

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

Name of Program:	Bachelor of Technology		
Branch:	Agricultural Engineering	Semester:	VI
Subject:	Tractor Systems and Controls	Code:	C094611(094)
Total Theory Periods:	40	Total Tutorial Periods:	Ten(Minimum)
Class Tests:	Two(Minimum)	Assignments:	2(Minimum)
ESE Duration:	Three Hours	Maximum Marks:100	Minimum Marks:35

Course Objectives:

- 1. To understand basic concepts of Study of transmission systems, clutches
- 2. To understand the concepts of Familiarization of brake mechanism,
- 3. To learn about Tractor power outlets, Tractor chassis mechanics and design for tractor stability
- 4. Be familiar with the concepts of Ergonomic considerations and operational safety
- 5. To understand the concepts of Importance of balancing front and rear attached machinery

UNIT I:	Study of transmission systems, clutches: functioning, parts and design problem on clutch system, Gear box: different types of gear box, calculation of speed ratios, design problems on gear box, study on differential and final drive and planetary gears, Differential and final drive mechanism.
UNIT II	Familiarization of brake mechanism, Design problems. Steering geometry and adjustments Ackerman and hydraulic steering and hydraulic systems.
UNIT III	Tractor power outlets: P.T.O., belt pulley, drawbar, etc. Tractor chassis mechanics and design for tractor stability. Methods of finding CG of the tractor, Methods for finding moment of inertia of the tractor.
UNIT IV	Ergonomic considerations and operational safety. Importance of anthropometric requirements in design. Power Tiller: Construction and working, Power transmission system.
UNITV	Balancing of front and rear attached machinery. Importance of balancing, Techniques in balancing.

Text Books:

1. Barger, E.L., Liledahl, J.B., Carleton, W.M. and Mckibben, E.G. (1978). Tractor and their power units. Wiley Eastern pvt. Ltd, New York.
2. RadheyLal and Datta, A.C. (1978). Problems in Agricultural Engineering. Sathya Prakashan, Allahabad.

Reference Books:

1. Mehta, M.L, Verma, S.R. Misra, S.K., and Sharma, V.K.(1995). Testing and evaluation of Agricultural Machinery. National Agricultural Technology Information Centre, Ludhiana

Course Outcomes:

1. Students are able to understand the concepts of functioning, parts and design problem on clutch system, Gear box
2. Students should be able to understand brake mechanism, Steering geometry and adjustments Ackerman & hydraulic steering and hydraulic systems.
3. Students can explain Methods of finding CG of the tractor, Methods for finding moment of inertia of the tractor.
4. Students should be able to develop the Importance of anthropometric requirements in design, Power Tiller.
5. Students can understand the concepts balancing of front and rear attached machinery Techniques in balancing.

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

Name of Program:	Bachelor of Technology		
Branch:	Agricultural Engineering	Semester:	VI
Subject:	Agricultural Structures and Environment Control	Code:	C094612(094)
Total Theory Periods:	40	Total Tutorial Periods:	Ten(Minimum)
Class Tests:	Two(Minimum)	Assignments:	2(Minimum)
ESE Duration:	Three Hours	Maximum Marks:100	Minimum Marks:35

Course Objective:

1. To understand basic concepts of Planning and layout of farmstead
2. To understand the concepts of BIS. Standards for dairy, piggery, poultry and other farm structures
3. To learn about Engineering for rural living and development
4. Be familiar with the Design of septic tank
5. To understand the concepts of BOD and COD of food plant waste

UNIT I:	Planning and layout of farmstead. Physiological reactions of livestock to solar radiation and other environmental factors, livestock production facilities.
UNIT II	BIS. Standards for dairy, piggery, poultry and other farm structures. Design, construction and cost estimation of farm structures; animal shelters, compost pit, fodder silo, fencing and implement sheds, barn for cows, buffalo, poultry, etc.
UNIT III	Engineering for rural living and development, rural roads, farm fencing, their construction cost and repair and maintenance.
UNIT IV	Design of septic tank for small family. Solid waste management system.
UNIT V	BOD and COD of food plant waste, primary and secondary treatment of food plant waste.

