

**Integral University, Lucknow**  
**Integral Institute of Agricultural Science and Technology**  
**Evaluation Scheme of Undergraduate program**  
**B. Tech. Agricultural Engineering**  
**w.e.f. Session 2018-19**  
**Semester – II**

Course Code	Subject	Periods Per h/week/sem			Evaluation Scheme Theory Mid sem			Evaluation Scheme Practical Examination					End sem Theory Exam	Subject total	Credit	Total Credit Points
								Sessional			End sem exam (Taken by external examiner)	Sub Total (sessional + exam) <sup>b+c</sup>				
		L	T	P	CT	TA	Total <sup>a</sup>	CT	TA	Total <sup>b</sup>						
MT134	Mathematics in Agricultural Engineering -II	2	0	2	10	10	20	5	5	10	20	30	50	100	2:0:1	3
ES124	Environmental Science and Disaster Management	2	0	2	10	10	20	5	5	10	20	30	50	100	2:0:1	3
BM126	Entrepreneurship Development and Business Management	2	0	2	10	10	20	5	5	10	20	30	50	100	2:0:1	3
AE106	Fluid Mechanics and Open Channel Hydraulics	2	0	2	10	10	20	5	5	10	20	30	50	100	2:0:1	3
AE107	Strength of Materials	1	0	2	10	10	20	5	5	10	20	30	50	100	1:0:1	2
ME107	Workshop Technology and Practices	1	0	4	10	10	20	5	5	10	20	30	50	100	1:0:2	3
ME108	Theory of Machines in Agriculture	2	0	0	10	10	20	-	-	-	-	-	80	100	2:0:0	2
CA171	Web Designing and Internet Applications	1	0	2	10	10	20	5	5	10	20	30	50	100	1:0:1	2
	<b>Total</b>															<b>21</b>

Theory mid sem (20 marks) = Mid sem/ makeup (10 marks) + Quiz 1 (2.5 marks) + Quiz 2 (2.5 marks) + Attendance (5 marks)

Practical mid sem (10 marks) = CT (5 marks) + TA (2.5 marks) + Attendance (2.5 marks)

End sem exam practical (Taken by external examiner) = 20 marks

End sem final theory = 100 marks (40 marks objective type and 60 marks subjective type questions)

**B. Tech. Agricultural Engineering**  
**SEMESTER-II**  
**Syllabus: Mathematics in Agricultural Engineering-II**  
**Paper Code: MT134**  
**w.e.f. Session 2018-19**

**3(2+1)**

**Unit I:** Ordinary differential equations: Exact and Bernoulli's differential equations, equations reducible to exact form by integrating factors, equations of first order and higher degree, Clairaut's equation

**Unit II:** Differential equations of higher orders, methods of finding complementary functions and particular integrals, method of variation of parameters, Cauchy's and Legendre's linear equations, simultaneous linear differential equations with constant coefficients, series solution techniques, Bessel's and Legendre's differential equations.

**Unit III:** Functions of a Complex variable: Limit, continuity and analytic function, Cauchy-Riemann equations, Harmonic functions. Infinite series and its convergence, periodic functions, Fourier series, Euler's formulae, Dirichlet's conditions, functions having arbitrary period, even and odd functions, half range series, Harmonic analysis.

**Unit VI:** Fourier Sine and Cosine Series, Fourier series for function having period  $2L$ , Elimination of one and two arbitrary function. Partial differential equations: Formation of partial differential equations Higher order linear partial differential equations with constant coefficients, solution of non-linear partial differential equations, Charpit's method, and application of partial differential equations (one dimensional wave and heat flow equations), Laplace Equation.

**Practical:** Tutorials on solution of ordinary differential equations of first and higher orders. Series solutions of differential equations. Bessel's and Legendre's differential equations, Convergence of infinite series. Fourier series, harmonic analysis, analytical functions, Cauchy-Riemann equations, harmonic functions, Solution of partial differential equations, Application of partial differential equations.

