

**ARD – 225 DESIGN OF RCC STRUCTURES**B.Arch. 2<sup>nd</sup> year (3<sup>rd</sup> Semester)

Contact Hours per Week		Continuous Assessment Examination: 40%			End Semester Exam	Exam Duration	Credit			
L	T	P	D	Total				Mid Term	Class Test	Assignment/Quizzes /Projects/Attendance etc.:
2	1	-	-	3	20%	10%	10%	60%	3 hours	03

**OBJECTIVE**

To understand the basic properties of RCC as a building material and principles of design of RCC structures.

**CONTENTS****UNIT I (Time-two weeks)**

- Introduction:- Materials, basic properties of concrete and steel, Reinforcement, standard loading, characteristics strength, permissible stresses in Concrete and steel as per Indian Standard, Design Philosophies- Working Method, Ultimate Load, Method and Limit state Method.

**UNIT II(Time-seven weeks)**

- Limit State Design Method: Safety and serviceability requirements, limit states, characteristics material strength and loads and Partial safety factors.
- Design of Beams: Design of singly and doubly reinforced beams including L & T beams for flexure shear, bond and torsion.
- Design of Compression members: Design of short and slender columns.
- Design of RCC one way & two way slab.

**UNIT III (Time- five weeks)**

- Proportioning of footings: - Square, Rectangular, Circular, Trapezoidal and combined.

**UNIT- IV (Time- two weeks)**

- Introduction to pre-stressed concrete.

**NOTE**

The time mentioned at the end of each of the above unit indicates the tentative time taken to complete each. The marks for sessional works may be divided accordingly.

**REFERENCE BOOKS**

- "R.C.C. Designs (Reinforced Concrete Structures)", Dr. B.C. Punmia, Ashok Kumar Jain and Arun Kumar Jain, Laxmi; Tenth edition, 2006.
- "Reinforced Concrete, 6<sup>th</sup> Edition", S.K.Mallick and A.P.Gupta, Oxford & IBH Publishing Co. Pvt. Ltd. New Delhi, 1996.
- "Limit State Design of Concrete Structures", Dr. Ramchandra and Virendra Gehlot, Scientific Publishers, 2007.
- "Comprehensive RCC Design", Dr. B.C. Punmia, Ashok Kumar Jain and Arun Kumar Jain, Laxmi; Tenth edition, 2006.

**ARD – 226 COMPUTER APPLICATIONS IN ARCHITECTURE** B.Arch. 2<sup>nd</sup> year (4<sup>th</sup> Semester)

Contact Hours per Week		Continuous Assessment 60%		End Term (Lab Final) : 40%	Exam Duration	Credit
L T P D 2 - - 4	Total	Record Mark: Assignment/ Quizzes /Projects/Attendance	Viva Voce	Comprehensive Viva Voce 40%	-	04
	06	30%	30%			

**OBJECTIVE**

At the end of this part of the course the students should be able to create three dimensional objects in space, which can also be used for the purpose of presentation as well as visualization using different rendering techniques.

**CONTENTS****Unit I(Time-Four weeks)**

- Ms Office – creating a document file, viewing editing and formatting a document, using graphics in a text document, etc.
- MS Word: Report writing
- MS Excel: Computation of data
- MS PowerPoint: Presentations

**Unit II(Time-Four weeks)**

- Introduction to AutoCAD
- 2D tools of AutoCAD
- Creating Drawings & Using text
- Use of Drawing and modify toolbar
- Grouping of Objects

**UNIT III (Time - Four weeks)**

- Introduction to Revit.
- Introduction to Google sketchup.
- Introduction to Photoshop.

**UNIT IV (Time - Four weeks)**

- 3D Rendering:-Introduction to 3D Rendering, Simulating the Sunlight angle, Adding shadows, Adding Materials and adjusting its appearance, Adding a background scene, Effects with light, Adding Reflections and details with Ray Tracing, Creating and adjusting Texture maps, Adding Landscape and people and Improving your images and editing.

**NOTE**

The time mentioned at the end of each of the above units indicates the tentative time taken to complete each. The marks for sessional work may be divided accordingly.

**REFERENCE BOOKS**

- “Mastering Microsoft Office-2007”, CADD Centre, India.
- “Mastering AutoCAD 2010 and AutoCAD LT 2010”, George Omura, Wiley, 2009.
- Mastering Adobe Photoshop.

**ARD – 227 DISASTER MANAGEMENT**B.Arch. 2<sup>nd</sup> year (4<sup>th</sup> Semester)

Contact Hours per Week		Continuous Assessment Examination: 40%			End Semester Exam	Exam Duration	Credit			
L	T	P	D	Total				Mid Term	Class Test	Assignment/Quizzes /Projects/Attendance etc.:
2	1	-	-	3	20%	10%	10%	60%	3 hours	03

**OBJECTIVE**

To let the students understand the type of in natural disasters and its effects on structural and non-structural elements. To understand the mechanism involved in the management of disasters.

**CONTENTS****Unit I (Time-four Weeks)**

- Introduction to Natural Disasters.
- Introduction to disaster management, Rules and Notification.
- Natural Disasters: Earthquakes, Floods, River Erosion, Cyclones Tsunami Landslides & Avalanches Forest Fires

**Unit II (Time-three Weeks)**

- Man induced Disasters: Introduction, Nuclear Disaster Chemical, Mine Disaster, Biological Disaster, Cyber Terrorism, and Environmental Disaster.

**Unit III (Time-five weeks)**

- Planning for Disaster: Guidelines for disaster management of Floods, River Erosion, Cyclones Tsunami Landslides & Avalanches Forest Fires

**Unit IV (Time-four weeks)**

- Fire Service, Forecasting & Early Warning Communications & IT Co-ord. with Scientific Organizations
- Spatial Data Management, Risk Transfer
- Microfinance, Role of Corporate Role of NGOs
- Community Preparedness and Education Gender Issue Vulnerable Groups
- Urban Development Civil Defense Home Guards NCC,NSS,NYK
- Medical Preparedness , Public Awareness

**REFERENCE BOOKS**

- "Disaster Management in the Hills", Dr. Satendra, Concept Publishing Company, 2003.
- "Disaster Management", Harsh K. Gupta, Universities Press, 2003.
- "Natural Hazards and Disaster Management: Vulnerability and Mitigation",R. B. Singh, Rawat; Reprint edition, 2006.
- "Proceedings of the National Conference on Disaster & Technology, 1998, Manipal, India", NirmitaMehrotra,1998.
- "Disaster Risk Reduction in South Asia", Sahni, Pardeep, Ariyabandu and Madhavi Malalgoda, PHI Learning, 2003.

**ARD – 311 ARCHITECTURAL DESIGN – V**B.Arch 3<sup>rd</sup> year (5<sup>th</sup> Semester)

Contact Hours per Week		Continuous Assessment 60%		End Term (Lab Final) : 40%		Exam Duration	Credit
L T P D	Total	Record Mark: Assignment/ Quizzes /Projects/Attendance	Viva Voce	Final Exam	Viva Voce	6 Hours	07
2 - - 10	12	30%	30%	20%	20%		

**OBJECTIVE**

- The objective of the course is to understand the traditional construction techniques.
- To study design considerations under the broad heading of Barrier Free Environment.

**CONTENTS****UNIT – I (Time-eight weeks)**

- Completion of the measured drawing of the building studied in the summer vacations.

**UNIT – II (Time-eight weeks)**

- Design of a small campus such as School, District Library, Museum etc. with emphasis on design with Barrier Free Environment.

**NOTE**

Two design problems and one time problem of 01 week is to be completed in this semester. The concerned faculty is required to frame a detailed program for each of the above design problems and time problem introduced with reference to the above contents.

**REFERENCE BOOKS**

- “Building drawing with an integrated approach to Built Environment”, M. G. Shah, C. M. Kale, S. Y. Patki, Tata McGraw-Hill Education, 2002.
- “Manual of Tropical Housing & Building”, O. H Koenigsberger, T. G Ingersoll, Alan Mayhew, S V Szolay, Universities press, 2000.
- “Campus Architecture: Building in the Groves of Academe”, Richard P. Dober, 1996.
- “Campus & Community, Moore Ruble Yudell Architecture and Planning”, Rockport Publishers, Inc., 1997.
- “Environmental Design An introduction for architects and engineers”, Randall Thomas, Taylor and Francis, 2005.

**ARD – 312 BUILDING CONSTRUCTION & MATERIALS – V**B.Arch 3<sup>rd</sup> year (5<sup>th</sup> Semester)

Contact Hours per Week		Continuous Assessment 60%		End Term (Lab Final) : 40%		Exam Duration	Credit
L T P D 2 - - 4	Total	Record Mark: Assignment/ Quizzes /Projects/Attendance	Viva Voce	Final Exam	Viva Voce	4 Hours	04
	06	30%	30%	20%	20%		

**OBJECTIVES**

To inculcate awareness of the constructional aspects of structural steel and its application in various building components of an industrial building.

**CONTENTS****UNIT I (Time-three week)**

- Introduction to structural steel section, grillage foundation and framed construction. Detail studies such as characteristics of structural steel sections, methods of jointing and its applications as structural members in different parts of building.

**UNIT II (Time-three week)**

- Types of industrialized doors and windows, sliding, revolving, collapsible, rolling shutters, steel, aluminum and composite sections. Detailed drawings and construction details of various types of Doors and Windows in steel and Aluminum.
- Detailed drawings and construction details of Steel stairs such as Straight flight and Spiral.
- Introduction to the concept of Mezzanine floor.

**UNIT III (Time-six week)**

- Introduction to Structural steel trusses. Detailed drawings and construction details of North light truss, tubular truss, lattice girder along with roof coverings, valleys, gutters etc

**UNIT IV (Time-four week)**

- Introduction to false ceiling. Detailed drawings and construction details of the same.
- Introduction to various materials, products and hardware for false ceiling, paneling and partitions.

**Note:**

- **Site Visits** to ongoing related construction projects.

