brake power, belt power, drawbar power, power takeoff power – definition; measurement of engine power by using dynamometer – dynamometer types – determination of specific fuel consumption, mechanical efficiency and thermal efficiency.

REFERENCES

1. O.P. Singhal, 1998. Agricultural Engineering, Aman Publishing House, Merut(UP)

2. Sreevastave, A.C., 1990. Elements of Farm Machinery, Oxford and IBH Publication Co., New Delhi.

3. Senthilkumar, T., R. Kavitha and V.M.Duraisamy 2015. A TEXT BOOK OF FARM MACHINERY, Thannambikkai Publications, Coimbatore. ISBN: 978-9381102305

4. Jagadishwar Sahay, 2010. ELEMENTS OF AGRICULTURAL ENGINEERING. Standard Publishers Distributors, New Delhi. ISBN: 978 – 818040440

LEARNING OUTCOME

- Students will learn to basic engineering mechanics for undertaking skilled agricultural operations efficiently

KALINGA UNIVERSITY
RAIPUR | INDIA

ENGINEERING DRAWING-I (BVFEM 104)

OBJECTIVE:

- To make student conversant with the construction of geometrical figures and projection of 1D, 2D, 3D elements and sectioning of solids and development of surfaces

UNIT–I: Scales - Recommended scales, reduced & enlarged Drawing Sheet sizes: A0, A1, A2, A3, A4, A5, Layout of drawing sheet, sizes of title block and its contents. Using drawing instruments to draw straight lines, rectangles, squares, circles, polygons.

UNIT–II: Lettering and Dimensioning - Types of Lettering, Guide Lines for lettering, Recommended sizes of letters and numbers, Single stroke letters, Dimensioning - rules and systems of dimensioning – dimensioning a given drawing.

UNIT–III: Identify the alphabet of lines- Read and Interpret the meaning of various line types with examples- Object Lines, Hidden Lines, Center Lines, Phantom Lines, Dimension Lines, Extension Lines, Leaders, Break Lines -Long-break Line, Round, Solid, Hollow Cross Section, Section Lines – Common Manufacturing Materials, Cutting Plane Lines

UNIT–IV: Geometric Construction - Bisecting a line - perpendiculars - parallel lines - division of a line; Angles - bisection, trisection, Tangent lines touching circles internally and externally Polygons - Regular polygons - circumscribed and inscribed in circles. Conic sections - Definitions of focus, directrix, eccentricity, Construction of Ellipse by Concentric circles method, Construction of parabola by rectangular method.

UNIT–V: Orthographic Projection - Definition - Planes of Projection - Four quadrants – Reference Line, First angle projection - Third angle projection. Isometric Projection - Definition - Isometric axes, lines and planes, Isometric Scale - Isometric view. Drawing of isometric views of plane figures, Drawing of isometric views of prisms and pyramids, Drawing of isometric view of cylinders and cones Development of Surfaces - Need for preparing development of surface, Concept of true length - Principal methods of development, Development of simple solids like cubes, prisms, cylinders, pyramids, cones.

TEXT BOOKS:

1. K.V. Natarajan, 2006 A text book of engineering graphics, Dhanalakshmi Publishers, Chennai.

2. M.B. Shah and B.C. Rana, 2005, Engineering drawing, Pearson education.

REFERENCE BOOKS:

1. N.D. Bhatt, 2003, Engineering Drawing, Chaotar publishing house 46th edition.

2. K.R. Gopalakrishnan.1998 Engineering Drawing (Vol. I & II) Subhas Publications

3. Luzadder and Duff, 2001, Fundamentals of Engineering Drawing Prentice Hall of India Pvt Ltd XI edition

4. K. Venugopal, 2002. Engineering graphics, New Age International (P) Limited.

LEARNING OUTCOME

- Student conversant with the construction of geometrical figures and projection of 1D, 2D, 3D elements and sectioning of solids and development of surfaces

KALINGA UNIVERSITY
RAIPUR | INDIA

FARM POWER AND MACHINERY (BVFEM 105)

OBJECTIVE:

- To equip the students with sufficient theoretical knowledge and practical skills about farm power and tractor power, implement resources used in agriculture, their cost of operation and selection.

UNIT–I: FARM POWER AND TRACTORS: Farm power in India - sources, IC engines – working principles, two stoke and four stoke engines, IC engine terminology, different systems of IC engine. Tractors – types and utilities.

UNIT–II: TILLAGE AND TILLAGE MACHINERY: Tillage **–** ploughing methods – primary tillage implements – mould board, disc plough and chisel plough – secondary tillage implements – cultivators, harrows and rotovators – wetland equipment – puddlers, tramplers and cage wheels.

UNIT–III: SOWING, PLANTING AND INTERCULTURAL EQUIPMENT: Sowing methods – seed drills, seed cum fertilizer drills – Paddy transplanters – nursery requirements – implements for intercultural operations – wet land, dry land and garden land intercultural tools.

UNIT–IV: PLANT PROTECTION GADGETS, HARVESTING MACHINERY AND HORTICULTURE TOOLS: Plant protection equipment – harvesting tools and equipment's – reapers and combine – harvesting machinery for groundnut, tuber crops and sugarcane – tools for horticultural crops

UNIT–V: EQUIPMENT FOR LAND DEVELOPMENT AND FARM MACHINERY SELECTION: Equipment for land development and soil conservation – Cost of operation of farm machinery – Tractor and implement selection

TEXT BOOKS

1. Senthilkumar, T., R. Kavitha and V.M.Duraisamy 2015. A TEXT BOOK OF FARM MACHINERY, Thannambikkai Publications, Coimbatore. ISBN: 978-9381102305

2. Jagadishwar Sahay, 2010. ELEMENTS OF AGRICULTURAL ENGINEERING. Standard Publishers Distributors, New Delhi. ISBN: 978 – 818040440

REFERENCE BOOKS

1. Ojha, T.P and A.M.Michael 2005. PRINCIPLES OF AGRICUTURAL ENGINEERING

   VOL I. Jain Brothers, New Delhi. ISBN: 978-8186321638

2. Nakra C.P 1970. FARM MACHINERY AND EQUIPMENT: Dhanpat Rai Publishing Company Ltd, New Delhi ISBN : 978-8187433231

3. Sricastava, A.C., 1991. ELEMENTS OF FARM MACHINERY. Oxford & IBH Publishing Co Pvt Ltd, New Delhi. ISBN: 978-8120405134

LEARNING OUTCOME

- Students equip with sufficient theoretical knowledge and practical skills about farm power and tractor power, implement resources used in agriculture, their cost of operation and selection.

KALINGA UNIVERSITY
RAIPUR | INDIA

OPERATION AND MAINTENANCE OF FARM MACHINERY-I (BVFEM 106)

OBJECTIVE:

- Students will be equipped with sufficient practical skills on farm power sources, handling of tractors, power tillers and various implements used in land preparation, sowing, inter cultivation and plant protection

UNIT– I: TRACTOR AND POWER TILLERS: Tractors – different types – makes – power tillers – working principle components – Uses –Major systems – Functioning of each system

UNIT–II: TILLAGE IMPLEMENTS: Tractor drawn implements – Primary Tillage – Secondary tillage implements – Proper hitching of Implements – Power tiller attachments – Operational Adjustments – Safety aspects

UNIT–III: SOWING IMPLEMENTS: Sowing implements – Types – Working Principle – Calibration of seed drill – Adjustments – safety aspects

UNIT–IV: SPECIAL PLANTERS: Paddy Trans planters – Pneumatic planters – Planters for Sugarcane and vegetables

UNIT–V: PLANT PROTECTION EQUIPMENTS: Plant protection Equipment's – types – Working principle of different types of sprayers

TEXT BOOK

1. Jain, S.C. and C.R.Rai, 1999. Farm tractors (Maintenance and Repair). Standard Publishers Distributers, New Delhi.

REFERENCE BOOKS

1. Barger, E.L., J.B. Lilijedahl and E.C. McKibben, 1997. Tractors and their power units.

Wiley Easterb Pvt Ltd, New Delhi.

2. Jagadishwar Sahay, 1992. Elements of Agricultural Engineering. Agro book agency, Patna – 20.

3. Ralph Alcock, 1986, Tractor implement system. AVI Pub, co., Inc. West poert, connectient.

4. Sreevastave, A.C., 1990. Elements of Farm Machinery, Oxford and IBH Publication Co. New Delhi.

JOURNALS

International journal of automotive technology, ISSN 1229-9138

Review of automotive engineering published by the Japanese society of automotive engineers.

E-REFERENCES

1. www.idavette.net

2. www.autorepair.about.com

LEARNING OUTCOME

- Students can be equipped with sufficient practical skills on farm power sources, handling of tractors, power tillers and various implements used in land preparation, sowing, inter cultivation and plant protection

KALINGA UNIVERSITY
RAIPUR | INDIA

PRINCIPLE OF ELECTRIC MOTOR AND PUMPS (BVFEM 107)

OBJECTIVE:

- To learn the working principle, Installation, maintenance and operation of an electric motor/diesel engine and irrigation pumps.

UNIT–I: FARM ELECTRICITY: Farm electricity – use of electricity; origin of electricity; electrical terms; generation of electricity; Generator, Motor and Alternator; Selection, Installation and Maintenance of Electric Motor; Transformer; Transmission and Distribution of Electric Power.

UNIT–II: ELECTRIC MOTOR: Electric motor – DC motor and AC motor – DC Motor – Components – Types – Working Principles – DC motor starter – types; AC motors – Single phase – Components – Types – Working principle – Three phase – Components – types – working principle; Overload protection devices; Motor starters – types.

UNIT–III: CENTRIFUGAL PUMP: Principle of centrifugal pump; Construction installation and operation of centrifugal pump in series and parallel; Finding out defects and method to recondition centrifugal pump; submersible pump – construction, installation, operation and selection of appropriate type. Procedure to recondition, install and test of submersible pumps. Causers of failures and remedial measures.

UNIT–IV: SOLAR PV PUMP: Solar Photo Voltaic pump –Description and principle of working of solar cell – conversation efficiency – commercial solar cells - photo voltaic water pumping system – components, installation and maintenance.

UNIT–V: DIESEL ENGINE PUMPS: Pumps operated by diesel engine - Principle of Compression-ignition engine, Diesel cycle. Different type of starting and stopping method of Diesel Engine. Technical terms used in engine, Engine specification Procedure to clean fuel tank & check leak in the fuel line. Lubrication system – types, description and advantages of each over others. Filters and oil coolers – their description functions and method to overhaul for efficient functioning.

REFERENCES:

1. Sharma, S.K. 1984. Principles and practices of irrigation Engg., S.Chand and Company Ltd., New Delhi.
2. Michael, A.M. and T.P.Ojha. 1987. Principles of Agricultural Engineering. Vol.2. Jain Brothers, New Delhi.
3. Michael, A.M. 1983. Irrigation Theory & Practice, Vikas Publishing house, New Delhi.
4. Sivanappan, R.K. and Karaigowder. 1997. Irrigation and Drainage, Popular Book Depot, Chennai.
5. Basak, N.N. 1999. Irrigation Engineering. TATA McGraw Hill, New Delhi.

LEARNING OUTCOME

- Students to know the working principle, Installation, maintenance and operation of an electric motor/diesel engine and irrigation pumps.

KALINGA UNIVERSITY
RAIPUR | INDIA

BASIC WORKSHOP (BVFEM108P)

OBJECTIVE:

- To familiarize with the basics of tools and equipment's used in fitting, carpentry, sheet metal, welding and smithy.
- To familiarize with the production of simple models in the above trades.

UNIT–I: WELDING : Tools and equipment's - Arc welding of butt joint, tap joint, tee fillet, etc, Demonstration of gas welding. Heat treatment process-annealing, normalizing, hardening and tempering,

UNIT–II: FITTING: Tools and equipment's - Practice in chipping, filing, drilling, grinding, making vie joints, square and dove tail joints. Tap and dies and hand reamers.

