



**DEPARTMENT OF ARCHITECTURE & PLANNING
VNIT, NAGPUR**





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Faculty Profile

Faculty	
Name	Specialization
Adane Vinayak	Building Services, Construction, Design, City Planning, Urban Infrastructure Planning.
Bahadure Pankaj	Urban Planning, Compact City Ideas, Housing
Bahadure Sarika	Construction, Design, Sustainable Development, Building Materials, Urban Planning
Bakde Vilas	Building Materials and Specifications, Building Construction, Visual Arts, Architectural Design, Housing, Slums.
Deshkar Sameer	Architectural Design, Urban Planning, Environmental Planning & Education, Disaster Management, Urban Biodiversity Conservation, Green Infrastructure Planning.
Deshmukh Amit	Detailing, Working Drawings, Building regulations, Interior Design, Computer applications, City Development Plans, Urban Legislations, Project formulations and implementation
Deshmukh Aniket	Architectural Design, Professional Office Practice, Urban Planning, Urban Transportation
Ghughe Vidya	Architectural Design, Urban Planning, Building Material, Graphics, Building Construction, RS & GIS thermal environment studies.
Joglekar Kishor	Construction, Architectural Graphics, Working Drawing, Transportation Planning.
Kapse Vijay	Construction Technology, Low Cost Housing, Architectural Graphics, Architectural Design, Urban Planning, Urban Poverty.
Khan Smita	Architectural Design, History & Theory of Architecture, Basic and Visual Arts, Interior & Space Design.
Kotharkar Rajashree	Climate Responsive Architecture, Green Buildings, Urban Sustainability, Urban Heat Island Study, Compact City, Vernacular Architecture and Urban Planning
Patil Akshay	Urban Design, Urban Complexity, Complexity Science, Emergence, Agent-Based-Modeling, Public Realm, Informal Sector, and Human Settlements.
Sabnani Chandra	Interior Design, Appropriate Technology, Architectural Design, Low Cost Housing, Urban Planning.
Surawar Meenal	Urban Planning, Sustainable Development and GIS
Wahurwagh Amit	Architectural Conservation, Cultural Landscapes, Architectural Knowledge systems.



**MAPPING OF COURSE
B. ARCHITECTURE
YEAR OF ADMISSION
2015-2016**

OVERALL CREDIT STRUCTURE					
Undergraduate Core (UC)			Undergraduate Elective (UE)		
Category	Credit	% of total	Category	Credit	% of total
Departmental Core (DC)	168	76.71	Departmental Electives (DE)	17-23	10.50
Basic Sciences (BS)	4	1.83	Humanities (HM)	0-3	
Engineering Arts and Science (ES)	18	8.22	Open Category (OC)	0-3	
Humanities and Social Science (HU)	6	2.74			
Total	196	89.50	Total	23	10.50
Grand Total UC+UE			219		

Syllabus for 1st & 2nd Semester is approved in last senate dated 27/07/2015.



MAPPING OF COURSE										
B. ARCHITECTURE										
YEAR OF ADMISSION 2015-16										
SEM	SR. NO.	CODE	COURSES	STRUCTUR			CREDITS	CATEG ORY	TOTAL CREDITS	Hou rs
				L	T	P				
I	1	ARP 161	Basic Design	1	0	6	4	DC	4	38
	2	ARP 162	Graphics I	0	0	4	2	DC	2	
	3	ARP 163	Visual Arts	0	0	4	2	DC	2	
	4	ARL 158	Construction I	2	0	4	4	DC	4	
	5	ARL 151	Building Materials	3	0	0	3	DC	3	
	6	ARL 152	History of Architecture I	3	1	0	4	DC	4	
	7	HUL 179	Communication Skills	2	0	2	3	HU	3	
	8	MAL 103	Mathematics	3	1	0	4	BS	4	
	9	SAP 101	Health Information and Sports- Part1	0	0	2	0		0	
				14	2	22	26		26	
II	1	ARP 164	Architectural Design I	1	0	6	4	DC	4	37
	2	ARP 165	Graphics II	0	0	4	2	DC	2	
	3	ARP 166	Modeling Workshop	0	0	4	2	DC	2	
	4	ARL 159	Construction II	2	0	4	4	DC	4	
	5	ARL 153	Climate Responsive Architecture	3	1	0	4	DC	4	
	6	ARL 154	History of Architecture II	3	0	0	3	DC	3	
	7	ARL 155	Theory of Architecture	3	0	0	3	DC	3	
	8	AML 169	Engineering Mechanics	3	1	0	4	ES	4	
	9	SAP 102	Health Information and Sports- Part2	0	0	2	0		0	
				15	2	20	26		26	
III	1	ARP 271	Architectural Design II	1	0	6	4	DC	4	36
	2	ARP 272	Graphics III	0	0	4	2	DC	2	
	3	ARL 258	Construction III	3	0	4	5	DC	5	
	4	ARL 251	History of Architecture III	3	1	0	4	DC	4	
	5 / 6	ARL 261	Advanced Building Materials	3+3	0	0	3+3	DE (1 & 2)	3+3	
		ARL 262	Art & Architecture Appreciation							
		ARL 263	Environmental Studies							
		ARL 264	Green Architecture							
	5 / 6	ARL 265	Barrier Free Environmental Design							
7	CEP 283	Surveying	0	0	4	2	ES	2		
8	AML 281	Strength of Materials	3	1	0	4	ES	4		
				16	2	18	27		27	
IV	1	ARP 273	Architectural Design III	1	0	6	4	DC	4	35
	2	ARP 274	Computer Aided Design and Simulation	0	0	4	2	DC	2	
	3	ARL 259	Construction IV	3	0	4	5	DC	5	
	4	ARL 252	Building Services I	3	1	0	4	DC	4	
	5	ARL 253	History of Human Settlements	3	0	0	3	DC	3	
	6	ARL 254	Environment Behavioral Studies	3	0	0	3	DC	3	
	7	ARP 276	Visual Communication	0	0	4	2	DE (3)	2	
		ARP 277	Building Documentations							
	8	ARL 266	Vernacular Architecture	3	0	0	3	DE (4)	3	
ARL 267		Contemporary Design Theory and Criticism								
AML 381		Theory of Structure								
				16	1	18	26		26	



V	1	ARP 361	Architectural Design IV	1	0	8	5	DC	5	
	2	ARP 362	Working Drawing I	0	0	4	2	DC	2	
	3	ARL 358	Construction V	3	0	4	5	DC	5	
	4	ARL 351	Building Services II	3	1	0	4	DC	4	
	5	ARL 352	Specifications	3	0	0	3	DC	3	
	6	ARL 353	Building Legislation	3	0	0	3	DC	3	
	7	AML 482	Concrete Structures	3	1	0	4	ES	4	
				16	2	16	26		26	34
VI	1	ARP 363	Architectural Design V	1	0	8	5	DC	5	
	2	ARP 364	Working Drawing-II	0	0	4	2	DC	2	
	3	ARL 359	Construction VI	3	0	4	5	DC	5	
	4	ARL 354	Building Services III	3	0	0	3	DC	3	
	5	ARL 355	Acoustics	3	0	0	3	DC	3	
	6	ARL 356	Estimation and Valuation	3	0	0	3	DC	3	
	7	AML 481	Steel Structures	3	1	0	4	ES	4	
				16	1	16	25		25	33
VII	1	ARP 481	Architectural Design VI	1	0	8	5	DC	5	
	2	ARL 458	Landscape Design	2	0	4	4	DC	4	
	3	ARL 454	Urban Planning and Design	3	0	0	3	DC	3	
	4	ARL 455	Professional Practice	3	0	0	3	DC	3	
	5/6	ARL 461	Disaster Mitigation and Management	3+3	0	0	3+3	DE (5 & 6)	3+3	
		ARL 462	Appropriate Technology							
		ARL 463	Rural Planning and Development							
ARL 464		Building Repair and Restoration								
	AML 483	Earthquake Resistant Structures								
				15	0	12	21		21	27
VIII	1	ARP 482	Architectural Design VII	1	0	8	5	DC	5	
	2	ARL 459	Interior Design	2	0	4	4	DC	4	
	3	ARL 453	Construction and Project Management	3	0	0	3	DC	3	
	4	ARL 466	Project Proposals and Documentations	3	0	0	3	DE (7)	3	
		ARL 467	Architectural Conservation							
		ARL 468	Architectural Research Methods							
5	HUL	Building Economics & Real Estate Development	3	0	0	3	HU	3		
				12	0	12	18		18	24
IX	1	ARC 401	Practical Training	0	0	8	8	DC	8	
				0	0	8	8		8	
X	1	ARD 401	Project I (Seminar and Dissertation)	0	0	6	3	DC	3	
	2	ARD 402	Project II	0	0	20	10	DC	10	
	3	ARL 469	Housing	3	0	0	3	DE (8)	3	
		ARL 470	Infrastructure Planning and Design							
		ARL 471	Industrial Architecture							
				3	0	26	16		16	29
				123	10	168	219	0	219	301



Notes

Method of Assessment

1. Lecture Course (L): Remains same as per institute norms.

2. Studio Course (P):

- Continuous evaluation same as P type course as per institute norms
 - A. Architectural Design Courses should have: Minor Problem, Major Problem and External Viva
 - B. Architectural Design assignments shall be of group (minor) & individual (major) type.

3. Assessment Method for combined Lecture and Studio Course:

The marks percentage distribution is as follows:

Ses I	Ses II	ESE (End Sem Exam)	Mid Term Evaluation I (MTA I)	Mid Term Evaluation II (MTA II)	End Term Evaluation (ETA)
10	10	30	15	15	20

- Studio assessment should be done one week prior to the End Semester Exam (ESE).
- Student failing to get 40% marks in the studio component of the subject will not be allowed to appear for the End Exam and he/she will be awarded FF grade
- The student will be asked fresh registration for the course in the subsequent Even/Odd semester.

Prerequisite:

- To register for Project in X Semester, A1 - Credits for all previous Architectural Designs should be earned
- The students should have earned credits for all previous architectural Designs including Basic Design to be eligible to register for Project in X semester.
- The Student should have earned 140 credits to be eligible to register for Practical Training.
- The student will be allowed to register for only one course(Theory Type) along with practical training(for students with backlog)
- Only one theory course can be registered along with practical training (for students with backlog).

Zero Credits Courses:

Health Information and Sports- Part1 and Part 2 are zero credit course (same as Institute norms).

Electives:

- There are 8 elective subjects to be offered.
- The student should select one in X Semester.
- The department should offer minimum two courses under each elective head.

Study Tour:

- Study tour is integrated with Architectural Design III (Fourth Semester) and Architectural Design V (Sixth Semester) with weightage of 10-20%.

Students in the current program with backlog will be suggested suitable equivalent courses in consultation with faculty advisor and HoD (Applicable only for the students with backlog).



**MAPPING OF COURSE
B. ARCHITECTURE
YEAR OF ADMISSION 2015-16**

SEM	SR. NO.	CODE	COURSES	STRUCTURE			CREDITS	CATEG ORY	TOTAL CREDITS	Hours
				L	T	P				
I	1	ARP 161	Basic Design	1	0	6	4	DC	4	
	2	ARP 162	Graphics I	0	0	4	2	DC	2	
	3	ARP 163	Visual Arts	0	0	4	2	DC	2	
	4	ARL 158	Construction I	2	0	4	4	DC	4	
	5	ARL 151	Building Materials	3	0	0	3	DC	3	
	6	ARL 152	History of Architecture I	3	1	0	4	DC	4	
	7	HUL 179	Communication Skills	2	0	2	3	HU	3	
	8	MAL 103	Mathematics	3	1	0	4	BS	4	
	9	SAP 101	Health Information and Sports- Part I	0	0	2	0		0	
				14	2	22	26	0	26	38

Note: Courses already approved



SUBJECT NAME: BASIC DESIGN	SUBJECT CODE: ARP 161 (DC) L-T-P (Credits): 1-0-6 (4)	B. ARCH. SEMESTER: I
Objective:		
<ul style="list-style-type: none">• To introduce the various facets of art and architecture and formal vocabulary of design.• To understand the elements and principles of Basic Design as the building blocks of creative design and visual composition.• To nurture creativity and sensitise the pupil to various design aspects.		
Course:		
Introduction to Architectural Design through Basic Design Terminology and concepts. <ul style="list-style-type: none">○ Elements of Design: Properties, qualities and characteristics of point, line, direction, plane, shape, form, colour and texture○ Principles of Design: Scale, Proportion, Balance, Harmony, Rhythm Contrast, etc. <ul style="list-style-type: none">• Elementary design exercises for study and exploration using elements and principles of design by means of two and three dimensional compositions.• Introduction to Expression in Art and Architecture - sense of enclosure-openness, robustness, dynamism, spatial geometry, etc• Appraisal of design form in terms of visual character, play of light and shade, solids and voids etc.		
Sessional work: Number of exercises in the form of design studios, seminars and creative workshops.		
Method of Assessment:		
Assessment of students' work, Progressive evaluation at three stages, Time Problem.		
Expected Outcome:		
<ul style="list-style-type: none">• Understanding of the qualities and effects of different elements and principles of design along with their composite fusion.• Understanding of space and form through 2D and 3D Composition.		
References:		
<ol style="list-style-type: none">1. Charles Wallschlaggerm and Cynthia Basic-Snyder, “Basic Visual Concepts and Principles for Artists, Architects and Designers”, Mc Graw Hill, New York 1992.2. Exner V., Pressel D., “Basics Spatial Design”, Birkhanser, 2009.3. Francis D.K.Ching, “Architecture: Form, Space and Order”, Van Nostrand Reinhold Co., (Canaa), 1979.4. Joshua C. Taylor, “Learning to Look: A Handbook for the Visual Arts”, (Phoenix Books), University Of Chicago Press, 19815. Mark Baskinger and William Bardel, “Drawing Ideas: A Hand-Drawn Approach for Better Design”, Watson-Guptill, 2013.6. Nathan Knobler, “Visual Dialogue”, Harcourt School; 3 Sub Edition, 1980.7. Owen Cappleman and Michael Jack Jordon, “Foundations in Architecture: An Amotated Anthology of Beginning Design Project”, Van Nostrand Reinhold New York, 1993.8. Paul J. Zelanski and Mary Pat Fisher, “The Art of Seeing”, Pearson, 2010.9. Prammar V.S., “Design fundamentals in Architecture”, Somaiya Publications Pvt. Ltd., New Delhi, 1973.		
Pre-requisite:		
Nil		



SUBJECT NAME: GRAPHICS I	SUBJECT CODE: ARP 162 (DC) L-T-P (Credits): 0-0-4 (2)	B. ARCH. SEMESTER: I
Objective:		
<ul style="list-style-type: none">• The Subject is aimed at developing the drawing skills as tools for creative thinking, visualization, perception, imagination, representation and to understand fundamentals of architectural drawing.• Students shall understand the graphic treatment of two and three dimensional drawings including perception and presentation of simple architectural shapes, forms and basic elements of building /structure.• Students shall also be familiarized for preparing and developing architectural innovative presentation techniques including lettering and rendering, etc.		
Course:		
<ul style="list-style-type: none">• Introduction to architectural drafting Architectural techniques. Drawing of different types of Architectural Letterings.• Understanding concept of Scale, their construction including Plain and Diagonal scales. Knowing use of architectural scale in drawings. Drawing of interesting 2 dimensional images in Reduced and Enlarge scales.• Concept of Orthographic Projections. Introduction to projections of basic elements like ...point, lines, planes and solids with reference to HP and VP. Drawing of relevant simple compositions in plan and all elevations.• Sections and true sections of all types of solids in different positions.• Development of lateral surface of all types of solids.• Explaining concept of Isometric & Axonometric projections / views. Understanding concept of Isometric scale. Drawing of Isometric views of all simple solids including few of interesting compositions of building elements like column, beam and slabs etc.• Graphical codes / symbolical presentations (in plans, sections and elevations) of basic building materials and constructional elements, furniture, services like water supply, sanitation and electrical etc.• Preparation of presentation drawings (plan and elevations) of minor innovative built form, furniture, building components etc.		
Method of Assessment:		
Plates, sketches and tests.		
Expected Outcome:		
?		
References:		
<ol style="list-style-type: none">1. Bhatt N. D. “Engineering Drawing”, Charotar Publishing House.2. John Montague, Willey, John Willey and sons, Inc. “Basic Perspective Drawing”, A Visual Approach, Sixth Edition.3. Shah, Kale & Patki, “Building Drawing”, Tata McGraw-Hill Book Co.4. Mulik S.H. “Perspective & Sciography”,5. Narayanan K.L. “Engineering Drawing”, SciTech Publications.		
Pre-requisite:		
Nil		