**Suggested Readings:**

1. Ramana B V. 2008. Engineering Mathematics. Tata McGraw-Hill. New Delhi.
2. Narayan Shanti. 2004. Differential Calculus. S. Chand and Co. Ltd. New Delhi.
3. Narayan Shanti. 2004. Integral Calculus. S. Chand and Co. Ltd. New Delhi.
4. Grewal B S. 2004. Higher Engineering Mathematics. Khanna Publishers Delhi.
5. Narayan Shanti. 2004. A Text Book of Vector. S. Chand and Co. Ltd. New Delhi.

**B. Tech. Agricultural Engineering**  
**SEMESTER-II**  
**Syllabus: Environmental Science and Disaster Management**  
**Paper Code: ES124**  
**w.e.f. Session 2018-19**

**3(2+1)**

**Unit I:** Environmental Studies: Scope and importance. Natural Resources: Renewable and nonrenewable resources Natural resources and associated problems. a) Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forest and tribal people. b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems. c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies. d) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. e) Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources. Case studies. f) Land resources: Land as a resource, land degradation, man induced landslides,

**Unit II:** Soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles. Ecosystems: Concept, Structure, function, Producers, consumers, decomposers, Energy flow, ecological succession, food chains, food webs, ecological pyramids. Introduction, types, characteristic features, structure and function of the forest, grassland, desert and aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries).

**Unit III:** Biodiversity and its conservation: - Introduction, definition, genetic, species & ecosystem diversity and bio-geographical classification of India. Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values. Biodiversity at global, National and local levels, India as a mega-diversity nation. Hot-spots of biodiversity. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. Endangered and endemic species of India. Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

**Unit VI:** Environmental Pollution: definition, cause, effects and control measures of a. Air pollution b. Water pollution c. Soil pollution d. Marine pollution e. Noise pollution f. Thermal pollution g. Nuclear hazards. Solid Waste Management: causes, effects and control measures of urban and industrial wastes. Role of an individual in prevention of pollution. Pollution case studies. Social Issues and the Environment from Unsustainable to Sustainable development, Urban problems related to energy. Water conservation, rain water harvesting, watershed management. Environmental ethics: Issues and possible solutions, climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. dies. Wasteland reclamation. Consumerism and waste products. Environment Protection Act. Air (Prevention and Control of Pollution) Act. Water (Prevention and control of Pollution) Act. Wildlife Protection Act. Forest Conservation Act. Issues involved in enforcement of environmental legislation. Public awareness. Human Population and the Environment: population growth, variation among nations, population explosion, Family Welfare Programme. Environment and human health: Human Rights, Value Education, HIV/AIDS. Women and Child Welfare. Role of Information Technology in Environment and human health.

**Unit V:** Disaster Management: Natural Disasters and nature of natural disasters, their types and effects. Floods, drought, cyclone, earthquakes, landslides, avalanches, volcanic eruptions, Heat and cold waves, Climatic change: global warming, Sea level rise, ozone depletion. Man Made Disasters- Nuclear disasters, chemical disasters, biological disasters, building fire, coal fire, forest fire, oil fire, air pollution, water pollution, deforestation, industrial waste water pollution, road accidents, rail

accidents, air accidents, sea accidents. Disaster Management- Effect to migrate natural disaster at national and global levels. International strategy for disaster reduction. Concept of disaster management, national disaster management framework; financial arrangements; role of NGOs, community-based organizations and media. Central, state, district and local administration; Armed forces in disaster response; Disaster response; Police and other organizations.

**Practical:** To Case Studies and Field work. Visit to a local area to document environmental assets river/forest/grassland/hill/mountain, Visit to a local polluted site-Urban/ Rural/ Industrial/ Agricultural, study of common plants, insects, birds and study of simple ecosystems-pond, river, hill slopes, etc. Expected impact of climate change on agricultural production and water resources, Mitigation Strategies, Economics of climate change. Disaster Management introduction, Natural and Manmade Disaster Studies, Informatics for Disaster Management, Quantitative Techniques for Disaster Management Environmental Impact Assessment (EIA) and Disaster Management Disaster Management Policy Environmental Modelling.