**REFERENCE BOOKS**

- "The Construction of Buildings", Vol. 3 4/e PB, R Barry, Wiley, 2001.
- "Building Construction Metric" Vol. 4, W.B.Mckay, Orient Longman Private Limited, Mumbai, 2006.
- "Building Construction Illustrated", Francis D.K. Ching, John Wiley & Sons, 2011.
- "Construction Technology" Vol. 2-3-4 Roy Chudley, Roger Greeno, Prentice Hall (UK), 2005.
- "Architectural Graphic Standards", Charles George Ramsey, Harold Reeve Sleeper, Bruce Bassler John Wiley & Sons, 2008.
- "Interior Design", Ahmed A Kasu, Om Books, 2005.
- "Time Saver Standards for Interior Design and Space Planning", Joseph De Chiara, Julius Panero & Martin Zelnik, Mcgraw-Hill, 1991.

**ARD – 313 THEORY OF DESIGN – II**B.Arch 3rd year (5<sup>th</sup> Semester)

Contact Hours per Week		Continuous Assessment Examination: 40%			End Semester Exam	Exam Duration	Credit			
L	T	P	D	Total				Mid Term	Class Test	Assignment/Quizzes /Projects/Attendance etc.:
2	1	-	-	3	20%	10%	10%	60%	3 hours	03

**OBJECTIVE**

To understand the development of Architecture in 20<sup>th</sup> century.

**CONTENTS****UNIT I (Time-four weeks)**

- Study of work of the early 20<sup>th</sup> century architects like Richard Neutra, Philip Johnson, Eero Saarinen, Oscar Niemeyer, Jorn Utzon, Bruce Goff, P.L. Nervi and other architects.
- Study of Late and Post Modernism through the work of Richard Meier, Arata Isozaki, Michael Graves, Robert Venturi, Norman Foster, Richard Rogers, Renzo Piano etc.

**UNIT II (Time-six weeks)**

- Introduction to Post Independence (Modern) architecture in India. Contribution of Le Corbusier and Louis Khan
- Study of the works done by the pioneers in Indian Architecture Raj Rewal, Charles Correa, B.V.Doshi, A.P. Kanvinde, Ananth Raje, Louis Kahn, Joseph Allen Stein, U.C Jain, Lauri Baker etc.
- Study of the works done by Dean D Cruze, Hafeez Contractor, Nari Gandhi, Hasmukh Patel, & Chandravarkar & Thacker,

**UNIT II (Time-six weeks)**

- Study of the works done by Contemporary western architects Norman Foster, Frank-O-Gehry, Zahahadid, Moshe Safdie.

**NOTE**

Two buildings of each architect should be studied.

The time mentioned at the end of each of the above units indicates the tentative time taken to complete each. The marks for sessional work may be divided accordingly.

Analysis of architectural style/building typology must include functional, constructional/ Architectural structural and ornamental aspects.

**REFERENCE BOOKS**

- "A History of Architecture", Sir Banister Fletcher, CBS Publisher, 1999.
- "Housing and Urbanisation: Building Ideas for People and Cities", Charles Correa, Thames & Hudson Ltd., 2000.
- "Documenting Chandigarh", Kiran Joshi, Mapin Publishing, 1999.
- "Modern Architecture: A Critical History", Kenneth Frampton, Thames & Hudson; 4<sup>th</sup> Edition, 2007.
- "The Details of Modern Architecture (Volume 1)", Edward R. Ford, The MIT Press, 2003.
- "Twentieth Century Architecture: A Visual History", Dennis Sharp, Images Publishing, 2006.
- "Architecture and Independence: The Search for Identity--India 1880 to 1980", Jon Lang, Madhavi Desai and Miki Desai, Oxford University Press, 1998.
- "Architecture in the Twentieth Century", Peter Gössel and Gabriele Leuthäuser, Taschen, 2001.
- "History of Architecture: From Classic to Contemporary", Barbara Borngasser, Parragon Inc; Reprint edition, 2010.

**ARD – 314 BUILDING SERVICES – II**B.Arch 3<sup>rd</sup> year (5<sup>th</sup> Semester)

Contact Hours per Week		Continuous Assessment Examination: 40%			End Semester Exam	Exam Duration	Credit			
L	T	P	D	Total				Mid Term	Class Test	Assignment/Quizzes /Projects/Attendance etc.:
2	1	-	-	3	20%	10%	10%	60%	3 hours	03

**OBJECTIVE**

To familiarize the students with fundamentals of electricity, illumination and acoustics in building services & their integration with architectural design

**CONTENTS****UNIT I (Time- five weeks): Electrical services**

- Thermal, Mechanical & Electrical energy and its generation
- Electrical distribution systems and safety devices
- Types of wiring systems, advantages and disadvantages, safety and precautions,
- Internal wiring, loads, demand, tariffs and rules
- Types of electrical equipments used in a building such as motors, fuses, switchboards etc.
- Introduction to Indian Electricity rules related to buildings.
- Introduction to wiring system in a multistoried building. Detailed studies of the electrical Fittings such as MCB's, ELCB's, fuse units, control panels etc.
- Standard symbols for various fixtures as per National Building Code 2005
- Exercise: Preparing an electrical layout with all necessary details for a small building/residence.

**UNIT II (Time- six weeks): Illumination & Lighting Design**

- Introduction to Illumination, studies of the same such as various types of artificial lighting
- Various Terms in lighting, standards of illumination for illumination levels,
- Types of artificial lighting sources, types of luminaires & fixtures
- Comparative efficiency of lighting fixtures
- Methods and calculation for lighting design- Inverse Square Law, Cosine Law & Coefficient of Utilization Method

**UNIT III (Time-five weeks): Acoustics**

- Introduction to general principles of sound such as Reverberation, Absorption, Reflection, etc..
- Introduction to Building acoustics with reference to various building types such as studios, auditoriums etc.
- Detailed studies of various types of Acoustical materials and their application.

**REFERENCE BOOKS**

- IS 732: 1989 - Code of Practice for Electrical Wiring Installations.
- "Electrical Design & Drawing: with estimation and costing", Surjit Singh, Dhanpat Rai & Co (p) Ltd., 2007.
- "Lighting Design Handbook", Lee Watson, McGraw-Hill Inc., USA, 1990.
- "Architectural Lighting Design", Gary R. Steffy, Van Nostrand Reinhold, 1990.
- "Fundamentals of Acoustics", Lawrence E. Kinsler, Austin R. Frey, Alan B. Coppers and James V. Sanders, John Wiley & Sons; 4th Edition, 2000.
- "Acoustics in the Built Environment: Advice for the Design Team", Peter Mapp, Peter Sacre, David Saunders and Duncan Templeton, Architectural Press, 1993.

**ARD – 315 DESIGN OF STEEL STRUCTURES**B.Arch 3rd year (5<sup>th</sup> Semester)

Contact Hours per Week		Continuous Assessment Examination: 40%			End Semester Exam	Exam Duration	Credit			
L	T	P	D	Total						
2	1	-	-	3	20%	10%	10%	60%	3 hours	03

**OBJECTIVE**

To understand the principles of design of Steel structures, IS:800-2007

**CONTENTS****UNIT I (Time-three weeks)**

- Design of connections in steel Structures ;- Bolted and welded connections, assumptions, different types of joints, design of various types of welded connections subjected to direct loads and moments.

**UNIT II (Time-four weeks)**

- Design of Tension Members: Selection of sections, IS specifications, design of axially loaded tension members, design of members for axial tension & bending, end connections, IS code provisions for Lug angles and tension splices.

**UNIT III (Time-three weeks)**

- Design of Compression Members: Theory of buckling, design of column cross sections (single & built up sections); design of angle struts, eccentrically loaded columns. IS code provisions for column splices, lacing & battens.

**UNIT IV (Time-four weeks)**

- Design of Beams: Lateral stability, design of single & built up beams, plated beams and curtailment of flange plates.
- Design of Roof Trusses: Types of trusses, roofs & side coverage, types of loading and load combinations, design of members & connections.

**UNIT V (Time-two weeks)**

- Case studies of modern steel structures.

**NOTE**

The time mentioned at the end of each of the above unit indicates the tentative time taken to complete each. The marks for sessional works may be divided accordingly.

**REFERENCE OF BOOKS:**

- Bureau of Indian Standards, IS:800-2007, New Delhi, 2007.
- "Design of Steel Structures", Anand S. Arya and J.L. Ajmani, Nem Chand, 2011.
- "Design of Steel Structure Volume 2", D. Ramachandra and Virendra Gehlot, Scientific Publishers, 2013.
- "Design of Steel Structures", P. Dayaratnam, S. Chand Publishing; Reprint Edition, 2007.
- "Design of Steel Structure", Dr. B. C. Punmia, Ashok Kumar Jain and A. K. Jain, Laxmi Publications, 2006.
- "Design and Analysis of Steel Structures", V.N. Vazirani, Khanna Publishers, Delhi, 2012.



**ARD – 316 BUILDING ESTIMATION, COSTING & SPECIFICATION B.Arch. 3<sup>rd</sup> year (5<sup>th</sup> Semester)**

Contact Hours per Week		Continuous Assessment Examination: 40%			End Semester Exam	Exam Duration	Credit			
L	T	P	D	Total				Mid Term	Class Test	Assignment/Quizzes /Projects/Attendance etc.:
2	1	-	-	3	20%	10%	10%	60%	3 hours	03

**OBJECTIVE**

To familiarize the student with the commonly used methods of preparing estimates of Architectural Projects.

**CONTENTS****UNIT I (Time-four weeks)**

- Introduction to different types of specification and their uses.
- Writing specification for civil works of the design project done during the previous Semester starting with excavation, earth work, foundations, damp proof course, brick masonry work, concreting, flooring, plastering, painting, doors and windows, painting, varnishes, sanitary fixtures, electric fixtures etc.
- Importance of specification as part of contract documents.

**UNIT II (Time-nine weeks)**

- Introduction to cost estimation and definitions of related to estimate.
- Introduction to the types of Preliminary Estimates and their preparation.
- Introduction to the types of Detail Estimates, methods of details of measurement and their application, item of work, measurement of typical elements, viz., arches, steps, and polygonal rooms.
- Introduction to Bill of Quantities of Materials for RCC work in slab, beam, column, stair cases etc.
- Detailed studies to preparation of estimated cost/bill of quantities use of schedule of rates, analysis of rates and break up of material required.
- Illustrative examples for the same.