SUBJECT NAME: VISUAL ARTS	SUBJECT CODE: ARP 163 (DC) L-T-P (Credits): 0-0-4 (2)	B. ARCH. SEMESTER: I
Objective: <ul style="list-style-type: none">This studio aims at imparting basic artistic backing essential in architectural learning. The objectives of the course include polishing the skills of the hand by intensive working with different mediums to help enhance self-expression through effective visual presentation. It also includes study of basic principles of visual arts and relationship of allied forms of art, their contributions in the enrichment of architectural expression and understanding of Architectural Tectonics.		
Course: <ul style="list-style-type: none">Mediums of Expression. Use of pencil, pen and ink and charcoal sketching, Learning through exercises of sketching, shading, free hand drawing, rendering etc. by use of mixed media rendering, water colour compositions and primary use of acrylic/ oil colours. Architectural sketching and rendering of historic and contemporary buildings using different mediums.Colour theory. Hues, Chromatic and Tonal Values of colours. Colour wheel and colour composition, Properties (visual and psychological) of colour, Symbolism of colours, Types of colour schemes.Alternative media exploration. Experimentation through advanced art exercises; glass painting, earthen pot painting, mural making, mixed media, collage etc. Link with digital media.Principles of visual arts. Enhancing understanding by experimentation through use of elements of visual arts such as point, line, plane, form, space, colour, texture, light, solids and voids, shadow and shade etc.Allied visual and performing arts and relationship to built environments.Tectonics: Understanding of effect of scale, proportions, order, material effects such as textures, patterns, light, sound, temperature etc in architectural spaces.		
Method of Assessment: <p>Continuous evaluation of studio work through midterm evaluations and end term evaluation on completed portfolio at semester end.</p>		
Expected Outcome: <ul style="list-style-type: none">Exercises of sketching, shading, free hand drawing, rendering etc. on sketch book, drawing sheets in studio and outdoor sketching etc.Experimentation with colours, learning through exercises and creative tasks.Seminar presentations, Book reviews, Notes and reports for study components.Model making and creative assignments to experiment and explore different media and possibilities for application in visual arts.		
References: <ol style="list-style-type: none">Gill Robert; “Rendering with Pen & Ink”. Thames & Hudson, London.Ruskin John; “Seven lamps of Architecture”, George Allen & Unwin Ltd., London, 1925.Salingaros Nikos; “A Theory of Architecture”, Umbau, 2008.“Scott. Design Fundamentals”.Sukhatme Shirish; www.artinarch.co		
Pre-requisite: <p>Nil</p>		



SUBJECT NAME: CONSTRUCTION I	SUBJECT CODE: ARL- 158 (DC) L-T-P (Credits): 2-0-4 (4)	B. ARCH. SEMESTER: I
Objective:		
<ul style="list-style-type: none">Objective of the course is to learn in progression various construction systems from simple building construction techniques to comprehensive, complex construction methods. The subject is focus on understanding the relationship between architectural design, building materials, services etc. Emphasis shall be on reasoning and analysis while acquainting the students with different building elements. The course shall aim at building a strong sense of visualization to enable students to evolve and apply alternative materials and methods of construction. At first year level student shall aware about various technical terms, basic principles of construction and methods / techniques of construction through various elements / components of building.		
Course:		
<ul style="list-style-type: none">Introduction to various elements of building from foundation to roof.General idea of load transmission in load bearing & frame structures, their advantages, disadvantages and suitability.Introduction to various types of foundations with emphasis on simple foundation for load bearing walls, plinth filling, steps, etc.Various types of construction in brick and stone masonry. Types of bond – English, Flemish, Local etc.Introduction to various types of Lintels and Arches.Introduction to basic tools and equipments used in construction.		
Method of Assessment:		
Sessional and End term Examination. Continuous evaluation of student work and Teacher Assessment.		
Expected Outcome:		
References:		
<ol style="list-style-type: none">Arora, S.P. & Bindra, S.P., “A Text Book of Building Construction”, Dhanpat Rai & Sons, New Delhi, 1994.Barry R., “Construction of Building”, Orient Longman lid, 1999.Chudley R., “Building Construction Handbook”, British library cataloguing, 2008.Francis DK Ching, “Building Construction Illustrated”, Van Nostrand Reinhold Ltd., 2001.Goyal, M.M , “Handbook of Building Construction”, Thomson Press.2004Jha, J. & Sinha, S.K., “Building Construction”, Khanna Publishers, New Delhi, 1977.Kumar S.K., “Building Construction”, Standard publisher. 2003.Mckay, W.B, “Building Construction” - Vol. I, Longman, 2005.Mehta, M., Scarborough, W. and Armpriest, Diane, “Building Construction: Principles, Materials and Systems”, Pearson Prentic Hall, 2008.Punmia B.C., “Building Construction”, Laxmi Publications Pv. Ltd., 1995.Rangwala S.C., “Building Construction”, Charotar Publishing House, 1963.Simmons H. L, “Olin’s Construction Principles, Materials and Methods”, John Wiley and Sons, 2007.		
Pre-requisite:		
Nil		



SUBJECT NAME: BUILDING MATERIALS	SUBJECT CODE: ARL-151 (DC) L-T-P (Credits): 3-0-0 (3)	B. ARCH. SEMESTER: I
Objective: The objective of the course is to make the students aware of various building materials used in construction industries and to understand their relationship with architectural design and building construction.		
Course: Study of various materials used commonly for building construction in rural & urban areas, with their properties, various types, market forms available and application in buildings. <ul style="list-style-type: none">• Clay products: Classification of bricks, Fire Brick, Fly Ash Bricks, Tiles, Terra-cotta, Earthenware, Porcelain, Stoneware.• Stones: Uses of Stones, Qualities of Good Building Stones, Dressing, Common Building Stones of India, Artificial Stone.• Cement: Properties, Different Types and Uses in Building construction• Mortar & Concrete: Composition, Classification and Uses of Mortar, Proportioning Concrete, Curing, and Types Of Concrete.• Glass: Classification with Commercial Forms, their Suitability, limitations, precautions, etc.• Timber: Market Forms & Industrial Timber, their suitability, limitations, precautions, etc.• Metals: Ferrous & Nonferrous Metals and Alloys, Commercial Forms, their Suitability, limitations, precautions, etc.• Paints and Varnishes: Different types of paints, method of application on different surface, their Suitability, limitations, precautions, etc.		
Method of Assessment: Tests, Assignments, Site Visit and Market Survey Reports		
Expected Outcome: To make the students aware about the different materials available for building materials along with their properties, uses, their Suitability, limitations, precautions, etc.		
References: <ol style="list-style-type: none">1. P.G. Varghese, "A Text Book of Building Materials", Prentice-Hall of India Pvt. Ltd., Publication.2. Mohan Rai and M.P. Jain "Advances in Building Materials and Construction" Singh publication by CBRI, Roorkee.3. H. Zhang, "Building Materials in Civil Engineering", Woodhead Publishing, ISBN: 978-1-84569-955-04. Arora, "Building Materials",5. Khanna, "Civil Engineers Hand Book"6. Chaudhary, "Engineering Materials Engineering Materials", Dr. Janardan Jha Khanna Publishers.7. R K Rajpoot, "Engineering Materials",8. Rangawala P.C. "Engineering Materials", Charter Publishing House, Anand, India.9. Sushil Kumar, "Engineering Materials", Standard Publication and Distributors, New Delhi.10. Chakraborti M "Estimating, Costing, Specification and Valuation in Civil Engineering" (English) 24th Edition11. "National Building Code 2005".12. "Use of Bamboo & reeds in construction", UNO publications.		
Pre-requisite: Nil		



SUBJECT NAME: HISTORY OF ARCHITECTURE I	SUBJECT CODE: ARL-152 (DC) L-T-P (Credits): 3-1-0 (4)	B. ARCH. SEMESTER: I
Objective: Study the chronological evolution and impacts of geographic, climatic, geological, religious, political and socio-cultural backgrounds of Indian ancient and medieval architecture – in relationship to materials and techniques of construction.		
Course: Introduction to evolution of built form design as a result of socio cultural, physical, technological factors manifested in design attitudes during various phases in history. <ul style="list-style-type: none">• Understanding of the causative forces - the cultures, history, socio religious practices and institution, political and economic conditions, issues of land, climate and technology, Historical and Primitive Architecture.• Study of architectural developments in India from Indus valley culture to rise, spread & decline of Buddhism & Jainism. Rock-cut Architecture.• Evolution of Hindu Temple: Gupta, Aihole, Badami, Pattadakal, Mahabalipuram. Indo Aryan Style: Orrisa, Khajuraho, Gujarat, Rajasthan. Dravidian Style: Chola, Chalukyan, Pandya, Pallava, Hoysala Style, Revival of Hindu architecture of South India at Vijaynagara and Madurai.• Indo Islamic Architecture in India: Imperial Architecture of Delhi, including Slave dynasty, Khilji dynasty, Tughlak dynasty, Sayyid dynasty, Lodhi dynasty.• Provincial Style Architecture: Development of regional styles noticed in various provinces such as Bengal, Jaunpur, Gujarat, Mandu, Deccan, Malwa and Bijapur.• Mughal Architecture of India– characteristics, styles, features of different periods and its blend on other styles and vice-versa. Maugham gardens.		
Sessional work: Sessional examination and End term Examination, Assignments, Site Visit, Reports, Seminars and Documentation of historic structure, Sketches, Plates, and tests.		
Method of Assessment:		
Tutorials work: aims at to generate interest in the theory course, enjoy and appreciate historic structures, changing the way architectural history is viewed and studied. Short exercise (in groups) on comparative studies and architecture timeline chart preparation; emphasize the connections, contrasts, and influences of architectural movements throughout history, Case studies and photo essays.		
Expected Outcome:		
References: <ol style="list-style-type: none">1. Bannister Fletcher, “A History of Architecture”, 20th edition, CBS Publishers and Distributors, New Delhi, 19992. Christopher Tadgell, “History of Architecture”3. Francis D.K.Ching, “A Global History of Architecture”, John Wiley and Sons., (Canada), 20114. Henri Stierlin, “Hindu India”, From Khajuraho to the temple city of Madurai, Taschen, Paris, ISBN 3-8228-7649-65. Percy Brown, “Indian Architecture (Buddhist and Hindu)”, D. B. Taraporevala Sons and Co. Private Ltd., Bombay, India, 19956. Percy Brown, “Indian Architecture (Islamic Period)”, D. B. Taraporevala Sons and Co. Private Ltd., Bombay, India, 19957. Satish Grover, “History of Architecture”8. Satish Chandra, “History of Architecture & Ancient Building Materials in India”9. Simon Unwin, “Analysing Architecture”, Roulledge, London, 2003.		
Pre-requisite:		
Nil		



SUBJECT NAME: COMMUNICATION SKILLS	SUBJECT CODE: HUL179 (HU) L-T-P (Credits): 2-0-2 (3)	B. ARCH. SEMESTER: I
Objective: To impart to the students the skills that they need in their academic, and later in their professional pursuit. To train the students to adopt an innovative approach to English language teaching and learning.		
Course: ENERGY: Oil, Nuclear Preparation, Alternative Sources COMPUTERS: Introducing Computers, New Frontiers, Computers in India TECHNOLOGY: Appropriate Technology, Printing, Evaluating Technology ENVIRONMENT: Pollution, Ecology, Our living Environment INDUSTRY: Personnel and Production, Safety and Training, Selling Product		
Method of Assessment:		
Expected Outcome:		
References: 1. Orient Longman , A Textbook of English for Engineers and Technologists. 2. Quirk R.and Greenbaum S., A University Grammar of English. 3. Krishnaswamy N., English Grammar (Longman Publication) (Macmillan India Ltd)		
Pre-requisite: Nil		



SUBJECT NAME: MATHEMATICS	SUBJECT CODE: MAL103 (BS) L-T-P (Credits): 3-1-0 (4)	B. ARCH. SEMESTER: I
Objective: <ul style="list-style-type: none">The objective of this subject is to expose student to understand the basic concepts of differential and integral calculus, ordinary differential equations, matrix theory, three dimensional geometry and basic statistics		
Course: <p>Calculus:Tangent and Normal, Maxima and minima of functions of one variable, Curvature (Cartesian and Parametric form), Curve tracing, Taylor's and Maclaurin's expansion for one variable, Indeterminate forms, partial differentiation, Maxima and minima of functions of two variables. Double integrals, Calculation of areas using double integrals (Cartesian and Polar), Applications of double integrals for Centre of gravity and Moment of inertia.</p> <p>Ordinary Differential Equations: First order ODEs: Method of solution, orthogonal trajectories, Newton's law of cooling. Second and higher order linear ODEs: Solution of homogeneous and non-homogeneous linear equations with constant coefficients, Applications.</p> <p>Matrices: Review of inverse of a square matrix using Adjoint matrix. Rank of a matrix, consistency and inconsistency of system of linear equations, solution of LPP using graphical method.</p> <p>Three Dimensional Geometry: Directional Cosines and ratio's, angle between two lines, equations of straight line, coplanar lines, equation of plane, shortest distance between lines and planes, tangent plane and normal line, sphere.</p> <p>Statistics: Arithmetic mean, median, mode, standard deviation and variance, regression and correlation; Curve fitting, method of least squares (Straight line and parabola),</p>		
Method of Assessment:		
Expected Outcome:		
References: <ol style="list-style-type: none">Kreyszig, E., "Advanced Engineering Mathematics", 8th Edition, John Wiley & Sons, New York 2008.Thomas G.B., "Calculus and Analytical Geometry", Addison Wesley, London, 1998.Grewal B.S., "Higher Engineering Mathematics", Khanna Publishers, New Delhi, 2011.Jain, R.K. and Iyengar, S.R.K.; "Advanced Engineering Mathematics; Narosa Publishers 2005.Piskunov, N.: "Differential and Integral calculus", Vol. 1, Vol. 2, MIR Publishers, Moscow - CBS Publishers and Distributors (India),1996.James Stewart, "Calculus -Early Transcendental", Thomson Brooks/Cole, 2008.		
Pre-requisite:		
Nil		



SUBJECT NAME: HEALTH INFORMATION AND SPORTS-PART 1	SUBJECT CODE: SAP 101 L-T-P (Credits): 0-0-2 (0)	B. ARCH. SEMESTER: I
Objective: To provide physical fitness and good health. Create awareness among the students about their health status by conducting various tests and measurements and suggest them suitable remedial physical fitness program so that they can improve physical and physiological health status. To improve productivity, foster social harmony, inculcate sense of discipline and dedication in general life, develop the spirit of team work, through various sports activities.		
Course: Development of components of fitness through conditioning exercises: Strength: (Strength Endurance, Maximum Strength, explosive strength), Endurance: (aerobic endurance, anaerobic endurance, speed endurance and strength endurance), Speed, Co-coordinative ability, Flexibility Physical Efficiency Test Level 1 (Testing and Evaluation of Physical Fitness): Cooper Test 12 minute run or walk test, Sit and reach test, 100 meter run, one minute sit up test, Push up/Bent knee push up test, Teaching and development of sports skills: Cognitive, Perceptual, Motor, Perceptual motor. First Aid training: Intramural phase 1: Identification of sports talent through exposing students to inter-section tournament. Football, Volleyball, throw ball, table tennis & Chess.		
Method of Assessment:		
Expected Outcome:		
References:		
Pre-requisite: Nil		



MAPPING OF COURSE
B. ARCHITECTURE
YEAR OF ADMISSION 2015-16

SEM	SR. NO.	CODE	COURSES	STRUCTURE			CREDITS	CATEG ORY	TOTAL CREDITS	Hours
				L	T	P				
II	1	ARP 164	Architectural Design I	1	0	6	4	DC	4	
	2	ARP 165	Graphics II	0	0	4	2	DC	2	
	3	ARP 166	Modeling Workshop	0	0	4	2	DC	2	
	4	ARL 159	Construction II	2	0	4	4	DC	4	
	5	ARL 153	Climate Responsive Architecture	3	1	0	4	DC	4	
	6	ARL 154	History of Architecture II	3	0	0	3	DC	3	
	7	ARL 155	Theory of Architecture	3	0	0	3	DC	3	
	8	AML 169	Engineering Mechanics	3	1	0	4	ES	4	
	9	SAP 102	Health Information and Sports- Part2	0	0	2	0		0	
				15	2	20	26		26	37