Text Books:

1. Albright, L.D.(1996). Environmental control for Animals and Plants. ASAE, Michigan, USA.
2. Clark, J.A. (1980). Environmental Aspects of Housing for Animal Production. Butter worths, London.
3. Goel, J.K. (2002). Energy and Environment of Buildings & Farms, Saroj Prakashan, Alabhabad.

Reference Books:

1. Maton, A et al. (1986). Housing of Animals- Developments in Agrl.Engg. Elsevier Science Publishing Co. Inc.
2. Michael and Ohja (2002). Principles of Agricultural Engineering (Vol. 1). Jain Brothers, New Delhi.

Course Outcome:

1. Students are able to understand the concepts of physiological reactions of livestock to solar radiation and other environmental factors, livestock production facilities.
2. Students should be able to design, construction and cost estimation of farm structures; animal shelters, compost pit, fodder silo.
3. Students can design a septic tank for small family
4. Students should be able to learn primary and secondary treatment of food plant waste

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

Name of Program:	Bachelor of Technology		
Branch:	Agricultural Engineering	Semester:	VI
Subject:	Machine Design	Code:	C094613(037)
Total Theory Periods:	40	Total Tutorial Periods:	Ten(Minimum)
Class Tests:	Two(Minimum)	Assignments:	2(Minimum)
ESE Duration:	Three Hours	Maximum Marks:100	Minimum Marks:35

Course Objective:

- To choose proper materials to different machine elements depending on their physical and mechanical properties.
- To design and analyze basic elements of machine e.g. key, shaft and axle.
- To design and analyze various type of joints for members with axial load
- To design and analyze couplings and clutches for members in torsion
- To design and analyze threaded fastener and power screws
- To design and analyze riveted and welded joint

s

UNIT I	Principle of design, Phases of design, design considerations. Common engineering Materials and their mechanical properties.
UNIT II	Types of loads and stresses, theories of failure, factor of safety, selection of allowable Stress. Stress concentration. Elementary fatigue and creep aspects.
UNIT III	Design of Cotter joints, knuckle joint and Design of welded subjected to static loads, Design of shafts under torsion and combined bending and torsion, Design of keys, Design of muff, sleeve and rigid flange couplings.
UNIT IV	Design of helical and leaf springs, Design of flat belt and V-belt drives and pulleys.
UNIT V	Design of gears, Design of spur and helical gears, Design of screw motion mechanism like screw jack, lead screw. Antifriction bearing.

Text Books:

1. Design of Machine Elements- V.B.Bhandari - TMH, New Delhi
2. Mechanical Engineering Design - Shigley – McGraw Hill, Delhi
3. Machine Design by Dr. Sadhu Singh

Reference books:

1. Theory of mechanism and machine – A. Ghosh, A.K. Mallik –EWP Press.
2. Machine Design - Movnin – MIR Publishers, Moscow
3. Machine Design - Fundamental & Application – Gope –PHI, New Delhi
4. Machine Design - Sharma & Agrawal – Katson, New Delhi
5. Principles of Mechanical Design - R. Phelan – McGraw Hill, New Delhi.
6. Machine Design – Sundaraja moorthy & Shanmugum– Anuradha Agencies, Chennai

Course Outcome:

After studying the contents of the syllabus in detail the students will be able to

- Apply knowledge of machine design for understanding, formulating and solving engineering problems.
- Acquire knowledge and hands-on competence in applying the concepts in the design and development of mechanical systems.
- Demonstrate creativeness in designing new systems components and processes in the field of engineering in general and mechanical engineering in particular.
- Identify, analyze, and solve mechanical engineering problems useful to the society.
- Work effectively with engineering and science teams as well as with multidisciplinary designs.