UNIT–III: CARPENTRY: Tools and equipment's - Planning Practice - making halving joint and dove tail joint models, limits, fits, and tolerances with examples used in auto components

UNIT– IV: PLUMBING: Tools and equipment's - types of joints, treading fitting for different types of pipes-GI, PVC, HDPE . study of different type of screws, nuts, studs, bolts and locking devices.

UNIT–V: SMITHY : Tools and equipment's-Demonstration of making simple parts like keys, bolts, etc. sheet metal operations-shearing, banding, drawing and squeezing

REFERENCES:

- S.K. Hajra Choudhury, A.K. Hajra Choudhury and Nirjhar Roy, 2001, Elements of Workshop Technology-Vol. 1 Manufacturing processess, Media Promoters and Publishers Pvt, Ltd. Mumbai.

LEARNING OUTCOME

- Students familiarize with the basics of tools and equipment's used in fitting, carpentry, sheet metal, welding and smithy.
- Students familiarize with the production of simple models in the above trades.

KALINGA UNIVERSITY
RAIPUR | INDIA

IN PLANT TRAINING I (BVFEM 109P)

OBJECTIVE:

To learn skills for specific job role from relevant Industry / Institution.

Students have to undergo four weeks training in any Agricultural Machinery Manufacturing Industry / Training Institutes to acquire relevant skills. The in-plant training may be organized continuously for four weeks or more than one spell within a semester as per the convenience of the Industry/Institutes. During their stay in the industry, they have to maintain a diary on daily basis to record the work assigned, outcome of the work and it has to be countersigned by the student's in-charge. In addition, he/she has to submit weekly report to the department. During the in-plant training period, the Industry / Institute partner will evaluate their performance for 60 marks and the concerned course teacher for 40 marks as given below

INDUSTRY/ INSTITUTE

1	Attitude	10 marks
2	Punctuality	
3	Behavior	
4	Involvement	10 marks
5	Performance (completion of assigned work)	20 marks
6	Contribution to the industry	20 marks
	Total	60 marks

COURSE TEACHER

1	Diary /Record	10 marks
2	Weekly report	20 marks
3	Viva –voce	20 marks
	Total	40 marks

KALINGA UNIVERSITY
RAIPUR | INDIA

2ND SEMESTER
COMPUTER FUNDAMENTALS AND OFFICE AUTOMATION
(BVFEM201)

OBJECTIVE:

- To understand the basic concepts of computers
- To develop applications using MS word, MS excel and MS PowerPoint.

UNIT–I : Definition of a computer – computer terminologies – anatomy of a computer – generations of computers- types of computers – types of operating system- types of programming languages – assembler- translator – compiler – cross complier

UNIT–II : Input devices – output devices – storage devices – source data entry devices.

UNIT–III: MS – Word: Introduction – features – document creation – document editing: cursor movements – selecting text – copying text – moving text – finding and replacing text – spelling and Grammar – page setup – mail merge – table creation.

UNIT–IV: MS – Excel: Introduction – advantages and application – organization of workbook – editing a worksheet – range – formatting worksheet – chart: creation – changing type – print options – built-in functions.

UNIT–V: Power point: introduction – features – creating presentation – viewing – saving and close presentation – changing layout – changing designs – slide transition – adding animation effects – inserting table, charts, pictures, clipart in presentation.

REFERENCES:

1. Fundaments of Information Technology, S.K.Bansal, A.P.H. Publishing company, New Delhi, 2002.

2. 2007 Microsoft Office System step by step, Joyce Cox, Joan Preppernau, Steve Lambert and Curtis Fyre, 2007.

LEARNING OUTCOME

- Students understand the basic concepts of computers
- Students using MS word, MS excel and MS PowerPoint.

KALINGA UNIVERSITY
RAIPUR | INDIA

WORKSHOP CALCULATION & SCIENCE II (BVFEM202)

OBJECTIVE:

- To calculate area, volume, weight, temperature, pressure, horse power and calorific value of fuels which are involved in farm equipment operations.

UNIT I : Formulae for Perimeter and Area of Plane figure - Rectangle, Square, Parallelogram, Triangle, Hexagon, any regular polygon, Trapezium, Circle, sector, Fillet, Ellipse, segment of a circle; Formulae for Volume and surface area of solids- Rectangular solid, Prism, cylinder, pyramids and cones, Frustum of pyramid and cones, sphere, Hollow sphere, segment of sphere, circular ring, spherical sector, Calculation of volume and weight of simple solid bodies such as cubes, square and hexagonal prism-shop problem.

UNIT II : Heat and temperature –Temperature-Thermodynamic temperature scale (Kelvin), Cooling system temperature; Standard temperature and pressure (STP); Thermal expansion with calculation; Heat- Sensible heat, Latent heat, Specific latent heat, Specific heat capacity, Quantity of heat with calculation; Heat transfer – Conduction, Convection, Radiation ;

UNIT III: Heating, expansion and compression of gases - Absolute pressure, Absolute temperature; Laws relating to the compression and expansion of gases -Heating a gas at constant volume, Heating a gas at constant pressure, Charles' law. Expansion or compression at constant temperature – isothermal

UNIT IV: Internal combustion engines- Engine power-Brake power, Horsepower, Mean effective pressure, Calculation of indicated power, Cylinder pressure vs. crank angle, Mechanical efficiency of an engine, Volumetric efficiency, Torque vs. engine speed, Specific fuel consumption vs. engine speed, Brake power, torque and sfc(Specific fuel consumption) compared, Brake mean effective pressure, Thermal efficiency, Indicated thermal efficiency, Brake thermal efficiency petrol vs. Diesel.

UNIT V: Fuels and combustion- Calorific value, Combustion-Products of combustion, Relevant combustion equations. Air–fuel ratio-Petrol engine combustion, Detonation, Preignition, Octane rating, Diesel fuel, Flash point , Pour point, Cloud point, Biofuels, Liquefied petroleum gas (LPG) ,Hydrogen, Zero emissions vehicles (ZEVs)

TEXT BOOKS

1. Sanjay Kumar, 2007, A TEXT BOOK OF TRACTOR AT A GLANCE, International book distributing company, Lucknow

2. Senthilkumar, T., R. Kavitha and V.M.Duraisamy 2015. A TEXT BOOK OF FARM MACHINERY, Thannambikkai Publications, Coimbatore. ISBN: 978-9381102305

3. Jagadishwar Sahay, 2010. ELEMENTS OF AGRICULTURAL ENGINEERING. Standard Publishers Distributors, New Delhi. ISBN: 978 – 818040440

REFERENCE BOOKS

1. Ojha, T.P and A.M.Michael 2005. PRINCIPLES OF AGRICUTURAL ENGINEERING VOL I. Jain Brothers, New Delhi.

ISBN: 978-8186321638

2. Nakra C.P 1970. FARM MACHINERY AND EQUIPMENT: Dhanpat Rai Publishing Company Ltd, New Delhi

ISBN : 978-8187433231

3. Sricastava, A.C., 1991. ELEMENTS OF FARM MACHINERY. Oxford & IBH Publishing Co Pvt Ltd, New Delhi. ISBN: 978-8120405134

LEARNING OUTCOME

- Students learn calculate area, volume, weight, temperature, pressure, horse power and calorific value of fuels which are involved in farm equipment operations

KALINGA UNIVERSITY
RAIPUR | INDIA

ENGINEERING DRAWING-II (BVFEM203)

OBJECTIVE:

- To read and interpret drawings, identify different drawing projections, free hand sketching of machine and tractor engine systems.

UNIT – I : Read and interpret drawings- Determine information from the title block, Read and interpret industrial prints, Read and interpret detailed and assembly drawings, Identify casting drawings and machining drawings, Read and interpret diagrams, Distinguish between a mono detail and a multi detail drawing.

UNIT–II: Identify different drawing projections - Interpret pictorial and multi-view drawings. Interpret auxiliary and section views, Determine views in a drawing and the significance of the view being shown. Identify missing lines and missing views.

UNIT–III: Free hand sketching of key and screw threads. Read and interpret three Types of screw thread representation: pictorial, schematic and simplified presentation. Terms used in describing a threaded Part, Designation of Thread Specifications, Left-Hand Thread Notations, read and interpret the different type of Finish Symbols, Fillets and Rounds and Machine Slots.

UNIT–IV: Drawing of I .C engine – Diesel and their parts. Sketching of Diesel cycle, valves and valve timing diagram. Free hand sketch of piston assembly, Free hand sketching of piston gudgeon pins rings and connecting rod. Free hand sketching of crank shaft and cam shaft showing all parts. Free hand sketching of cylinder block and cylinder head, cylinder liners.

UNIT–V: Free hand sketching of different cooling system -showing all necessary parts such as water pump, thermostatic valve, Radiator etc. Free hand sketching of lubrication system, showing all necessary parts such as filters, oil pump, pressure release valve etc. Free hand sketching of power take off (PTO) system. Freehand sketching of steering system. Free hand sketching of charging system and solenoid switch circuit.

TEXT BOOKS:

1. Sanjay Kumar, 2007, A TEXT BOOK OF TRACTOR AT A GLANCE, International book distributing company, Lucknow

2. K.V. Natarajan, 2006 A text book of engineering graphics, Dhanalakshmi Publishers, Chennai.

3. M.B. Shah and B.C. Rana, 2005, Engineering drawing, Pearson education.

REFERENCE BOOKS:

1. N.D. Bhatt, 2003, Engineering Drawing, Chaotar publishing house 46th edition.

2. K.R. Gopalakrishnan.1998 Engineering Drawing (Vol. I & II) Subhas Publications

3. Luzadder and Duff, 2001, Fundamentals of Engineering Drawing Prentice Hall of India Pvt Ltd XI edition

4. K. Venugopal, 2002. Engineering graphics, New Age International(p) Limited.

LEARNING OUTCOME

- Students can read and interpret drawings, identify different drawing projections, free hand sketching of machine and tractor engine systems

KALINGA UNIVERSITY
RAIPUR | INDIA

ENGINEERING SURVEY (BVFEM204)

OBJECTIVE:

- To measure the regular and irregular areas of a agricultural field by using chain survey.
- To prepare contour map and level difference of a given field by using levelling.

UNIT–I: Surveying--definition and purpose; classification of surveying; units of measurement of length and area; scales; measurement of horizontal distance --chains, types of chains, tapes. Ranging rod, arrows, plump bob-its functions and usage.

UNIT–II: Chaining – method of chaining on level ground and on sloping ground; direct method and indirect method of stepping; errors and corrections in chaining; laying out right angles and offsets.

UNIT–III: Cross staff survey; Obstacles in chaining; triangulation method of chain survey; ordinate method –average ordinate, mid ordinate, trapezoidal, and Simpson method to determine areas of regular and irregular fields.

UNIT–IV: Leveling, definition, terminology, leveling equipment's, dumpy level, leveling of dumpy level, leveling staff, methods of calculation of reduced level, the collimation system and the rise and fall system

UNIT–V: Types of leveling simple leveling, and differential leveling, contouring, ----uses of contours, and method of contouring, grid system, and plotting of contours.

REFERENCES:

1. Zamir Alvi, 2004, A Textbook of Surveying, Vikas Publishing House Pvt, Ltd, New Delhi.
2. Singhal, O.P. 1998. Agricultural Engineering, Aman Publishing house, Meerut.
3. Dr.Bimal Chandra Mil. 1995. Introduction to soil and water conservation engineering, Kalyani Publishers, Calcutta.
4. Saini, G.S. 1996. A textbook of soil and water conservation, Amman Publishing house, Meerut..
5. Murthy, V.V.N Zoos.2009 Land and water Management, Kalyani Publishing, New Delhi

LEARNING OUTCOME

- Students to know about measure the regular and irregular areas of a agricultural field by using chain survey. To prepare contour map and level difference of a given field by using levelling.

KALINGA UNIVERSITY
RAIPUR | INDIA

FARM ENGINE AND TRACTOR SYSTEMS (BVFEM205)

OBJECTIVE:

- To learn different systems of the tractor for effective functioning and maintenance.