SUBJECT NAME: ARCHITECTURAL DESIGN I	SUBJECT CODE: ARP 164 (DC) L-T-P (Credits): 1-0-6 (4)	B. ARCH. SEMESTER: II
Objective:		
<ul style="list-style-type: none">• Conceptualization of Form, Space and Structure through creative thinking• Initiate Architectural Design Process.		
Course:		
<ul style="list-style-type: none">• Anthropometries, ergonomics, understanding basic human activities in Indian and Global context.• Measurement of known spaces and finding the horizontal and vertical relationship.• Application of Basic design in mono-cellular activity through the manipulation of elements and principle of design.• Spatial aspects related to form, function and expression.• Design of Single activity spaces and Multi activity spaces.		
Sessional work: One design assignment, along with other design tasks and assignments. Suggested Designs: <ul style="list-style-type: none">• Placement of built in and movable furniture in different architectural spaces w.r.t. openings locations.• Redesign of familiar spaces.• Residential Activity Space, Shop, Exhibition Pavilion, Children's Environment, Snack Bar, Petrol Bunk, Fire Station, Small Residence, Nursery School, Dispensary, Etc		
Method of Assessment:		
Assessment of students 'work, Progressive evaluation at three stages, External Review.		
Expected Outcome:		
References:		
<ol style="list-style-type: none">1. Ernst Neuferts, "Architects Data", Blackwell 2002.2. Francis D.K.Ching, "Architecture: Form, Space and Order", Van Nostrand Reinhold Co., (Canaa), 1979.3. Geoffrey H. Baker, "Design Strategies in Architecture- An Approach to the Analysis of Form", Taylor & Francis, 1996.4. Joseph De Chiara, Michael J Crosbie, "Time Saver Standards for Building Types", McGraw Hill Professional 2001.5. Joseph De Chiara, Julius Panero, Martin Zelnik, "Time Saver Standards for Interior Design and Space Planning", McGraw Hill 2001.6. N. John Habraken, Andrés Mignucci and Jonathan Teicher, "Conversations With Form: A Workbook for Students of Architecture", Routledge 2014.7. Owen Cappelman and Michael Jack Jordon, "Foundations in Architecture : An Amotated Anthology of Beginning Design Project", Van Nostrand Reinhold New York, 1993.8. Pramara V.S., "Design fundamentals in Architecture", Somaiya Publications Pvt. Ltd., New Nelhi, 1973.9. Ramsey et al, "Architectural Graphic Standards", Wiley 2000.		
Pre-requisite:		
Nil		



SUBJECT NAME: GRAPHICS II	SUBJECT CODE: ARP 165 (DC) L-T-P (Credits): 0-0-4 (2)	B. ARCH. SEMESTER: II
Objective: <ul style="list-style-type: none">To familiarize the students with preparation of perspective drawing and Sciography by innovative methods.To teach the students with perspectives of interiors, Exteriors etc. and showing of shades & shadow.To develop innovative presentation techniques in Perspective and Sciography.Methodology: Lecture, Studios and Home Assignments		
Course: <p>Perspective Drawing:</p> <ul style="list-style-type: none">Difference with metric projections. Anatomy of perspective: Station point, Eye level, Cone of vision, Picture plane, Horizon line, Ground line, Vanishing points etc.Types of perspectives: One point, two points, Three point Perspectives of simple and complex blocks Perspectives of simple household furniture items Perspectives of Built Form.Perspective Drawing By Innovative Methods: Preparation of Perspective by innovative methods like approximate method, Diagonal Method, Grid Method etc. And other innovative methods of perspective presentation including rendering in various medium.One point and two points perspectives of interiors. Introduction to shortcut methods in perspective drawing.Freehand perspective drawing. <p>Sciography :</p> <ul style="list-style-type: none">Understanding Concept of Sciography and its importance in Architectural drawings.Concept of Conventional Angle of Ray. Showing Sciography of Basic objects like point, line, planes and solids on one and both the planes.Sciography of interesting architectural three dimensional compositions.Showing Shades and shadows in the presentation drawings of small built forms including assignments taken based on same level Architecture Design.		
Method of Assessment: Plates, sketches and tests.		
Expected Outcome:		
References: <ol style="list-style-type: none">Bhatta N. D., “Engineering Drawing”, Charotar Publishing House.John Montague, Willey, “Basic Perspective Drawing, A Visual Approach”, Sixth Edition, John Willey and sons, Inc.Narayanan, “Engineering Drawing”, SciTech PublicationsMulik S.H., “Perspective & Sciography”,Shah, Kale & Patki, “Building Drawing”, Tata McGraw-Hill Education.		
Pre-requisite: Nil		



SUBJECT NAME: MODELING WORKSHOP	SUBJECT CODE: ARP 166 (DC) L-T-P (Credits): 0-0-4 (2)	B. ARCH. SEMESTER: II
Objective: To acquire the skill in constructing three dimensional forms using different model making materials and equipment in different scale.		
Course: <ul style="list-style-type: none">• Introduction to different materials like paper, thermocol, mud, wood, foam sheet, sun board, cork sheet, metal sheets, wires, plaster of Paris (PoP), etc. for making models.• Making basic shapes out of different materials to explore the nature and texture of the material.• Application of various tools and joining techniques required for model making.• Introduction to various types of models at appropriate scales- site model, study model, block model, finished presentation models, etc.• Elementary joinery in wood and plywood.• Models in appropriate scale for interior and exterior spaces.• Introduction to digital medium to explore models digitally.		
Sessional work: Practical and job work to cover the topics mentioned above (related to Studio assignment).		
Method of Assessment: Assessment of students 'work, Progressive evaluation at three stages		
Expected Outcome: Understand of different types of materials and its feasibility in model making.		
References: <ol style="list-style-type: none">1. Akiko Busch, “The Art of the Architectural Model”, Design Pr,19912. John R. Taylor, “Model Building for Architects and Engineers”, McGraw-Hill Inc.,US,1971.3. Martha Sutherland, “Model Making: A Basic Guide (Norton Professional Books for Architects & Designers)”, W. W. Norton & Company 1999.4. Petra Schmidt and Nicola Stattmann, “Unfolded: Paper in Design, Art, Architecture and Industry”, Birkhauser Verlag AG, 2009.5. Rolf Janke, “Architectural Models”, 1978.		
Pre-requisite: Nil		



SUBJECT NAME: CONSTRUCTION II	SUBJECT CODE: ARL 159 (DC) L-T-P (Credits): 2-0-4 (4)	B. ARCH. SEMESTER: II
Objective:		
<p>Objective of the course is to learn in progression various construction systems from simple building construction techniques to comprehensive, complex construction methods. The subject is focus on understanding the relationship between architectural design, building materials, services etc. Emphasis shall be on reasoning and analysis while acquainting the students with different building elements. The course shall aim at building a strong sense of visualization to enable students to evolve and apply alternative materials and methods of construction.</p> <p>At first year level student shall aware about various technical terms, basic principles of construction and methods / techniques of construction through various elements / components of building. Second semester syllabus is based on timber technology. Students shall aware about the carpentry joints and tools and equipment used in timber construction.</p>		
Course:		
<ul style="list-style-type: none">• Timber Doors: Design considerations, Location of doors, Panelled, partly panelled and partly glazed shutters, flush shutters, and ledged, braced, battened and framed shutters. Joinery details of timber frame, styles, rails, panels etc., Fixtures and fastenings.• Timber Windows: Design considerations, Location of windows, fully glazed window, louvered, centrally pivoted, top hung windows, side hung, partly glazed, Joinery details of timber frame, style, rails, panels, fixing of glass, double glazing etc. Fixtures and fastenings.• Timber Roof: Classification of roof, various forms of roofs for different spans. Introduction to timber trusses and joinery details of tie beam, principal rafter, common rafter etc., Fixing of roof tiles.• Timber Floor: Functional requirements of floor in design and construction, Classification of floor - ground and upper floor. Introduction to timber floors in relation to spans, load transmission. Joinery details of bridging joist, binder, and girder etc., Types of strutting.• Timber staircase: Principles & components of staircase, Requirement of good staircase, Classification of staircase based on geometry and materials like timber, brick, stone, RCC etc. Joinery details of timber tread riser, baluster, handrail, newel post etc.• Introduction to basic tools and equipments used in timber construction.		
Method of Assessment:		
Sessional and End term Examination. Continuous evaluation of student work and Teacher assessment.		
Expected Outcome:		
References:		
<ol style="list-style-type: none">1. Arora, S.P. & Bindra, S.P., "A Text Book of Building Construction", Dhanpat Rai & Sons, New Delhi, 1994.2. Barry R., "Construction of Building", Orient Longman lid, 1999.3. Chudley R., "Building Construction Handbook", British library cataloguing, 2008.4. Francis DK Ching, "Building Construction Illustrated", Van Nostrand Reinhold Ltd., 2001.5. Goyal, M.M, "Handbook of Building Construction", Thomson Press.20046. Jha, J. & Sinha, S.K., "Building Construction", Khanna Publishers, New Delhi, 1977.7. Kumar S.K., "Building Construction", Standard publisher. 2003.8. Mckay, W.B, "Building Construction" - Vol. I, Longman, 2005.9. Mehta, M., Scarborough, W. and Armpriest, Diane, "Building Construction: Principles, Materials and Systems", Pearson Prentic Hall, 2008.10. Punmia B.C., "Building Construction", Laxmi Publications Pv1. Ltd., 1995.11. Rangwala S.C., "Building Construction", Charotar Publishing House, 1963.12. Simmons H. L, "Olin's Construction Principles, Materials and Methods", John Wiley and Sons, 2007.		
Pre-requisite:		
Nil		



SUBJECT NAME: CLIMATE RESPONSIVE ARCHITECTURE	SUBJECT CODE: ARL 153 (DC) L-T-P (Credits): 3-1-0 (4)	B. ARCH. SEMESTER: II
Objective: To study the fundamentals of climatology and its application in climate responsive building design.		
Course: <ul style="list-style-type: none">• Climate & Weather. Scales of climate - macro-climate, meso-climate and micro climate. Climatic variables: temperature, humidity, precipitation, cooler radiation, wind, etc. Tropical Climate. Climatic Zones of India & their characteristics.• Geometry of solar movement. Altitude & azimuth angles. Sunpath diagram/Solar chart. Horizontal and vertical shadow angles. Use of shadow angle protractor. Design of shading devices. Performance evaluation of shading devices.• Air flow/wind movement around and through buildings. Natural ventilation. Climatic design recommendations for various climatic zones in India.• Thermal comfort. Indices of thermal comfort - Tropical Summer Index & Effective Temperature.• Thermal effects in buildings. Basic concepts of heat transfer in buildings, units & terminology.• The sky as a source of light, Daylight factor, Lighting - Windows, Room proportions and other building elements, Daylight penetration, Calculation of daylight factor.• Site Climate: Microclimate, site climate data, local factors, presence of water body and vegetation, topography, special characteristics, urban climate cooling degree days and heating degree days.• Passive Design Strategies, Orientation-sitting of building with respect to sun, wind and view, use of evaporative cooling, ground cooling-earth air tunnel, thermal mass-cavity wall, natural ventilation, night time cooling, reflective surfaces and radiant barrier, cool roof and green roof, etc.• Examples of contemporary climate responsive architecture India and Abroad.		
Sessional work: Reports, Plates, Class tests, Case studies.		
Method of Assessment:		
Sessional Exam + Teacher's Assessment + End Term Exam		
Expected Outcome:		
References: <ol style="list-style-type: none">1. Crichfield Howard J., “General Climatology”, Phi Learning, 1998.2. Ellis Aronin Jefferey, “Climate & Architecture”, Reinhold, 1953.3. Evans Martin, “Housing, Climate and Comfort”, London: Architectural Press; New York: J. Wiley, 1980.4. Givoni B., “Man Climate and Architecture”, Van Nostrad Reinhold, 1981.5. Keonigsberge O.H., Ingersoll T. G., Mayhew Alan, Szokola S.V., “Manual of Tropical Housing and Building”, Orient Blackswan, 1984.6. Kukreja C. P., “Tropical Architecture”, Tata Mc Graw-Hill, 1978.7. Olgyay, <u>Aladar</u>, Olgyay <u>Victor</u>, “Solar Control and shading Devices”, Princeton University Press, 1957.8. Sealey, Antony “Introduction to building Climatology”, C'wealth Assn.of Architects, September 1979.9. <u>Seshadri T. N.</u>, <u>Sharma Mela Ram</u>, <u>Sharafat Ali</u> “Climatological and Solar Data for India”, Central Building Research Institute, 1969.		
Pre-requisite:		
Nil		



SUBJECT NAME: HISTORY OF ARCHITECTURE II	SUBJECT CODE: ARL 154 (DC) L-T-P (Credits): 3-0-0 (3)	B. ARCH. SEMESTER: II
Objective: Study the chronological evolution and impacts of geographic, climatic, geological, religious, political and socio-cultural backgrounds of western ancient and medieval architecture – in relationship to materials and techniques of construction.		
Course: Introduction to evolution of built form design as a result of socio cultural, physical, technological factors manifested in design attitudes during various phases in history. <ul style="list-style-type: none">• Architecture of Ancient Civilizations: Egyptian –Mastabas, Royal Pyramids and Great Temples. West Asiatic (Mesopotamian and Persia) – Ziggurats and Palaces. Mayan Architecture – step Pyramid Complex• Classical Architecture: Greek – Columnar and Trabeated structural systems, Doric, Ionic and Corinthian Orders, Agora, Arcropolis, Temple of Parthenon, Cultural (theatre) and Sports (Public) Buildings, Optical correction.• Classical Architecture: Roman Arcuated Architecture, Monumental Scale, Tuscan and Composite Orders, Pantheon, Forum, Basilican, Thermae, Theatres (Colosseum) and circuses.• Medieval Architecture: Early Christian – Evolution of Church Architecture; Byzantine Architecture – Hagia Sophia;• Romanesque Architecture: Pisa Cathedral Complex, Gothic Architecture: Pointed Arch Architecture, Notre Dame etc.• Oriental Architecture: generic forms and transformation of styles in Japanese Architecture, Chinese Architecture.		
Sessional work: Sessional examination and End term Examination, Assignments, Site Visit, Reports, Seminars and Documentation of historic structure, Sketches, Plates, and tests		
Method of Assessment:		
Expected Outcome:		
References: <ol style="list-style-type: none">1. Bannister Fletcher, “A History of Architecture”, 20th edition, CBS Publishers and Distributors, New Delhi, 1999.2. Christopher Tadgell, “History of Architecture”3. Francis D.K.Ching, “A Global History of Architecture”, John Wiley and Sons., (Canada), 2011.4. Henri Stierlin, “Hindu India”, From Khajuraho to the temple city of Madurai, Taschen, Paris, ISBN 3-8228-7649-65. Percy Brown, “Indian Architecture (Buddhist and Hindu)”, D. B. Taraporevala Sons and Co. Private Ltd., Bombay, India, 19956. Percy Brown, “Indian Architecture (Islamic Period)”, D. B. Taraporevala Sons and Co. Private Ltd., Bombay, India, 1995.7. Satish Grover, “History of Architecture”.8. Satish Chandra, “History of Architecture & Ancient Building Materials in India”.9. Simon Unwin, “Analysing Architecture”, Roulledge, London, 2003.		
Pre-requisite: Nil		