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

Name of Program:	Bachelor of Technology		
Branch:	Agricultural Engineering	Semester:	VI
Subject:	Database Management And Internet Lab	Code:	C094621(037)
Total Lab Periods:	48	Batch Size	30
Maximum Marks	40	Minimum	20

List of Experiments: (At least eight experiments are to be performed by each student)

1. Creating a table, data base, inserting, and manipulation.
2. Programming using select statement.
3. Programming using in and between operators.
4. Programming using like operators.
5. Programming using sub queries.
6. Group by clause. Programming using aggregate function sum, min, max.
7. Order by clause.
8. Set operators.
9. Internet applications.
10. Tools required-tags, attributes.
11. Formatting-text, heading, paragraph.
12. Designing a web page-background color, marquee, adding, images, and sound

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

Name of Program:	Bachelor of Technology		
Branch:	Agricultural Engineering	Semester:	VI
Subject:	Tractor Systems and Controls Lab	Code:	C094622(037)
Total Lab Periods:	48	Batch Size	30
Maximum Marks	40	Minimum	20

List of Experiments: (At least eight experiments are to be performed by each student)

1. Introduction to transmission systems and components
2. Study of clutch functioning, parts and design problem on clutch system
3. Study of different types of gear box,
4. Calculation of speed ratios, design problems on gear box;
5. Study on differential and final drive and planetary gears;
6. Study of brake systems and some design problems;
7. Steering geometry and adjustments;
8. Study of hydraulic systems in a tractor,
9. Hydraulic trailer and some design problems;
- 10 Traction performance of a tractor wheel;
11. Finding C.G. of a tractor by weighing technique;
12. Finding CG of a tractor using suspension/balancing techniques;
13. Finding moment of Inertia of a tractor;
14. Appraisal of various controls in different makes tractors in relation to anthropometric measurements.

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

Name of Program:	Bachelor of Technology		
Branch:	Agricultural Engineering	Semester:	VI
Subject:	Agriculture structures and environmental control Lab	Code:	C094623(037)
Total Lab Periods:	48	Batch Size	30
Maximum Marks	40	Minimum	20

List of Experiments: (At least eight experiments are to be performed by each student)

1. Reflective and Non-reflective air space in buildings. Cooling load of farm building e.g. poultry house.
Moisture condensation in agriculture building
2. Instruments for measurement of environmental parameters. Environmental indices for your city
3. Design and layout of a dairy farm
4. Design and layout of a dairy house
5. Design and layout of a sheep/goat house
6. Design of a Bio Gas Plant
7. Design of a farm fencing system
8. Familiarization with local grain storage structures
9. Design of grain storage structures
10. Cost estimation of farm building

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

Name of Program:	Bachelor of Technology		
Branch:	Agricultural Engineering	Semester:	VI
Subject:	Tractors and Farm Machinery Lab	Code:	C094624(037)
Total Lab Periods:	48	Batch Size	30
Maximum Marks	40	Minimum	20

List of Experiments: *(At least eight experiments are to be performed by each student)*

1. Introduction to various systems of a tractor viz. fuel, lubrication, cooling, electrical, transmission, hydraulic and final drive system.
2. Familiarization with tractor controls and learning procedure of tractor starting and stopping.
3. Hitching, adjustments, settings and field operation of farm machinery.
4. Familiarization with different makes and models of 4 – wheeled tractors.
5. Starting and stopping practice of the tractor and familiarization with instrumentation panel and controls.
6. Road signs, traffic rules, road safety, driving & parking of tractor.
7. Tractor driving – forward & reverse driving practice.
8. Tractor driving practice with two wheeled tractor trailer forward & reverse.
9. Study and practicing the hitching and de – hitching of implements.
10. Study operation and field adjustments of M.B. plough & disk plough.
11. Field operation of trailing & mounted disk harrow.
12. Field operation and adjustments of seed drill/planter/sprayer.
13. Familiarization with tools and equipment used for maintaining and servicing of tractors and farm machines.
14. Maintenance after 10, 50, 100, 250, 500 and 1000 hours of operation, adjustment of tractor track.
15. Dismantling and assembling of major engine parts.
16. Visit to tractor/ engine repair workshop, injection pump injector repair shop.
17. Doing minor repair of electric, mechanical and hydraulic system.
18. Adjustment and maintenance of seeding and planting and transplanting machines.
19. Adjustment and maintenance of reapers and threshers.
20. Adjustment and maintenance of combine harvesters, straw combines, balers etc.
21. Visit to small scale farm machinery manufacturers and their repair shops, seasonal repair of farm machinery.