UNIT–I: Engine Components – working principle & construction of cylinder heads, types of combustion chambers. Function of Engine Valves. Description & function of connecting rod, importance of big-end split obliquely. Description of crankshaft & Camshafts. Firing order of the engine. Description and function of the fly wheel and vibration damper, Timing mark.

UNIT–II: Fuel system – different parts of the system – working of the system, care of fuel system; air cleaner – types, working principles – governing system – functions, principles of operation and methods of governing system.

UNIT–III: Cooling systems:- Purpose, types, Cooling system components, water pump, function of thermostat, pressure cap, Recovery system & Thermo-switch. Function & types of Radiator; Lubrication system: - purposes & characteristics of oil, type of lubricants, grade as per SAE, & their application, oil additives, type of lubrication system. Lubrication system components- different type of Oil pump, Oil filters & oil cooler. Probable reasons for low / high oil pressure, high oil consumption and their remedies.

UNIT–IV: Ignition system – function, classification – CI system and SI system – different components of the system; Electrical system – different components of the system – battery, generator and starter motor; starting troubles and their remedies, battery maintenance

UNIT–V: Transmission system – clutch assembly – types; gears – functions; tractor differential, differential lock, final drive, torque converter – its functions and components; hydraulic system, components, controls and advantages; hitching of the implements – different types and its operation

TEXT BOOKS

1. Sanjay Kumar, 2007, A TEXT BOOK OF TRACTOR AT A GLANCE, International book distributing company, Lucknow

2. Senthilkumar, T., R. Kavitha and V.M.Duraisamy 2015. A TEXT BOOK OF FARM MACHINERY, Thannambikkai Publications, Coimbatore. ISBN: 978-9381102305

3. Jagadishwar Sahay, 2010. ELEMENTS OF AGRICULTURAL ENGINEERING.

Standard Publishers Distributors, New Delhi. ISBN: 978 – 818040440

REFERENCE BOOKS

1. Ojha, T.P and A.M.Michael 2005. PRINCIPLES OF AGRICUTURAL ENGINEERING

VOL I. Jain Brothers, New Delhi. ISBN: 978-8186321638

2. Nakra C.P 1970. FARM MACHINERY AND EQUIPMENT: Dhanpat Rai Publishing Company Ltd, New Delhi ISBN : 978-8187433231

3. Sricastava, A.C., 1991. ELEMENTS OF FARM MACHINERY. Oxford & IBH Publishing Co Pvt Ltd, New Delhi. ISBN: 978-8120405134

LEARNING OUTCOME

- Students know about different systems of the tractor for effective functioning and maintenance.

KALINGA UNIVERSITY
RAIPUR | INDIA

OPERATION AND MAINTENANCE OF FARM MACHINERY-II (BVFEM206)

OBJECTIVE:

- To learn functions, components and working principle of intercultural operation machineries, rice transplanting and harvesting machinery, multicrop thresher.

UNIT–I: Machinery for Intercultural operations – cultivators, sweep, junior hoe, manual weeders, power weeders for wetland and garden land -- functions, components, working principle; estimating the cost of operation in the field condition.

UNIT–II: Rice Transplanting machinery - functions, components, working principle; estimating the cost of operation in the field condition.

UNIT–III: Harvesting machinery for paddy – self propelled vertical conveyor reaper and tractor rear/front mounted vertical conveyor reaper - functions, components, working principle; estimating the cost of operation in the field condition.

UNIT–IV: Harvesting machinery for groundnut, tuber crops and sugarcane - functions, components, working principle; estimating the cost of operation in the field condition.

UNIT–V: Multi crop thresher – functions, components, working principle; estimating the cost of operation in the field condition.

REFERENCES:

1. Ojha, T.P and A.M.Michael 2005. PRINCIPLES OF AGRICULTURAL ENGINEERING

VOL I. Jain Brothers, New Delhi. ISBN: 978-8186321638

2. Nakra C.P 1970. FARM MACHINERY AND EQUIPMENT: Dhanpat Rai Publishing Company Ltd, New Delhi ISBN : 978-8187433231

3. Sricastava, A.C., 1991. ELEMENTS OF FARM MACHINERY. Oxford & IBH Publishing Co Pvt Ltd, New Delhi. ISBN: 978-8120405134

LEARNING OUTCOME

- Students able to learn functions, components and working principle of intercultural operation machineries, rice transplanting and harvesting machinery, multicrop thresher.

KALINGA UNIVERSITY
RAIPUR | INDIA

PRINCIPLE OF IRRIGATION AND WATER MANAGEMENT (BVFEM207)

OBJECTIVE:

- To understand functioning of different irrigation practices, soil, plant and water relationship and methods adopted to improve irrigation efficiencies.

UNIT–I: Sources of irrigation water, measurement of irrigation of water volumetric method, velocity area methods, direct discharge methods, weirs and orifices; water conveyance systems , open channel, underground pipe lines

UNIT–II: Irrigation methods, surface irrigation, and sub-surface irrigation, surface irrigation border, check basin, furrow, surge irrigation, conditional favorable to adapt the irrigation methods, its advantages and limitations

UNIT–III: Over Head irrigation methods or micro irrigation systems, Drip irrigation and sprinkler irrigation, description, components, advantages, limitations, suitability and hydraulics of flow for irrigation systems.

UNIT–IV: Soil-water - plant relationship, Soil-water relationship, Soil-crop relationship, Crop- water relationship, factors affecting water requirements of crops, determination of water requirements of crop, soil-water-plant-relationship, Duty of water, relation between delta, duty and base period.

UNIT–V: Irrigation efficiencies Water conveyance, water distribution, water application, water storage, water use efficiency, methods used to improve irrigation efficiency, calculations of irrigation efficiencies

REFERENCES:

1. Sharma, S.K. 1984. Principles and practices of irrigation Engg., S.Chand and Company Ltd., New Delhi.
2. Michael, A.M. and T.P.Ojha. 1987. Principles of Agricultural Engineering. Vol.2. Jain Brothers, New Delhi.
3. Michael, A.M. 1983. Irrigation Theory & Practice, Vikas Publishing house, New Delhi.
4. Sivanappan, R.K. and Karaigowder. 1997. Irrigation and Drainage, Popular Book Depot, Chennai.
5. Basak, N.N. 1999. Irrigation Engineering. TATA McGraw Hill, New Delhi.

LEARNING OUTCOME

- Students can understand functioning of different irrigation practices, soil, plant and water relationship and methods adopted to improve irrigation efficiencies.

KALINGA UNIVERSITY
RAIPUR | INDIA

OPERATION AND MAINTENANCE OF MICRO IRRIGATION SYSTEMS (BVFEM208)

OBJECTIVE:

- To learn skills of designing, installation and maintenance of micro irrigation systems.

UNIT–I: Importance of micro irrigation systems; relations between agronomy and micro irrigation, types of crops, types of soils, types of roots, identification of crop pattern, water requirement of different crops, and type of fertilizers.

UNIT–II: Design and layout plan of micro irrigation systems, survey of field, measurement of field, availability of water resources, shape and slope of field, designing fundamentals, spacing according to crops, and listing of crops to be produced.

UNIT–III : Components of micro irrigation system description and function of water pumps, control valves, filters, head-unit, laterals, emitters, back flow preventers, pressure regulator, flush valve, pipe/drip tape, connectors, micro sprinklers.

UNIT–IV: Installation of micro irrigation system, installation of head unit, filters, valves, main and sub main line, trenching, adjusting length of drip line and testing of micro irrigation system.

UNIT–V: Maintenance of micro irrigation system cleaning of filters, pressure gauge readings, air valve and safety, valve cleaning, draining of drip lines, flushing of main line and sub main , changing emitters, removing and reinstallation of micro irrigation system and standard procedures of assembling and dismantling of micro irrigation system.

REFERENCES:

1. Sharma, S.K. 1984. Principles and practices of irrigation Engg., S.Chand and Company Ltd., New Delhi.
2. Michael, A.M. and T.P.Ojha. 1987. Principles of Agricultural Engineering. Vol.2. Jain Brothers, New Delhi.
3. Michael, A.M. 1983. Irrigation Theory & Practice, Vikas Publishing house, New Delhi.
4. Sivanappan, R.K. and Karaigowder. 1997. Irrigation and Drainage, Popular Book Depot, Chennai.
5. Basak, N.N. 1999. Irrigation Engineering. TATA McGraw Hill, New Delhi.

LEARNING OUTCOME

- To learn skills of designing, installation and maintenance of micro irrigation systems.

KALINGA UNIVERSITY
RAIPUR | INDIA

IN PLANT TRAINING II (BVFEM209P)

OBJECTIVE:

To learn skills for specific job role from relevant Industry / Institution.

Students have to undergo four weeks training in any Agricultural Machinery Manufacturing Industry / Training Institutes to acquire relevant skills. The inplant training may be organized continuously for four weeks or more than one spell within a semester as per the convenience of the Industry/Institutes. During their stay in the industry, they have to maintain a diary on daily basis to record the work assigned, outcome of the work and it has to be countersigned by the student's incharge. In addition, he/she has to submit weekly report to the department. During the inplant training period, the Industry / Institute partner will evaluate their performance for 60 marks and the concerned course teacher for 40 marks as given below

INDUSTRY/ INSTITUTE

1	Attitude	10 marks
2	Punctuality	
3	Behavior	
4	Involvement	10 marks
5	Performance (completion of assigned work)	20 marks
6	Contribution to the industry	20 marks
	Total	60 marks

COURSE TEACHER

1	Diary /Record	10 marks
2	Weekly report	10 marks
3	Viva –voce	20 marks
	Total	40 marks

KALINGA UNIVERSITY
RAIPUR | INDIA

3RD SEMESTER
ENVIRONMENTAL STUDIES
(BVFEM301)

OBJECTIVE:

- To learn the importance in conservation of environment and natural resources.
- To learn causes, effects and control measures of environmental pollution.
- To understand the concepts of disaster management and preparedness to overcome

UNIT– I : Natural Resources : Introduction to Environment and natural resources (Definition, scope and important) – Forest Resources: Use and over-exploitation of forest resources and its impact on forest and tribal people – Water Resources: Use and over- exploitation of water and impact – Land Resources: Land degradation and soil – erosion, desertification – Food Resources: Effects of modern agriculture, fertilizer- pesticide problems – Energy Resources: Growing energy needs renewable and non- renewable energy source-use of alternative energy sources.

UNIT– II: Ecosystem and Biodiversity: Concept of an ecosystem – Structure and function of an ecosystem – Energy flow in the ecosystem - Food chains, food webs and ecological pyramids – Types of ecosystem – Biodiversity: genetic, species and ecosystem diversity, India as a mega – diversity nation – Treats to biodiversity : habit loss, poaching of wild life, man-wildlife conflicts; Endangered and endemic species of India – Conservation of Biodiversity: In-situ and Ex-situ conservation of biodiversity.

UNIT– III: Environmental Pollution: Causes, effects and control measure of: Air pollution, Water pollution, Soil pollution, Noise pollution and nuclear hazards, Solid waste management, Global environmental problems.

UNIT– IV: Social Issues and the Environment : Sustainable development, Rural Urban problems related to environment, Water management and rain water harvesting – Environment ethics: Issues and possible solutions, Environmental Protection Policy, Acts and Legislation, Population and the Environment – Environmental and Population concern: Environment and human health, Environment education at various levels – HIV/AIDS, Women and child welfare, gender issues, gender equity, institutions for gender studies / research.

UNIT– V: Disaster Management: Disaster: Meaning and concepts, types, causes and management – Effects of disaster on community, economy, environment – Disaster management cycle: early response, rehabilitation, reconstruction and preparedness – Vulnerability Analysis and role of community in Disaster Mitigation – The Disaster Management Act 2005 – Disaster Management Authority : National, State and District level – Ill effects of fireworks.