SUBJECT NAME: THEORY OF ARCHITECTURE	SUBJECT CODE: ARL 155 (DC) L-T-P (Credits): 3-0-0 (3)	B. ARCH. SEMESTER: II
Objective:		
The course aims at introducing basics of architecture and theory of architecture. The objectives of the course is to understand the evolution of the objective principles and subjective values that guide individual and collective decisions about, and assessments of one's own and others', architectural works.		
Course:		
<ul style="list-style-type: none"> • Introduction to Architecture- Definitions of Architecture – Origin of Architecture – architecture as a discipline – context for architecture as satisfying human needs: functional, aesthetic and psychological-outline of components and aspects of architectural form-site, structure, skin, materials, services, use, circulation, expression, character, experience – Introduction to the formal vocabulary of architecture and Gestalt ideas of visual perception. Debating a Discipline – Architecture, Argument, and the Concept of the Dialectic. “Simplicity and Complexity”, “Natural and Constructed”, “Context and Building”, “Gender, Race and the Body”, “Tangible and Intangible”. • Elements of Architecture- Understanding fundamental elements such as point, line, plane, form and space, shape, pattern, light, colour, surface and texture with reference to the evolution of architectural form and space. • Elements of Architecture – Form- Understanding perceptual effects of specific geometric forms such as sphere, cube, pyramid, cylinder and cone and its sections as well as their derivatives with respect to the evolution of architectural form and space. • Elements of Architecture – Space- Understanding perceptual effects of specific configuration of architectural spaces – Enclosure – Internal and External, Continuous spaces – Spatial relationship and its types, Spatial organisation: Centralized, Linear, Radial Clustered, Grid – built form and open space relationships. • Principles of Architecture- Understanding fundamental principles such as proportion, scale, balance, symmetry/asymmetry, rhythm, axis, hierarchy, datum, unity, harmony, dominance, climax – Movement with reference to the architectural form and space – detailed study of relationship between architectural form and circulation – Types of circulation – Building approach and entrance, path configuration and form, path space relationship, orientation. • Theories in architecture verses theories in natural sciences or social sciences, three dichotomous pairs of theory of Architecture: “Objective principles and subjective values”, “Individual and collective”, “one's own and others”. Theories of architectural technology: principles of structure, ventilation, drainage, lighting, etc. Theories of architectural history: social phenomena and patterns, linguistic analyses, analyses of physical artifacts, etc. Theories of architectural design: organizational strategies, design methods, spatial concepts, aesthetic judgments, etc. <p>Application of the above mention points in architecture, demonstrated through various architectural examples worldwide.</p> <p>Sessional work: Sessional examination and End term Examination, Assignments.</p>		
Method of Assessment:		
Sessional examination and End term Examination.		
Expected Outcome:		
References:		
<ol style="list-style-type: none"> 1. Charles Wallschlaggerm and Cynthia Busic-Snyder, “Basic Visual Concepts and Principles for Artists, Architects and Designers”, Mc Graw Hill, New York 1992. 2. Exner V., Pressel D., “Basics Spatial Design”, Birkhanser, 2009. 3. Francis D.K.Ching, “Architecture: Form, Space and Order”, Van Nostrand Reinhold Co., (Canaa), 1979. 4. John Ruskin, “Seven lamps of Architecture”. 5. Joshua C. Taylor, “Learning to Look: A Handbook for the Visual Arts”, (Phoenix Books), University Of Chicago Press, 1981 6. Korydon Smith., “Introducing Architectural Theory”, Debating a Discipline, Routledge, London, ISBN: 978-0-415-88837-0, 2012. 7. Michael Brawne, “Architectural Thought: the Design Process and the Expectant Eye”, Elsevier, London, ISBN 0 7506 58517, 2005 8. Mark Baskinger and William Bardel, “Drawing Ideas: A Hand-Drawn Approach for Better Design” Watson-Guptill, 2013. 9. Nikos Salingaros, “A Theory of Architecture”. 10. Nathan Knobler, “Visual Dialogue”, Harcourt School; 3 Sub edition, 1980. 11. Owen Cappleman and Michael Jack Jordon, “Foundations in Architecture: An Amotated Anthology of Beginning Design Project”, Van Nostrand Reinhold New York, 1993. 12. Prammar V.S., “Design fundamentals in Architecture”, Somaiya Publications Pvt. Ltd., New Nelhi, 1973. 13. Paul J. Zelanski and Mary Pat Fisher, “The Art of Seeing”, Pearson, 2010 14. Simon Unwin, “Analysing Architecture”, Roulledge, London, 2003. 		
Pre-requisite:		
Nil		



SUBJECT NAME: ENGINEERING MECHANICS	SUBJECT CODE: AML 169 (DC) L-T-P (Credits): 3-1-0 (4)	B. ARCH. SEMESTER: II
Objective:		
To introduce basic understanding requirement of structural aspect to engineering structures and to explain effect of forces on various structural elements such as beams, trusses, cables etc.		
Course:		
Co-planer Statics Anxioms of static and basic concepts, law of forces, force system, Resolution and resultant of forces (concurrent parallel and non-concurrent), supports-types and reactions, free body diagram, equilibrium of forces, conditions of equilibrium. Cables Weightless flexible cables under concentrated loads and uniformly distributed load with level & non-level supports. Friction Laws of static friction, application to inclined planes and ladder. Properties of areas Centroid of areas, first and second moments of area about an axis in plane, parallel axis theorem, radius of gyration about an axis. Pin jointed trusses Solution by method of joints and method of section. Graphic Statics Force polygon and funicular polygon for coplanar forces. Condition of equilibrium, reactions at supports of simply supported beams and trusses, centroids of planer bodies, simple trusses – Maxwell diagrams.		
Method of Assessment:		
Expected Outcome:		
References:		
1. R.C. Hibbler, “ Engineering Mechanics ”, Pearson Education, Asia Pvt. Ltd. 2. J.L. Meriam & L.G. Kraige, “ Engineering Mechanics ”, John Wiley and Sons. 3. F.P. Beer & E.R. Johnston, “ Vector Mechanics for Engineers ”, Tata McGraw Hill.		
Pre-requisite		
Nil		



SUBJECT NAME: HEALTH INFORMATION AND SPORTS-PART-2	SUBJECT CODE: SAC 102 (DC) L-T-P (Credits): 0-0-2 (0)	B. ARCH. SEMESTER: I
Objective: Achieving higher level of physical activity in engineering population will contribute indirectly to gains in other sectors, vital to human development and economic progress. To improve productivity, foster social harmony, inculcate sense of discipline and dedication in general life, develop the spirit of team work, through various sports activities.		
Course: <ul style="list-style-type: none">• Physical Efficiency Test Level 2(Testing and Evaluation of Physical Fitness):1500 meter run, shuttle run, standing broad jump, one minute sit up test, flexibility test.• Testing and assessment of selected Physiological parameters through Sports Medicine Research Lab: Total body fat analysis, Harvard step test, BMI, WHR, Back strength, Leg strength, grip strength, resting pulse rate, and resting respiratory rate. Intramural phase 2: Badminton, Basketball, Cricket, Kho-Kho.		
Method of Assessment:		
Expected Outcome:		
References:		
Pre-requisite:		
Nil		



MAPPING OF COURSE
B. ARCHITECTURE
YEAR OF ADMISSION 2015-16

SEM	SR. NO.	CODE	COURSES	STRUCTURE			CREDITS	CATEGORY	TOTAL CREDITS	Hours	
				L	T	P					
III	1	ARP 271	Architectural Design II	1	0	6	4	DC	4		
	2	ARP 272	Graphics III	0	0	4	2	DC	2		
	3	ARL 258	Construction III	3	0	4	5	DC	5		
	4	ARL 251	History of Architecture III	3	1	0	4	DC	4		
	5/6	ARL 261	Advanced Building Materials (DE-1)	3 + 3	0	0	3 + 3	DE	3+3		
		ARL 262	Art & Architecture Appreciation (DE-1)								
		ARL 263	Environmental Studies (DE-1)								
		ARL 264	Green Architecture (DE-2)								
	ARL 265	Barrier Free Environmental Design (DE-2)									
7	CEP 283	Surveying	0	0	4	2	ES	2			
8	AML 281	Strength of Materials	3	1	0	4	ES	4			
				16	2	18	27		27	36	



SUBJECT NAME: ARCHITECTURAL DESIGN - II	SUBJECT CODE: ARP 271 (DC) L-T-P (Credits): 1-0-6 (4)	B. ARCH. SEMESTER: III
Objective: <ul style="list-style-type: none">To understand architectural form, space and related qualities, exploration through fenestrations and facade treatment, material and expressionTo explore influence of climate and site conditions on architectural form		
Course: <ul style="list-style-type: none">Study of programmed human activities (defined functions & activities), non-programmed human functions (non defined activities, movement, etc.)Explorations in understanding architectural spaces and forms, their various components & elements; creating architectural compositions based on principles of massing, use of voids, semi-enclosed spaces, etc.Study of multi-level circulation patterns, Use of levels and staircase as means of vertical movement.Introduction to climate as a determinant of architectural form; Design considerations for climate, surrounding physical environment, light, ventilation, etc. in creation of simple multi-cellular architectural forms. <p>Introduction to site planning & its objectives; approaches to site development and integration in architectural design.</p> <p>Suggested Design Projects: Small-scale public buildings such as Commercial, Recreational, Health Care & Human Support Facilities, Institutional, etc.</p> <p>Sessional work: One major design project along with other design tasks and assignments.</p>		
Method of Assessment Continuous Evaluation same as P type courses at institution. Design studio should have Minor assignment, Major assignment and Time problem.		
Expected Outcome: Enhanced ability to integrate aspects such as climate, building material & construction, and principles of visual arts into architectural design.		
References: <ol style="list-style-type: none">Antoniades, C. Anthony, “Epic Space: Towards roots of Western Architecture”, John Willey & Sons, 1992Ching, D.K. Francis, “Architecture: Form, Space and Order”, Van Nostrand Reinhold, New York, 1996.		



SUBJECT NAME : GRAPHICS STUDIO III	SUBJECT CODE: ARP 272 (DC) L-T-P (Credits): 0-0-4 (2)	B. ARCH. SEMESTER: III
Objective: To develop drawing skills as tools for design thinking, visualization, representation and to understand fundamentals of architectural drawing.		
Course: <ul style="list-style-type: none">• Understanding of line or curve of intersection of solids, methods of determining the line or curve of interpenetration of solids/objects.• Complex sections and development of surfaces of interpenetration of solids / objects.• Alternative methods of perspective like parallel and angular measuring point and casting of shades and shadows.• Measured drawing of small structure.		
Method of Assessment: Continuous evaluation same as P type course at institution		
Expected Outcome: Understanding of fundamentals of architectural drawing along with visualisation and representation skill development.		
References: <ol style="list-style-type: none">1. Bhatt N.D., “Engineering Drawing”, R.P.patel, Rupalee Publication, 1995.2. Burns J.A., ed., “Recording Historic Structures”, Wiley, 2003.3. Ching, F.D.K., “Architectural Graphics”, 4th Ed., John Wiley, 2015.4. Ching F.D.K., “Design Drawing”, Van Nostrand Reinhold, John Wiley & Sons, 2010.5. ChingF.D.k., “Drawing: A Creative Process”, Wiley, 1989.6. Gopalakrishna KR, “Engineering drawing Vol I and II”, Subhas Store, 2010.7. Griffin, A.W. and Brunicardi, V.A., “Introduction to Architectural Presentation Graphics”, Prentice Hall, 1998.8. Henkin D, “City Reading”, Columbia University Press, 1998.9. Morris IH , “Geometrical Drawing for Arts Students”, Orient Longman Pvt. Ltd. 2004.10. Mulik S.H., “Perspective and Sciography”, Allied Publishers Ltd. 1999.11. Narayanan K.C., “Engineering Drawing”, Scitch Publications, 2013.12. Rasmusson, S.E., “Experience Architecture”, The MIT Press, 1964.13. Shah, Kale and Patki, “Building Drawing”, Tata Mcgraw Hill Publishing Company Ltd., 2002.		
Pre-requisitee: Nil		



SUBJECT NAME : CONSTRUCTION III	SUBJECT CODE: ARL 258 (DC) L-T-P (Credits): 3-0-4 (5)	B. ARCH. SEMESTER: III
Objectives:		
<ul style="list-style-type: none">• To introduce construction of building components in Reinforced Cement Concrete (RCC) and the temporary support system to cast concrete components.• To understand and illustrate the details of partitions for interior spaces their types with different techniques and materials.• To understand the suitability, function, mechanism, details, etc. of various opening types• To understand the methods of construction using steel for roofs and openings.		
Course:		
<ul style="list-style-type: none">• R. C. C: Introduction to RCC. Its potential & applications, Typical details for R.C.C. Columns, Footings, Lintels, Beams Slabs, Chajjas, Balconies, Canopies, Fins, Parapets, Stairs, etc.• Centering and Form-Work for R.C.C. works like columns, beams, slabs, stairs, arches etc.• Partitions: Design considerations, Partitions in different Materials (Timber, Aluminum, Metal Lath, Metal sheet, Wood-wool slab, Glass block, Clay block partitions, etc.). Different types like partly paneled and partly glazed, flush, louvered, etc. Partition connections with floors, ceilings and walls, corner junctions, access doors,• Doors and windows: Steel doors and windows with reference to BIS, methods of fixing and glazing, fixtures and fastenings, windows with M.S./T.W. surround, pressed metal frames for doors.• Sliding doors (Manual and Automatic), sliding and folding doors, Aluminium sliding windows. Revolving doors, rolling shutters, collapsible gates etc.• Steel Roofing: Roof trusses for various spans (small and medium span), design considerations, advantages, and connections of various members supported on R.C.C. columns, Brick piers, Steel Stanchions, etc. Fixing of G.I and A.C. and Aluminium roofing sheets, gutter types, wind bracing etc.		
Sessional work		
Field studies, Sketches and Drawings		
Method of Assessment:		
Follow Assessment Method for combined Lecture and Studio Course Sessional and End term Examination. Continuous evaluation of student work and Teacher assessment.		
References:		
<ol style="list-style-type: none">1. Ambrose J.E., "Building Construction", Springer, 20132. Arora, S.P. & Bindra, S.P., "A Text Book of Building Construction", Dhanpat Rai & Sons, New Delhi, 1994.3. Barry R., "Construction of Building", Orient Longman lid, 1999.4. Chudley R., "Building Construction Handbook", British library cataloguing, 2008.5. Francis DK Ching, "Building Construction Illustrated", Van Nostrand Reinhold Ltd., 2001.6. Goyal, M.M, "Handbook of Building Construction", Thomson Press.20047. Jha, J. & Sinha, S.K., "Building Construction", Khanna Publishers, New Delhi, 1977.8. Kumar S.K., "Building Construction", Standard publisher. 2003.9. Mckay, W.B, "Building Construction" - Vol. I to IV, Longman, 2005.10. Mehta, M., Scarborough, W. and Armpriest, Diane, "Building Construction: Principles, Materials and Systems", Pearson Prentic Hall, 2008.11. Punmia B.C., "Building Construction", Laxmi Publications Pv1. Ltd., 1995.12. Rangwala S.C., "Building Construction", Charotar Publishing House, 1963.13. Simmons H. L, "Olin's Construction Principles, Materials and Methods", John Wiley and Sons, 2007.		
Pre-requisite:		
Nil		



SUBJECT NAME: HISTORY OF ARCHITECTURE -III	SUBJECT CODE: ARL 251 (DC) L-T-P- (Credits): 3-1-0 (4)	B. ARCH. SEMESTER: III
Objective: This course is in continuation of the previous course of History of Architecture and aims to understand the evolution of architecture and its transformation in the contemporary times, both at the international end level well as at the national level.		
Course: <ul style="list-style-type: none">• Development of classicism in Renaissance and onward development into Baroque and Roccoco• Industrial revolution, inventions of building materials and techniques, its influence on prevailing architectural styles in the Continent, the great exhibitions and achievements in technology and expression. Search for new forms; rationalism, engineering traditions; reinforced and ferro concrete, formative strands of modern architecture; art movements and -isms, Arts and Craft Ideals, American development of Chicago School, Louis Sullivan etc.• Study of modern masters, responses to mechanisation and new space conceptions, organic architecture and architectural system of Frank Lloyd Wright, Le Corbusier's quest for ideal form and points of a new architecture, Walter Gropius and Bauhaus movement, Mies, minimalism and international style, Problem of Regional Identity - movements in Scandinavia and Japan etc. Study of second generation masters Kahn, Saarinen, Goff, Nervi, Johnson etc, late modern transformations, post- modernism, deconstruction, architectural philosophy and works of Meier, Venturi, Tange, Isozaki, Graves, Gehry, Hadid, Foster, Piano, Rogers etc.• Architectural developments in east and south-east Asia; Japan & China, tropical architecture in Singapore, Indonesia & Thailand, Architecture in SAARC nations with special emphasis on Pakistan, Bangladesh and Sri Lanka• Architectural developments in India, colonial architecture and architectural developments post independence, first generation masters Correa, Doshi, Stein, Lauri Baker, Nari Gandhi etc, emergence of new typologies such as housing colonies, malls, airports, information technology parks, contemporary practice.• Emerging concepts of contemporary architecture in the age of electronic media, concepts of futuristic vision, concluding part of the course gives an idea about present revolution in science and technology, new materials and application, emerging concepts of a humane habitat, people centric architecture, contemporary vernacular, sustainability, green buildings, zero carbon buildings, adaptive reuse, parametric design, biomimicry etc., possible changes and future possibilities in architecture. Some ongoing experiments by leading architects of today highlighted as path finders.		
Sessional Work: <ul style="list-style-type: none">• Sketches, Essays, Reports and Tests on above topics.• Seminar Presentations and discussions on selected portions.		
Method of Assessment: Sessional Exams, Teacher's Assessment, End Term Exam		
Expected Outcome: A sound knowledge base of the processes and events that shaped the architecture of the present. Development of critical analysis of the contributing factors and an overview of the issues facing the contemporary world.		
References: <ol style="list-style-type: none">1. Siegfried Giedion, "Space, Time and Architecture", Harvard University Press, 19822. William Jr. Curtis, "Architecture since 1900", Phaidon Press Ltd., London. 20023. Banister Fletcher, "A History of Architecture", University of London, 19614. Monographs of Architects5. Readings on Tropical Architecture by various authors		
Pre-requisite: Nil		