Professional Elective – II

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

Name of Program:	Bachelor of Technology		
Branch:	Agricultural Engineering	Semester:	VI
Subject:	Design and maintenance of greenhouse	Code:	C094631(094)
Total Theory Periods:	40	Total Tutorial Periods:	Ten(Minimum)
Class Tests:	Two(Minimum)	Assignments:	2(Minimum)
ESE Duration:	Three Hours	Maximum Marks:100	Minimum Marks:35

Course Objective:

1. To educate the student about the concept of green house
2. To educate the student about concept of design criteria of construction method
3. To educate the student about concept of solar heat transfer, environmental Control Systems.
4. To educate the student about cropping systems

UNIT I:	History and types of greenhouses; importance, function and features of green house; scope and development of greenhouse technology
UNIT II	Location, Planning and various component of greenhouse; design criteria and calculation; constructional material and methods of construction; covering materials and its characteristics.
UNIT III	Solar heat transfer, solar fraction for green house, steady state analysis of green house, Greenhouse heating, cooling, shedding and ventilation systems.
UNIT IV	Carbon Dioxide generation and monitoring and lighting systems, instrumentation & computerized environmental Control Systems. Watering, fertilization, root substrata and its pasteurization, containers and benches, plant nutrition.
UNIT V	Alternative cropping systems; plant tissue culture, chemical growth regulation; disease control; integrated pest management. Postproduction quality and handling Cost analysis of greenhouse production; Applications of green house & its repair & maintenance.

Text books:

1. Manohar, K.R. and Iga Thinathane. C. Green House Technology and Management. B.S. Publications, Hyderabad

Course Outcome:

1. Understand the importance of greenhouse technology.
2. Understand the different method of analysis and design method of construction
3. Understand the procedure of analysis and design of green house and solar fraction of green house
4. Understand the importance of cropping system, environmental control system and analysis of greenhouse production

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

Name of Program:	Bachelor of Technology		
Branch:	Agricultural Engineering	Semester:	VI
Subject:	Quality Control & Total Quality Management	Code:	C094632(094)
Total Theory Periods:	40	Total Tutorial Periods:	Ten(Minimum)
Class Tests:	Two(Minimum)	Assignments:	2(Minimum)
ESE Duration:	Three Hours	Maximum Marks:100	Minimum Marks:35

Course Objective:

1. Define and understand various terms associated with quality control
2. Enhance the students understanding of the complexity of statistical analysis and interpretation.
3. Provide an introduction to the fundamental concept of SPC, total quality management, six sigma, quality function deployment and applications of these concepts.
5. Understanding the philosophies of TQM in order to better evaluate the TQM implementation proposals.
6. Assess exactly where an organization stands on quality management with respect to ISO 9000 quality management

UNIT I	Basic Concept of Quality- Quality and quality control, concept of quality, quality characteristics, Quality of design and quality of conformance ,History of quality control, Quality policy and objectives, Economics of quality. Statistical Concept of Variation- Concept of variation frequency distribution, continuous and discrete, probability distributions viz. Normal, Exponential and Weibull distribution, pattern of variation, significance tests, Analysis of variance, statistical aids in limits and tolerances.
UNIT II	Quality Assurance- Concept, advantages, field complaints, quality rating, quality audit, inspection planning, quality mindness, quality budget, vendor quality rating (VQR), vendor rating (VR), manufacturing planning for quality, Quality function deployment (QFD). Statistical Quality Control- Objectives, Growth and applications of S.Q.C., S.O.C, Techniques in manufacturing planning. Process capability analysis, Control charts for variables and attributes and their analysis, process capability, concept of six sigma.
UNIT III	ACCEPTANCE SAMPLING- Fundamental concept in acceptance sampling, operating characteristics curve. Acceptance plans, single, double and introduction of multiple plans
UNIT IV	Total Quality Management- Total Quality Control (TQC), Concept of Total Quality Management (TQM), TQM philosophies, Deming approach to TQM, Juran ten steps to Quality Management, Taguchi Philosophy, Crosby fourteen steps, TQM models, Tools and techniques of TQM.
UNIT V	Quality system- Quality system, need for quality system, ISO 9000 Quality Management Standards, ISO 9000:2000 requirement, Quality Auditing, ISO 14000, Benefits of ISO 14000.