**UNIT III (Time-three weeks)**

- Introduction to Standard rates and their derivation from given rates.
- Case studies/practical expertise in preparing detailed estimates of quantities of materials and analysis of rates of materials and labor for a small residential building.

**NOTE**

The time mentioned at the end of each of the above units indicates the tentative time taken to complete each. The marks for sessional work may be divided accordingly.

Scope of the subject will be limited to preparing detailed estimate and costing of two storied residential building in masonry and reinforced cement concrete.

**REFERENCE BOOKS**

- "Estimating and Costing in Civil Engineering", B.N.Dutta, UBS Publishers & Distributors Ltd., 2006.
- "Text Book of Estimating and Costing (Civil Engineering)", G.S.Birdie, Dhanpat Rai Publishing Company (P) Ltd., New Delhi, 2015.
- "Cost Planning of Buildings", Douglas J. Ferry, Peter S. Brandon and Jonathan D. Ferry, Wiley-Blackwell; 7<sup>th</sup> editions, 1999.
- "Building Construction Estimating", Stephen D. Schuette and Roger W. Liska, Mcgraw-Hill College, 1994.

**ARO – 317 AUTOCAD (Open Elective)**B.Arch 3<sup>rd</sup> year (5<sup>th</sup> Semester)

Contact Hours per Week		Continuous Assessment 60%		End Term (Lab Final) : 40%	Exam Duration	Credit
L T P D 1- - 3	Total	Record Mark: Assignment/ Quizzes /Projects/Attendance	Viva Voce	Comprehensive Viva Voce 40%	-	03
	04	30%	30%			

**OBJECTIVE**

The students should be exposed to the potential of computers and Internet. They should understand its working in an elementary way and be able to use it for word processing and communication & making two dimensional drawing in Autocad

**CONTENTS****UNIT I (Time-eight weeks)**

- The User Interface
- Start, Organize, and Save a Drawing:
- Control the Drawing Views: Display Multiple Views in Model Space
- Drawing and modify toolbar

**UNIT II (Time-eight weeks)**

- Complete 2d drawing
- Drawing and modify toolbar for 3d drawing
- Work on three dimensional objects

**NOTE**

The time mentioned at the end of each of the above units indicates the tentative time taken to complete each. The marks for sessional work may be divided accordingly.

**REFERENCE BOOKS**

- "Computer Today", Suresh K. Basandra, Galgotia, 2009.
- Mastering Microsoft Office-2007, CADD Centre
- Microsoft Office 2000 Complete, CADD Centre.
- "Mastering AUTOCAD 2010", George Omura

**ARD – 321 ARCHITECTURAL DESIGN – VI**B.Arch 3<sup>rd</sup> year (6<sup>th</sup> Semester)

Contact Hours per Week		Continuous Assessment 60%		End Term (Lab Final) : 40%		Exam Duration	Credit
L T P D	Total	Record Mark: Assignment/ Quizzes /Projects/Attendance	Viva Voce	Final Exam	Viva Voce	6 Hours	07
2 - - 10	12	30%	30%	20%	20%		

**OBJECTIVE**

To understand the importance of services and structures in design of building complexes.

**CONTENTS****UNIT I (Time-eight weeks)**

- Design of Auditorium, Hospital etc. with emphasis on structure and services. (Water supply, Electrification, Acoustics, Air conditioning, Firefighting etc.)

**UNIT II (Time-eight weeks)**

- Design of a multi-storied office-cum-commercial complex.
- Design involving large spans i.e., exhibition pavilions, industrial buildings etc.

**NOTE**

- Two design problems and one time problem of 01 week is to be completed in this semester. The concerned faculty is required to frame a detailed program for each of the above design problems and time problem introduced with reference to the above contents.
- Professional training: 06-08 weeks duration in Summer Vacations.

**REFERENCE BOOKS**

- "Landscape Architecture: A manual of Site planning and design", John Ormsbee Simonds, McGraw Hill Professional, 1998.
- "Public Municipal and Community buildings", Charles K. Hoyt, McGraw-Hill Book Company, 1978.
- "Commercial Spaces - Cerver" Franscisco Asensio, Rotovision, 1995.
- "Cinema builders", Edwin Heathcote, Wiley-Academy, 2001.
- "Campus Architecture: Building in the Groves of Academe", Richard P. Dober, 1996.

**ARD – 322 BUILDING CONSTRUCTION& MATERIALS – VI**B.Arch 3<sup>rd</sup> year (6<sup>th</sup> Semester)

Contact Hours per Week		Continuous Assessment 60%		End Term (Lab Final) : 40%		Exam Duration	Credit
L T P D	Total	Record Mark: Assignment/ Quizzes /Projects/Attendance	Viva Voce	Final Exam	Viva Voce	4 Hours	04
2 - - 4	06	30%	30%	20%	20%		

**OBJECTIVES**

- To familiarize the student with the system of making detailed working drawings required for construction on site.

**CONTENTS****UNIT I (Time-eight weeks)**

- Introduction to methodology of preparing working drawings, Systems of dimensioning, writing specifications, etc.
- Preparation of detailed working drawing for Site Plan, Foundation Plan & Foundation details, Floor plans and Elevations, Sections.

**UNIT II (Time-six weeks)**

- Preparation of detailed drawings of toilets, modular Kitchen, Built- in furniture, Shop fronts, display units, counter (shops, Bank, hotel etc.) and other furniture items. Plans, Elevations Sections and working details.

**UNIT III (Time-two weeks)**

- Introduction to glass as building material. Detailed studies of the same- types, manufacturing and application.

**NOTE:**

- The students shall bring one of their previous semester's major projects for preparation of working drawing.
- Site Visits** to ongoing related construction projects.

**REFERENCE BOOKS**

- "Construction Planning and Management", U.K.Shrivastava, Galgotia Publications, 2009.
- "Building drawing with an integrated approach to Built Environment", M. G. Shah, C. M. Kale, S. Y. Patki, Tata McGraw-Hill Education, 2002.
- "Building Construction Drafting and Design", John Molnar, Van Nostrand Reinhold, 1986.
- "Building Construction Details", Hans Banz, Van Nostrand Reinhold Co., 1983.
- "Building Construction", Sushil Kumar, Standard Publishers Distributors, New Delhi, 2006.

Contact Hours per Week		Continuous Assessment Examination: 40%			End Semester Exam	Exam Duration	Credit			
L	T	P	D	Total				Mid Term	Class Test	Assignment/Quizzes /Projects/Attendance etc.:
2	1	-	-	3	20%	10%	10%	60%	3 hours	03

**OBJECTIVE**

This course intends to develop an understanding the evolution of settlement planning.

**CONTENTS****UNIT I (Time-two weeks)**

- Introduction: Meaning and Scope in Relation to town planning and architecture.
- Settlement patterns in later periods of history; Changing form and pattern of human settlements in ancient, medieval, colonial and modern India

**UNIT II (Time-four weeks)**

- Role and contribution of the following towards contemporary town planning thought- Patrick Geddes, Patric Abercrombie, Daniel Burnham, Soria Y Mata, Frederick Olmstead, Ebenezer Howard, Clarence Perry, Clearance stein, CA Doxiadis, Le Corbusier, Frank Lloyd Wright

**UNIT III (Time-six weeks)**

- Globalization and its impact on cities – Urbanization, emergence of new forms of developments – self sustained communities – SEZ – transit development – integrated townships – case studies.
- Scope and Content of Master plan – planning area, land use plan and Zoning regulations – zonal plan – need, linkage to master plan and land use plan – planned unit development (PUD) – need, applicability and development regulations - Urban Renewal Plan – Meaning, Redevelopment, Rehabilitation and Conservation – JNNURM – case studies.
- Definition and explanation of the concepts of density, FAR, land use and zoning

**UNIT IV (Time-four weeks)**

- Emergence of the metropolitan phenomenon; Planning problems of cities and Solutions
- Rural and regional Systems: The rural-urban relationships; Problems of rural systems.

**REFERENCE BOOKS**

- “Ekistics - An Introduction to the Science of Human Settlements”, C.L.Doxiadis, Hutchinson, London, 1968.
- “Housing and Urban Renewal”, Andrew D. Thomas, George Allen and Unwin, Sydney, 1986.
- “Ministry of Urban Affairs and Employment”, Government of India, New Delhi, 1999.
- “Town and Country Planning”, Patrick Abercrombie, 3<sup>rd</sup> Edition, Oxford University Press.
- “Design of Cities”, Edmund N. Bacon, Penguin Books; Revised edition, 1976.
- “An Introduction to Town & Country Planning”, A.J. Brown and H.H. Sherrard, Angus and Robertson, Sydney, 1969.

Contact Hours per Week		Continuous Assessment Examination: 40%			End Semester Exam	Exam Duration	Credit			
L	T	P	D	Total				Mid Term	Class Test	Assignment/Quizzes /Projects/Attendance etc.:
2	1	-	-	3	20%	10%	10%	60%	3 hours	03

**OBJECTIVE**

To familiarize the students with fundamentals of air conditioning, firefighting and vertical Transport systems building services & their integration with architectural design.

**CONTENTS****UNIT I (Time-six weeks): Air-conditioning**

- Detailed studies of Natural and Artificial ventilation.
- Introduction to the concept of Air-conditioning and detailed studies regarding different types of Air-conditioning systems and their working- window, split, Central systems etc.

**UNIT II (Time-five weeks) Fire fighting**

- Introduction to firefighting systems
- Fire detection, Fire sprinklers, Fire extinguishers and Fire Hydrants system, Their system of working and design calculations

**UNIT III (Time-five weeks) Vertical Transport Systems**

- Lifts- Types, Parts, Dimensions and design of lift system in a building
- Escalators- Types, Parts, Dimensions and design of lift system in a building

**NOTE**

The time mentioned at the end of each of the above units indicates the tentative time taken to complete each. The marks for sessional work may be divided accordingly.