### **Suggested Readings:**

1. Bharucha Erach. 2005. Text Book of Environmental Studies for Undergraduate Courses.
2. Sharma J P. 2003. Introduction to Environment Science. Lakshmi Publications.
3. Chary Manohar and Jaya Ram Reddy. 2004. Principles of Environmental Studies. BS Publishers, Hyderabad.
4. Kaul S N, Ashuthosh Gautam. 2002. Water and Waste Water Analysis. Days Publishing House, Delhi.
5. Gupta P K. 2004. Methods in Environmental Analysis - Water. Soil and Air. Agro bios, Jodhpur.
6. Sharma, R.K. & Sharma, G. 2005. Natural Disaster. APH Publishing Corporation, New Delhi.
7. Husain Majid. 2013. Environment and Ecology: Biodiversity, Climate Change and Disaster Management.

**B. Tech. Agricultural Engineering**  
**SEMESTER-II**  
**Syllabus: Entrepreneurship Development and Business Management**  
**Paper Code: BM126**  
**w.e.f. Session 2018-19**

**3(2+1)**

**Unit I:** Entrepreneurship, management - Management functions - planning- Organizing –Directing motivation - ordering - leading - supervision-Communication and control - Capital - Financial management - importance of financial statements - balance sheet - profit and loss statement.

**Unit II:** Analysis of financial statements - liquidity ratios - leverage ratios, Coverage ratios - turnover ratios - profitability ratios, Agro-based industries - Project - project cycle - Project appraisal and evaluation techniques - undiscounted measures - payback period - proceeds per rupee of outlay, Discounted measures - Net Present Value (NPV) - Benefit-Cost Ratio (BCR) - Internal Rate of Return (IRR) Net benefit investment ratio (N / K ratio) - sensitivity analysis-Importance of agribusiness in Indian economy International trade-WTO agreements - Provisions related to agreements in agricultural and food commodities. Agreements on agriculture (AOA).

**Unit III:** Domestic supply, market access, export subsidies agreements on sanitary and phytosanitary (SPS) measures, Trade related intellectual property rights (TRIPS). Development (ED): Concept of entrepreneur and entrepreneurship Assessing overall business environment in Indian economy Entrepreneurial and managerial characteristics.

**Unit VI:** Entrepreneurship development Programmes (EDP) Generation incubation and commercialization of ideas and innovations- Motivation and entrepreneurship development-Globalization and the emerging business entrepreneurial environment- Managing an enterprise: Importance of planning, budgeting, monitoring evaluation and follow-up managing competition. Role of ED in economic development of a country- Overview of Indian social, political systems and their implications for decision making by individual entrepreneurs- Economic system and its implications for decision making by individual entrepreneurs- Social responsibility of business. Morals and ethics in enterprise management- SWOT analysis.

**Unit V:** Government schemes and incentives for promotion of entrepreneurship. Government policy on small and medium enterprises (SMEs)/SSIs/MSME sectors- Venture capital (VC), contract farming (CF) and joint ventures (JV), public-private partnerships (PPP) - Overview of agricultural engineering industry, characteristics of Indian farm machinery industry.

**Practical:** Determination Preparation of business - Strengths Weaknesses Opportunities and Threats (SWOT) analysis, Analysis of financial statements (Balance Sheet, Profit loss statement). Compounding and discounting, Break-even analysis Visit to agro-based industries-I, Visit to agro-based industries-II Study of Agro-industries Development Corporation , Ratio analysis-I, Ratio analysis-II, Application of project appraisal technique-I (Undiscounted measures), Application of project appraisal technique-II(Discounted Measures), Formulation of project feasibility reports. Farm Machinery Project proposals as entrepreneur - individual and group - Presentation of project proposals in the class.

**Suggested Readings**

1. Harsh, S.B., Conner, U.J. and Schwab, G.D. 1981. Management of the Farm Business. Prentice Hall Inc., New Jersey.
2. Joseph, L. Massie. 1995. Essentials of Management. Prentice Hall of India Pvt. Ltd., New Delhi.

3. Gittenger Price, J. 1989. Economic Analysis of Agricultural Projects. John Hopkins University, Press, London.
4. Thomas W Zimmer and Norman M Scarborough. 1996. Entrepreneurship. Prentice-Hall, New Jersey.
5. Mark J Dollinger. 1999. Entrepreneurship Strategies and Resources. Prentice-Hall, Upper Saddal Rover, New Jersey.
  6. Khanka S S. 1999. Entrepreneurial Development. S. Chand and Co. New Delhi..