REFERENCES

1. A text book of Environmental Studies, 2006, Asthana, D.K., Meera Asthana, S.Chand & Company Ltd., New Delhi.
2. Environmental Studies, 2005, Benny Joseph, Tata Macgraw – Hill Publishing Company, New Delhi
3. A text book of Environmental Studies, 2005, Erach Bharueha, UGC, University Press, New Delhi.
4. Panchayats in Disaster: Preparedness and Management, 2009, Palanithurai, G., Concepts Publishing company.
5. A text book of Environmental Studies, 2003, Thangamani and Shyamala, Pranav Syndicate, Publication Division, Sivakasi.

LEARNINNG OUTCOME

- Students able to learn in-situ and ex-situ conservation of bio-diversity
- Students able to learn the control measures of environmental pollution

KALINGA UNIVERSITY
RAIPUR | INDIA

UNIVERSAL HUMAN VALUES (BVFEM302)

OBJECTIVE:

1. To help students distinguish between values and skills, and understand the need, basic guidelines, content and process of value education.

2. To help students initiate a process of dialog within themselves to know what they 'really want to be' in their life and profession.

3. To help students understand the meaning of happiness and prosperity for a human being.

4. To facilitate the students to understand harmony at all the levels of human living, and live accordingly.

5. To facilitate the students in applying the understanding of harmony in existence in their profession and lead an ethical life

UNIT-1

Course Introduction- Need, Basic Guidelines, Content and Process for Value Education Understanding the need, basic guidelines, content and process for Value Education, Self-Exploration–what is it? - its content and process; 'Natural Acceptance' and Experiential Validation- as the mechanism for self exploration, Continuous Happiness and Prosperity- A look at basic Human Aspirations, Right understanding, Relationship and Physical Facilities- the basic requirements for fulfillment of aspirations of every human being with their correct priority, Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario, Method to fulfill the above human aspirations: understanding and living in harmony at various levels.

UNIT-2

Understanding Harmony in the Human Being- Harmony in Myself Understanding human being as a co-existence of the sentient 'I' and the material 'Body', Understanding the needs of Self ('I') and 'Body' - Sukh and Suvidha, Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer), Understanding the characteristics and activities of 'I' and harmony in 'I', Understanding the harmony of I with the Body: Sanyam and Swasthya; correct appraisal of Physical needs, meaning of Prosperity in detail, Programs to ensure Sanyam and Swasthya.

UNIT-3

Understanding Harmony in the Family and Society- Harmony in Human-Human Relationship Understanding harmony in the Family- the basic unit of human interaction, Understanding values in human-human relationship; meaning of Nyaya and program for its fulfillment to ensure Ubhay-tripti; Trust (Vishwas) and Respect (Samman) as the foundational values of relationship, Understanding the meaning of Vishwas; Difference between intention and competence, Understanding the meaning of Samman, Difference between respect and differentiation; the other salient values in relationship, Understanding the harmony in the society (society being an extension of family): Samadhan, Samridhi, Abhay, Sah-astitva as comprehensive Human Goals, Visualizing a universal harmonious order in society- Undivided Society (AkhandSamaj), Universal Order (SarvabhaumVyawastha)- from family to world family!.

UNIT-4

Understanding Harmony in the Nature and Existence- Whole existence so-existence Understanding the harmony in the Nature, Interconnectedness and mutual fulfillment among the four orders of nature- recyclability and self-regulation in nature, Understanding Existence as Co-existence (Sah-astitva) of mutually interacting units in all-pervasive space, Holistic perception of harmony at all levels of existence.

UNIT-5

Implications of the above Holistic Understanding of Harmony on Professional Ethics Natural acceptance of human values, Definitiveness of Ethical Human Conduct, Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order, Competence in Professional Ethics: a) Ability to utilize the professional competence for augmenting universal human order, b) Ability to identify the scope and characteristics of people-friendly and eco-friendly production systems, technologies and management models, Case studies of typical holistic technologies, management models and production systems, Strategy for transition from the present state to Universal Human Order: a) At the level of individual: as socially and ecologically responsible engineers, technologists and managers, b) At the level of society: as mutually enriching institutions and organizations.

Course Outcome:

On completion of this course, the students will be able to

1. Understand the significance of value inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content and process of value education, explore the meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society.

2. Distinguish between the Self and the Body, understand the meaning of Harmony in the Self the Co-existence of Self and Body.

3. Understand the value of harmonious relationship based on trust, respect and other naturally acceptable feelings in human human relationships and explore their role in ensuring a harmonious society.

4. Understand the harmony in nature and existence, and work out their mutually fulfilling participation in the nature.

5. Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.

Text Books:

1. R R Gaur, R Sangal, G P Bagaria, 2009, A Foundation Course in Human Values and Professional Ethics.

References:

1. Ivan Illich, 1974, Energy & Equity, The Trinity Press, Worcester, and Harper Collins, USA

2. E.F. Schumacher, 1973, Small is Beautiful: a study of economics as if people mattered, Blond & Briggs, Britain.

3. Sussan George, 1976, How the Other Half Dies, Penguin Press. Reprinted 1986, 1991

4. Donella H. Meadows, Dennis L. Meadows, Jorgen Randers, William W. Behrens III, 1972, Limits to Growth – Club of Rome's report, Universe Books.

5. A Nagraj, 1998, Jeevan Vidya Ek Parichay, Divya Path Sansthan, Amarkantak.

6. P L Dhar, RR Gaur, 1990, Science and Humanism, Commonwealth Publishers.

7. A N Tripathy, 2003, Human Values, New Age International Publishers.

8. SubhasPalekar, 2000, How to practice Natural Farming, Pracheen (Vaidik) KrishiTantraShodh, Amravati.

9. E G Seebauer & Robert L. Berry, 2000, Fundamentals of Ethics for Scientists & Engineers , Oxford University Press.

10. M Govindrajran, S Natrajan & V.S. Senthil Kumar, Engineering Ethics (including Human Values), Eastern Economy Edition, Prentice Hall of India Ltd.

11. B P Banerjee, 2005, Foundations of Ethics and Management, Excel Books.

12. B L Bajpai, 2004, Indian Ethos and Modern Management, New Royal

Book Co., Lucknow. Reprinted 2008.

Mode of Evaluation:

Assignment/ Seminar/Continuous Assessment Test/Semester End Exam

1. R R Gaur, R Sangal, G P Bagaria, 2009, A Foundation Course in Human Values and Professional Ethics.

KALINGA UNIVERSITY
RAIPUR | INDIA

WORKSHOP CALCULATION & SCIENCE – III (BVFEM303)

OBJECTIVE:

- To learn the principles of lever, moments, torque and gear, velocity, acceleration, speed, force, mass, work done, vehicle dynamics and balancing of rotating components.

UNIT – I: Levers and moments : Data interpretation - Allegations or Mixture, torque and gears - definition of Levers, Principles of leverage- The principle of moments. The bell crank lever, a practical application of the bell crank lever in vehicle. Axle loadings, a steering mechanism as a machine

UNIT – II: Friction : Definition of friction, Coefficient of friction, Static friction, Sliding friction; Making use of friction – Clutch- Torque & power transmitted by a plate clutch and Example calculation, Belt drive- Torque & power transmitted by a belt drive and Example calculation, speed ratio of belt drive.

UNIT-III: Materials- Stress, strain: Definition of Stress, Types of Stress-Tensile, Compressive, Shear. Examples of the three basic stresses in automotive components, Calculation of Stress and Strain in automotive application, Stress raisers, Strain-, Tensile, Compressive, Shear stress, Tensile strength, Factor of Safety, Torsional stress, Strain energy.

UNIT-IV: Force, mass and acceleration: Newton's laws of motion, Relation between mass and weight. Inertia, Motion under gravity, Angular (circular) motion, Equations of angular motion Relation between angular and linear velocity, Centripetal acceleration, Accelerating torque- Vehicle dynamics -Load transfer under acceleration, Static reactions, Vehicle under acceleration, Definition of tractive effort, Tractive resistance- Rolling resistance, air resistance, gradiant resistance, Inertia. Power required to propel vehicle, Forces on a vehicle on a gradient – gradient resistance, Grade ability, Vehicle power on a gradient, Vehicle on a curved track, Overturning speed, Skidding speed

UNIT-V: Balancing and vibrations: Balance of rotating masses acting in the same plane (coplanar). Engine balance, Simple harmonic motion (SHM), Applications of SHM- Vibration of a helical coil spring, Torsional vibration, Free vibrations, Example of free vibrations, Forced vibrations- Resonance, Driveline vibrations, Damping, Vibration dampers, Dual mass flywheel, Cams.

REFERENCES

1. Properties of Matter, 2006, D.S.Mathur, Shyam Lal Charitable Trust, New Delhi

2. Vibration and Waves in Physics, 1995, Iain G Main, Cambridge University Press

LEARNING OUTCOME

- Student will understand benefits of lever, moments, torque and gear, velocity, acceleration, speed, force, mass, work done, vehicle dynamics and balancing of rotating components.

KALINGA UNIVERSITY
RAIPUR | INDIA

ENGINEERING DRAWING – III (BVFEM304)

OBJECTIVE:

- To acquire knowledge about the free hand sketching of farm machineries.
- To simulate the shape and size of the components proportionately to the original

UNIT – I: Free hand sketching of tractor and power tiller and their components

UNIT – II: Free hand sketching of different tillage implements and their components

UNIT – III: Free hand sketching of rotavator, harrows, cultivators and their components

UNIT - IV: Free hand sketching of seed drills and seed planters and their components.

UNIT - V: Free hand sketching of weeders, bund former, ridger and their components.

REFERENCES

1. K.V. Natarajan, 2006 A text book of engineering graphics, Dhanalakshmi Publishers, Chennai.
2. M.B. Shah and B.C. Rana, 2005, Engineering drawing, Pearson education.
3. N.D. Bhatt, 2003, Engineering Drawing, Chaotar publishing house 46th edition.
4. K.R. Gopalakrishnan,1998, Engineering Drawing (Vol. I & II) Subhas Publications
5. Luzadder and Duff, 2001, Fundamentals of Engineering Drawing Prentice Hall of India Pvt Ltd XI edition
6. K. Venugopal, 2002, Engineering graphics, New Age International(p) Limited.

LEARNING OUTCOME

- The student will be able to understand the shape and size of the components of the tractor, power tiller, tillage implements, rotavator, harrows, cultivator, seed drills, weeders, bund former and ridger

OPERATION AND MAINTENANCE OF TILLAGE MACHINERIES (BVFEM305)

OBJECTIVE:

- To identify suitable farm implement based on soil and crop conditions.
- To learn field adjustments for achieving proper ploughing

UNIT-I: Mould board plough and Chisel plough UNIT- II: Disc plough and Reversible disc plough

UNIT- III: Rotavator

UNIT- IV: Cultivator and Five Bottom plough

UNIT- V: Offset Disc Harrow

REFERENCES

1. Repair, Maintenance and Field Operation of Tillage Equipments, March 2011, Sector: Agriculture. For Modular Employable skills developed by National Instructional Media Institute, DGET, Ministry of Labour & Employment, Government of India, Chennai.

2. Ojha, T.P and A.M.Michael 2005. Principles of Agricultural Engineering VOL I. Jain Brothers, New Delhi. ISBN: 978-8186321638

3. Fundamentals of Agricultural Engineering, 2012, Er. Sanjay Kumar, Er. Vishal Kumar, Dr. Ram Kumar Sahu Published by Kalyani Publishers, Chennai, ISBN: 978-93-272-2168-8

LEARNING OUTCOME

- Student will be able to gain skill to identify suitable farm implement based on soil, moisture and crop conditions
- Student will acquire skill for adjusting the plough, harrows to reach the maximum output

KALINGA UNIVERSITY
RAIPUR | INDIA

OPERATION AND MAINTENANCE OF SOIL FORMING AND LAND SHAPING EQUIPMENT'S (BVFEM306)

OBJECTIVE:

- To acquire skills in operation of soil forming and land shaping equipment's.
- To learn field adjustments and maintenance of equipment's

UNIT-I Earth Moving Equipment's: Leveler, Laser Leveler, Terracer, Dumper, Wheel dozer and Chain dozer

UNIT- II Ridger and Bund Former

UNIT- III Bed former and Posthole digger

UNIT- IV Plastic mulching equipment

UNIT- V Wet land equipment's- Peddler, Trampler and cage wheel

REFERENCES

1. Repair, Maintenance & Field Operation of Land Shaping and Development Machinery, March 2011, Sector: Agriculture for Modular Employable Skills, Developed by National Instructional Media Institute, Directorate General of Employment & Training, Ministry of Labour & Employment, Government of India, Chennai.