**REFERENCE BOOKS**

- "Heating, Ventilating and Air Conditioning: Analysis and Design, 6th Edition", Faye C. McQuiston, Jerald D. Parker and Jeffrey D. Spitler, John Wiley & Sons, 2004.
- SP 7: 2005 "National Building Code of India"
- IS 3534: 1976 "Outline dimensions of electric lifts"
- IS1860: 1980 "Code of Practice for Installation, Operation and Maintenance of Electric Passenger and Goods Lifts"

Contact Hours per Week		Continuous Assessment Examination: 40%			End Semester Exam	Exam Duration	Credit			
L	T	P	D	Total				Mid Term	Class Test	Assignment/Quizzes /Projects/Attendance etc.:
2	1	-	-	3	20%	10%	10%	60%	3 hours	03

**OBJECTIVE**

The objective of this course is to impart a comprehensive knowledge of the vernacular architecture, historical and environmental aspects for building up on the hills.

**CONTENTS****UNIT I (Time-five weeks)**

- Historical perspective of hill architecture and its unique attributes and concerns.
- Major hill settlements in various regions of the world.
- A broad view of traditional hill architecture of medieval European settlements and other places.

**UNIT II (Time-six weeks)**

- Traditional hill settlements in India.
- An overview of vernacular hill architecture of Himachal Pradesh.
- Building Types, techniques and materials of vernacular architecture of Himachal Pradesh.
- Lessons from vernacular architecture and their time tested indigenous technology.

**UNIT III (Time-five weeks)**

- Modern buildings on hills in India.
- Constraints of climate, topography and availability of materials.
- Design factors such as access, circulation, gradients, slope analysis, grading and interpolation of contours.
- Structural aspects of modern buildings and necessary safeguards.
- Environmental and ecological concerns and safeguards.

**NOTE**

The time mentioned at the end of each of the above units indicates the tentative time taken to complete each. The marks for sessional work may be divided accordingly.

**REFERENCE BOOKS**

- "The Architectural Heritage of Himachal Pradesh: Origin and Development of Temple Styles", Laxman S. Thakur, Munshiram Manoharlal Publishers, 1996.
- "Environment Protection of Himalaya: A Mountaineer's View", Aamir Ali, Indus Publishing Company, 1998.
- "The Survival of the Himalaya, Eco-systems- A scenario of Unsustainability", Sunder LalBahuguna, Tej Vir Singh and M.L.Sharma
- "Himalayan Ecology, Transhumance and Social Organization Gaddis of Himachal Pradesh", Veena Bhasin, Kamla-Raj Enterprises, 1988.
- "Ecological Hazards in the Himalayas", S.K. Chadha, Pointer Publishers, 1989.
- "Himachal Pradesh:A perspective", Ramesh Chauhan, Menerava Book, 1998.
- "Temples of the Western Himalayas", Penelope Chetwode, The Architectural Review, London.
- ICIMOD,Constraints and Opportunities, International Centre for Integrated Mountain Development, Proceedings of International Symposium on Mountain Environment and Development Kathmandu, Nepal.
- "Environmental Concerns and Strategies", T.N. Khoshoo, South Asia Books; 2<sup>nd</sup>Sub edition, 1988.
- "Site Engineering for Landscape Architects", Steven Strom, Kurt Nathan and Jake Woland, Wiley; 6<sup>th</sup>edition, 2013.

Contact Hours per Week		Continuous Assessment Examination: 40%			End Semester Exam	Exam Duration	Credit			
L	T	P	D	Total				Mid Term	Class Test	Assignment/Quizzes /Projects/Attendance etc.:
2	1	-	-	3	20%	10%	10%	60%	3 hours	03

**OBJECTIVE**

To create awareness among the students regarding management of physical and human resources pertaining to a business organization in general and specific to construction industry.

**CONTENTS****UNIT I - BUILDING ECONOMICS (Time – eight weeks)**

- **Nature Of Economics:** Introduction, Evolution of Economics, Definition – wealth, welfare, scarcity, Nature and scope of economics, Division of economics, Economics in relation to engineering and other Social Sciences
- **Demand and Law Of Demand:** Meaning of demand, Kinds of demand, Law of demand, Demand schedule and curve, Limitations of law of demand, Shape of demand curve, Extension Contraction Increase and decrease in demand, Factors affecting demand, Goods and kinds of goods.
- **Elasticity of Demand:** Meaning of elasticity of demand, Degree of elasticity of demand, Types of elasticity of demand, Factors governing elasticity of demand, Importance of elasticity of demand
- **Laws Of Consumption:** Consumption, Forms of Consumption, Importance of utility, Law of diminishing marginal utility, Law of equi-marginal utility.
- **Scale of production:** Supply, Laws of supply, General equilibrium
- Large scale production its advantages and disadvantages, Small scale production its advantages and disadvantages
- Economics Related To Building Construction Industry And Real Estate: Need for economic tools, Concept of Economic efficiency, Economic analysis process, Construction Industry, Nature of construction industry in India, Problems of changes in demand (Sellers' market to Buyers' market), Existing scenario of construction industry/Real estate and Land market in the metro cities of India, Influence of the Government policies on the land Market and the Construction Industry, Methods of controlling the inadequacies in construction industry/real estate.

**Unit II - SOCIOLOGY (Time – eight weeks)**

- **Indian social structure:** Introduction – Varied religion/cultures –varied languages — Rural Urban conflict
- **The Indian Village:** Introduction – Village types according to their structure –Village forms With respect to Order/Cluster – Caste Hierarchy -Caste and Habitation area in a village – Social structure of a village community – Planning of a typical village house
- **The Indian City:** Introduction – Emergence of small family pattern -Urban and Suburban life – Disintegration of Joint family –Emergence of Urban societies City life style – Characteristics Of urban population – Social Psychology of urban life – Varied life styles – Planning of a typical urban dwelling

**REFERENCE BOOKS**

- “Modern Economic Theory”, K.K. Dewett and K.K. Bahl, S Chand; Reprint Edition, 2006.
- “Economics for Engineers”, M.L. Gupta, Abhishek Publications, 2000.
- “Microeconomic Theory”, Larry Samuelson, Springer Science & Business Media, 1986.
- “Rural Sociology in India”, A.R.Desai, Popular Prakashan Ltd.; New edition, 2011.
- “The Urban World”, J. John Palen, Oxford University Press; 9<sup>th</sup>edition, 2011.
- “Models of Urban and Regional Systems in Developing Countries”, George F. Chadwick, Pergamon Press, 1987.



**ARD – 327 EARTHQUAKE RESISTANT BUILDING DESIGN**B.Arch 4<sup>th</sup> Year (6<sup>th</sup> Semester)

Contact Hours per Week		Continuous Assessment Examination: 40%			End Semester Exam	Exam Duration	Credit			
L	T	P	D	Total						
2	1	-	-	3	20%	10%	10%	60%	3 hours	03

**OBJECTIVE**

To let the students understand the terminology used in Earthquake and its effects on structural and non-structural elements.

**CONTENTS****Unit I (Time- three weeks): Elementary Seismology**

- Earthquake occurrence in the world, plate tectonics, faults, earthquake hazard map of India and the states.
- Causes of earthquake, seismic waves, magnitude, intensity, epicenter and energy release, characteristics of strong earthquake ground motion.

**Unit II (Time- three weeks): Performance of Ground and Building in Past Earthquakes**

- Earthquake effects: On ground, soil ruptures, liquefaction and landslides.
- Behavior of various types of Buildings, structures, power plants, switchyards, equipments, life lines and collapse patterns.
- Behavior of Non-Structural Elements like services, fixtures, mountings.

**Unit III (Time- four weeks): Site Planning, building forms and Seismic Design Principles**

- Building forms: Horizontal and Vertical eccentricities, mass and stiffness distribution, soft storey, etc.
- Plan and vertical irregularities, redundancy and setbacks.
- Concept of Seismic design, stiffness, strength period, ductility, damping, hysteric energy dissipation, center of mass, center of rigidity, torsion, design eccentricities.
- Ductility based design: Design of energy absorbing devices. Seismic based isolation and seismic active control.
- Contemporary international approaches.

**Unit IV (Time- three weeks): Earthquake Resistant Construction Details**

- Introduction to various IS codes.
- Various types and construction details of Foundation, Soil stabilization, retaining walls, underground and overhead tanks, staircases and isolation of structures.
- Methodologies for seismic retrofitting.

**REFERENCE BOOKS**

- "Disaster Management in the Hills", Dr. Satendra, Concept Publishing Company, 2003.
- "Disaster Management", Harsh K. Gupta, Universities Press, 2003.
- "Natural Hazards and Disaster Management: Vulnerability and Mitigation", R. B. Singh, Rawat; Reprint edition, 2006.
- "Proceedings of the National Conference on Disaster & Technology, 1998, Manipal, India", Nirmita Mehrotra, 1998.
- "Disaster Risk Reduction in South Asia", Sahni, Pardeep, Ariyabandu and Madhavi Malalgoda, PHI Learning, 2003.

**ARD – 411 ARCHITECTURAL DESIGN – VII**B.Arch 4<sup>th</sup> year (7<sup>th</sup> Semester)

Contact Hours per Week		Continuous Assessment 60%		End Term (Lab Final) : 40%		Exam Duration	Credit
L T P D 2 - - 10	Total	Record Mark: Assignment/ Quizzes /Projects/Attendance	Viva Voce	Final Exam	Viva Voce	6 Hours	07
	12	30%	30%	20%	20%		

**OBJECTIVE**

To make the students aware of design issues related to problems of Housing/ Institutional complex in context to Site Planning.

**CONTENTS****UNIT I (Time-eight Weeks)**

Designing & planning of Neighborhood Unit in urban area or suburbs with respect to:

- Unit orientation.
- Cluster formation.
- Open space: size, hierarchy & ownership.
- Circulation: Pedestrian, walkway, cycle tracks, hierarchy of roads, road layout system.
- Integrating building services in a unit cluster.