**B. Tech. Agricultural Engineering**  
**SEMESTER-II**  
**Syllabus: Fluid Mechanics and Open Channel Hydraulics**  
**Paper Code: AE106**  
**w.e.f. Session 2018-19**

**3(2+1)**

**Unit I:** Properties of fluids: Ideal and real fluid. Pressure and its measurement, Pascal's law, pressure forces on plane and curved surfaces, centre of pressure, buoyancy, Meta centre and Meta centric height, condition of floatation and stability of submerged and floating bodies.

**Unit II:** Kinematics of fluid flow: Lagrangian and Eulerian description of fluid motion, continuity equation, path lines, streak lines and stream lines, stream function, velocity potential and flow net. Types of fluid flow, translation, rotation, circulation and vorticity, Vortex motion.

**Unit III:** Dynamics of fluid flow, Bernoulli's theorem, venturimeter, orifice meter and nozzle, siphon; Laminar flow: Stress strain relationships, flow between infinite parallel plates both plates fixed, one plate moving, discharge, average velocity.

**Unit IV:** Laminar and turbulent flow in pipes, general equation for head loss Darcy, Equation, Moody's diagram, Minor and major hydraulic losses through pipes and fittings, flow through network of pipes, hydraulic gradient and energy gradient; Flow through orifices (Measurement of Discharge, Measurement of Time), Flow through Mouthpieces, Flow over Notches, Flow over weirs, Chezy's formula for loss of head in pipes.

**Unit V:** Flow through simple and compound pipes, Open channel design and hydraulics: Chezy's formula, Bazin's formula, Katter's Manning's formula, Velocity and Pressure profiles in open channels, Hydraulic jump; Dimensional analysis and similitude: Rayleigh's method and Buckingham's Pi-theorem, types of similarities, dimensional analysis, dimensionless numbers. Introduction to fluid machinery.

**Practical**

Study of manometers and pressure gauges; Verification of Bernoulli's theorem; Determination of coefficient of discharge of venturi-meter and orifice meter; Determination of coefficient of friction in pipeline; Determination of coefficient of discharge for rectangular and triangular notch; Determination of coefficient of discharge, coefficient of velocity and coefficient of contraction for flow through orifice; Determination of coefficient of discharge for mouth piece; Measurement of

force exerted by water jets on flat and hemispherical vanes; Determination of meta-centric height;

Determination of efficiency of hydraulic ram; Performance evaluation of Pelton and Francis turbine; Study of current meter; Velocity distribution in open channels and determination of Manning's coefficient of rugosity.

**Suggested Readings**

1. Khurmi, R .S. 1970. A Text Book of Hydraulics, Fluid Mechanics and Hydraulic Machines S. Chand & Company Limited, New Delhi.
2. Modi P M and Seth S.M.1973. Hydraulics and Fluid Mechanics. Standard Book House, Delhi.
3. Chow V T 1983. Open Channel Hydraulics. McGraw Hill Book Co., New Delhi.
4. LalJagadish 1985. Fluid Mechanics and Hydraulics. Metropolitan Book Co.Pvt. Ltd., New Delhi.

**B. Tech. Agricultural Engineering**  
**SEMESTER-II**  
**Syllabus: Strength of Materials**  
**Paper Code: AE107**  
**w.e.f. Session 2018-19**

**2(1+1)**

**Unit I:** Slope and deflection of beams using integration techniques, moment area theorems and conjugate beam method.

**Unit II:** Columns and Struts. Riveted and welded connections. Stability of masonry dams.

**Unit III:** Analysis of statically intermediate beams. Propped beams. Fixed and continuous beam analysis using superposition, three moment equation and moment distribution methods.