2. Repair, Maintenance & Field Operation of Soil Farming Equipment's, March 2011, Sector: Agriculture for Modular Employable Skills, Developed by National Instructional Media Institute, Directorate General of Employment & Training, Ministry of Labour & Employment, Government of India, Chennai.

3. Fundamentals of Agricultural Engineering, 2012, Er. Sanjay Kumar, Er. Vishal Kumar, Dr. Ram Kumar Sahu, Published by Kalyani Publishers, Chennai ISBN: 978-93-272- 2168-8

4. Ojha, T.P and A.M.Michael 2005. Principles of Agricutural Engineering VOL I. Jain Brothers, New Delhi. ISBN: 978-8186321638

LEARINIG OUTCOME

- Student will gain skill in operation of soil forming and land shaping machineries
- Student become expert in adjustments and maintenance of machine to reach highest efficiency

KALINGA UNIVERSITY
RAIPUR | INDIA

REPAIR & OVERHAULING OF TRACTOR ENGINE (BVFEM307)

OBJECTIVE:

- To learn the importance of servicing of tractor engine.
- To acquire skills in engine overhauling.
- To identify faults in engine and its remedies

UNIT- I Servicing of tractor

UNIT- II Dismantling and assembling of engine components

UNIT- III Radiator

UNIT- IV Air cleaner and fuel feed pump UNIT- V Fuel injection pump

REFERENCES

1. Mechanic Tractor, February 2016 Sector : Automobile, Common for Mechanic Tractor / Mechanic Agriculture Machinery, Trade: Practical, Developed by National Instructional Media Institute, Directorate General of Employment & Training, Ministry of Labour & Employment, Government of India, Chennai.

2. Repair & Maintenance of Radiator, March 2011, Sector : Agriculture for Modular Employable Skills, Developed by National Instructional Media Institute, Directorate General of Employment & Training, Ministry of Labour & Employment, Government of India, Chennai.

3. Repair & Overhauling of Tractor, October 2011, Sector : Agriculture for Modular Employable Skills, Developed by National Instructional Media Institute, Directorate General of Employment & Training, Ministry of Labour & Employment, Government of India, Chennai.

4. Basic Tractor Servicing, March 2011, Sector : Agriculture for Modular Employable Skills, Developed by National Instructional Media Institute, Directorate General of Employment & Training, Ministry of Labour & Employment, Government of India, Chennai.

5. Automobile engineering, 2006, Vol.2; Published by A.K.Jain, Standard Publishers Distributors, 1705-B, Nai Sarak, Delhi – 110 006, ISBN: 81-86308-01-6

6. A Text Book of Tractor at a glance (A unique book of farm power), 2007, Er. Sanjay Kumar, Published by International Book Distributing Co., Lucknow 226 001 UP, ISBN: 81-8185-185-6

LEARNING OUTCOME

- Student will know importance of servicing of tractor and acquire skills in engine overhauling
- Student will be able to identify the faults in engine and its remedies

KALINGA UNIVERSITY
RAIPUR | INDIA

IN PLANT TRAINING – III (BVFEM308P)

OBJECTIVE:

To learn skills for specific job role from relevant Industry / Institution.

Students have to undergo four weeks training in any Agricultural Machinery Manufacturing Industry / Training Institutes to acquire relevant skills. The inplant training may be organized continuously for four weeks or more than one spell within a semester as per the convenience of the Industry/Institutes. During their stay in the industry, they have to maintain a diary on daily basis to record the work assigned, outcome of the work and it has to be countersigned by the student's incharge. In addition, he/she has to submit weekly report to the department. During the inplant training period, the Industry / Institute partner will evaluate their performance for 60 marks and the concerned course teacher for 40 marks as given below

INDUSTRY/ INSTITUTE

1	Attitude	10 marks
2	Punctuality	
3	Behavior	
4	Involvement	10 marks
5	Performance (completion of assigned work)	20 marks
6	Contribution to the industry	20 marks
	Total	60 marks

COURSE TEACHER

1	Diary /Record	10 marks
2	Weekly report	10 marks
3	Viva –voce	20 marks
	Total	40 marks

KALINGA UNIVERSITY
RAIPUR | INDIA

4TH SEMESTER
INTERNET AND WEB TECHNOLOGY
(BVFEM401)

OBJECTIVE:

- To enable the students with the knowledge of Network, Internet and its applications.
- To make the students to be familiar with multimedia tools

UNIT- I: Information Technology : Information Technology introduction; Information systems and its components; Types of information systems; IT in business and industries; Application areas of IT- Education, Training, CAD and CAM; Application areas of IT- Entertainment, arts and science; GPS(Global positioning system)- Working method and its applications

UNIT- II: Communication Technology : Network basics and its terminologies introduction; Advantages of networks; Types of networks- LAN, MAN and WAN structure and its working principle; Network topologies- Bus, Star, Ring, Tree and Mesh; Communication channels- twisted pair, co-axial and fiber optics; Internetworking devices- bridges, routers and its gateways

UNIT- III: Internet : Internet basics and Internet terminologies; Applications of Internet- e-mail; Applications of Internet- Usenet, telnet, e-commerce; Applications of Internet- World Wide Web, Video Conferencing; Voice over internet protocol introduction, working principles and advantages; New internet technologies- cloud computing, virtualization, social network, web surf on any device, software defined radio and other technologies

UNIT- IV: Multimedia : Multimedia basics; Paint and draw applications of Multimedia basics and its applications; Various graphics effects and techniques and its varations; Sound and music and video tool of multimedia, various compression techniques; Multimedia authoring tools types; Various devices used in delivering multimedia; Role of multimedia in web designing

UNIT- V: Personal, Social and Ethical Issues : Personal, Social and Ethical Issue- computers and operator health; Viruses- worms- malware- anti-virus; Computer crime basics, types of crimes, security techniques; Cryptography- importance, techniques.

REFERENCES

1. Introduction to Information Technology, ITL education solution limited, Pearson Education India, New Delhi, July 2011

2. Fundamentals of Information Technology, 2/e, Alexis leon and Mathew leon, Vikas publication, New Delhi, 2009

3. Internet for everyone, 2/e, 2/e, Alexis leon and Mathew leon, Vikas publication, New Delhi, 2011

LEARNING OUTCOME

- At the end of this exercise students shall be able to identify the knowledge of Network, Internet and its applications.
- To make the students to be familiar with multimedia tools

KALINGA UNIVERSITY
RAIPUR | INDIA

SOFT SKILLS AND PERSONALITY ENHANCEMENT (BVFEM402)

OBJECTIVE:

UNIT- I:

(I) Team Building – The magic of synergy, characteristics of an effective team, essentials of an effective team, Team Dynamics, Team Leading, Managing a Team. (II) Art of Negotiation –To understand what is negotiation, Ways of negotiating and being successful in it, To understand the power of language and non-verbal communication.

(III) Grooming –To learn selection of proper attire as per the place, Practiced perception, How to carry one's self, How to project one's self in the positive frame and spirit.

UNIT- II:

(I) Organizing Meetings – How to announce, call and organize a meeting in a smooth manner, How to design Agenda and prepare Minutes of Meeting

(II) Telephonic Etiquettes –Learn the tone and pitch of voice while speaking over phone, How to send a voice mail.

(III) Business Etiquettes –What does business etiquettes mean, Professional and Cultural expectations, Effective writing, Corporate Communication, Interaction with foreign clients.

UNIT- III:

(I) Stress Management –Types of stress, Symptoms and causes of Stress, Power of perception, Reaction to stress, Stress Management techniques.

(II) Time Management – Importance of Time Management, Prioritizing Tasks, Goal setting, Barriers to Time Management , Planning Routine and Time Tables.

(III) Self Management –Self evaluation, Self discipline, Self criticism, SWOT analysis, Self Awareness, Development of the Self.

UNIT- IV:

(I) Presentation Skills –How to prepare a presentation, Knowing the audience and their requirements, Effective ways to deliver presentation, How to prepare Multimedia presentation.

(II) Organizational Skills – How to understand the nature and structure of organization, To understand hierarchy and communication channel of the organization, Clarity about the roles and responsibilities in an organization, How to be a team member, How to draft reports

(III) Leadership Skills

UNIT- V:

(I) Group Discussion – Understanding the nature of discussion, Difference between debate and discussion, Ways to form and present arguments, Ways to defend your point.

(II) Personal Interview –To learn the skills of appearing in an interview and being successful in it.

(III) Public Speaking – Art of public speaking, To know the rhetoric of making a public speech, exploring rhetorical elements through various ideas..

(IV) Conference and Meeting, Participation and Technical clarity in conference and meeting, Learning to listen and respond, Final Report drafting.

Reference Books:-

1. Soft Skill for everyone –Jeff Butterfield
2. Soft Skill for-S.I. Hariharan -MJP Publications
3. Personality Development & Soft skill – Goyal Brothers Prakasan

KALINGA UNIVERSITY
RAIPUR | INDIA

WORKSHOP CALCULATION & SCIENCE – IV (BVFEM403)

OBJECTIVE:

- To learn electrical principle, ohms law, measurement of current and voltage, resistance, temperature, relays, capacitors, electronic principles, light emitting diodes, transistors and refrigeration.

UNIT-I : The binary system- Most significant bit (MSB), Hexadecimal, Converting base 10 numbers to binary 10, Uses of binary numbers in vehicle. Electrical principles-Electrical current, Atoms and electrons, conductors and insulators,- Conductors, Semiconductors, Insulators, Electromotive force, Electrical power sources- producing electricity- Chemical power source, Magnetic power source, Thermal power resource, Effects of electric current- using electricity. Electrical circuits- Circuit principles, A simple circuit, Direction of current flow, Electrical units- Volt, Ampere, Ohm, Watt; Ohm's law, Resistors in series, Resistors in parallel, Alternative method of finding total current in a circuit, containing resistors in parallel, Measuring current and voltage, Ohmmeter, Open circuit, Short circuit.

UNIT- II : Temperature coefficient of resistance- Negative temperature coefficient; Electricity and magnetism- Permanent magnets, The magnetic effect of an electric current, Direction of the magnetic field due to an electric current in a straight conductor, Magnetic field caused by a coil of wire. Solenoid and relay, Electromagnetic induction, The electric motor effect, Fleming's rule, Alternating current- Cycle, Period, Frequency; Applications of alternating current, Transformer.

UNIT- III: Capacitors- Capacitance, Capacitors in circuits- Contact breaker ignition circuit, Capacitive discharge ignition system, Capacitors in parallel and series, Impedance. Electronic principles- Introduction, Semiconductors- Effect of dopants, Electrons and holes, The p-n junction, Bias, Behaviour of a p-n junction diode, Diode protection resistor, Negative temperature coefficient of resistance- semiconductor, The Zener diode.

UNIT- IV : Light Emitting Diode (LED)- Voltage and current in an LED, Photodiode, Bipolar transistors, Basic operation of transistor, Current gain in transistor, Current flow in transistors; Transistor circuit used in automotive applications- Voltage amplifier, Darlington pair, Heat sink.