SUBJECT NAME: ADVANCED BUILDING MATERIALS	SUBJECT CODE: ARL 261(DE-1) L-T-P (Credits): 3-0-0 (3)	B. ARCH. SEMESTER: III
Objective:		
<ul style="list-style-type: none">• To make the students aware of various advanced building material used in construction industries and their environmental impact and reuse.• To have an understanding of the properties, various types, characteristics, market forms available and application of materials in construction work.		
Course:		
<ul style="list-style-type: none">• Polymer based Materials and Components: thermoplastics, thermosetting plastics, elastomers, properties, commercial names, application and innovations (polythene, poly propylene, PVC, ethylene, polycarbonate, acrylic flooring, tiles, decorative laminates, pipes and sanitary-ware)• Insulating Materials: Hot and cold applications, organic binders, bitumen, asphalt, tars, emulsions, mastics, vinyl, epoxy resins, chemical admixtures, waterproofing items, steam-proofing, heat insulating, acoustic and sealing materials, etc.• Finishing Materials: Interior and exterior for various architectural and interior components. Smooth, textured, ribbed, etched, exposed aggregate finish, weathering of finishes, external renderings- roughcast, dry dash, textured, stucco, gypsum and POP applications, protective and decorative coatings.• Adhesives, Sealants and Joint Fillers• Metals in advanced building systems: steel cables, structural glazing and curtain walling.• Light weight roofing materials: GI Sheets, Pre- coated metal sheets, Polycarbonate sheeting, Teflon coated sheets, Polytetrafluoroethylene (PTFE) and Ethene-co-tetrafluoroethene (ETFE)• Nano Materials: Characteristics, Types, Application and Case examples.• "Green' Materials Selection: Factors in material selection, Resources to assist in determining materials appropriateness, Analytical process to evaluate materials for a project, Material considerations when using the rating program		
Sessional Work: Tests, Assignments, Site Visits and Market Survey Reports, Seminar		
Method of Assessment:		
Sessional Exams, Teacher's Assessment, End Term Exam		
Expected Outcome:		
<ul style="list-style-type: none">• Students understand the materials with their properties, environmental impact and relationship with architectural design and building construction		
References:		
<ol style="list-style-type: none">1. Rangwala S. C., "Engineering Materials", Charotar, Publishing House, Anand-388 001, India, 2007.2. Duggal S.K., "Building materials", New Age International, New Delhi, 2009.3. Reshpande B., "Materials and Construction", Oriental Watchman Publishing House, Poona-2.4. Varghese P.C., "Building Materials", Prentice Hall of India put Ltd, New Delhi 110001, 2005.5. Spencke R.J. and Cook S.J., "Building materials in developing countries", John Wiley and sons6. 1983.7. Varghese P.C., "Building Materials", Prentice Hall of India put Ltd New Delhi, 2005.8. Dunkelberg (K), "Bambus – Bamboo, Bamboo as a Building Material", Karl Kramer Verlag9. Stuttgart, 2000.10. GernotMinke and FriedemannMahlke "Building with straw: Design and Technology of a Sustainable Architecture", Birkhauser, Publisher for Architecture Berlin, Bostan, 2005.11. Oleg Figovsky, Dmitry Beilin, "Advanced Polymer Concretes and Compounds",CRC Press, 201312. William Rupp, Arnold Friedmann, Philip F. Farrell, "Construction materials for interior design: principles of structure and properties of materials"Whitney Library of Design, 198913. Bill Addis, "Building with Reclaimed Components and Materials: A Design Handbook for Reuse and Recycling", Routledge, 2006		
Pre-requisite:		
Nil		



SUBJECT NAME: ART AND ARCHITECTURE APPRECIATION	SUBJECT CODE: ARL 262 (DE-1) L-T-P (Credits): 3-0-0 (3)	B. ARCH. SEMESTER: III
Objective: To sensitize the students towards contribution of art, especially those arts that are involved in architecture. It aims at the flowering of aesthetic sensibilities and a taste for the visual and sensory appeal of physical form. The course is a medium for understanding architecture as one of the principal arts in the pantheons of human creativity. The emphasis is to make students into connoisseurs of art rather than consummate artists themselves.		
Course: <ul style="list-style-type: none">• To introduce the vocabulary of art constituted by its elements (line, shape, form, space, colour, light, value, texture) and principles (unity, variety, harmony, rhythm, balance, proportion, emphasis, contrast, movement)• A concise study of evolution of art production from prehistoric beginnings to classical to modern art. New directions in art thru' various –isms such as impressionism, fauvism, expressionism, cubism, dadaism, surrealism, futurism, constructivism, de stijl, abstract expressionism, pop art and new emerging forms of artistic expression.• A concise study of art production in India. Important works from art traditions from Indus Valley Art - Hindu Buddhist and Jain art - Mughal and Rajput miniatures - art during the colonial period - modern Indian Art.• Learning 'appreciation' through the technique of 'critique'. An initiation to verbal and written expression of experiencing various art forms (culinary art, cinema, theatre, performing arts such as vocal and instrumental renditions, various dance forms etc).• Appreciating a work of architecture by analysis of work of an architect. Or a local built environment for synthesis of art in architecture.		
Sessional Work: Essays, Notes, Studio exercises on above topics Seminar presentations and critical writings		
Method of Assessment: Sessional Exams, Teacher's Assessment, End Term Exam		
Expected Outcome: Students are able to: <ul style="list-style-type: none">• Appreciate the art forms and analyze the same and resizing the concept in their architecture profession.• Gather information across the world art and the use of art in architecture and its use• Develop ability to express appreciation through technique of critique		
References: <ol style="list-style-type: none">1. Rasmusson S E., "Experiencing Architecture", Chapman and Hall Ltd.2. David Britt, eds. "Modern Art: Impressionism to Post Modernism", Thames and Hudson, 19993. Bachelard, Gaston; Jolas, Maria (Translator); "The Poetics of Space", Publisher: Beacon Press; Reprint edition, 1994		
Pre-requisite:		
Nil		



SUBJECT NAME: ENVIRONMENTAL STUDIES	SUBJECT CODE: ARP 263 (DE-1) L-T-P (Credits): 3-0-0 (3)	B. ARCH. SEMESTER: III
Objective:		
<ul style="list-style-type: none">• To introduce principles and approaches to natural resources conservation• To enhance environmental awareness and its integration in design discipline		
Course:		
<ul style="list-style-type: none">• Fundamentals of ecology, ecosystem structure and function; Classifications of ecosystems & ecological regions• Natural resource conservation & management; Fundamental ecological principles pertaining to development.• Significance of Biodiversity, Bio-geographical classifications of India, Issues & approaches in biodiversity management• Environmental pollution, types, effects, sources and amelioration with particular reference to physical planning and design measures.• Introduction to theory of Environmental Design.		
Sessional work:		
Method of Assessment:		
Sessional Exams, Teacher's Assessment, End Term Exam, tests, tutorials on relevant topics		
Expected Outcome:		
Enhanced sensitivity towards environmental issues & natural resource conservation together with developed understanding of approaches for addressing various environmental concerns.		
References:		
<ul style="list-style-type: none">• O.L. Gilbert, "The Ecology of Urban Habitats", Chapman and Hall, New York, 1989.• Anne Beer & Catherine Higgins, "Environmental Planning for Site Development", E&FN Spon, New York, 2000• Andrew Goudi, "The Human Impact", Basil Blackwell, Oxford, 1981.		
Pre-requisite:		
Nil		



SUBJECT NAME: GREEN ARCHITECTURE	SUBJECT CODE: ARL 264 (DE-2) L-T-P (Credits): 3-0-0 (3)	B. ARCH. SEMESTER: III
Objective: To introduce the concept of energy efficiency and green building design. To introduce the Energy Conservation Building Code (Building Envelope) to the students.		
Course: <ul style="list-style-type: none">• Heat Transfer in the Buildings• Heating & cooling loads – Energy estimates - Energy conservation – Efficient day lighting, heating and cooling load calculations in buildings.• Use alternative sources of energy in Buildings• Bio-meteorological studies of individual buildings• Net Zero Building• Energy Conservation Building code (Building Envelope)• Introduction to Green Building and Green Neighbourhood.• Study of Green building design – Rating system – LEED, GRIHA, BREEAM etc. and case studies.		
Sessional work: Reports, Case studies, Assignments, Field surveys and Tests on above topics.		
Method of Assessment: Sessional Exams, Teacher’s Assessment, End Term Exam		
Expected Outcome: Understanding of the concept of green building design		
References: <ol style="list-style-type: none">1. “Manual on Solar Passive Architecture”, IIT Mumbai and Mines New Delhi, 19992. Arvind Krishnan & Others, “Climate Responsive Architecture”, A Design Handbook for Energy Efficient Buildings, TATA McGraw Hill Publishing Company Limited, New Delhi, 20013. Majumdar M, “Energy-efficient Building in India”, TERI Press, 2000.4. Givoni .B, “Passive and Low Energy Cooling of Buildings”, Van Nostrand Reinhold, New York, 19945. ECBC code 2007. (Chapter on Building Envelope)6. ECBC User guide, published by Bureau of Energy Efficiency, July 2009.		
Pre-requisite: Nil		



SUBJECT NAME: BARRIER FREE ENVIRONMENTAL DESIGN	SUBJECT CODE: ARL 265 (DE-2) L-T-P (Credits): 3-0-0 (3)	B. ARCH. SEMESTER: III
Objective: To create awareness about the concept of 'access for all' to public buildings / premises and universal design To sensitise students to understand the importance of designing barrier free built environments To provide an overview of the barrier free design requirements and legislative obligations		
Course: <ul style="list-style-type: none">• Understanding the term disability and barrier, Various types of disabilities, Categorization of people with disabilities and the difficulties encountered, Types of barriers, Need for barrier free Architecture and built environment, Principles and objectives of barrier free design• Typical barrier problems of the physically challenged - parking & approaches to buildings, movement within buildings, travel, using amenities and facilities, etc.• An introduction to minimum standards, norms and guidelines related to barrier free architectural design.• Legislation related to Barrier Free Architecture, PWD Act 1995.• Principles of design for convenience, comfort and safety of elderly and children, barrier free environments for visually impaired, hearing and speech impaired, physically disabled, special children; Adaptive house• Architectural detailing of various elements for creating barrier free built environment• Learning to assess and audit the premises and buildings to find problems and solutions, through case / field studies. Suggesting design interventions for the existing as well as proposed buildings and premises to create barrier free built environment• Principles of designing the urban built environment – street furniture, footpaths, ramps, facilities for mobility, public toilet, etc.		
Sessional Work Notes, Assignments, Field Surveys, Tests on above topics		
Method of Assessment: Sessional Exams, Teacher's Assessment, End Term Exam		
Expected Outcome: Development of sensitivity and understanding of architectural design elements for creating barrier free built environments		
References: <ol style="list-style-type: none">1. Bednar, M. J. "Barrier Free Environments". John Wiley & Sons Inc, (1997).2. "Guidelines and Space Standards for Barrier-Free Built Environment for Disabled and Elderly" Central Public Works Department. (1998). CPWD, Govt. of India.3. "Handbook on Barrier Free and Accessibility", Central Public Works Department. (n.d.), CPWD, Govt of India.4. Harkness, S. P., & Groom, J. N. "Building Without Barriers for the Disabled", Watson-Guptill Pubns, (1976).5. Kliment, S. A. "Into the Mainstream : A Syllabus for a Barrier-free Environment", Washington DC: Rehabilitation Services Administration (HEW) & The American Institute of Architects,(1976).6. Robinette, G. O. , "Barrier-Free Exterior Design: Anyone Can Go Anywhere", Van Nostrand Reinhold. (1985).		
Pre-Requisites: Nil		



SUBJECT NAME: SURVEYING	SUBJECT CODE: CEP 283 L-T-P (Credits): (0-0-4) (2)	B. ARCH. SEMESTER: III
Objective: <ul style="list-style-type: none">• Principal and rule of Surveying• Different Surveying Methods and related instruments• Use of field book for different type of survey• Use of different survey instruments		
Course: <p>Minimum 8 Practicals to be performed based on following course contents</p> <ul style="list-style-type: none">• Linear Measurements: Methods, Equipments, Ranging, Chain Surveying, Field Work and Plotting, Obstacles in Chaining, area and Volume Computation• Compass Surveying: Instrument, Principles, Bearings• Plane Table: Equipment, Methods, Errors, Adjustment Survey, Traversing and Plotting• Leveling: Instruments, Collimation Method, Rise-Fall Method, Curvature and Refraction, Contouring Theodolite survey – Study of theodolite – Temporary and permanent adjustments – Measurement of horizontal angles – Methods of repetition and reiteration – Measurement of vertical angles• Tacheometric Surveying: Theory, Instrument Constants, Methods <p>List of Practicals:</p> <ul style="list-style-type: none">• Chain survey Traversing and plotting of details-Area Determination• Building lay- out work Using chain and compass survey• Plane table survey Method of Radiation/ Intersection• Plane table survey solving two/ three point problem• Plane table survey Traverse• Instrument Constant-Tachometer• Leveling Fly leveling – Plane of collimation method• Leveling Fly leveling – Rise and fall method• Theodolite surveying Measurement of horizontal angle• Theodolite surveying Measurement of vertical angle for determination of height of object <p>Sessional Work Preparation of sheets on the basis of Practicals.</p>		
Method of Assessment: Performance/understanding of the course through Viva-voce/Multiple choice questions/examination.		
Expected Outcome: <ul style="list-style-type: none">• Gain a broad understanding of Land Survey• Get accustomed with the angular and linear measurements• Trained with recording the field information and necessary plot• Contemporary issues and developments.		
References: <ol style="list-style-type: none">1. B. C. Punmia, Standard Book-House Latest2. S. K Duggal, “Surveying Volume I”, Tata McGraw Hill, Latest.3. A M Chandra, “Plane Surveying”, New Age International Publication		
Pre-Requisites: Nil		



SUBJECT NAME : STRENGTH OF MATERIALS	SUBJECT CODE: AML 281 (ES) L-T-P (Credits): 3-1-0 (4)	B. ARCH. SEMESTER: III
Objectives:		
<ul style="list-style-type: none">To introduce mechanical properties of materials, concepts of stress & strain and distribution of stresses & deformations.		
Course:		
<ul style="list-style-type: none">Simple stresses and strains, stress-strain curves for concrete and steel.Elastic constants, Poisson's ratio, Bulk modulus, Modulus of rigidity and their inter-relationship.Temperature stresses and strains.Hoop stresses: Stresses in thin cylinders.Bending moment diagram, shear force diagram for simply supported and cantilever beams.Bending stresses & Shear stresses in rectangular, I & T sections.Torsion of solid and hollow circular shafts.		
Sessional Work :-		
Method of Assessment:		
Sessional Exams, Teacher's Assessment, End Term Exam		
References:		
<ol style="list-style-type: none">Popov, E R. "Engineering Mechanics of solid", Prentice Hill of India, New Delhi, 2000.Beer, Johnston, Dewolf. "Mechanics of Materials", Tata McGraw Hill, New Delhi, 2008.Singer, F. L. "Strength of Materials", Harper Collins Publishers, Singapore, 1987.Ramamurtham S. "Strength of Materials", Danpatrai & son, New Delhi, 2000		
Pre-requisite:		
Nil		



MAPPING OF COURSE
B. ARCHITECTURE
YEAR OF ADMISSION 2015-16

SEM	SR. NO.	CODE	COURSES	STRUCTURE			CREDITS	CATEGORY	TOTAL CREDITS	Hours
				L	T	P				
IV	1	ARP 273	Architectural Design III	1	0	6	4	DC	4	
	2	ARP 274	Computer Aided Design and Simulation	0	0	4	2	DC	2	
	3	ARL 259	Construction IV	3	0	4	5	DC	5	
	4	ARL 252	Building Services I	3	1	0	4	DC	4	
	5	ARL 253	History of Human Settlements	3	0	0	3	DC	3	
	6	ARL 254	Environment Behavioral Studies	3	0	0	3	DC	3	
	7	ARP 276	Visual Communication	0	0	4	2	DE (3)	2	
		ARP 277	Building Documentations							
	8	ARL 266	Vernacular Architecture	3	0	0	3	DE (4)	3	
		ARL 267	Contemporary Design Theory and Criticism							
AML 381		Theory of Structure								
				16	1	18	26		26	35