**Practical**

To perform the tension test on metal specimen (M.S., C.I.), to observe the behaviour of materials under load, to calculate the value of E, ultimate stress, permissible stress, percentage elongation etc. and to study its fracture; To perform the compression test on; Concrete cylinders & cubes, C.I., M.S. & Wood specimens and to determine various physical and mechanical properties; To perform the bending test on the specimens; M.S. Girder, Wooden beam, Plain concrete beams & R.C.C. beam, and to determine the various physical and mechanical properties; To determine Young's modulus of elasticity of beam with the help of deflection produced at centre due to loads placed at centre & quarter points; To study the behaviour of materials (G.I. pipes, M.S., C.I.) under torsion and to evaluate various elastic constants; To study load deflection and other physical properties of closely coiled helical spring in tension and compression; To perform the Rockwell, Vicker's and Brinell's Hardness tests on the given specimens; To perform the Drop Hammer Test, Izod Test and Charpy's impact tests on the given specimens; To determine compressive & tensile strength of cement after making cubes and briquettes; To measure workability of concrete (slump test, compaction factor test); To determine voids ratio & bulk density of cement, fine aggregates and coarse aggregates; To determine fatigue strength of a given specimen; To write detail report emphasizing engineering importance of performing tension, compression, bending, torsion, impact and hardness tests on the materials.

**Suggested Readings**

1. Khurmi R.S. 2001. Strength of Materials S. Chand & Co., Ltd., New Delhi.
2. Junarkar S.B. 2001. Mechanics of Structures (Vo-I). Choratar Publishing House, Anand.
3. Ramamrutham S. 2003. Strengths of Materials. Dhanpat Rai and Sons, Nai Sarak, New Delhi.



**B. Tech. Agricultural Engineering**  
**SEMESTER-II**  
**Syllabus: Workshop Technology and Practices**  
**Paper Code: ME107**  
**w.e.f. Session 2018-19**

**3(1+2)**

**Unit I:** Introduction to various carpentry tools, materials, types of wood and their characteristics and Processes or operations in wood working; Introduction to Smithy tools and operations.

**Unit II:** Introduction to welding, types of welding, oxyacetylene gas welding, types of flames, welding techniques and equipment. Principle of arc welding, equipment and tools. Casting processes; Classification, constructional details of center lathe, Main accessories and attachments. Main operations and tools used on center lathes.

**Unit III:** Types of shapers, Constructional details of standard shaper. Work holding devices, shaper tools and main operations. Types of drilling machines. Constructional details of pillar types and radial drilling machines.

**Unit IV:** Work holding and tool holding devices. Main operations. Twist drills, drill angles and sizes. Types and classification. Constructional details and principles of operation of column and knee type universal milling machines. Plain milling cutter. Main operations on milling machine.

**Practical**

Preparation of simple joints: Cross half Lap joint and T-Halving joint; Preparation of Dovetail joint, Mortise and tenon joint; Jobs on Bending, shaping etc.; Jobs on Drawing, Punching, Riveting. Introduction to tools and measuring instruments for fitting; Jobs on sawing, filing and right angle fitting of MS Flat; Practical in more complex fitting job; Operations of drilling, reaming, and threading with tap and dies; Introduction to tools and operations in sheet metal work; Making different types of sheet metal joints using G.I. sheets. Introduction to welding equipment, processes tools, their use and precautions; Jobs on ARC welding - Lap joint, butt joint; T-Joint and corner joint in Arc welding; Gas welding Practice - Lab, butt and T-Joints; Introduction to metal casting equipment, tools and their use; Mould making using one-piece pattern and two pieces pattern; Demonstration of mould making using sweep pattern, and match plate patterns; Introduction to machine shop machines and tools; Demonstration on Processes in machining and use of measuring instruments; Practical jobs on simple turning, step turning; Practical job on taper turning, drilling and threading; Operations on shaper and planer, changing a round MS rod into square section on a shaper; Demonstration of important operations on a milling machine, making a plot, gear tooth forming and indexing; Any additional job.

**Suggested Readings**

1. Hazra, Choudari S K and Bose S K. 1982. Elements of Workshop technology (Vol. I and II). Media Promoters and Publishers Pvt. Ltd., Mumbai.
2. Chapman W A J. 1989. Workshop Technology ( Part I and II). Arnold Publishers (India) Pvt. Ltd., AB/9 Safdarjung Enclave, New Delhi.
3. Raghuwamsi B S. 1996. A Course in Workshop Technology (Vol. I and II). Dhanpat Rai and Sons, 1682 Nai Darak, New Delhi.