UNIT- V : Filter circuits, Voltage divider, Integrated circuits, Sensors and actuators, Control unit (computer) inputs and outputs, Logic gates- The RTL NOR gate, Truth tables, Bits, bytes and baud. Properties of refrigerants, refrigerant oil, Fluorinated refrigerants, Refrigeration process- pressure/ enthalpy diagram

REFERENCES

1. Digital Principles and Applications, Leach and Malvind, Seventh Edition, Tata McGraw Hill

2. Basic Electronics for Scientist, fourth edition, Brophy J.J., McGraw Hill.

3. Electricity and Magnetism, Seghal, Chopra, Seghal, S. Chand & Co.

LEARNING OUTCOME

- Student will learn electrical principle, ohms law, measurement of current and voltage, resistance, temperature, relays, capacitors, electronic principles, light emitting diodes, transistors and refrigeration.

KALINGA UNIVERSITY
RAIPUR | INDIA

ENGINEERING DRAWING-IV (BVFEM404)

OBJECTIVE:

- To learn AutoCAD for drawing farm machineries.
- To design new or improvements in the farm machineries by using AutoCAD

UNIT- I : Introduction to AutoCAD, Starting AutoCAD, Exercises using Draw commands as- Line, Polygon, Rectangle, Circle, Ellipse. Exercise on using Edit commands as Erase, Copy, Mirror, Offset, Extend, Array, Move, Rotate, Scale, Trim, Chamfer, Fillet.

UNIT-II : Exercises on using X, Y, Z, coordinate entry system for Angular measurement, Absolute coordinate, Relative coordinate, Polar coordinate. Exercises on using Drawing Aids- grid and snap, ortho and polar tracking, Polar Snap, running object snaps, the From snap, and object snap tracking. Exercises on using Osnap commands as Endpoint, Intersection, Nearest, Midpoint, Tangent and Center. Exercises on using Layers as Create new layer, Assign layer color, Assign layer line type.

UNIT-III : Exercises on using dimensions- Styling Dimensions, Adding Dimensions, Using Inquiry Commands, Adding Dimension Objects, Adding and Styling Multileaders, Editing Dimensions. Exercises on using Creating and Editing Text- Creating Text Styles, Writing Lines of Text, Creating Text to Fit, Justifying Text, Transforming and Creating Text, Editing Text

UNIT-IV : Exercises on using Zoom Commands- Zoom real time, Zoom window, Zoom previous, Zoom all, Pan real-time. Exercises on using Hatching and Gradients- Specifying Hatch Areas, Picking Points to Determine Boundaries, Selecting Objects to Define Boundaries, Associating Hatches with Boundaries, Hatching with Patterns, Specifying Properties, Separating Hatch Areas, Hatching with Gradients.

UNIT-V : Exercises on using Printing and plotting- Configuring Output Devices, Setting Up a System Printer, Setting Up an AutoCAD Plotter, Plotting in Model space, Plotting Layouts in Paper space, Exporting to an Electronic Format. Introduction to Modeling- type of modeling- 2D wire frame, 3D wire frame, surface modeling, solid modeling. Exercises on using 3D primitives, Extrude, Revolve command, subtract, union 3D drawing by using User co-ordinate systems. Working drawing of Combine Harvester Using CAD.

REFERENCES

1. Venugopal.K. 2002, Engineering drawing and graphics with Auto CAD, New age International (p)Ltd., publishers, New Delhi – 110 002.
2. Natarajan,K.V. 1999, A text book on Engineering Drawing + Auto CAD, Dhanalakshmi Publications, Chennai.
3. Jaypoovan,T. 2001, Engineering Drawing with Auto CAD 2000, Vikas Publishing House Pvt. Ltd.,New Delhi – 110 014.
4. Narayana, K.N. and Kannaiah,P. 2000, Textbook on Engineering Drawing, Scitech Publications, Chennai – 600 017.

LEARNING OUTCOME

- Student will be able to operate AutoCAD software and can design new implements, new components in the farm machinery and also design improvements in the farm machinery by using AutoCAD

KALINGA UNIVERSITY
RAIPUR | INDIA

OPERATION AND MAINTENANCE OF SOWING AND WEEDING EQUIPMENT'S (BVFEM405)

OBJECTIVE:

- To learn skills in handling of different types of seed planters and trans planters.
- To practice on field adjustments.
- To operate different types of weeders in field conditions

UNIT - I: Manually operated seed drill- Dibbler, Broad casting devices, Direct paddy seeder

UNIT - II: Power tiller drawn seed planter

UNIT - III: Tractor drawn seed planter, Broad bed furrow cum seeder, vegetable planter

UNIT-IV: Trans planter- Manually operated rice trans planter and self propelled rice trans planter- Mat nursery, Pro-tray Seeder, Automatic Pro-tray seeder

UNIT- V: Manually operated- Dry land weeders, Cono weeder and Power weeder.

REFERENCES

1. Repair, Maintenance & Field Operation of Seed Drills, March 2011, Sector : Agriculture for Modular Employable Skills, Developed by National Instructional Media Institute, Directorate General of Employment & Training, Ministry of Labour & Employment, Government of India, Chennai

2. Repair, Maintenance & Field Operation of Planters and Transplanter, May 2011, Sector : Agriculture for Modular Employable Skills, Developed by National Instructional Media Institute, Directorate General of Employment & Training, Ministry of Labour & Employment, Government of India, Chennai.

3. Fundamentals of Agricultural Engineering, 2012, Er. Sanjay Kumar, Er. Vishal Kumar, Dr. Ram Kumar Sahu, Published by Kalyani Publishers, Chennai ISBN: 978-93-272-2168-8

LEARNING OUTCOME

- Student will acquire skill in handling of different types of seedling, planter, trans planter and practice on field adjustments and operates different types of weeders in field conditions

KALINGA UNIVERSITY
RAIPUR | INDIA

OPERATION AND MAINTENANCE OF PLANT PROTECTION EQUIPMENT'S (BVFEM406)

OBJECTIVE:

- To learn different types of sprayers and dusters and its application in field conditions.
- To identify the repairs and its remedies.
- To practice on field adjustments

UNIT – I: Lever operated Knapsack sprayer, Foot sprayer, Foot rocker sprayer

UNIT- II: Battery operated Knapsack sprayer, Hand sprayer, Hand held ULV sprayer

UNIT- III: Power sprayer, Power duster, Hand rotary duster

UNIT- IV: High volume sprayer, Unimobile sprayer, Avenger ULV sprayer UNIT- V :Tractor operated Tall tree sprayer

REFERENCES

1. Repair & Maintenance of Spraying and Dusting Equipments, March 2011, Sector : Agriculture for Modular Employable Skills, Developed by National Instructional Media Institute, Directorate General of Employment & Training, Ministry of Labour & Employment, Government of India, Chennai

2. Fundamentals of Agricultural Engineering, 2012, Er. Sanjay Kumar, Er. Vishal Kumar, Dr. Ram Kumar Sahu, Published by Kalyani Publishers, Chennai ISBN: 978-93-272- 2168-8

3. A Text Book of Farm Machinery, April 2015, Dr. T. Senthilkumar, Dr. R. Kavitha Dr. V. M. Duraisamy, Published by Thannambikkai publication, Coimbatore, ISBN: 978-93- 81102-30-5

LEARNING OUTCOME

- Student acquire skill in operation and maintenance of different types of sprayers and dusters and its application in field conditions
- Student identify the repair and remedies of the sprayer and duster
- Student become expert in the operation and field adjustments of these machines

KALINGA UNIVERSITY
RAIPUR | INDIA

REPAIR AND OVERHAULING OF TRACTOR TRANSMISSION SYSTEM & CONTROLS (BVFEM407)

OBJECTIVE:

- To learn overhauling of tractor transmission systems.
- To identify the defects in transmission system and its remedies

UNIT- I : Clutch

UNIT- II : Gear box

UNIT- III : Differential

UNIT- IV: Rear axle

UNIT- V : Steering box

REFERENCES

1. Basic of Transmission, Suspension, Steering System & Brakes, January 2014, Sector : Automobile for Centres of Excellence, Developed by National Instructional Media Institute, Directorate General of Employment & Training, Ministry of Labour & Employment, Government of India, Chennai.

2. Repair & Overhauling of Chassis System (Heavy Vehicle), March 2010, Sector : Automotive Repair for Modular Employable Skills, Developed by National Instructional Media Institute, Directorate General of Employment & Training, Ministry of Labour & Employment, Government of India, Chennai.

3. A Text Book of Farm Machinery, April 2015, Dr. T. Senthilkumar, Dr. R. Kavitha Dr. V. M. Duraisamy, Published by Thannambikkai publication, Coimbatore, ISBN: 978-93- 81102-30-5

4. A Text Book of Tractor at a glance (A unique book of farm power), 2007, Er. Sanjay Kumar, Published by International Book Distributing Co., Lucknow 226 001 UP, ISBN: 81-8185-185-6

LEARNING OUTCOME

- Student become expert in overhauling in tractor transmission system and can identify the defects in the tractor transmission system and also rectify the same

KALINGA UNIVERSITY
RAIPUR | INDIA

IN PLANT TRAINING – IV (BVFEM408P)

OBJECTIVE:

To learn skills for specific job role from relevant Industry / Institution.

Students have to undergo four weeks training in any Agricultural Machinery Manufacturing Industry / Training Institutes to acquire relevant skills. The inplant training may be organized continuously for four weeks or more than one spell within a semester as per the convenience of the Industry/Institutes. During their stay in the industry, they have to maintain a diary on daily basis to record the work assigned, outcome of the work and it has to be countersigned by the student's incharge. In addition, he/she has to submit weekly report to the department. During the inplant training period, the Industry / Institute partner will evaluate their performance for 60 marks and the concerned course teacher for 40 marks as given below

INDUSTRY/ INSTITUTE

1	Attitude	10 marks
2	Punctuality	
3	Behavior	
4	Involvement	10 marks
5	Performance (completion of assigned work)	20 marks
6	Contribution to the industry	20 marks
	Total	60 marks

COURSE TEACHER

1	Diary /Record	10 marks
2	Weekly report	10 marks
3	Viva –voce	20 marks
	Total	40 marks

KALINGA UNIVERSITY
RAIPUR | INDIA

5TH SEM
ENTREPRENEURSHIP DEVELOPMENT
(BVFEM501)

OBJECTIVE:

- To expose the students about the scope for identifying and establishing enterprises in their locality.

UNIT – I: Introduction to Entrepreneurship: Definition – concept – industrial small entrepreneurship – meaning – Important – Significance and Scope – characteristics of entrepreneur – Factors influence rural entrepreneurial development.

UNIT – II: Industries for Small Entrepreneurs : General study of cottage and Small Scale Industries – Enterprise Management – Need and Important – Women Entrepreneurship development through SHG – Entrepreneurial Competencies.

UNIT – III: Registration & Financing : Identification of opportunities – choice of product – preparation of feasibility – Report – Registration and License – Financial assistance Nationalized banks – State financial corporation – DIC – KVIB – KVIC – NSIC, SIDBI,NABARD, SMAM and NHB – Incentives and Government support from Ministry of Agriculture, GoI.

UNIT – IV: Entrepreneurial Development: Approaches to Entrepreneurship Development – EDP–Issues–Entrepreneurial Training - Methods and Institutions offers Entrepreneurial Training – Market Survey – Model Project Report.

UNIT – V: Regularity Laws : Central Excise – Income Tax – Sales tax – Licensing Authority – Export and Import Regulatory Acts.

REFERENCES:

1. Women Entrepreneurship: Opportunities, Performance, Problems, 2002, Dhumija, S.K., published by Deep and Deep publications, New Delhi.
2. Entrepreneurial Development, 2005, Khanka, S.S., published by S. Chand & Co. publications, New Delhi.
3. Training for Entrepreneurship and Self Employment, 1999, Malli, D.D, published by Mittal publications, New Delhi.
4. Empowerment of Women through Entrepreneurship, 2008, Rathakrishnan L, Gyan Publishing House, New Delhi. 464.
5. Entrepreneurship and Small Business Management, 2003, Shukla, Published by Kitab Mahal publications, Agra.
6. Small – scale Industry and Entrepreneurship,2003, Vasanth Desai, Himalaya Publishing House, Mumbai.

LEARNING OUTCOME

- Students will learn the procedure for starting an enterprises and its feasibility in given situation.