SUBJECT NAME: ARCHITECTURAL DESIGN - III	SUBJECT CODE: ARP 273 (DC) L-T-P (Credits): 1-0-6 (4)	B. ARCH. SEMESTER: IV
Objective:		
1. Introducing concept of universal design and socio-cultural dimensions in architectural design 2. Enhance understanding of site planning, analysing topographic features of a contour site and addressing it in architectural design 3. Explorations in Structural concepts and their applications in architectural design		
Course:		
The studio will have emphasis on the following – <ul style="list-style-type: none">• Introduction to principles of universal design; design considerations for barrier free environments, study of built environments from human psychology perspectives. Introduction to site planning & its objectives; approaches to site development and integration in architectural design; Introduction to contoured site, slope analysis & elevation maps, site planning and development of contoured sites, environmental considerations, etc.• Design studies and explorations in understanding of complex architectural spaces and forms; Study and explorations in architectural image & meaning of form.• Introduction to relationship between building materials, their structural applications and resulting applications (elementary) in creation of architectural form.• Study Tour Component of 10-20% weightage<ul style="list-style-type: none">• Assignments on various aspects like Materials, Structure, User, Housing Pattern, Climate study etc.• Compile work as Photographs, Sketches, Reports and Presentation.• Assessment - Two Tour coordinators, HoD and one faculty.		
Sessional work: One design project, along with other design tasks and assignments.		
Suggested design projects: Medium-scale public buildings such as Educational, Institutional, Recreational, Human Support Facilities, etc.		
Method of Assessment:		
Continuous Evaluation same as P type courses at institution. Design studio should have Minor assignment, Major assignment and External Viva-voce.		
Expected Outcome:		
Students would have enhanced ability to deal with site terrain & physiography, address socio-cultural aspects, gender and age issues through architectural design		
References:		
1. Antoniadis, C. Anthony, “ Epic Space: Towards roots of Western Architecture ” John Wiley & Sons,1992 2. Broadbent, Geoffery, “ Emerging Concepts in Urban Space Design ”, Van Nostrand Reinhold Co., New York, 1990. 3. Brolin C. Brent, “ Failure of Modern Architecture ”, Van Nostrand ReinholdCo., New York, 1976. 4. Ching, D.K. Francis, “ Architecture: Form, Space And Order ”, Van Nostrand Reinhold, New York, 1996. 5. GiedionSiegfried, “ Space, Time and Architecture ”, Harvard University Press, 1963 6. Joseph De Chiara & John Callender, “ Time Saver standards for Building Types ”, McGraw-Hills International, 1983.		
Pre-requisite:		
Nil		



SUBJECT NAME: COMPUTER AIDED DESIGN & SIMULATION	SUBJECT CODE: ARP 274 (DC) L-T-P (Credits): 0-0-4 (2)	B. ARCH. SEMESTER: IV
Objective: <ul style="list-style-type: none">To Impart skills of Computer Aided Design & Simulation in decision making in Architectural designTo impart skills of presentation technique using computer as a tool		
Course: <ul style="list-style-type: none">Introduction to Hardware and recent software related to raster and vectorIntroduction to different software for representation of architectural design.CAD 2D Vector UCS generation, creation of different entities, dimensioning, Blocks, Array, Layers, line types, Colours.Generation of basic 3D objectsIntroduction to Office management & multiple user based interfaceImporting and exporting models for simulation in other formatsIntroduction to different software as a tool for Imagination, designing, analysis of architectural design.		
Sessional work: 2d drawing in software with basics, Presentation drawing in CAD, Composition		
Method of Assessment: Continuous evaluation same as P type courses at institution, Task based evaluation, Viva voice		
Expected Outcome: Understanding CAD as a basic tool for Architectural Design		
References: Online Manual of Autocad, Archicad, Prodigcad		
Pre-requisite: Nil		



SUBJECT NAME : CONSTRUCTION IV	SUBJECT CODE: ARL 259 (DC) L-T-P (Credits): 3-0-4 (5)	B. ARCH. SEMESTER: IV
Objectives:		
<ul style="list-style-type: none"> To understand various advanced foundation types and their suitability for different soil types and loading patterns. To understand the concept of temporary support systems required during the construction stage, repair works and modifications in buildings. To understand the methods of construction using steel for roofs. To understand the mechanism of preventing moisture inside the buildings and different types of joints required in buildings. 		
Course:		
<ul style="list-style-type: none"> Advanced Foundations: Study of soil conditions and suitability of foundations on particular type of Soil, Steel grillage footing, R.C.C. strip, raft and cellular foundation. Machine Foundation. Pile Foundation, Types of Piles in Timber, Steel & R.C.C. (Pre-cast & Cast-in- Situ), R.C.C. under-reamed piles, pile caps etc. Temporary Support Systems: General idea of Raking, Flying and Dead shores, Floor Strutting, underpinning, timbering for deep trenches and basements. Design & detailing of “addition & alteration” in existing buildings put to new use, process of modifications precautions to be taken. Scaffolding. Design & detailing of "addition & alteration" in existing buildings put to new use, process of modifications precautions to be taken. Steel North Light and Monitor roofs: Trusses Types, Support on steel stanchions, connections, Gutters, Patented glazing etc. Waterproofing: old and new materials and methods, water proofing of roofs, slabs, foundations, basements, swimming tanks etc. Joints: Various types of joints, expansion, contraction, isolation, construction and sliding joints, considerations, materials and methods of constructing expansion joints in buildings. 		
Sessional work		
Field studies, Sketches and Drawings		
Method of Assessment:		
Follow Assessment Method for combined Lecture and Studio Course Sessional and End term Examination. Continuous evaluation of student work and Teacher assessment.		
References:		
<ol style="list-style-type: none"> Arora, S.P. & Bindra, S.P., “A Text Book of Building Construction”, Dhanpat Rai & Sons, New Delhi, 1994. Barry R., “Construction of Building”, Orient Longman Ltd, 1999. Chudley R., “Building Construction Handbook”, British library cataloguing, 2008. Francis DK Ching, “Building Construction Illustrated”, Van Nostrand Reinhold Ltd., 2001. Frederick S. Merritt, Jonathan T. Ricketts, “Building Design and Construction Handbook”, McGRAW-HILL, 2001 Goyal, M.M , “Handbook of Building Construction”, Thomson Press.2004 James Ambrose, “Design of Building Trusses”, Wiley, 1994 Jha, J. & Sinha, S.K., “Building Construction”, Khanna Publishers, New Delhi, 1977. Mckay, W.B, “Building Construction” - Vol. I to IV, Longman, 2005. Mehta, M., Scarborough, W. and Armpriest, Diane, “Building Construction: Principles, Materials and Systems”, Pearson Prentice Hall, 2008. Punmia B.C., “Building Construction”, Laxmi Publications Pvt. Ltd., 1995. Stephen Emmitt, Christopher Gorse, “Barry's Advanced Construction of Buildings”, John Wiley & Sons, 2010 Simmons H. L, “Olin's Construction Principles, Materials and Methods”, John Wiley and Sons, 2007. Varghese, P. C, “Maintenance, Repair & Rehabilitation and Minor Works of Buildings”, PHI Learning Pvt. Ltd. 		
Pre-requisite:		
Nil		



Subject Name: BUILDING SERVICES I	Subject Code: ARL 252, (DC) L-T-P (Credits) 3-1-0 (4)	B. ARCH. SEMESTER: IV
Objective		
<ul style="list-style-type: none">• To provide inputs on basic building services like water supply, sanitation, storm water, refuse & fire through conceptual understanding of system, process, methods, network, materials, & resources.• To provide knowledge regarding working of systems with sustainable options in vogue.		
Course		
<ul style="list-style-type: none">• Elements of public water supply system: Sources of water, intake, water quality, Biochemical Oxygen Demand, pumping and transportation of water, water purification process.• Direct and indirect systems, special installation in multi-storeyed buildings. Over-head and underground reservoirs.• Service connections: cold and hot water distribution system design in building with, materials, joints, fittings and valves. Distribution system, network, ferrule, water meters, stopcocks, bib cocks, & pipe appurtenances.• Types of sanitary fixtures and appliances like wash basins, water closets, urinals, bidet, sink, etc. Conditions of flow in building drainage pipes, traps, vents and their material options.• Design of drainage layout of low-rise and high-rise buildings, storm water drainage, building drains, sewers, gully traps, inspection chambers, manholes, connection to public main sewer.• On & off site Waste-water disposal systems, septic tank, soak pits and anaerobic filters, on-site processing and disposal methods. STP working, conventional waste-water treatment, activated sludge, trickling filters, etc.• Solid waste collection, segregation from buildings, sanitary landfill, on & offsite disposal methods.• Fire fighting measures and installations in a multi-storeyed building.• Basic understanding on drainage layout for building & cluster of houses with network system.		
Sessional Work		
Tutorial based on above topics & design approach for water supply, drainage layout & connection.		
Method of Assessment:		
Evaluation based through tutorials, group work, tests, presentations, etc		
Expected Outcome:		
Conceptual understanding about the process & systems with installation of equipments related to the services identified.		
References:		
1 Prof. A. L. Chhatre & Prof. M. W. Indapawar “ Vastu Pariseva Va Sadhane ” 2 J. Nathanson “ Basic Environmental Technology ”, 3 F. Hall, “ Building Services ” 4 “ National Building Code ”		
Pre-requisite:		
Nil		



SUBJECT NAME: HISTORY OF HUMAN SETTLEMENTS	SUBJECT CODE: ARL 253 (DC) L-T-P (Credits): 3-0-0 (3)	B. ARCH. SEMESTER: IV
Objective: <ul style="list-style-type: none">To introduce the development of human settlements till industrial revolution.To outline the origin, growth and evolution of human settlements through the course of history.To provide insight into determinants, elements and principles of human settlements.		
Course: <ul style="list-style-type: none">Introduction to relationship between Man, Nature, Culture and city forms.Study of determinants (Natural and man-made) influencing location, growth & pattern of human settlements.Types of settlements growth (Organic and Planned) and settlement forms, etc.Settlements in river valley civilizations – Egyptian, Sumerian, Indus Valley, etc.Settlements in Indian context – Vedic, Buddhist, Hindu and Islamic settlements during medieval period, British contribution in India.Settlements in other parts of the world – Greek, Roman, Medieval, Renaissance, impacts of industrial revolution.		
Sessional Work Notes, Seminars, assignments on above topics.		
Method of Assessment: Continuous Evaluation – I and II Sessional Examination, End Semester Examination and Assignments.		
Expected Outcome: The course shall develop understanding about the emergence of human settlements on the basis of complex interaction of determinants, elements and principles over time.		
References: <ol style="list-style-type: none">Begde, Prabhakar: “Ancient and Medieval Town Planning in India”, Sagar 1978.Broadbent, Geoffery: “Emerging Concepts in Urban Space Design”, Van Nostand Reinhold, 1990.Gallion, Arthur & Eisner, Simon: “The Urban Pattern”, John Wiley & Sons, 1993.Jain, Kulbhushan: “Indian Cities in Arid West”, AADI Centre, 1994Kostoff, Spiro, “City Shaped: The elements of Urban Form through history”, Little Brown, 1992 BostonA.E.J. Morris, “History of Urban Form before the Industrial Revolution”, Prentice Hall, 1996Edmund Bacon, “Design of Cities”, Penguin, 1976.		
Pre-requisite: Nil		



SUBJECT NAME: ENVIRONMENT BEHAVIOUR STUDIES	SUBJECT CODE: ARL 254 (DC) L-T-P (Credits): 3-0-0 (3)	B. ARCH. SEMESTER: IV
Objective:		
This inter disciplinary course intends to give an insight into user centric aspects of design by study of intrinsic behavioural traits of human beings. The focus of this elective is to study the impact of built environment upon human behaviour and vice versa.		
Course:		
<ul style="list-style-type: none"> • Introduction to environmental psychology and over view of the course. Study of basic behavioural traits of living beings with respect to space and territory & its manifestation amongst human beings. Development and evolution of the nascent field of E-B studies. Understanding the inter-disciplinary nature of the field encompassing psychology, sociology, anthropology, built environment, culture studies etc. Study of the contributions of scholars' worldwide to the field and its significance & applicability in the Indian context. • Understanding the significance of intrinsic attributes such as Social & Personal space, Privacy, Territoriality, Defensible space, Hierarchy, Crowding and Density, Environmental Cognition, Way finding etc. Concept of Place, meaning of Place and Place Attachment, Identity, Symbolism, Culture and Tradition. • Understanding the importance of participatory design process and its mechanism. Application of user-interface as an important aspect for developing design. Study of the tools and techniques applied for study and research in the E-B field. Understanding importance of evaluation studies, concept of Building Performance Assessment and Post Occupancy Evaluation as a tool for detail study. • Understanding application of EB studies in the following: <ul style="list-style-type: none"> i) Designing for special needs of human communities such as children, elderly and the aged, differently challenged, women etc. ii) Designing of various typologies as housing colonies, learning and educational environments, office environments, health care and healing environs, retail environments, resorts and recreation etc. iii) Enrichment of current studio- based pedagogical orientation of architectural design. 		
Sessional Work: Field studies, Notes, class assignments, reports, and seminars on above topics.		
Method of Assessment:		
Sessional exams, teacher's assessment, end term exam, field studies, observation and documentation, , etc.		
Expected Outcome:		
Development of a user sensitive approach in the conception of the built environments.		
References:		
<ol style="list-style-type: none"> 1. Personal Space: the behavioral basis of design by Robert Sommer, Fairchild Books, NY 1988 2. Post Occupancy Evaluation by Wolfgang Preiser et al., Van Nostrand Reinhold, NY, 1988. 3. Urban Social Space by La Gory and Pipkin 4. Environmental Psychology for Design by Dak Kopec, Fairchild Books, NY 2012 5. The Hidden Dimension by Edward Hall, Anchor Books, NY 1990. 6. Beyond Culture by Edward Hall, Anchor Books, NY 1989. 7. Visual Research Methods in Design by Henry Sanoff, Routledge, 2016. 8. Inquiry by Design by J. Zeisel. Norton & Co. NY 2006 9. Behavioural Research Tools and Techniques by Sommer and Sommer, Oxford University Press, 2002 10. Various Technical Papers in reputed journals 		
Pre-requisite:		
Nil		



SUBJECT NAME: VISUAL COMMUNICATION	SUBJECT CODE: ARP 276 (DE-3) L-T-P (Credits): 0-0-4-(2)	B. ARCH. SEMESTER: IV
Objective:		
To sensitize the students to the importance of non-verbal communication as an integral part of architecture. Course aims at a deeper understanding of aesthetical aspects, generating methods and processes for solving communication problems with greater analytical and problem solving capabilities.		
Course:		
<ul style="list-style-type: none">• Introduction to the various modes of non-verbal communication. Signs symbols imagery and metaphor. Understanding relationship between syntactic, semantics and pragmatics of visual language. View points, point of reference and framing. Critical study of visual elements, features and principles. Exploration and creation of complex and meta patterns. Analysis of aesthetics- the structure of appearance. Exploration of visual images with analogies from nature.• General concepts of semantics and communication theory, visual culture, information graphics, visual ergonomics and human perception and photo communication. Study of a visual design problem. Understanding of factors that directly or indirectly influence the visual design problem through a methodology of design. Development of a program for investigation of problem. In the evaluation process, study the phases of process from analysis through synthesis. To construct communicable messages for the audience through various media.• Use of computer aided software, digital video communication, concept of human computer interaction, experimental animation, visual culture. Introduction to various digital technologies used in communication design Designing for internet and communication devices, its limitations and possibilities Pixel perfect design, use and importance of digital artifacts Designing for print media Constraints and possibilities in modern printing process Study of production methods of books, new papers, magazines etc. Study of packaging using different materials. Handling print projects through digital media. Digital format image manipulation, Colour correction, font management, colour proofing etc.• Photography as an important tool for architectural evaluation as well as appreciation. Learning the use of camera for architectural photography. Lens, Focal Length, Exposure (Shutterspeed, Aperture, ISO), Depth of Field, Histogram, Picture Styles, RAW image, Digital Imaging, Sensor, Crop Factor, Light Metering (Incident, Reflected), Photographic Documentation, Studio Lighting, Flash Photography, Tabletop photography, Digital Photography etc.• Traditional and contemporary schools of Indian Art, folk art Oral Traditions from the ancient to the present Music, Classical (Hindustani & Carnatic), Semi-classical, Folk, Fusion Dance, Classical, Folk, Contemporary Theatre. Traditional (Natashastra), Contemporary, Puppet Theatre. An understanding of the scientific approach to everything and the holistic approach to it and how it influenced all aspects like health, architecture, management and even the arts. Post independence understanding of India as a nation and bridging the wealth of the past with the potential of the future. Reflection of this exposure to the question. What is or what can be called Indian Design. Indian thought and traditions in art design and society, story and narrative, image making and representation.		
Sessional Work: Computer lab work, Notes and test on above topics.		
Method of Assessment:		
Seminar presentations and working on relevant software and Sessional Exams		
Expected Outcome:		
Enabling students with techniques of visual communication. Using computer aided design software for achieving visual communication.		
References:		
<ol style="list-style-type: none">1. Principles of Form and Design, Wong, Wucius, Wiley Publication, 19932. The Hidden Dimension Hall Edward, Anchor, 19903. Moving Focus: Essays on Indian Art, Subramanyan K G, Seagull Books, Kolkatta, 20064. Visual Display of Quantitative Information Tufte, Edward R, Graphis Press5. Design for the Real World by Victor Papanek, Thames and Hudson, 19956. 5000 years of Art in India by Bussagli & Sivaramamurti, Abrams NY7. Language of Vision by Gyorgy. Dover Publications, 19958. Design Basics, by David Lauer. Wadsworth Publishing 19999. Classic Essays on Photography by Alan Trachtenberg. Leetes Island Books, 198110. Information Theory and Aesthetic Perception by A. Mole. U of I press, Urbana USA 1968		