Site may be chosen in different climatic conditions in India.

**UNIT II (Time-eight weeks)**

- Design of a University Campus and redevelopment projects etc.

**NOTE**

Two design problems and one time problem of 01 week is to be completed in this semester. The concerned faculty is required to frame a detailed program for each of the above design problems and time problem with reference to the above contents.

**REFERENCE BOOKS**

- "Mane" A New Initiative in Public Housing, Hudco Publication, New Delhi.
- "Housing and Urbanization", Charles Correa, Thames & Hudson, 2000.
- "Time saver standards for Housing and Residential development", De Chiara, Panero & Zelnik, Tata McGraw-Hill Education, 2009.
- "Time Saver Standards for Building Types", John Hancock Callender, Joseph De Chiara, McGraw-Hill, New York, 1983.
- "Campus Architecture: Building in the Groves of Academe", Richard P. Dober, 1996
- "Campus & Community, Moore Ruble Yudell Architecture and Planning", Rockport Publishers, Inc., 1997.
- "People Places: Design guidelines for urban open spaces", Clare Cooper Marcus, Carolyn Francis (Eds.), John Wiley & Sons, 1998.

**ARD – 412 ADVANCED CONSTRUCTION TECHNIQUES**B.Arch 4<sup>th</sup> Year (7<sup>th</sup> Semester)

Contact Hours per Week		Continuous Assessment 60%		End Term (Lab Final) : 40%		Exam Duration	Credit
L T P D 2 - - 4	Total	Record Mark: Assignment/ Quizzes /Projects/Attendance	Viva Voce	Final Exam	Viva Voce	4 Hours	04
	06	30%	30%	20%	20%		

**OBJECTIVE**

To make the students learn about all the aspects of advanced building construction techniques.

**CONTENTS****UNIT I (Time- six weeks)**

- Introduction to new structural forms and methods of their execution such as form work required for execution of shell structures, Pneumatic Structure, geodesic domes, space steel frames etc.
- Introduction to types of special slabs like Filler slab, waffle, coffer and flat slabs.
- Introduction to shell & folded plate.

**UNIT II (Time-six weeks)**

- Design and Details of roof gardens.
- Detailing of Curtain walls, triple glazing windows.
- Introduction to high tech building materials like structural glazing, vitreous tiles, artificial veneers, aluminum composite panels etc.
- Advanced building finishes.

**UNIT III (Time-four weeks)**

- Introduction to cost effective and environmentally friendly building materials such as Stabilized mud blocks, Hollow concrete blocks, Aerated concrete blocks, Fly ash bricks, eco boards, husk boards etc.
- Prestressed Concrete Structures: Introduction, method of pre – stressing, losses of prestress designing of rectangular beams.
- Introduction of Prefabrication- Advantages and disadvantages of on-site and off-site prefabrication; Prefabrication in Indian construction industry.
- Emerging trends in building materials and recent advances in concrete technology.

**NOTE**

- **Site Visits** to ongoing construction project/s and modern buildings.
- **Market survey** of building materials and visits to building materials industries.

**REFERENCE BOOKS**

- “Steel Structure and Architecture”, Arne Petter Eggen, Bjørn Normann Sandaker, Whitney Library of Design, 1995.
- “Structural Analysis and Design of Tall buildings”, Bungale S. Taranath, CRC Press, Florida, 2012.
- “Handbook of Designing and Installation of services in Building complex”, Highrise Buildings, V.K.Jain, Khanna Tech., 1990.
- “Building Structures”, James Ambrose, Patrick Tripeny, John Wiley & Sons, 2011.
- “Handbook of Building Construction” Vol-1&2, MM Goyal, Thomson Press, 2006.

**ARD – 413 LANDSCAPE DESIGN**B.Arch 4<sup>th</sup> year (7<sup>th</sup> Semester)

Contact Hours per Week		Continuous Assessment Examination: 40%			End Semester Exam	Exam Duration	Credit			
L	T	P	D	Total						
2	1	-	-	3	20%	10%	10%	60%	3 hours	03

**OBJECTIVE**

This course is aimed at providing a comprehensive knowledge regarding ecological aspects and environmental concerns in landscape design besides the advanced knowledge of basic elements of landscape design.

**CONTENTS****UNIT I (Time-two weeks)**

- Introduction to the elements of landscape such as Earth form, Water and Vegetation and their effect in relation to the built environment. Plant types, characteristics, structure and color of foliage.

**UNIT II (Time-four weeks)**

- History, nature and scope Purpose of designed open space.
- Exposure to historical landscape (English, French, Italian, Chinese, Japanese, Mughal, Ancient India) and their relevance in their time, context and social needs.
- Introduction to ecology and its importance to Landscape designers.

**UNIT III (Time-five weeks)**

- Site analysis and site structure unity.
- Advanced knowledge of basic elements of Landscape Design and their effects in context to the environmental concerns
- Basic knowledge of contour/mapping and various methods of documentation of physical features, topography and landscape elements.

**UNIT IV (Time-five weeks)**

- Case studies of varied urban situations with typical different landscape characters in Chandigarh, Delhi region to analyze and assess their present landscape status by applying knowledge and techniques acquired as above.
- Landscape design proposal based on above mentioned analysis as a studio exercise.

**NOTE**

The time mentioned at the end of each of the above units indicates the tentative time taken to complete each. The marks for sessional work may be divided accordingly.

**REFERENCE BOOKS**

- "Time-saver standards for landscape architecture: design and construction data", Nicholas T. Dines, Kyle D. Brown; McGraw-Hill, 1998
- "Landscape design: a practical approach", Leroy G. Hannebaum; Reston Pub. Co., 1981
- "Landscape design: an international survey", Ken Fieldhouse; Overlook Press, 1993
- Landscape Detailing, Micheal Littlewood; Routledge, 2001
- "Planting Design", Theodore D. Walker; John Wiley & Sons, 1991
- "Landscape Architecture Construction", Harlow C. Landphair, Fred Klatt; Prentice Hall PTR, 1999
- "Landscape As Inspiration", Hans Dieter Schaal; Academy Editions, 1994
- "Introduction to Landscape Design", John L. Motloch; John Wiley & Sons, 2000
- "Landscape Architecture: A Manual of Site Planning and Design", John Ormsbee Simonds; McGraw Hill Professional, 1998
- "Trees of Chandigarh", Chhatar Singh, Rajnish Wattas, Harjit Singh Dhillon; B.R. Publishing Corporation, 1998

**ARD – 414 LOW COST BUILDING**B.Arch 4<sup>th</sup> Year (7<sup>th</sup> Semester)

Contact Hours per Week		Continuous Assessment Examination: 40%			End Semester Exam	Exam Duration	Credit			
L	T	P	D	Total				Mid Term	Class Test	Assignment/Quizzes /Projects/Attendance etc.:
2	1	-	-	3	20%	10%	10%	60%	3 hours	03

**OBJECTIVE**

To make the students aware of the use of conventional and non-conventional resources for low cost construction.

**CONTENTS****UNIT I (Time-five weeks)**

- An introduction to the subject to understand the various building techniques adopted in different climatic zones of the country, which resulting in varied vernacular expressions.
- Use of cost effective technologies through the use of local materials, up gradation of traditional technologies, prefabrication etc.

**UNIT II (Time-five weeks)**

- Need for low cost construction, both in the rural and the urban sectors.
- Innovations of building techniques for low cost construction.
- Analysis of space norms for low cost buildings.

**UNIT III (Time-six weeks)**

- Study of usages pattern of low cost buildings by the habitants.
- Comparative analysis of building materials and costing.
- Works of Laurie Baker, Hassan Fathy and other prominent architects.

**NOTE**

The time mentioned at the end of each of the above units indicates the tentative time taken to complete each. The marks for sessional work may be divided accordingly.

**REFERENCE BOOKS**

- "Building Systems for Low Income Housing", Ashok Kumar Jain; Management Publishing House, 1992
- "Low Cost Housing in Developing Countries", Guru Charan Mathur; For Centre for Science & Technology of the Non-Aligned and Other Developing Countries, Oxford & IBH Publishing Company, 1993

**ARD – 415 ENERGY EFFICIENT ARCHITECTURE**B.Arch 4<sup>th</sup> year (7<sup>th</sup> Semester)

Contact Hours per Week		Continuous Assessment Examination: 40%			End Semester Exam	Exam Duration	Credit			
L	T	P	D	Total				Mid Term	Class Test	Assignment/Quizzes /Projects/Attendance etc.:
2	1	-	-	3	20%	10%	10%	60%	3 hours	03

**OBJECTIVE**

To familiarize the students with role of energy in built environment and for the efficient use of energy in design process.

**CONTENTS****UNIT I (Time-three weeks)**

- Types, availability and reserves of conventional and non-conventional energy sources.
- Energy Conservation, Indian Energy Conservation Act 2001 Features, Energy Star Rating of buildings and Equipments, Bureau of Energy Efficiency.

**UNIT II (Time-six weeks)**

- Energy Conservation Building Code (ECBC).
- Energy Building Code, Guidelines: Thermal Insulation, Heating, Ventilation and Air .
- Conditioning System, Building Lighting Design: Lighting levels, light efficient options, CFL,
- LEDs, Fixtures, Day lighting timers, Building Energy Management.

**UNIT III (Time-seven weeks)**

- Introduction to Building rating systems in India. Detailed study on LEED and GRIHA (Green Rating for Integrated Habitat Assessment).
- Case study national and international examples.

**REFERENCE BOOKS**

- “Renewable Energy Sources and Their Environmental Impact”, Shahid A. Abbasi, Naseema Abbasi; PHI Learning Pvt. Ltd., 2004
- “Energy efficient buildings: architecture, engineering and environment”, Dean Hawkes, Wayne Forster; W.W. Norton & Company, 2002
- Indian Energy Conservation Act 2001, Gol
- Energy Conservation Building Code Manual, Gol
- “GRIHA Manuals”, The Energy and Resources Institute (TERI), 2011
- “Energy-efficient Buildings in India”; The Energy and Resources Institute (TERI), 2001

**ARD – 416 (Elective – I): (i) ART AND ARCHITECTURE**B.Arch 4<sup>th</sup> Year (7<sup>th</sup> Semester)

Contact Hours per Week		Continuous Assessment Examination: 40%			End Semester Exam	Exam Duration	Credit			
L	T	P	D	Total				Mid Term	Class Test	Assignment/Quizzes /Projects/Attendance etc.:
2	1	-	-	3	20%	10%	10%	60%	3 hours	03

**OBJECTIVE**

This course covers topics on in the development of human settlements in relation to infrastructure. The objective of the course is to make students aware about infrastructure as important part in analyzing planning problems.