KALINGA UNIVERSITY
RAIPUR | INDIA

FOOD PROCESSING (BVFEM502)

OBJECTIVE:

- To learn the operation of machineries used for making value added products.
- To understand the process, nutritive and market value of the value added products.

UNIT – I: Importance and scope of food processing- cereals, millets and pulses- introduction- processing methods- puffing- popping- flaking- malting

UNIT- II: Convenience foods- ready to use- extruder foods- bakery products- cakes- biscuits and bread

UNIT- III: Milk and milk product- processing of milk products- ice cream- panner- kulabjamun

UNIT- IV : Principles and methods of fruit and vegetable preservation- fruit and vegetable products- jam, jelly, beverages, pickles- drying and dehydration- Ripening chamber and cold storage- packaging- principles in the development of protective packaging

UNIT- V : Food safety standards- introduction-Food Safety and Standards Act- eight laws, The Food and Drug Administration, Fruit Product Order, Bureau of Indian Standards, Prevention of Food Adulteration Act, Fair Average Quality , Hazard Analysis and Critical Control Point, ISO 22000, AGMARK, FSSAI-entrepreneurship-marketing- project preparation-cost economics.

REFERENCES

1. Fundamentals of Agricultural Engineering, 2012, Er. Sanjay Kumar, Er. Vishal Kumar, Dr. Ram Kumar Sahu, Published by Kalyani Publishers, Chennai ISBN: 978-93-272- 2168-8
2. Bakers Handbook on Practical Baking, 1994, US wheat Associate, New Delhi
3. Post Harvest Technology of cereals and pulses, 1991, Chakravarthy,A and O.S.De, Oxford and IBH Publ.Co., New Delhi.
4. Presentation of Fruits and Vegetables, 1995 Giritharilal and G.S.Sighappa, published by publication and Information Division. ICAR New Delhi.
5. Food Processing, 1993, Pothy,V.H. and M.J.Mulky, Oxford and IBH Publ.Co., New Delhi.
6. Fruits and Vegetables preservation, 1998, Srivastava,R.P. and Sanjeev Kumar, International Book Distributing Co.Lucknow.
7. Outlines of Dairy Technology, 1980, Sukumar,De, Oxford University Press, Delhi.

LEARNING OUTCOME

- Students able to procure raw materials, operate the machineries for making value added products
- Assess nutritional value and scope of marketing

KALINGA UNIVERSITY
RAIPUR | INDIA

OCCUPATIONAL SAFETY AND HEALTH EDUCATION (BVFEM503)

OBJECTIVE:

- To learn safety precautions in handling farm equipment's.
- To learn first aid methods and practice it on and off the field

UNIT – I : Safety & Health : Introduction to Safety Management, Safety Policy under Factories 1948 Act, Dangerous Machineries Act, Safety Committee, Safety Review, Responsibility of Management, Safety Officers Duties & Responsibilities, Safety Targets, Objectives, Standards, Practices and Performances. Motivation & Communication as part of Safety Programme

UNIT – II: Occupational Hazards : Basics Hazards, Chemical Hazards, Vibroacoustic Hazards, Mechanical Hazards, Electrical Hazards, Thermal Hazards. Occupational health, Occupational hygienic, Occupational Diseases/Disorders & its prevention

UNIT-III : Accident & Safety : Need for Personal Protection Equipment, Selection, Use, Care & Maintenance of Respiratory and Non-respiratory Personal Protective Equipment, Non- respiratory Protective Devices of the operator, Accident Insurance Schemes

UNIT-IV: First Aid : Burns, Fractures, Toxic Ingestion, Bleeding, Wounds and Bandaging, Artificial Respiration, Techniques of Resuscitation.

UNIT-V: Safety Health Practices : Health – Cleanness, Disposal of Waste , Ventilation and Temperatures, Dust & Fumes, Drinking Water, Lighting, Latrines & urinals. Safety - Fencing of machineries, Work on or near machinery in motion, Hoists and lifts, Pressure plants, Floors, Stairs and means of escape, Protection against fumes & gases, Safety offers. Welfare - Washing facilities in Dry clothing, Storing, Sitting, First Aid Appliances, Canteen, Shelters for rest & lunch, Crèches, Welfare offers, Right & Obligation of workers.

REFERENCES

1. Preventive and Social Medicine, Published by Benarus Publication, 23rd Edison, Author: Parle & Parle
2. First Aid, Published by Jaypee Publication – 2nd Edison, Author: Ahuja

LEARNING OUTCOME

- Students able to follow the safety guidelines while handling farm equipment's.
- Students able to handle first- aid methods to safeguard the injured person.

KALINGA UNIVERSITY
RAIPUR | INDIA

OPERATION & MAINTENANCE OF POWER TILLER (BVFEM504)

OBJECTIVE:

- To acquire skills in operation and maintenance of power tiller.
- To learn adjustments in engine and transmission system

UNIT – I : Familiarizing the tools for maintaining the power tiller- Identifying the different system of power tiller

UNIT – II : Dismantling and assembling of the power tiller engine- Overhauling, dismantling and assembling of main clutch of power tiller- Overhauling of steering clutch and brake of the power tiller

UNIT – III: Adjustment of clutch assembly- Adjustment of transmission system

UNIT – IV: Dismantling, checking, repairing and assembling of rotavator- Replacement of tynes of the tiller

UNIT – V: Periodical maintenance of the power tiller-Preventive maintenance of the power tiller- Important brake down maintenances- Field operations of the power tiller and its attachments

REFERENCES

1. Repair, Maintenance & Operation of Power Tiller, March 2011 Sector : Agriculture for Modular Employable Skills, Developed by National Instructional Media Institute, Directorate General of Employment & Training, Ministry of Labour & Employment, Government of India, Chennai.

2. Mechanic Tractor, February 2016 Sector : Automobile, Common for Mechanic Tractor / Mechanic Agriculture Machinery, Trade: Practical, Developed by National Instructional Media Institute, Directorate General of Employment & Training, Ministry of Labour & Employment, Government of India, Chennai.

3. Practical Agricultural Engineering, 1993, R K Ghosh & S Swain, Naya proksah publications, Kolkata, ISBN: 81-85421-15-3

LEARNING OUTCOME

- Student become expert in the operation and maintenance of power tiller
- Student can be expert in the adjustments of the engine and transmission system of the power tiller

SERVICING OF AUTO ELECTRICAL & ELECTRONIC SYSTEM (BVFEM505)

OBJECTIVE:

- To learn electrical and electronic systems used in tractor.
- To service the electrical system in tractor

UNIT – I: Locating electrical parts, system and controls of the tractor- Making different joints on simple strapped conductors- Sieving, insulating the conductors- Measuring the gauge of the conductors- Soldering the wire joints

UNIT – II: Making serious and parallel connections and circuits- Connecting the voltmeter and ammeter- Checking the fuse box, wires short circuited and identification of starting system wiring and marking on terminal joints- Study of circuit breakers, relays and construction of simple circuit using relay

UNIT – III: Testing of alternator output voltage, circuit voltage drop and trouble shooting in charging system- Dismantling and assembling of alternator and trouble shooting of alternator

UNIT – IV: Dismantling and assembling of starter motor- Replacement of brushes and commutator- Checking up of spark plug, head light, ignition coil and condenser

UNIT – V: Battery servicing- Study of rectifiers, diodes and charging systems- Study on sensors, electronic control assembly, engine scanners and different wiring systems

REFERENCES

1. Repair & Overhauling of Auto Electrical & Electronic System, March 2010, Sector : Automotive Repair for Modular Employable Skills, Developed by National Instructional Media Institute, Directorate General of Employment & Training, Ministry of Labour & Employment, Government of India, Chennai.

2. Mechanical Technology in Agriculture, 2005, Donald M. Johnson, Joe Harper, David E. Lawver, Philip, Buriak, Published by International Book Distributing Co., Lucknow 226 001 UP, ISBN: 81-8189-081-7

3. Mechanic Tractor, February 2016, Sector : Automobile, Common for Mechanic Tractor/ Mechanic Agriculture Machinery, Trade Practical, Developed by National Instructional Media Institute, Directorate General of Employment & Training, Ministry of Labour & Employment, Government of India, Chennai.

LEARNING OUTCOME

- The students acquire skill to identify the repairs in electrical and electronics system used in the tractor and service the alternator and starting motor of the tractor.

KALINGA UNIVERSITY
RAIPUR | INDIA

MAINTENANCE & SERVICING OF HYDRAULIC SYSTEM IN TRACTOR (BVFEM506)

OBJECTIVE:

- Familiarizing with field operation of hydraulic system. Identifying trouble shooting of hydraulic system and its solutions

UNIT – I: Identify the tools needed for maintenance of hydraulic system; Constructional details of hydraulic system; Types of pumps and valves used in hydraulic system

UNIT – II: Dismantling and assembling of hydraulic system; Check, repair, replace and adjustments of hydraulic system

UNIT – III: Constructional details of draft control, positional control and mixed control; Practice on changing the drive mechanism of hydraulic system

UNIT – IV: Describe the components of three point linkage; Practice on hitch agriculture equipment's with three point linkage; Identification of the faults and remedies of three point hitch system

UNIT – V: Practice on field operation, care and maintenance of hydraulic system; Trouble shooting of hydraulic system-Problem, causes and solution

REFERENCES

1. Repair & Overhauling of Hydraulic System, October 2011, Sector: Agriculture for Modular Employable Skills, Developed by National Instructional Media Institute, Directorate General of Employment & Training, Ministry of Labour & Employment, Government of India, Chennai

2. A Text Book of Tractor at a glance (A unique book of farm power), 2007, Er. Sanjay Kumar, Published by International Book Distributing Co., Lucknow 226 001 UP,ISBN: 81-8185-185-6

3. Mechanical Technology in Agriculture, 2005, Donald M. Johnson, Joe Harper, David E. Lawver, Philip, Buriak, Published by International Book Distributing Co., Lucknow 226 001 UP, ISBN: 81-8189-081-7

LEARNING OUTCOME

- Student become expert in the identification of repair and maintenance of the hydraulic system of the tractor

KALINGA UNIVERSITY
RAIPUR | INDIA

MAINTENANCE OF BATTERIES AND WHEELS (BVFEM507)

OBJECTIVE:

- Identify the various tyre defects and its solutions
- Care and maintenance of tyres and tubes. To learn battery servicing and testing

UNIT – I: Identify the tools needed for maintenance of tyres and tubes; Identify the types and components of wheels and tyres; Remove wheel from tractor, dismantle and assemble tyre from wheel; Refit the wheel on the tractor

UNIT – II: Maintain the tyres and tubes; Maintain the tyres by vulcanizing method; Maintain the tyre by cold patch and hot patch; Practice on the tyre rotation, check and inflate correct tyre pressure; Tighten the wheel nut in a sequence, Ballasting of Wheels

UNIT – III: Adjust wheel track; Identify the various tyre defects- wear on edges, wear at centre, wear on spots, uniform wear all around, wear on inner edge, wear on outer edge; Practice on the maintenance of tyres, Trailer wheel with power assisted brake

UNIT – IV: Identify and measure voltage of Dry cells/ Battery; Identify the parts of a battery charger and test for its operation; Charge a Secondary Battery

UNIT – V: Maintain service and trouble shoot a battery charger; Form a DC source 6V/ 500mA using 1.5 V cells; Maintenance of Lead- Acid Batteries; Battery Servicing and Testing.

REFERENCES

1. Repair and Maintenance of Tyres and Tubes, March 2011, Sector: Agriculture. For Modular Employable Skills, NIMI Publications, Chennai

2. Maintenance of Batteries, May 2013, Sector: Electrical. For Modular Employable Skills, NIMI Publications, Chennai

3. Automobile engineering, 2006, Vol.2; Dr. Kirpal Singh, Published by A.K.Jain, Standard Publishers Distributors, 1705-B, Nai Sarak, Delhi, ISBN: 81-86308-01-6

4. A Text Book of Tractor at a glance (A unique book of farm power), 2007, Er. Sanjay Kumar, Published by International Book Distributing Co., Lucknow 226 001 UP, ISBN: 81-8185-185-6

LEARNING OUTCOME

- Student will be able to identify the various repairs in the battery, tyres and tubes and able to rectify the same

KALINGA UNIVERSITY
RAIPUR | INDIA

IN PLANT TRAINING – V (BVFEM508P)

OBJECTIVE:

To learn skills for specific job role from relevant Industry / Institution.