Text books:

1. Quality Planning and Analysis - Juran & Gryana – McGraw Hill, New York
2. Statistical Quality Control – R.C. Gupta – Khanna Publishers, Delhi

Reference Books

1. Statistical quality control – Grant and Leavenworth – McGraw Hill, New York
2. Engineering Statistics and Quality Control – I. W. Burr- McGraw Hill, New York
3. Managing for Total Quality - Logothetis – PHI Delhi
4. Statistical Quality Control – M. Mahajan – Dhanpat Rai – New Delhi
5. Total Quality Management – Suganthi & Samuel - PHI, Delhi
6. Total Quality Management - Charantimath, Poornima – Pearson, Delhi
7. Total Quality Management – K.C. Arora - S.K. Kataria- New Delhi

Course Outcomes

1. Explain the importance of quality & role of statistical quality control
2. Apply methods and techniques of statistical quality control, to studies and interpret the results in business.
3. Demonstrate motivation and responsibility to advocate for quality in business
4. Develop an understanding on quality management philosophies and frameworks
5. Develop in-depth knowledge on various tools and techniques of quality management

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

Name of Program:	Bachelor of Technology		
Branch:	Agricultural Engineering	Semester:	VI
Subject:	Remote Sensing and GIS Application	Code:	C094633(094)
Total Theory Periods:	40	Total Tutorial Periods:	Ten(Minimum)
Class Tests:	Two(Minimum)	Assignments:	2(Minimum)
ESE Duration:	Three Hours	Maximum Marks:100	Minimum Marks:35

Course Objective:

1. To understand basic concepts of Remote sensing application in Agriculture.
2. To understand the concepts of GIS application in Agriculture
3. To learn about Databases and files
4. Be familiar with the digital image interpretation.
5. To understand the concepts of reservoir planning.

UNIT I	Remote Sensing: Definition, stage in remote sensing, modern remote sensing technology versus conventional aerial photography
UNIT II	Visual image interpretation, image interpretation, basic principles of image interpretation, factors governing the quality of an image; factors governing interpretability, visibility of objects, elements of image interpretation, techniques of image interpretation, digital image processing, digital image;
UNIT III	Remote sensing in agriculture progress and prospects, microwave radiometry for monitoring agriculture crops and hydrologic forecasting; aerial photo interpretation for water resources development and soil conservation survey.
UNIT IV	GIS: History of development of GIS definition, basic components, and standard GIS packages; data-entry, storage and maintenance; data types spatial-non-spatial (attribute data), data structure, data format- point line vector-raster -polygon-object structural model.
UNIT V	Files, files organization-data base management systems (DBMS), entering data in computer digitizer scanner data compression.

Text books:

1. Burrough P.A. 1986. Principles of GIS for Land Resource Assessment. Clarendon Press, Oxford, New York.
2. Chrisman Nicholas. 1997. Exploring Geographic Information Syatems John Wiley and Sons Heywood land Cornelius.
3. Sarah and Carver Steve. 1999. An Introduction to Geographic Information Systems Addison-Wesley-Longman, UK
4. Sabins J.R. 1987. Remote Sensing Principles and Interpretations W.H. Freeman & Co.
5. Shultz, G.A. and Engman E.T. 2000. Remote Sensing in Hydrology and Water Management Springer New York.

Course Outcome:

1. Students shall be able to explain basic concepts of Remote sensing application in Agriculture.
2. Students shall be able to explain the concepts of GIS application in Agriculture
3. Students shall be able to explain about Databases and files
4. Students shall be familiar with the digital image interpretation.