**CONTENTS****UNIT I(Time-one week)**

- Introduction to application of art in Architecture, purpose of Applied Art, Principles and nature.

**UNIT II (Time-two weeks)**

- Paintings, Murals and Sculptures; Materials and techniques study of styles and changing trends in India from ancient times.

**UNIT III (Time-two weeks)**

- Decorative elements such as Jali Design; Inlay work; Relief art work; Study of changing needs in different periods- Dravidian, Gandhara, Gupta, Mughal, Rajput; Materials and techniques.

**UNIT IV (Time-three weeks)**

- Application of colors and textures in sculptures, murals, paintings, fountains etc., psychological effects of colors and textures.

**UNIT V (Time-two weeks)**

- Art expression, appreciation and symbolism; two and three dimensional forms; Aesthetic order; functional Importance.

**UNIT VI (Time-three weeks)**

- Interior and exterior space organization, graphic techniques of communication, form-space relation.

**UNIT VII (Time-three weeks)**

- Modern trends in applied art, contribution of science and technology in terms of new materials.
- Styles and techniques of modern masters.

**REFERENCE BOOKS**

- Architecture/ Art/ Parallels/ Connections- Barry A. Berkus AIA, the Image Publication Group Pvt. Ltd.
- "Design Fundamentals", Scott R.G.; McGraw Hill, 1951
- "Prebles' Artforms: An Introduction to the Visual Arts", Patrick Frank, Duane Preble, Sarah Preble; Pearson College Division, 2013
- Architecture: Form, Space, and Order, Francis D. K. Ching; John Wiley & Sons, 2014

**ARD – 416 (Elective – I): (ii) ARCHITECTURAL PHOTOGRAPHY & JOURNALISM**B.Arch 4<sup>th</sup> Year (7<sup>th</sup> Semester)

Contact Hours per Week		Continuous Assessment Examination: 40%			End Semester Exam	Exam Duration	Credit			
L	T	P	D	Total				Mid Term	Class Test	Assignment/Quizzes /Projects/Attendance etc.:
2	1	-	-	3	20%	10%	10%	60%	3 hours	03

**OBJECTIVE**

This course covers topics on in the photography in relation to Architecture & Journalism. The objective of the course is to make students aware about importance of visually analyzing the architecture and its interpretation through journalism.

**CONTENTS****UNIT I (Three Weeks)**

- General introduction to the art of photography; concept of color; concepts of lighting, distance, visual angle, Frames; media;

**UNIT II (Four Weeks)**

- Types of camera, properties and priorities; Exposure, Aperture, Speed; Photographic films, Film processing color, black and white, printing techniques, developing.

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**UNIT III (Nine Weeks)**

- Analysis of recent historical and contemporary examples of written and journalistic criticism of architecture, including selected writings by Indian and overseas critics; discursive techniques, analysis of major critical themes, thematic categories in architectural writing over the past three centuries.
- Works of Indian and international writers and critics will be presented and discussed. Seminars on Indian architectural writers, journalists and critics.
- Exercise on integrating photography in architectural journalism.

**REFERENCE BOOKS**

1. "Professional Secrets of Advertising Photography", Paul Markow; Amherst Media, 1998
2. Encyclopedia of practical photography, Eastman Kodak Company; Amphoto, 1979
3. "The New 35mm Photographer's Handbook: Everything You Need to Get the Most Out of Your Camera", Julian Calder, John Garrett; Three Rivers Press, 1999
4. Digital Photography for Dummies, Julie Adair King; John Wiley & Sons, 2012



**ARD – 416 (Elective – I): (iii) FUTURISTIC ARCHITECTURE**B.Arch 4<sup>th</sup> Year (7<sup>th</sup> Semester)

Contact Hours per Week		Continuous Assessment Examination: 40%			End Semester Exam	Exam Duration	Credit			
L	T	P	D	Total				Mid Term	Class Test	Assignment/Quizzes /Projects/Attendance etc.:
2	1	-	-	3	20%	10%	10%	60%	3 hours	03

**OBJECTIVE**

This course covers topics on future trends of architecture and its practice.

**CONTENTS****UNIT I (Time-two weeks)**

- Future concepts envisioned by earlier theorists and architects like Antonio Saint Elia and F.L. Wright

**UNIT II (Time-four weeks)**

- Emerging architectural paradigms such as programme generated architecture, dynamic architectural systems, virtuality, Trans architecture, data driven structures and 'glocal' approach through the study of relevant projects.

**UNIT III (Time-four weeks)**

- Evolution of contemporary architectural concepts-historical revival biomimicry adaptive reuse and low cost buildings; Futuristic building materials: Buildings; Futuristic building materials: Building tectonics and systems

**UNIT IV (Time-three weeks)**

- Study of specific building types-houses, office spaces, public buildings, skyscrapers and transportation hubs through various projects

**UNIT V (Time-three weeks)**

- Sustainable buildings including energy efficiency, Zero Energy and Energy Plus buildings and resource conservation

**REFERENCE BOOKS**

- 21st Century House- Bell ,J, Laurence King Publishing
- Materials for Architectural Design- Bell, Victoria Ballard, Laurence King Publishing
- Building a New Milleneum- Jodidio, P, Vol.1, Taschen
- Architecture Now- Jodidio, P.Vol. 2, Taschen

**ARD – 417 PROFESSIONAL TRAINING**B.Arch 4<sup>th</sup> Year (7<sup>th</sup> Semester)

Contact Hours per Week		Credit
L T P D	Total	02
- - - -	-	

Evaluation will be based on training completed during summer vacations.

**NOTES**

- The summer break will be used for Professional Training, which is to be undertaken as per CoA norms.
- The minimum period of training should be 06-08 weeks.
- Comprehensive Viva Voce will be conducted at the starting of semester which will consist of the report and the work done by the trainee and marks will be awarded as per the scheme given above.
- Trainees are required to submit training report duly signed by the employer and his assessment at the end of training period to the departmental course convener.

Contact Hours per Week		Continuous Assessment 60%		End Term (Lab Final) : 40%		Exam Duration	Credit
L T P D	Total	Record Mark: Assignment/ Quizzes /Projects/Attendance	Viva Voce	Final Exam	Viva Voce	6 Hours	07
2 - - 10	12	30%	30%	20%	20%		

**OBJECTIVE**

To make the students aware of Urban Design issues.

**CONTENTS****UNIT I (Time-Eight weeks)**

- Design an urban design scheme for any urban problem with emphasis to contextual issues.
- Design & plan of Urban agglomeration, Urban Haat etc.

**UNIT III (Time-Eight weeks)**

- Design of a Transport Terminal, Convention centre etc.

**NOTE**

Two design problems and one time problem of 01 week is to be completed in this semester. The concerned faculty is required to frame a detailed program for each of the above design problems and time problem with reference to the above contents.

**REFERENCE BOOKS**

- "The Image of the City", Kevin Lynch, The MIT Press, First Edition, 1960
- "The Urban Pattern: City Planning and Design", Arthur B. Gallion & Simon Eisner, Van Nostrand, Second Edition, 1963
- "People Places : Design Guidelines for Urban Open Space", Clare Cooper Marcus & Carolyn Francis, Van Nostrand Reinhold Company, First Edition, 1990
- "Urban Design : Green Dimensions", J.C. Moughtin & Peter Shirley, Architectural Press, First Edition, 1996
- "City Planning : Arco colour Urban Architecture (Arco colour collection)", Asensio Cervera & Francisco, Arco Editorial, 1996

**ARD – 422 INTERIOR DESIGN**B.Arch 4<sup>th</sup> Year (8<sup>th</sup> Semester)

Contact Hours per Week		Continuous Assessment 60%		End Term (Lab Final) : 40%		Exam Duration	Credit
L T P D	Total	Record Mark: Assignment/ Quizzes /Projects/Attendance	Viva Voce	Final Exam	Viva Voce	4 Hours	04
2 - - 4	06	30%	30%	20%	20%		

**OBJECTIVE**

To understand and appreciate the complexities and constraints in the design and execution of architectural interiors.

**CONTENTS****UNIT I (Time-five weeks)**

- Applications of colour, form and texture in interiors.
- Various material applications in interiors: walls, floors, ceilings and others
- Principles of aesthetic composition in interiors
- Meaning of spatial organizations, perceptual needs, psychological Needs, convenience, maintenance, durability and image in interior design.
- Use of artificial and natural lighting in interiors.

**UNIT II(Time-eleven weeks)**

- Interior design in terms of retail, hospitality, residential and commercial.
- Interior Design problem with details with focus on corporate interiors:Retail design-McDonalds/KFC/ICICI etc.

**NOTE**

Appraisal for above mentioned issues through various library case studies or live projects.

**REFERENCE BOOKS**

- "Interior Design", Ahmed Kasu,Om Books, 2005
- "Time Saver Standards for Interior design and space planning", De Chiara, Panero&Zelnik, McGraw-Hill, 1991
- "Interior Architecture" John Kurtich & Garret Eakin, Wiley,1<sup>st</sup> Edition, 1995
- "Interior Spaces", Hans DiterSchaal, Wiley, 1995
- "International Interiors", Lucy Bullivant,Laurence King Publishing, 1993

**ARD – 423 RESEARCH METHODOLOGY**B.Arch 4<sup>th</sup> Year (8<sup>th</sup> Semester)

Contact Hours per Week		Continuous Assessment Examination: 40%			End Semester Exam	Exam Duration	Credit			
L	T	P	D	Total						
2	1	-	-	3	20%	10%	10%	60%	3 hours	03

**OBJECTIVE**

To appreciate the process of research and make the students aware of its potential in the field of architecture.