Students have to undergo four weeks training in any Agricultural Machinery Manufacturing Industry / Training Institutes to acquire relevant skills. The in-plant training may be organized continuously for four weeks or more than one spell within a semester as per the convenience of the Industry/Institutes. During their stay in the industry, they have to maintain a diary on daily basis to record the work assigned, outcome of the work and it has to be countersigned by the student's in-charge. In addition, he/she has to submit weekly report to the department. During the in-plant training period, the Industry / Institute partner will evaluate their performance for 60 marks and the concerned course teacher for 40 marks as given below

INDUSTRY/ INSTITUTE

1	Attitude	10 marks
2	Punctuality	
3	Behavior	
4	Involvement	10 marks
5	Performance (completion of assigned work)	20 marks
6	Contribution to the industry	20 marks
	Total	60 marks

COURSE TEACHER

1	Diary /Record	10 marks
2	Weekly report	10 marks
3	Viva–voce	20 marks
	Total	40 marks

KALINGA UNIVERSITY
RAIPUR | INDIA

6TH SEM
AGRIBUSINESS AND PROJECT MANAGEMENT
(BVFEM601)

OBJECTIVE:

- To identify Agriculture Business and to draw plans to reach the objectives and to manage the staff.

UNIT- I: Introduction to Management and evolution of management thoughts : Management - Definition - Importance of Management - Management Thought and Process - Significance of Management - Nature of Management functions - Management Roles - Functions at various levels of Management - Management skills in organizing business.

UNIT- II: Agribusiness Management : Agribusiness - Definition - Evolution of Agribusiness - Agribusiness status in developed and developing nations. Special features of Agribusiness - Scope for Agribusiness in India. Government Promotional Programmes in Agribusiness. Classification of Enterprises - Micro, Small, Medium and Large. Forms of Business Organization - Sole Proprietorship - Partnership - Private and Public Limited.

UNIT- III: Project Characteristics : Meaning and definition of project - Types and characteristics of project - Project Life Cycle - Phases in Project Management. Agencies involved in Developing Agri. Projects - NABARD, Cooperative Banks, DIC and Commercial banks, National Institutes and Project incubation Centers.

UNIT- IV: Project Formulations : Project formulation - Methods - Feasibility analysis, Techno economic analysis - Project design and feasibility report for Agribusiness. Role of government and entrepreneur in project formulation.

UNIT- V: Project Appraisal : Objective of Appraisal; Appraisal of feasibility report and project report - appraisal of project funds and social cost benefits. SWOT analysis.

REFERENCES

1. Goel B.B., Project Management - A Development Perspective, Deep or Deep Publishers, New Delhi.
2. Gary R.Heerkens, Project Management, Tata McGraw Hill, New Delhi.
3. S.K.Kapur, Principles and Practice of Management, S.K. Publishers, New Delhi, 2004.
4. Heinz Weihrich and Harold Koontz., Management: A Global Perspective, McGraw Hill, New York, 2006.

LEARNING OUTCOME

- Student can identify Agriculture Business and to draw plans to reach the objectives and to manage the staff.

KALINGA UNIVERSITY
RAIPUR | INDIA

MILLET PROCESSING AND CROP RESIDUE MANAGEMENT EQUIPMENT'S (BVFEM602)

OBJECTIVE:

- To study the engineering properties of millets
- To learn the millet processing equipment operation and maintenance
- To study crop residue management equipment's

UNIT- I: Engineering properties of millets

UNIT- II: Drying, Dehusking of millets

UNIT- III: Rubber roller Sheller and polishers.

UNIT- IV: Destoner, Grader and Pulveriser.

UNIT- V: Shredder, Baler and chaff cutter.

REFERENCES

1. Directory of Rural Technologies, Vol.1, Farm & Post-harvest Equipment, 1986, Published by Council for Advancement of Rural Technology, New Delhi

2. Principles of Agricultural Processing, 1994, P.H.Pandey, Published by Kalyani Publishers, New Delhi

3. Bankable Post Harvest Equipment developed in India, 1986, R P Kachru, P K Srivastava, B S Bisht & T P Ojha, Published by CIAE, ICAR-Bhopal

LEARNING OUTCOME

- Students able to study the engineering properties of millets
- Students able to learn the millet processing equipment operation and maintenance
- Students able to study crop residue management equipment's

CUSTOM HIRING OF AGRICULTURE MACHINERY (BVFEM603)

OBJECTIVE:

- To study different types of custom hiring.
- To learn the procedure for obtaining loan / subsidy.
- To learn bank account maintenance

UNIT- I: Primary criteria of tractor selection size of land holding and type of operation, working time available, type of soil, type of implement, horse power requirements to operate the implement; Secondary criteria – running cost, after sales and repair facilities.

UNIT- II: Custom hiring – definition, types of custom hiring, advantages and disadvantages of custom hiring; Rental – definition, difference between rental and custom hiring, types of rental programme – pure and rollover; Leasing- definition, merits.

UNIT- III: Cash purchase and credit purchase – merits & demerits; Procedure for obtaining loan / subsidy – eligibility, quantum of loan, margin, cost of machinery repayment and interest; Norms for financing of tractors - acreage, insurance, selection of tractors and security.

UNIT- IV: Log book and history sheet – important and use, maintenance; cost of utilizing the machine – Fixed cost – depreciation, interest, tax, housing and insurance, variable cost– cost of fuel, oil, repair and maintenance and driver wages;

UNIT- V: Survey on farmer's field – detail of field / crop available for engaging tractor on custom hiring basis; off season storage of tractor and agricultural machinery bank account maintenance.

REFERENCES

Custom Hiring of Agriculture Machinery, March 2011, Sector: Agriculture for Modular Employable Skills, Published by National Instructional Media Institute, Directorate General of Employment & Training, Ministry of Labor and Employment, Government of India, Chennai.

LEARNING OUTCOME

- Student will be able to study different types of custom hiring. To learn the procedure for obtaining loan / subsidy and to learn bank account maintenance

OPERATION AND MAINTENANCE OF CROP HARVESTERS (BVFEM604)

OBJECTIVE:

- To learn the operation and maintenance of different root crop harvesting machineries

UNIT- I: Potato Digger

UNIT- II: Groundnut Digger

UNIT- III: Turmeric Digger

UNIT- IV: Sugarcane Harvester

UNIT- V: Maize Harvester

REFERENCES

1. Repair, Maintenance & Field Operation of Root Harvesting Equipments, March 2011, Sector : Agriculture for Modular Employable Skills, Developed by National Instructional Media Institute, Directorate General of Employment & Training, Ministry of Labour & Employment, Government of India, Chennai.

2. Farm Machinery and Equipment, Smith, Wilkes, Tata McGraw Hill.

3. Fundamentals of Agricultural Engineering, 2012, Er. Sanjay Kumar, Er. Vishal Kumar, Dr. Ram Kumar Sahu Published by Kalyani Publishers, Chennai, ISBN: 978-93-272-2168-8

4. Performance Evaluation of Sugarcane Harvesters, 2002, Technical Report No. CIAE/AMD/NATP/2002/272, CIAE, ICAR-Bhopal

LEARNING OUTCOME

- Student able to operate and maintain the different types of root crop harvesting machineries

OPERATION & MAINTENANCE OF COMBINE HARVESTER (BVFEM605)

OBJECTIVE:

- To learn field operation and maintenance of combine harvester
- To study the types of losses and their remedies

UNIT- I: Identify the tools needed for maintenance of combine harvester; Classification of combine harvester- pull type harvesting combines, pull type with auxiliary engine and self-propelled harvesting combine; Different systems of combine harvester; Advantages and disadvantages of combine harvester

UNIT- II: Constructional details of combine harvester- Dismantling and assembling the combine harvester; Check and repair cutter bar, feeder, thresher, straw walker, sieves, blower and augers

UNIT- III: Practice on checking the drive mechanism of combine harvester and replace thresher cylinder for Paddy/ Maize and adjustments.

UNIT- IV: Adjust cutter bar, feeder, thresher, straw walker blower and augers; Practice on the field operation of combine harvester for Paddy/ Maize harvesting and assess losses and remedies

UNIT- V: Identify the faults and remedies of combine harvester and set the precaution while handling in field; Practice on the maintenance and storage of combine harvester.

REFERENCES

1. Repair, Maintenance & Field Operation of Combine Harvester, March 2011, Sector : Agriculture for Modular Employable Skills, Developed by National Instructional Media Institute, Directorate General of Employment & Training, Ministry of Labour & Employment, Government of India, Chennai

2. Farm Machinery and Equipment, Smith, Wilkes, Tata McGraw Hill.

3. Practical Agricultural Engineering, 1993, R K Ghosh & S Swain, Naya Prokash publications, Kolkata, ISBN: 81-85421-15-3

4. Performance Evaluation of Sugarcane Harvesters, 2002, Technical Report No. CIAE/AMD/NATP/2002/272, CIAE, ICAR-Bhopal

LEARNING OUTCOME

- Student learn to operate and maintain the combine harvester in the field condition and also they learn to identify the different losses during harvest and able to rectify the same.

KALINGA UNIVERSITY
RAIPUR | INDIA

OPERATION AND MAINTENANCE OF POST HARVESTING EQUIPMENT'S (BVFEM606)

OBJECTIVE:

- To learn the operation and maintenance of selected post harvesting machineries.
- To learn the adjustments needed for effective functioning of the machineries

UNIT- I: Paddy thresher, Paddy winnower, Multicrop thresher

UNIT- II: Groundnut thresher, Pulse thresher, Mini dhal mill

UNIT- III: Arecanut dehusker, Castor Sheller, maize Sheller, Sunflower seed Sheller

UNIT- IV: Seed cleaner cum grader, Groundnut grader, Potato grader

UNIT- V: Rectangular metal bin drier, Solar Tunnel Drier, Solar cabinet drier, Agricultural waste fired furnace drier

REFERENCES

1. Repair, Maintenance & Operation of Post harvesting Equipment's, March 2011, Sector : Agriculture for Modular Employable Skills, Developed by National Instructional Media Institute, Directorate General of Employment & Training, Ministry of Labour & Employment, Government of India, Chennai.

2. Directory of Rural Technologies, Vol.1, Farm & Post-harvest Equipment, 1986, Published by Council for Advancement of Rural Technology, New Delhi

3. Principles of Agricultural Processing, 1994, P.H.Pandey, Published by Kalyani Publishers, New Delhi

4. Bankable Post Harvest Equipment developed in India, 1986, R P Kachru, P K Srivastava, B S Bisht & T P Ojha, Published by CIAE, ICAR-Bhopal

LEARNING OUTCOME

- Student will able to learn the operation and maintenance of selected post harvesting machineries.
- To learn the adjustments needed for effective functioning of the machineries

PROJECT WORK (BVFEM607P)

The project work will be in one of the following themes:

i. A new innovation or critical study related to the technology or development dimensions envisaged by the course

ii. Preparation of an innovative enterprise for one's future career

iii. Carrying out a regional development/employment development project planning exercise within the spirit of the course

iv. Finding out a innovative project with analysis suitable for the specific area.

Project work will be carried out by a group of students, minimum 2 and maximum 5 out of 100 marks, the evaluation of 60 marks will be awarded by project guide based on students performance during project period and 40 marks will be awarded jointly by project guide and course coordinator based on final viva and students project presentation.

RAIPUR|INDIA

KALINGA UNIVERSITY

KALINGA UNIVERSITY, KOTNI , NEAR MANTRALAYA, NAYA RAIPUR - 492101, CHHATTISGARH

CALL: 9907252100