SUBJECT NAME : BUILDING DOCUMENTATIONS	SUBJECT CODE: ARP277 (DE-3) L-T-P : 0-0-4 (2)	B. ARCH. SEMESTER: IV
Objective:		
<ul style="list-style-type: none">• To develop the knowledge and skill of recording, categorizing, dissemination and analysis of information through graphic and written mediums.• To understand the process of building documentation and how this process can be used as a basis for formation of strategy for future development like Building plan permission, socio-culture, environmental, assessment, development of standards, maintenance, management etc.		
Course:		
<ul style="list-style-type: none">• Study of means, methods and tools for documentation.• Measurement techniques for existing buildings or settlement.• Use of mechanical or electronic instruments for measurement.• Development of 2 D/3D drawings from sketches and photographs.• Study of socio-economic and cultural background of buildings or settlements.• Participatory approach for collection of data.• Analysis and interpretation• Preparation of report. <p>The assignment will be based on a field and literature study of buildings of architectural importance or settlements in and around Nagpur region.</p>		
Method of Assessment:		
Continuous evaluation same as P type course at institution		
Expected Outcome:		
Understanding of means, methods and tools of building documentation and their analysis.		
References:		
<ol style="list-style-type: none">1. Allen, E, “How Buildings Work: The natural order of architecture”, 3rd Edition, Oxford.2. Burns J.A., ed., “Recording Historic Structures”, Wiley, 2003.3. Ching F.D.k., “Drawing: A Creative Process”, Wiley, 1989.4. Griffin, A.W. and Brunickardi, V.A., “Introduction to Architectural Presentation Graphics”, Prentice Hall. University Press, 2005.5. Jefferis, A and Madsen, DA, “Architectural Drafting and Design”, 5th Edition, Thomson Delmar Learning, Albany, New York, 2005.6. Morris IH , “Geometrical Drawing for Arts Students”, Orient Longman Pvt. Ltd., 2004.7. Robin Thornes and John Bold (edited), “Documenting the Cultural Heritage”, Getty Information Institute, 1998.8. Shah, Kale and Patki, “Building Drawing”. Tata McGraw Hill Publishing Ltd., 2002		
Pre-requisite:		
Nil		



SUBJECT NAME: VERNACULAR ARCHITECTURE	SUBJECT CODE: ARL 266 (DE-4) L-T-P (Credits): 3-0-0 (3)	B. ARCH. SEMESTER: IV
Objective: To introduce the study of vernacular architecture as a process and not a product. To provide an overview of the various approaches and concepts to the study of vernacular architecture. To study vernacular architecture in various global climatic regions.		
Course: <ul style="list-style-type: none">• Introduction to Vernacular architecture as a process; Various definitions of Vernacular Architecture• Different approaches and concepts to the study of Vernacular architecture: an over view – Aesthetic, Architectural and anthropological studies• Forms, spatial planning, cultural aspects, symbolism, colour, art, materials of construction and construction techniques of vernacular architecture in different climatic regions with special emphasis on India.• Principles of Design in Vernacular Architecture; Response of Vernacular architecture to disaster, resource management, etc.• Chronological development of Vernacular architecture in Contemporary Indian architecture		
Sessional work: Reports, Case studies, Assignments, Field surveys and Tests on above topics.		
Method of Assessment:		
Expected Outcome: Understanding of Principles of design in Vernacular architecture		
References: <ol style="list-style-type: none">1. Paul Oliver, Encyclopedia of Vernacular Architecture of the World, Cambridge University Press, 1997.2. Amos Rapoport, House, Form & Culture, Prentice Hall Inc. 1969.3. R W Brunskill: Illustrated Handbook on Vernacular Architecture, 1987.4. V.S. Pramar, Haveli – Wooden Houses and Mansions of Gujarat, Mapin Publishing Pvt. Ltd., Ahmedabad, 1989.5. Kulbushanshan Jain and Minakshi Jain – Mud Architecture of the Indian Desert, Aadi Centre, Ahmedabad 1992.6. G.H.R. Tillotsum – The tradition of Indian Architecture Continuity, Controversy – Change since 1850, Oxford University Press, Delhi, 1989.7. Carmen Kagal, VISTARA – The Architecture of India, Pub: The Festival of India, 1986.		
Pre-requisite: Nil		



SUBJECT NAME: CONTEMPORARY DESIGN THEORY AND CRITICISM	SUBJECT CODE: ARL 267 (DE-4) L-T-P (Credits): 3-0-0 (3)	B. ARCH. SEMESTER: IV
Objective: Understanding of the philosophy and concepts underlying the contemporary architectural thoughts and their expression. This courses aims to sensitizing students to many lateral issues that have come into focus in contemporary times which require exploration and application to the betterment of the field of architectural design, research and practice.		
Course: <ul style="list-style-type: none">• Critically evaluate the evolution of architecture and underlying processes that determine the consistent quest of the human race to achieve a timeless and appropriate architectural response to the challenges of its era.• Study of spatial order, structural, constructional and material order, manner of articulation, symbols, and meanings, as these evolved in time and space. Relevance and meaning of non verbal communication by an understanding of meaning of signs, symbols and imagery, concept of genius loci and stabilitas loci, monumentality, contextuality, regionalism etc.• Study of natural and manmade patterns as principal conveyors of meaning of the built environments. Fractal theory, a scientific basis of creation of architectural forms, scaling orders, need for ornament, an in-depth examination of visual and structural principles etc.• Critical study of the emerging architectural scenario in pedagogy and practice. Study and understanding of the language of architecture as proposed by well known theoreticians of the contemporary world.		
Sessional Work: Making Notes, essays, class seminars, critique writing and test on above topics.		
Method of Assessment: Sessional exams, teacher's assessment, end term exam, Field studies, observation and documentation, notes, reports, seminars, paper writing etc.		
Expected Outcome: A studied approach to understanding the processes that underlies and shapes the field of architecture, knowledge of current narratives and debates, ability to critique developments in the field of architecture and the built environment.		
References: <ol style="list-style-type: none">1. Principles of Modern Architecture by Christian Norberg Schulz, Papadakis Publisher, UK. 20002. A Theory of Architecture by Nikos Salingaros, Umbau-Verlag, 2008.3. A timeless way of building by Christopher Alexander, Oxford University Press, NY. 19794. Pattern Language by Christopher Alexander, Oxford University Press, NY. 19795. Transformative Pedagogy by Ashraf Salama, Umbau-Verlag, 2009.6. The Strange Death of Architectural Criticism by Martin Pawley collected writings.Black Dog Publishing. 20077. The Poetics of Space by Gaston Bachelard. Beacon Press, Boston.19948. Failure of Modern Architecture by Brent Brolin. Studio Vista London. 19769. The Archaeology of Tomorrow: Architecture and the Spirit of Place by Travis Price, 2006		
Pre-requisite: Nil		



SUBJECT NAME : THEORY OF STRUCTURE	SUBJECT CODE: AML 381 (DE-4) L-T-P (Credits): 3-0-0 (3)	B. ARCH. SEMESTER: IV
Objectives: The objective of this course is to introduce students various methods of discrimination of structural internal forces of deformations.		
Course: <ul style="list-style-type: none">• Combined stresses: Direct and bending stresses• Stability of dams and retaining walls: Stresses at base, minimum base width (derivation and application)• Columns and struts: Euler's theory and Rankine's theory for columns• Deflection of beams: Deflection of simply supported and cantilever beam by double integration method• Fixed beams: Analysis of fixed beam with UDL and concentrated loads• Arches: Three hinged circular arch (application only)• Moment distribution method: Moment distribution method for continuous beams and simple non-sway frame.		
Method of Assessment: Sessional Exams, Teacher's Assessment, End Term Exam		
References: <ol style="list-style-type: none">1. Popov, E R. "Engineering Mechanics of solid", Prentice Hill of India, New Delhi, 2000.2. Beer, Johnston, Dewolf. "Mechanics of Materials", Tata McGraw Hill, New Delhi, 2008.3. Singer, F. L. "Strength of Materials", Harper Collins Publishers, Singapore, 1987.4. Ramamurtham S. "Strength of Materials", Danpatrai & son, New Delhi, 20005. Timoshenko S. P.; & Young D.H. "Theory of Structures", International edition, McGraw Hill, 1965.6. Jain, O.P. & Arya, A.S. "Theory and Analysis of Structures; Vol. I & II", Nemchand Brothers; Roorkee.7. Krishnamurthy D., "Theory of Structures", J.K. Jain Brothers, 1976.8. Ramamurtham S. "Theory of Structures", Danpatrai & son, New Delhi, 2000		
Pre-requisite: Nil		



**MAPPING OF COURSE
B. ARCHITECTURE
YEAR OF ADMISSION 2015-16**

SEM	SR. NO	CODE	COURSES	STRUCTURE			CREDITS	CATEGORY	TOTAL CREDITS	Hours
				L	T	P				
V	1	ARP 361	Architectural Design IV	1	0	8	5	DC	5	
	2	ARP 362	Working Drawing I	0	0	4	2	DC	2	
	3	ARL 358	Construction V	3	0	4	5	DC	5	
	4	ARL 351	Building Services II	3	1	0	4	DC	4	
	5	ARL 352	Specifications	3	0	0	3	DC	3	
	6	ARL 353	Building Legislation	3	0	0	3	DC	3	
	7	AML 482	Concrete Structures	3	1	0	4	ES	4	
				16	2	16	26		26	34



SUBJECT NAME: ARCHITECTURAL DESIGN IV	SUBJECT CODE: ARP 361 (DC) L-T-P (Credits): 1-0-8 (5)	B. ARCH. SEMESTER: V
Objective: <ul style="list-style-type: none">• The course of the semester shall include studies for development of design skill and creative abilities, to understand, explore and create duality, multiplicity and complex architectural relationships of design elements at multiple levels to a designed environment.• To explore the design of buildings addressing the socio -cultural / economic needs of different user groups with varying context like contemporary / traditional. Integration of basic building services, Use of appropriate materials and construction techniques and structural systems.		
Course: <ul style="list-style-type: none">• The course shall include, design considerations for climate, surrounding physical environment, light, ventilation, etc., under various physiographic & climatic situations under consideration. Design studies and explorations in understanding of complex architectural spaces and forms on contoured sites shall be introduced.• To explore the design of buildings addressing the socio -cultural / economic needs of different user groups with varying context like contemporary / traditional. Study of material-climate-culture-construction-design relationship in creation of complex multi-cellular architectural forms shall culminate in design of complex (multilevel / multi-cellular) architectural form. Study and explorations in architectural image & meaning of form, and its organization.• Introduction to integration of basic building services in architectural design, design implications of structural systems.• Introduction to residential / public buildings, their circulation patterns (Multi level), and design needs, services and structure. The suggested projects may include <ul style="list-style-type: none">• Residential buildings: Housing Projects, housing and facilities for different user groups,• Public buildings: Cultural centre, Institutional buildings, Sports arenas, Commercial buildings, Addressing the socio – cultural /economic needs of different user groups. Sessional work: Site visits, Case studies, literature review, Primary/Secondary data collection and analysis, design proposals and models		
Method of Assessment: <p>Continuous Evaluation same as P type courses at institution. Design studio should have Minor assignment, Major assignment and Time problem.</p>		
Expected Outcome: <ul style="list-style-type: none">• Development of design skill and creative abilities, to understand, explore and create duality, multiplicity and complex architectural relationships of design elements at multilevel to a designed environment and• Design of buildings addressing the socio -cultural / economic needs of different user groups with varying context like contemporary / traditional with Integration of basic building services, Use of appropriate materials and construction techniques and structural systems.		
References: <ol style="list-style-type: none">1. Amos Rapoport :House ,form and Culture, Prentice Hall, Englewood Cliffs, N.J ,1969Ching, DK Francis: Architecture: Form, Space and Order, Van Nostrand Reinhold, New York, 1996.2. Antoniades, C. Anthony: Epic Space: Towards roots of Western Architecture , John Wiley & Sons,19923. Broadbent, Geoffery: Emerging Concepts in Urban Space Design, Van Nostrand Reinhold, New York, 1990.4. Brolin, Brent: Failure of Modern Architecture ,1976Doxiadis, C. A.: Architectural Space in ancient Greece5. Giedion, Siegfried; Space, Time and Architecture. ,Harvard University Press, 19636. Jain, K. B.: Indian Cities of the Arid West,19947. Time Saver standards for building types, architectural design data		
Pre-requisite		
Nil		



SUBJECT NAME: WORKING DRAWING - I	SUBJECT CODE: ARP 362 (DC) L-T-P (Credits): 0-0-4 (2)	B. ARCH. SEMESTER:V
Objective:		
<ul style="list-style-type: none">The building design is executed through several construction drawings prepared in sequence and other constructional details along with it, all such drawings in a set of architectural drawings and other allied services drawings such as structural design drawings, mechanical services drawings and other services drawings for smooth execution of construction.The objective of this course is to study and prepare detailed construction drawings to facilitate ease of construction with these execution/working drawings to larger scales for more clarity of details.		
Course:		
<ul style="list-style-type: none">General understanding of building Byelaws, building regulations, requirements of parts of buildings etc. as per the National Building Code for preparation of Submission/Approval drawing.Understanding and use of building specifications in formulation of working drawings as detailed specifications to be the part of architectural working drawings.The set of drawings to be prepared may include following architectural working drawings, incorporating/integrating details and drawings from other consultant services such as structural, air conditioning, plumbing, sanitary, electrical, landscaping etc.<ol style="list-style-type: none">Detailed Floor Plans of all levels,Terrace plan showing roof drainage arrangement,All working sections,All working Elevations,Working details of Staircase,Working design and details of Doors, Windows, Ventilators, Metal Shutters, Compound gates etc.Working details of Kitchen, Toilet, and details of all other important architectural features etc.Integrating/ incorporating design details from consultant services such as structural, air conditioning, plumbing, sanitary, electrical, landscaping etc. such as Centreline plan, Foundation Plan, Plinth level Plan, Lintel level plan, Slab Level Plans to facilitate the execution of building.		
Sessional work: Preparing drawings on above topics to larger scales in studio.		
Method of Assessment:		
Drawings on above topics prepared in the studio for continuous evaluation. Continuous evaluation same as P type course at institution		
Expected Outcome:		
Imparts enough skill to prepare working drawings for the ease of construction with proper workmanship assurance in accordance with the specifications and the contract document and to the satisfaction of the Architect.		
References:		
<ol style="list-style-type: none">E. Allen and P. Rand, “Architectural Detailing: Function, Constructibility, Aesthetics”, 2016Stephen Emmitt and John Olie, “Principles of Architectural Detailing”, 2004Caleb Hornbostel, “Architectural Detailing Simplified”, 1985Robert C. McHugh, “Working Drawing Handbook”, 1977Keith Styles and Andrew Bichard, “Working Drawing Handbook”, 2015M. Shah, “Principles of Building Drawing”, 2007M. Shah, “Building Drawing with an integrated approach to Built Environment”, 2011M. Shah and C. Kale and Patki, “Building Drawing”, 1978K. Gatz, “Modern Architectural Detailing” 2000		
Pre-requisite:		
Nil		