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

Name of Program:	Bachelor of Technology		
Branch:	Agricultural Engineering	Semester:	VI
Subject:	Engineering Economics	Code:	C094634(094)
Total Theory Periods:	40	Total Tutorial Periods:	Ten(Minimum)
Class Tests:	Two(Minimum)	Assignments:	2(Minimum)
ESE Duration:	Three Hours	Maximum Marks:100	Minimum Marks:35

Course Objective:

1. To prepare engineering student to analyze cost/revenue data and carry out economic analyses in the decision making process to justify or reject alternatives/projects on an economic basis.
2. To prepare engineering students to function in the business and management side of professional engineering practice.

UNIT I:	Introduction & Scope: Engineers and Economics, Utility of its study, Managerial Economics, Nature and scope, basic terms and concept of economics like goods, kinds of goods, utility, value and wealth. Theory of Demand and supply, Elasticity of demand. Meaning, Characteristics, Objectives of Firm, Managerial and behavioral theories of a firm.
UNIT II	Pricing and Market Competition: Industrial Establishments, various types of industrial establishments, Sole traders, partnership, joint stock company, types of shares, financial goals of organization. Pricing Perspective approach: Pricing policy and price influencing factors, Basic data for price fixation. Market forms & Competition – Pure and perfect competition, monopoly, monopolistic competition, price determination under perfect and monopolistic competition.
UNIT III	Economy, Monetary & Fiscal Policy: Balance of payments – money and monetary policy, fiscal policy, Inflation, measuring employment and unemployment. Credit policies Concept and measurement of national income. Working Capital, Factors deciding Working capital, Return on investment, Financial Planning.
UNIT IV	Economy, Monetary & Fiscal Policy: Balance of payments – money and monetary policy, fiscal policy, Inflation, measuring employment and unemployment. Credit policies Concept and measurement of national income. Working Capital, Factors deciding Working capital, Return on investment, Financial Planning.
UNIT V	Depreciation & Capital Budgeting: Depreciation and its methods of calculation, marginal costing, break – even analysis, profit planning and forecasting, Capital budgeting, cost of capital, Appraising projects profitability

Text books:

1. Managerial Economics – P.L. Mehta – S. Chand and sons
2. Economics Michael Parkin, Addison Wesley Longman Publication, International Edition.
3. Elementary Economics Theory – K.K. Dewett – S. Chand & Company

Reference Books:

1. Economics – Samuelson, Pauls & W.D. Nordhan – McGraw Hill
2. Advanced Cost Accounting – Nigam, Sharma – Himalaya Publishing House
3. Managerial Economics – Mote and Paul - TMH
4. Macro Economics for management Students – A. Nag - Macmillan India Ltd
5. Cost Accounting – Jain & Narang - Kalyan Publishers
6. Managerial Economics - G.S. Gupta – TMH
7. Engineering Economics – J.L. Riggs, D.D. Bedforth , Randhawa – TMH
8. Essentials of Managerial Economics – Reddy & Ganesh – Himalaya Publishing House
9. Managerial Economics – Joel Dean - PHI.

Course Outcomes:

1. Be able to make intelligent comparisons of project alternatives during the planning and implementation phases.
2. Be able to perform and evaluate present worth, future worth and annual worth analyses on one of more economic alternatives.
3. Be able to perform and evaluate payback period and capitalized cost on one or more economic alternatives.
4. Be able to carry out and evaluate benefit/cost, life cycle and breakeven analyses on one or more economic alternatives

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

Name of Program:	Bachelor of Technology		
Branch:	Agricultural Engineering	Semester:	VI
Subject:	Mechanics of tillage and traction	Code:	C094635(094)
Total Theory Periods:	40	Total Tutorial Periods:	Ten(Minimum)
Class Tests:	Two(Minimum)	Assignments:	2(Minimum)
ESE Duration:	Three Hours	Maximum Marks:100	Minimum Marks:35

Course Objective:

1. To educate the student about the concept of stress and strain relation of soil and tillage tools
2. To educate the student about concept of soil cutting and analysis of soil dynamics.
3. To educate the student about concept of traction.
4. To educate the student about concepts of tyre.