**CONTENTS****UNIT – I (Time-four weeks)**

- Research in architecture – its nature, purpose and scope.
- Basic and applied research.
- Technical and behavioral – oriented research.

**UNIT – II (Time-four weeks)**

- Science and scientific method – various steps in scientific method: hypothesis, research design, data collection & analysis, conclusion and implications with special reference to architectural research.

**UNIT – III (Time-eight weeks)**

- Methods of conducting research.
- Selection of topics and its relevance.
- Identification and formulation of problem.
- Compiling and analyzing existing research database.
- Research design, research instruments and analysis.
- Presentation of results.
- Evaluation of findings, conclusions and recommendations.
- Techniques of research – report writing.

**NOTE**

The time mentioned at the end of each of the above units indicates the tentative time taken to complete each. The marks for sessional work may be divided accordingly.

**REFERENCE BOOKS**

- “Research : How to Plan, Speak and Write about it”, C. Hawkins & M. Sorgi, Springer-Verlag, 1985
- “Research Methodology” ,Rajagopalan, Mathews and Ramamurthy

**ARD – 424 URBAN DESIGN**B.Arch 4<sup>th</sup> Year (8<sup>th</sup> Semester)

Contact Hours per Week		Continuous Assessment Examination: 40%			End Semester Exam	Exam Duration	Credit			
L	T	P	D	Total				Mid Term	Class Test	Assignment/Quizzes /Projects/Attendance etc.:
2	1	-	-	3	20%	10%	10%	60%	3 hours	03

**OBJECTIVE**

To understand the principles and applications of urban design.

**CONTENTS****UNIT I (Four Weeks)**

- Introduction to Urban Design, its Principles and Techniques, Scope of Urban Design. Emergent concepts in urban design, Role of UAC.
- History & Heritage of Urban Design.
- Urban Design vocabulary, Elements of Urban Design.
- Concept of Urban Redevelopment, Urban Renewal and Urban Regeneration.

**UNIT II (Eight Weeks)**

- Importance of context in Urban design (Context analysis, regional study and project understanding). Impact of Factors such as economy, politics, religion and regional on urban design.
- Gentrification and social Imbalance.
- Concepts to be kept in mind (Gender issue, elderly People and Child) while designing.
- Study of Futuristic city and new urbanism.

**UNIT III (Four Weeks)**

- Concept of Neighborhood planning. Study of existing urban developments.
- Urban design exercises.

**REFERENCE BOOKS**

1. "Urban Design: Green Dimensions", J. C. Moughtin & Peter Shirley, Architectural Press, First Edition, 1996
2. "A New Theory of Urban Design (Center for Environmental Structure Series, Vol 6)", Christopher Alexander, Hajo Neis, Artemis Anninou & Ingrid King, Oxford University Press, 1987
3. "The Urban Design Handbook: Techniques and Working Methods", Ray Gindroz, Urban Design Associates, 2003
4. "Urban Design: Street and Square, J. C. Moughtin, Architectural Press, Third Edition", 2003
5. "Urban Spaces, No. 4", John Dixon, Visual reference publication, 2006

**ARD – 425 PROJECT MANAGEMENT**B.Arch 4<sup>th</sup> Year (8<sup>th</sup> Semester)

Contact Hours per Week		Continuous Assessment Examination: 40%			End Semester Exam	Exam Duration	Credit			
L	T	P	D	Total				Mid Term	Class Test	Assignment/Quizzes /Projects/Attendance etc.:
2	1	-	-	3	20%	10%	10%	60%	3 hours	03

**OBJECTIVE**

To let the students understand the onsite problems related to building construction and causes of delay in construction, as well as to inculcate the skills as a team manager.

**CONTENTS****UNIT I (Time-four weeks)**

- Aim, objectives and functions of Construction Management.
- Construction stages, Construction team
- Role of an architect in construction management.
- Management techniques and tools.

**UNIT II (Time-six weeks)**

- Bar charts and limitations of bar charts.
- Program Evaluation and Review Techniques (PERT)
- Critical Path Method (CPM) for project management
- Development and analysis of CPM net work
- Cost time analysis in network planning
- Scientific methods of construction management

**UNIT III (Time-six weeks)**

- Project management for repetitive types of buildings. Line of balance method – its working knowledge with exercises.
- Resources scheduling methods through Bar charts, CPM and Line of Balance method.
- Inspection and quality control.
- Safety in Construction.

**NOTE**

The time mentioned at the end of each of the above units indicates the tentative time taken to complete each. The marks for sessional work may be divided accordingly.

**REFERENCE BOOKS**

- Construction Planning and Management – U.K.Shrivastava
- Total Construction Project Management – George J Ritz

**ARD – 426 (Elective – II): (i) ARCHITECTURAL CONSERVATION** B.Arch 4<sup>th</sup> Year (8<sup>th</sup> Semester)

Contact Hours per Week		Continuous Assessment Examination: 40%			End Semester Exam	Exam Duration	Credit			
L	T	P	D	Total				Mid Term	Class Test	Assignment/Quizzes /Projects/Attendance etc.:
2	1	-	-	3	20%	10%	10%	60%	3 hours	03

**OBJECTIVE**

To equip students to deal with Architecture conservation, along with the related design issues of existing Architecture, old Monuments, and natural and urban heritage areas.

**CONTENTS****UNIT I (Time-five weeks)**

- Interactive session of History of heritage Buildings and cities.
- Introduction to conservation of Historic Buildings.
- Concepts and approach's to conservation in India and other countries.

**UNIT II (Time-six weeks)**

- Institutional Aspects of Conservation
- Conservation related Charters
- World Heritage legislation and Sites
- Conservation Acts & Legislation
- Archaeological Acts

**UNIT III (Time-five weeks)**

- Conservation Area practice, adaptive reuse, up gradation programs in old areas, infill design.
- Conservation of traditional water systems.
- Upgrading infrastructure, financing and implementation framework for redevelopment and revitalization projects.

**REFERENCE BOOKS**

- Architecture in Conservation: Managing Development at Historic Sites (Heritage: Care-Preservation-Management) –James Strike
- Protection, Conservation and Preservation of Indian Monuments- Shanti Lal Nagar
- Architectural and urban conservation- Santosh Ghosh, Ranajit Gupta, Sumita Gupta
- History of Architectural Conservation- Jukka Jokilehto



**ARD – 426 (Elective – II): (ii) HOUSING**B.Arch 4<sup>th</sup> Year (8<sup>th</sup> Semester)

Contact Hours per Week		Continuous Assessment Examination: 40%			End Semester Exam	Exam Duration	Credit			
L	T	P	D	Total						
2	1	-	-	3	20%	10%	10%	60%	3 hours	03

**OBJECTIVE**

To equip students to deal with housing, along with the related issues of existing Housing stock and its future requirement.

**CONTENTS****UNIT I (Time-Six Weeks)**

- Introduction to housing & human settlements, Housing policies and programs, settlements in the development of human civilization, role of Housing in social and economic development of the nation.
- Housing in five year plans & Social Housing plans.
- National housing Policy

**UNIT II (Time- four weeks)**

- Major elements of housing policy: land, finance, material, technology & legislation. Development concepts and human settlement planning.
- Slum area development.

**UNIT II (Time- six weeks)**

- Mass housing programs. Housing design and standards. Rural Housing.
- Housing design & standards, units of housing design form and structure of housing as shaped by socio economic and physical parameters, housing systems & sub systems. Partial and integrated environment quality; post occupancy evaluation, housing Satisfaction, housing demand and policy analysis.

**NOTE**

The time mentioned at the end of each of the above units indicates the tentative time taken to complete each. The marks for sessional work may be divided accordingly.

**REFERENCE BOOKS**

- Bennett L. Hecht (1990, "Developing Affordable Housing: A Practical Guide for Nonprofit Organizations" (Wiley Nonprofit Law, Finance and Management Series)
- Thomas Sowell (2009), "The Housing Boom and Bust"
- Sam Davis (1995), "The Architecture of Affordable Housing"
- Barbara Miller Lane (2009), "Housing and Dwelling: Perspectives on Modern Domestic Architecture"
- Barbara Miller Lane (2006), "Housing and Dwelling: Perspectives on Modern Domestic Architecture"
- Affordable Housing and Public Policy : Strategies for Metropolitan Chicago (Assembly Book); Lawrence B. Joseph (Editor)

**ARD – 426 (Elective – II): (iii) BUILDING MAINTENANCE**B.Arch 4<sup>th</sup> Year (8<sup>th</sup> Semester)

Contact Hours per Week		Continuous Assessment Examination: 40%			End Semester Exam	Exam Duration	Credit			
L	T	P	D	Total						
2	1	-	-	3	20%	10%	10%	60%	3 hours	03

**OBJECTIVE**

To understand historical building types and their conservation and a thorough knowledge of Building Maintenance can substantially contribute towards adequacy of design and suitability of materials.

**CONTENTS****UNIT – I (Time-four weeks)**

- Introduction: Maintenance defined. Need and Importance of building maintenance. Its economic and social significance.
- Categories of maintenance: Planned maintenance, preventive maintenance, running caretaker maintenance, PWD pattern of maintenance; A/R and S/R, maintenance cycles, maintenance profiles.

**UNIT – II (Time-six weeks)**

- Maintenance Generators: Climatic conditions; usages, defects in original design/construction, changing standards and tastes.
- Maintenance standards, determinants of maintenance standards, statutory standards, defective premises act, building bylaws & act, legislative controls, building & housing act.
- Organizing Maintenance; Managing maintenance, Financing & Budgeting for maintenance. Understanding technology and techniques involved in maintenance. Execution of maintenance work. Controlling costs. Information systems in maintenance. Inspections: annual, periodical, special, checklist and proformas.