**B. Tech. Agricultural Engineering**  
**SEMESTER-II**  
**Syllabus: Theory of Machines in Agriculture**  
**Paper Code: ME108**  
**w.e.f. Session 2018-19**

**2(2+0)**

**Unit I:** Basic Elements, links, pairs, kinematics chain, and mechanisms. Classification of pairs and mechanisms. Lower and higher pairs. Four bar chain, slider crank chain and their inversions. Determination of velocity and acceleration using graphical (relative velocity and acceleration) method. Instantaneous centers.

**Unit II:** Types of gears. Law of gearing, velocity of sliding between two teeth in mesh. Involute and cycloidal profile for gear teeth. Spur gear, nomenclature, interference and undercutting. Introduction to helical, spiral, bevel and worm gear. Simple, compound, reverted, and epicyclic trains.

**Unit III:** Determining velocity ratio by tabular method. Turning moment diagrams, coefficient of fluctuation of speed and energy, weight of flywheel, flywheel applications. Belt drives, types of drives, belt materials. Length of belt, power transmitted, velocity ratio, belt size for flat and V belts. Effect of centrifugal tension, creep and slip on power transmission.

**Unit VI:** Chain drives. Types of friction, laws of dry friction. Friction of pivots and collars. Single disc, multiple disc, and cone clutches. Rolling friction, anti-friction bearings. Types of governors. Constructional details and analysis of Watt, Porter, Proell governors.

**Unit V:** Effect of friction, controlling force curves. Sensitiveness, stability, hunting, isochronism, power and effort of a governor. Static and dynamic balancing. Balancing of rotating masses in one and different planes.

**Suggested Readings**

1. Bevan Thomas. 1984. Theory of Machines. CBS Publishers and Distributors, Delhi.
2. Ballaney P L. 1985. Theory of Machines. Khanna Publishers, 2-B Nath Market, Nai Sarak, New Delhi.
3. Rao J S and Dukkipatti R V. 1990. Mechanisms and Machine Theory. Wiley astern Ltd., New Delhi.
4. Lal Jagdish. 1991. Theory of Mechanisms and Machines. Metropolitan Book Co. Pvt.Ltd., 1Netaji Subash Marg, New Delhi.
5. Rattan S B. 1993. Theory of Machines. Tata McGraw Hill Publishing Co. Ltd., 12/4 Asaf Ali Road, New Delhi.
6. Khurmi R S and Gupta J K. 1994. Theory of Machines. Eurasia Publishing House Pvt. Ltd., Ram Nagar, New Delhi.

**B. Tech. Agricultural Engineering**  
**SEMESTER-II**  
**Syllabus: Web Designing and Internet Applications**  
**Paper Code: CA171**  
**w.e.f. Session 2018-19**

**2(1+1)**

**Unit I:** Basic principles in developing a web designing, Planning process, Five Golden rules of web designing, Designing navigation bar, Page design, Home Page Layout.

**Unit II:** Design Concept. Basics in Web Design, Brief History of Internet, World Wide Web , creation of a web site, Web Standards, Audience requirement.

**Unit III:** Introduction to Java Script, variables & functions, Working with alert, confirm and prompt, Connectivity of Web pages with databases; Project.

**Practical:** FLASH: Animation concept FPS, Understanding animation for web, Flash interface, Working with tools, DREAM WEAVER :Exploring Dreamweaver Interface, Planning & Setting Web Site Structure, Working with panels, Understanding and switching views, Using property inspector, Formatting text, JAVA SCRIPT: Working with alert, confirm and prompt, Understanding loop, arrays, Creating rollover image, Working with operator, GIF ANIMATION: Learning to use FTP, Setting FTP, Uploading of site, Using Control panel, FTP UPLOADING SITE: Understanding gif animation interface, Knowing Gif file format, Creating basic web banners, Creating web banners with effects, Creating animated web buttons.

**Suggested Readings**

1. Jennifer Niederst Robbins. Developing web design latest edition.
2. Frain and Ben. Responsive Web Design with HTML5.
3. Nicholas c.Zakas. Java Script for Web Developers.
4. George Q. Huang, K. L Mak. Internet Applications in Product Design and Manufacturing. ISBN:3540434658.