UNIT I:	Introduction to mechanics of tillage tools, engineering properties of soil, principles and concepts, stress strain relationship.
UNIT II	Design of tillage tools principles of soil cutting, design equation, force analysis, application of dimensional analysis in soil dynamics performance of tillage tools.
UNIT III	Introduction to traction and mechanics, off road traction and mobility, traction model, traction improvement, traction prediction.
UNIT IV	Tyre size, tyre lug geometry and their effects, tyre testing, soil compaction and plant growth.
UNIT V	Variability and geo statistic, application of GIS in soil dynamics

Text books:

1. Mc Kyes.E. Agricultural engineering soil mechanics. Elsevier Amsterdam.
2. Milligan, G.M.E and Houlby, G.T. Basic Soil mechanics,. Butter worth scientific London

Course Outcome:

1. Understand the importance of properties and stress relationship of soil
2. Understand the different design principles and analysis of soil cutting, force analysis
3. Understand the different method of traction, traction model
4. Understand the concepts Tyre size, tyre lug geometry and their effects, tyre testing.

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

Name of Program:	Bachelor of Technology		
Branch:	Agricultural Engineering	Semester:	VI
Subject:	Computer Graphics	Code:	C094636(094)
Total Theory Periods:	40	Total Tutorial Periods:	Ten(Minimum)
Class Tests:	Two(Minimum)	Assignments:	2(Minimum)
ESE Duration:	Three Hours	Maximum Marks:100	Minimum Marks:35

Course Objective:

1. To get familiar with Computer input and Output devices
2. To introduce fundamental techniques and methods for two-dimensional and three-dimensional computer graphics.
3. To recognize geometric and graphical elements of engineering design problems
4. To understand the algorithms and models for geometric projections, transformations, coordinate systems, parametric curves, hidden surface determination, color theory, texture mapping, shading and lighting.

UNIT I:	Input and Output Devices: Keyboard, Mouse, Z mouse Trackball, Joysticks, Data Glove, Digitizers, Light pen Touch Panels, Image scanners, Printers and Plotters. Video Display device: Refresh Cathode ray Tubes, Random Scan and Raster Scan monitors, Colour CRT Monitors, Flat panel display: LED and LCD Monitors & plasma display, Direct view Storage Tubes, Continuous Refresh and Storage display.
UNIT II	Output Characteristics: Aspect ratio; Aliasing and Anti-aliasing. Graphic primitives: Points & Lines, Line drawing Algorithm, DDA and Bresenham's Algorithm. Circle Generation Algorithm: Midpoint circle algorithm. Ellipse Generation Algorithm: Mid-point ellipse algorithm. Attributes of primitives: Line style, Type, Width, Color, Character Attributes, Area Filling: Inside-outside test; Fill Algorithm: Scan Line Polygon Fill algorithm, Boundary Fill Algorithm - 4 and 8 connected area; Flood Fill Algorithm.
UNIT III	Analytical & Synthetic curve: C0, C1 & C2 Continuity, Convex hull, Parametric & non Parametric representation of curves. Analytic curves: Parabola, Hyperbola, Splines: linear, quadratic, cubic, hermite, Bezier curves: single and multiple segments, Parametric forms of cubic splines, Synthetic Curves: Circle and ellipse drawing,
UNIT IV	2D Geometric Transformation: Window and View port: Window definitions, View port definitions, Window and View port relationship; World co-ordinates; Normalized device co-ordinates and Homogenous co-ordinates. Basic transformation- Translation, Scaling, Rotation, Reflection, Twist, Matrix Representation, Composite Transformations. 3D Geometric Transformation: Basic Transformations, 3D Display parallel & perspective projection
UNIT V	Viewing: Viewing, Device co-ordination system, Image co-ordination system, Viewing transformation. Clipping: Point clipping, Line clipping, Cohen- Sutherland clipping, Midpoint clipping method, Sutherland and Hodgeman Clipping

Text books:

1. Computer Graphics-Donald hearn and M.Pauline Baker-Prentice Hall of India Pvt Ltd.
2. Introduction to Computer Graphics – N. Krishnamurthy - TMH Publication.