**UNIT – III (Time-six weeks)**

- Creating database for maintenance, maintaining building registers, inventories, inspection reports, records, User complaints, buildings in danger.
- Understanding building defects & ailments, examining symptoms of various types and patterns of buildings disease and ailments, structural, non-structural finishes, stains, services ailments, leakages & dampness, corrosion protection, Sulphate attacks.
- Diagnosing & determining causes, prescribing effective remedial action.

**NOTE**

The time mentioned at the end of each of the above units indicates the tentative time taken to complete each. The marks for sessional work may be divided accordingly.

**REFERENCE BOOKS**

- Repair and Renovation of Modern Buildings – Ian Chandler
- A Manual of Maintenance Engineering – B. S.Nayak
- Maintenance and Repairs of Buildings – P.K.Guha
- Building Services Handbook - Hall, Fred

**ARD – 427 DISSERTATION**B.Arch 4<sup>th</sup> Year (8<sup>th</sup> Semester)

Contact Hours per Week		Continuous Assessment 60%		End Term (Lab Final) : 40%	Exam Duration	Credit
L T P D	Total	Record Mark: *	Viva Voce	Viva Voce	-	02
2 - - 0	02	30%	30%			

\* Marks are to be awarded on the detailed project report and open seminar.

**OBJECTIVE**

To make the students equip in and Data Collection, Analysis and Research of Architecture and Planning, Urban and Rural development and Socio-Economic conditions.

**CONTENTS****UNIT – I (Time-sixteen weeks)****Scope for Design/ Research Dissertation:**

- Topics / projects related to architecture and Planning
- Rural and Urban redevelopment projects
- Landscape projects

**Contents of report**

- Introduction
- Literature study and case study
- Analysis and Inferences
- Conclusion

**NOTE**

- Design dissertation on a topic (project) shall be approved by the department separately for each student in the end of previous semester. Projects may be based on ongoing, proposed development or new investigation in the related area.
- Students are also required to submit their thesis topics after the Viva-voce.
- Students are required to stay for a week for discussion on thesis topics and guide (External / Internal)
- Students are required to proceed for Case studies and Data collection of their respective approved Thesis topic in consultation with their Thesis Coordinators. This work has to be completed by the students in the summer break at the end of this semester.

## ARD – 511 ARCHITECTURE DESIGN THESIS (MAJOR PROJECT) B. Arch. 5<sup>th</sup> year (9<sup>th</sup> Sem)

Contact Hours per Week		Credit
L T P D	Total	10
0 - - 20	20	

Evaluation will be based on major project as per details below:

- **Stage I (Synopsis)** - Introduction, Validity, Aims & Objective, Methodology, Site Conditions and tentative space requirement
- **Stage II** - Synopsis, Case Studies, Data Analysis, Library study and Framing of the requirements, Design philosophy.
- **Stage III** –Concept, Pre-Final design proposal and Block Model. Detailed working drawings showing any two of the following services: Air-conditioning, Landscape, Structure, Interior detailing, Water supply & Sanitation or any other detail. Hard Bound report.
- **Stage IV** –Final design proposal along with model/views, to be evaluated by external examiner.

Teaching & Evaluation system

- The thesis studio will be conducted under the overall coordination of the thesis coordinator. In addition, one members of the Visiting/Expert Faculty would also be associated throughout the duration of the studio. Each student will be assigned a Thesis Guide (amongst the faculty), who will supervise the progress of the student's work on a regular basis.
- Approval of the thesis project will be done by the team comprising of the head of the department, the thesis coordinator and the respective thesis guide.
- **All stages of sessional work will be evaluated as per the clause 6.3 A(1 & 2) of UG manual.**
- Each student should have minimum one internal guide. Apart from that student may opt one external guide, from Academic/Research/Architectural Practice (Registered with COA & having experience of 5 yr or more) for which intimation & approval shall be done by DUGC.

**ARD – 512 PROFESSIONAL PRACTICE & ETHICS**B.Arch 5<sup>th</sup> Year (9<sup>th</sup> Semester)

Contact Hours per Week		Continuous Assessment Examination: 40%			End Semester Exam	Exam Duration	Credit			
L	T	P	D	Total				Mid Term	Class Test	Assignment/Quizzes /Projects/Attendance etc.:
2	1	-	-	3	20%	10%	10%	60%	3 hours	03

**OBJECTIVE**

Introduction to the professional, vocational and legal aspects of architectural practice and profession.

**CONTENTS****UNIT I (Time-two weeks)**

- Architectural professional association, its role and responsibilities.
- Introduction of Architects Act 1972. Council of Architecture – its role and responsibilities.

**UNIT II (Time-two weeks)**

- Code of professional conduct.
- Condition of engagement and scale of professional fees.
- Copyright Act as applicable to architectural work.
- Architectural competitions.

**UNIT III (Time-Five weeks)**

- Contract –Types, Preparation of contract documents general conditions of contract, interim certificates defect liability period, retention amount and virtual completion.
- Duties and liabilities of architects, contractors.
- Articles of agreement, execution of work payment and Arbitration.
- Tenders – types and the process of calling, security and selection system.
- Pre- Tender qualifications and registration of contracts.
- Office organizations and management, Role of design staff and supporting managerial staff; Personal management.

**UNIT IV (Time-Seven weeks)**

- Human Values: Morals, Values and Ethics, Integrity, Work Ethics, Service Learning, Civic Virtue, Respect For Others, Living Peacefully, Caring, Sharing, Honesty, Courage, Valuing Time, Co-Operation, Commitment, Self Confidence, Spirituality.
- Professional Ethics: Senses of 'Professional Ethics', Variety of model issues, types of inquiry, Moral dilemmas, Moral Autonomy, Kohlberg's theory, Gilligan theory, Consensus and controversy, Profession and Professionalism, Professional Ideals And Virtues, Theories About Right Action, Self-Interest, Customs And Religion, Uses Of Ethical Theories.
- GLOBAL ISSUES: Multinational corporations - Environmental ethics - computer ethics - weapons development - engineers as managers-consulting engineers-engineers as expert witnesses and advisors - moral leadership-
- Safety and risk - assessment of safety and risk - risk benefit analysis and reducing risk - the Three Mile Island and Chernobyl case studies.

**NOTE**

The time mentioned at the end of each of the above units indicates the tentative time taken to complete each. The marks for sessional work may be divided accordingly.

**REFERENCE BOOKS**

- "Ethic in Engineering", Mark Martin and Roland Schinzinger, Mccgrew hill,1999
- "Architects Handbook, A Ready Reckoner", Charanjit S.Shah, 2000
- "Town Planning", Rangwala, 2001
- "Handbook on Professional Practice". The Indian Institute of Architects.
- "Professional Practice", Roshan Namavati, 2004
- "Estimation, Costing and Valuation (Professional Practice)", Rangwala, 2002
- "Directory of Architects, List of Architects and Professional documents – Council of Architecture
- Architects Handbook", A Ready Reckoner – Charanjit S.Shah

**ARD-513 BUILDING BYE-LAWS & REGULATIONS**B.Arch 5<sup>th</sup> Year (9<sup>th</sup> Semester)

Contact Hours per Week		Continuous Assessment Examination: 40%			End Semester Exam	Exam Duration	Credit
L	T	P	D	Total			
2	1	-	-	3	60%	3 hours	03

**OBJECTIVES**

To familiarize the student with the regulatory system of construction on site.

**CONTENTS****Unit I****Introduction:**

- Legislative process –General Concept of Law: Source of law.
- Meaning of terms of law, legislation, ordinance, Bill, Act, code, standard, guidelines and Regulations and Bye-laws.
- Importance and benefits of building regulations, urban sociology.

**Unit II**

- Provisions of regulations as per National Building Code 2005
- Standards for residential buildings, Building by–laws of local authority, standards for industrial, public, commercial and institutional buildings.
- Local/regional and global case studies on planning and implementation mechanism- building bye laws, development controls and zoning regulations.

**Unit III**

- Regulatory types and their advantages and disadvantages
- Role of Regulatory structure, Enforcement criteria and detailed Technical requirements in development of effective regulations.
- Regulatory assessment and revision schedule.

**Unit IV**

- Various national standards, guidelines and regulations in India

**REFERENCE BOOKS**

- “Urban Planning”, Anthony James Catanese, James C. Snyder; McGraw-Hill, 1988
- “Introduction to planning practice” Allmendinger, Prentice Hall of India, 2000
- “Town and Country Planning”, Abercrombie P, 3rd Edition, Oxford University Press, 2004
- “Urban and Regional Planning in India: A Handbook for Professional Practice”, SK Kulshrestha
- “The Urban Sociology Reader”, Jan Lin, Christopher Mele, 2003
- “National Building Code 2005”, BIS India
- “UDPF Guidelines”, Ministry of Urban Affairs and Employment, GoI
- “Energy Conservation Building Code (ECBC)”, 2007
- “GRIHA Manuals” (Vol. 1-5), Teripress, New Delhi, 2003
- “Handbook of Energy conscious Buildings of India (HECB)”, MNRE, GoI, 2005

Contact Hours per Week		Credit
L T P D	Total	10
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Evaluation will be based on training performance, to be given by the architect under whom training is undertaken based on report and final evaluation.

#### NOTES

- The Winter break & entire Even semester will be used for Office Training, which is to be undertaken with an architect registered by the Council of Architecture India having minimum 5 years of practical experience
- The minimum period of training should be 18-20 weeks.
- Students can also pursue for training outside the Country, under any Architect whose degree is approved by Architect Act 1972 under Schedule (11) Section-14.
- Viva Voce( \* ) will be conducted as per the Academic Calendar, which will consist of the report and the work done by the trainee as per the guide lines & marks will be awarded as per the scheme given above.
- Trainees are required to submit monthly log book duly signed by the employer and his assessment at the end of training period to the Training & Placement Officer. These reports will be assessed by the Training & placement Officer.
- The following work is to be done by each trainee during the Office-Training:
  - **During Office hours**
    - Drafting, tracing, presentation drawings, perspectives models etc.
    - Working drawings and detailing.
    - Site Visits
    - The trainee is required to prepare a study report on the building/buildings designed by his/her employer. The report is to be based upon site visits and personal observations and will cover aspects of design, structure, use of material, construction methods, services etc.