Reference Books:

1. Computer Graphics –Harrington S. – TMH Publication.
2. CAD-CAM Theory and Practice-Ibrahim Zeid- TMH Publication.
3. Xiang and Plastok - Schaum's Outlines Computer Graphics - TMH, 2nd Edition, 2002.
4. Rogers, "Procedural Elements for Computer Graphics – TMH

Course Outcome:

1. Students will learn how to develop interactive programs that use effectively the graphics functionalities available in contemporary
2. personal computers,
3. Students will learn the fundamental principles and technologies upon which these functionalities, and possibly their future
4. evolutions, are based
5. The skills for designing and implementing practical graphic solutions to challenging problems in different application domains.
6. Proficiency in engineering design and ability to conduct an engineering project.
7. Understanding of the business environment & Ability to manage information and documentation.
8. Capacity for creativity and innovation & ability to demonstrate professional attitudes.

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

Program / Semester: B.Tech (VI)	Branch: Humanities
Subject: Technical Communication & Soft Skills	Course Code: C000601(046)
Total Marks (Internal Assessment): 10	L: 0 T:0 P: 2 Credit(s): 0
Internal Assessments to be conducted: 02	Duration (End Semester Exam): NA

UNIT-1 Communication Skills-Basics: Understanding the communicative environment, Verbal Communication; Non Verbal Communication & Cross Cultural Communication, Body Language & Listening Skills; Employment Communication&writing CVs, Cover Letters for correspondence.Common errors during communication, Humour in Communication.

UNIT-2 Interpersonal communication: Presentation, Interaction and Feedbacks, Stage Manners, Group Discussions (GDs) and facing Personal Interviews, Building Relationships, Understanding Group Dynamics- I, Emotional and Social Skills, Groups, Conflicts and their Resolution, Social Network, Media and Extending Our Identities.

UNIT- 3 Vocational skills: Managing time: Planning and Goalsetting, managing stress: Types of Stress; Making best out of Stress, Resilience, Work-life balance, Applying soft-skills to workplace.

UNIT-4 Mindsets and Handling People: Definitions and types of Mindset, Learning Mindset, Developing Growth Mindset, Types of People, How to Lead a Meeting, How to Speak Effectively in Meetings, Behavior & Roles in Meetings, Role Play: Meeting.On Saying “Please”, How to say “NO”.

UNIT-5Positive Pschycology: Motivating oneself, Persuasion, Survival Strategies, Negotiation, Leadership and motivating others, controlling anger, Gaining Power from Positive Thinking.

Text Books:

1. Petes S. J., Francis. Soft Skills and Professional Communication. New Delhi: Tata McGraw-Hill Education, 2011.
2. Stein, Steven J. & Howard E. Book. The EQ Edge: Emotional Intelligence and Your Success. Canada: Wiley & Sons, 2006.
3. Dorch, Patricia. What Are Soft Skills? New York: Execu Dress Publisher, 2013.

Reference Books:

- Kamin, Maxine. Soft Skills Revolution: A Guide for Connecting with Compassion for Trainers, Teams, and Leaders. Washington, DC: Pfeiffer & Company, 2013.
- Peale Norman Vincent. The Power of Positive Thinking: 10 Traits for Maximum Result. Paperback Publication. 2011.
- Klaus, Peggy, Jane Rohman& Molly Hamaker. The Hard Truth about Soft Skills. London: Harper Collins E-books, 2007.

Course Outcomes

1. Learn to listen actively to analyse audience and tailor the delivery accordingly.
2. Increase their awareness of communication behaviour by using propriety-profiling tool.
3. Master three “As” of stressful situation: Avoid, Alter, Accept; to cope with stressors and create a plan to reduce or eliminate them.
4. Develop growth mind-set and able to handle difficult person and situations successfully.
5. Develop technique of turning negativity into positivity and generate self-motivation skills.