SUBJECT NAME : CONSTRUCTION V	SUBJECT CODE: ARL 358 (DC) L-T-P (Credits): 3-0-4 (5)	B. ARCH. SEMESTER: V
Objective: <ul style="list-style-type: none">• To understand the function, mechanism, details, etc. of suspended ceilings for indoor spaces• To understand possibilities of cladding the building with various materials and study of details of fixing of various cladding materials and systems.• To understand the maintenance, quality assessment, repair and additions alteration required in buildings.• To understand methods and construction details with precast and prestressed concrete.• To understand the construction methods of temporary structures and their application.• To study advanced roofing systems in RCC.		
Course: <ul style="list-style-type: none">• False Ceiling: Types, Materials & Construction details.• Cladding: Various external cladding materials and systems, curtain walling in various materials, construction details of glass curtains, structural glazing systems, etc.• Building Defects: Causes of defects in building such as cracks, seepage, deflection etc. and their remedies. General idea of non-destructive tests such as Rebound Test, Penetration and Pullout Test etc., rehabilitation methods – Grouting, Guniting, Jacketing etc. General study of special chemicals used in construction and repairing work.• Precast concrete: Design considerations and constraints, advantages over cast in situ construction, construction technique, jointing details and applications. Different applications like Modular coordination, roofing system, basements, building components, etc.• Prestressed concrete: Principles and methods of prestressing, systems of prestressing, advantages, disadvantages and applications.• Temporary structures: Materials and techniques used, constructional aspects using timber and Steel.• R.C.C. roofing systems: Flat and Flat plate slabs, Lift slab, Coffered slabs, Waffle slabs, ribbed slabs, etc., North light roofing in RCC, Fixing patent glazing in RCC roofs, Skylights in R.C.C.		
Sessional work Field studies, Sketches and Drawings		
Method of Assessment: Follow Assessment Method for combined Lecture and Studio Course Sessional and End term Examination. Continuous evaluation of student work and Teacher assessment. Continuous evaluation same as P type course at institution		
References: <ol style="list-style-type: none">1. Alan J. Brookes and Maarten Meijs, “Cladding of Buildings”, Taylor & Francis, 20082. Arora, S.P. & Bindra, S.P., “A Text Book of Building Construction”, Dhanpat Rai & Sons, New Delhi, 1994.3. Barry R., “Construction of Building”, Orient Longman Ltd, 1999.4. Chudley R., “Building Construction Handbook”, British library cataloguing, 2008.5. Christopher Souder, “Temporary Structure Design”, Wiley, 20146. Francis DK Ching, “Building Construction Illustrated”, Van Nostrand Reinhold Ltd., 2001.7. Frederick S. Merritt, Jonathan T. Ricketts, “Building Design and Construction Handbook”, McGRAW-HILL, 20018. GoI, “Handbook on Repairs and Rehabilitation of RCC Buildings”, Director General Works, CPWD, Government of India, New Delhi9. Goyal, M.M , “Handbook of Building Construction”, Thomson Press.200410. Jha, J. & Sinha, S.K., “Building Construction”, Khanna Publishers, New Delhi, 1977.11. Kim S. Elliott, Colin Jolly, “Multi-Storey Precast Concrete Framed Structures”, Wiley-Blackwell, 201312. McKay, W.B, “Building Construction” - Vol. I to IV, Longman, 2005.13. Mehta, M., Scarborough, W. and Armpriest, Diane, “Building Construction: Principles, Materials and Systems”, Pearson Prentice Hall, 2008.14. Punmia B.C., “Building Construction”, Laxmi Publications Pvt. Ltd., 1995.15. Rajagopalan N., “Prestressed Concrete”, Alpha Science International, 201016. Ramamrutham S., “Prestressed Concrete”, Dhanpat Rai Publishing Company (P) Ltd, 201417. Rangwala S.C., “Building Construction”, Charotar Publishing House, 1963.18. Simmons H. L, “Olin’s Construction Principles, Materials and Methods”, John Wiley and Sons, 2007.19. Varghese, P. C, “Maintenance, Repair & Rehabilitation and Minor Works of Buildings”, PHI Learning Pvt. Ltd.		
Pre-requisite Nil		



SUBJECT NAME: BUILDING SERVICES II	SUBJECT CODE: ARL 351 (DC) L-T-P (Credits): 3-1-0 (4)	B. ARCH. SEMESTER: V
Objective:		
<ul style="list-style-type: none">• Space and facility requirement for provision of electrical supply from State electricity mains to the building / layout with emphasis on load calculation (thumb rules) wiring systems, distribution panels etc within small and medium size buildings and layouts.• To facilitate the understanding of Architectural Lighting Design based on the fundamentals of lighting and its components.		
Course:		
<ul style="list-style-type: none">• Space and facility requirement for provision of electrical supply from State electricity mains for small scale projects. Study of Consumer control assembly, electrical load based on thumb rules, wiring systems, various electrical fittings and appliances.• Architectural concepts and provision of Power transmission and supply for medium scale buildings. Study of sub stations, transformers, feeders, circuit breakers, bus bars, types of conductors, method of earthing, lightning arresters, electrical load, standby generators, Automatic relays etc.• Conceptual understanding of Electric supply and distribution for residences, group housing projects, High rise buildings, Institutional campus and other building typologies in medium scale.• Principles of light and Illumination –Definitions and design concerns- Electromagnetic radiation, waves, nature of vision, Units of light, flux, solid angle, luminous intensity –utilization factor – depreciation factor, brightness, glare, Visual tasks, Factors affecting visual tasks.• Electric light sources: brief description, characteristics and application of different types of lamps, methods of mounting and lighting control. Classification of luminaires. Market survey for different types of Luminaires- manufacturers' data on luminaires• Lighting design: Lumen method and point by point method for lighting design. Study of spectral energy distribution, Luminous efficiency- color temperature – color rendering, Additive, subtractive color, lighting tasks and their application areas .• Lighting concepts and tasks for different building typologies / spaces in small and medium scale.		
Sessional Work:		
<ul style="list-style-type: none">• Electrical layout for a residence and electrical layout for one of the medium sized building/layout based on thumb rule calculations and indexing at conceptual level.• Market survey (presentations) for various luminaires and their appropriateness of use for different typologies.• Lighting design concept and layout of a small space based on the identification of the lighting tasks.		
Method of Assessment:		
<ul style="list-style-type: none">• Term tests and continuous evaluation of the above sessional work.		
Expected Outcome:		
<ul style="list-style-type: none">• A fair understanding of space requirements and distribution of electrical service provisions.• The understanding of lighting principles and different electric light sources available.		
References:		
<ol style="list-style-type: none">1 F. Hall , Building Services and Equipment, Volume 1,2 & 3", Routledge; 3rd edition 19942 Prof.A.L.Chhatre & Prof.M.W.Indapawar, "VastuParisevaVaSadhane"3 National Building Code for India . Bureau of Indian Standards, Latest Edition4 John E. Flynn and Jack A. Kremers, "Architectural Interior Systems" , Van Nostrand Reinhold; 3 Sub edition, 19925 Dr. R. G. Edkie, "Architectural Acoustics and Illumination" , Ekweera Prakashan,6 Mark Karlen, James R. Benya, Christina Spangler, "Lighting Design Basics", John Wiley & Sons, 2012		
Pre-requisite:		
Nil		



SUBJECT NAME: SPECIFICATIONS	SUBJECT CODE: ARL 352 (DC) L-T-P (Credits): 3-0-0 (3)	B. ARCH. SEMESTER: V
Objective: To study and learn art of writing specifications for materials and works with emphasis on the required qualities of materials, process of construction and proper sequence of execution for the smooth flawless construction.		
Course: <ul style="list-style-type: none">• Importance of specifications, method of writing specifications and use of IS codes, NBC and Standard Specifications by various Govt. and other Organizations.• Classification, types of specifications and their applications and study of contract document.• Study and writing specifications for basic materials and other involved materials of construction.• Specifications for general items and specifications for works of construction.• Specifications for paving, floor finishing, dado, roofing, ceiling and specifications for fixtures and fastenings.• Specifications for water supply, sanitary and electrical installations.• Survey of proprietary materials along with manufacturer's specifications.		
Sessional Work: Notes and test on above topics.		
Method of Assessment: Sessional Exams, Teacher's Assessment, End Term Exam		
Expected Outcome: Writing specifications, for the project or building designed, will enable the professional to be more realistic in building design and construction to the best, avoiding legal hassles to minimum and promise to deliver the right goods to the client.		
References: <ol style="list-style-type: none">1 Dutta B.N., Estimating & Costing in Civil Engineering: Theory and Practice, including Specifications and Valuation, UBS Publication, 20132 S. C. Rangwala, Estimating and Costing and Contracts, Charotar Publications, 2004.3 Public Works Department, Standard Specifications, Published by Government of Maharashtra.4 M. Chakravarti, Estimating and Costing in Civil Engineering, Bhaktivedanta Book Trust, 20065 Govt of India., National Building Code of India 2005 (NBC 2005), GOI Publications 20056 Govt. of India., CPWD Specifications (Vol. 1) 2009 Published By Director General Of Works, CPWD, Nirman Bhawan, New Delhi, 20097 Govt. of India., CPWD Specifications (Vol. 2) 2009 Published By Director General Of Works, CPWD, Nirman Bhawan, New Delhi, 20098 Govt. of Gujarat, General Technical Specifications For Building Works Book, Published by State PWD9 Francis D. K. Ching, Building Codes Illustrated: A Guide to Understanding the 2009 International Building Code, Published by John Wiley & Sons; 3rd Edition (16 October 2009)10 Mark Kalin, Robert S. Weygant, Harold J. Rosen, John R. Regener, Construction Specifications Writing: Principles and Procedures, Published by John Wiley & Sons, 13-Sep-201111 Harold J. Rosen, John R. Regener, Morton Dan Morris, Construction specifications writing: principles and procedures, Published by J. Wiley, 2005		
Pre-requisite: Nil		



SUBJECT NAME: BUILDING LEGISLATION	SUBJECT CODE: ARL 353 (DC) L-T-P (Credits): 3-0-0 (3)	B. ARCH. SEMESTER: V
Objective:		
<ul style="list-style-type: none">• To understand need & relevance of Building Legislations• To create awareness about basis and contents of Development Control Regulations		
Course:		
<ul style="list-style-type: none">• Need for legislations, acts related to Buildings and land development• History and background of Regional Town planning & building regulations in India• Broad Understanding of National Building Code of India• Basic definitions and legal terminology • Introduction to development control regulations, municipal acts, building bye-laws. Indian Standard Codes of Practice• Study of Development control regulation (DCR) City specific• DCR for Subdivision of land• DCR for outdoor spaces• DCR of Indoor spaces • Calculations of Built up, FSI, Premium, Carpet Area, TDR, Parking for different occupancy, Sanitation & Water requirement, Fire safety norms & installations.• Relevant documentation and procedure for obtaining approvals related to building• Introduction to DCR of Class B & C town, Special township norms		
Sessional work: Sketches, assignments & Numerical (case specific)		
Method of Assessment:		
Sessional 1, Sessional 2, End semester examination,		
Expected Outcome:		
Development of skills for organizing of architectural project within building regulation framework		
References:		
<ol style="list-style-type: none">1. "National Building Code 2005"2. "Maharashtra Regional Town Planning act 1966"3. "Development Control Regulation of Nagpur".		
Pre-requisite:		
Nil		



SUBJECT NAME : CONCRETE STRUCTURES	SUBJECT CODE: AML 482 (ES) L-T-P (Credits): 3-1-0 (4)	B. ARCH. SEMESTER: V
Objectives:		
<ul style="list-style-type: none">To introduce structural material i.e. structural steel, reinforced concrete and concrete making material and their mechanical properties, familiarize various elements/ component of RCC structures, analysis of structure and behaviour of each element under static gravity loading and introduce the concept of design of structural members RCC building subjected to tension, compression, shear and bending.		
Course:		
<ul style="list-style-type: none">IS456: Study of IS456, Material, General design requirement and design methodologyIS875: Dead load, Live load and Wind load, Load calculations as per IS875 (for buildings only)Limit State Method of RCC Design, All type of Limit State of Collapse and ServiceabilitySingly and doubly reinforced beams: Design and investigation of singly and doubly reinforced rectangular beams, singly reinforced T and L beam sections.Slabs: Design of one-way and two-way slabsColumns and footings: Design of axially loaded columns and footingsDetailing of structural elements: Conceptual reinforcement detailing for various structures i.e. buildings (Beams, Slabs, Columns, Footings, Staircase, etc).		
Method of Assessment:		
Sessional Exams, Teacher's Assessment, End Term Exam		
References:		
<ol style="list-style-type: none">Sinha, S.N., "Reinforced Concrete Design", Tata McGraw Hill Publishing company ltd., New Delhi.Pillai, S.U.; & Menon, D., "Reinforced Concrete Design", Tata McGraw Hill Publishing company ltd. India, 1998."IS: 456; Code for Practice: Plain and Reinforced Concrete", Bureau of Indian standards; New Delhi, 2000."IS: 875 (Part 1 to 4); Code for Practice for Design Loads (Other than Earthquake) For Buildings & Structures"; Second Revision (5th Reprint)", Bureau of Indian Standards; New Delhi, 1987."IS: 13920; Ductile Detailing of Reinforced Concrete Structures Subjected to Seismic Forces- code of Practice; Second reprint-1996", Bureau of Indian Standards; New Delhi, 1993."SP- 34; Handbook on Concrete Reinforcement & Detailing and other relevant codes", 1987.		
Pre-requisite:		
Nil		



**MAPPING OF COURSE
B. ARCHITECTURE
YEAR OF ADMISSION 2015-16**

SEM	SR. NO.	CODE	COURSES	STRUCTURE			CREDITS	CATEGORY	TOTAL CREDITS	Hours
				L	T	P				
VI	1	ARP 363	Architectural Design V	1	0	8	5	DC	5	
	2	ARP 364	Working Drawing-II	0	0	4	2	DC	2	
	3	ARL 359	Construction VI	3	0	4	5	DC	5	
	4	ARL 354	Building Services III	3	0	0	3	DC	3	
	5	ARL 355	Acoustics	3	0	0	3	DC	3	
	6	ARL 356	Estimation and Valuation	3	0	0	3	DC	3	
	7	AML 481	Steel Structures	3	1	0	4	ES	4	
				16	1	16	25		25	33



SUBJECT NAME: ARCHITECTURAL DESIGN - V	SUBJECT CODE: ARP 363 (DC) L-T-P (Credits): 1-0-8 (5)	B. ARCH. SEMESTER: VI
Objective:		
In continuation with the preceding courses of Architectural Design, this course intends to develop design skills and abilities, to understand, explore and resolve the multiplicity, complex relationships of design elements (parts) to a designed environment (unified whole).		
Course:		
The studio will have emphasis on the following – <ul style="list-style-type: none">• Culture as a major determinant of architectural form.• Application of Development Control Rules and Regulation in Architectural Design.• Exploration of complex circulation, complex functional organization and spatial configuration for public buildings of medium and large scale.• Introduction to specialized building types, their design needs, services and structure.• Integration of building systems in architectural design.• Explorations in architectural expression.• Concept of space module and modular repetition in design - its relation with functional organization, structural concepts / systems and aesthetics.• Compatibility with the context. Suggested design projects: <ul style="list-style-type: none">• Commercial, Recreation, Hospitality, Health Care Facilities, Educational, etc.• Public buildings with emphasis on religious, cultural, social, etc. functions.• Multifunctional buildings / complexes.• Study Tour Component of 10-20% weightage• Assignments on various aspects like Materials, Structure, User, Settlement Pattern, Urban Design, Climate study etc.• Compile work as Photographs, Sketches, Reports and Presentation.• Assessment - Two Tour coordinators, HoD and one faculty.		
Sessional work: One design project, along with other design tasks and assignments.		
Method of Assessment:		
Continuous Evaluation same as P type courses at institution. Design studio should have Minor assignment, Major assignment and External Viva-voce.		
Expected Outcome:		
Enhanced ability to identify design issues, setting priorities, formulate design strategies leading to design acts to resolve the multiplicity, complex relationships of design elements (parts) to a designed environment (unified whole).		
References:		
<ol style="list-style-type: none">1. Amos Rapoport : “House, form and Culture”, Prentice Hall, Englewood Cliffs, N.J ,19692. Antoniadis, C. Anthony: “Epic Space: Towards roots of Western Architecture”, John Wiley & Sons,19923. Broadbent, Geoffery: “Emerging Concepts in Urban Space Design”, Van Nostrand Reinhold, New York, 1990.4. Brolin, Brent: “Failure of Modern Architecture”, 19765. Ching, DK Francis: “Architecture: Form, Space and Order”, Van Nostrand Reinhold, New York, 1996.6. Doxiadis, C. A.: “Architectural Space in ancient Greece”.7. Giedion, Siegfried; “Space, Time and Architecture”., Harvard University Press, 19638. Jain, K. B.: “Indian Cities of the Arid”, West,19949. “Time Saver standards for building types”, architectural design data.		
Pre-requisite		
Nil		



SUBJECT NAME: WORKING DRAWING - II	SUBJECT CODE: ARP 364 (DC) L-T-P (Credits): 0-0-4 (2)	B. ARCH. SEMESTER: VI
Objective: In continuation/ addition to the previous semester <ul style="list-style-type: none">• To make students aware about the importance of Working Drawings for a flawless execution of project, quality construction, preparation of estimate and tender documents, etc.; and accordingly prepare architectural detailing for their projects.• Understanding the complexities & scale of projects and preparing working drawings as per a standard method / system by a team of architects and draftsmen• Learning to prepare architectural details of toilets, bathrooms, kitchens, etc.• Learning to prepare architectural details for installing plumbing, sanitary, waste water disposal systems, electrical installations, etc. in buildings• Learning to show details of site development and landscaping• Learning to prepare a set of drawings for special architectural components, such as grills, railings, other fabrication work, doors and windows details, etc.		
Course: In continuation of previous semester, students shall be required to understand finer and larger details of building components in this semester and they shall be trained in preparing working drawings with appropriate/intricate finishing and furnishing details all such building components in extension and addition of the drawings and details prepared in the earlier semester A set of working drawings shall contain the followings. <ul style="list-style-type: none">• Working design details of Flooring and Floor pattern,• Finishing detail drawings of doors, windows, guard grills, railings, stairs, kitchen platform, cupboards, wardrobes, toilets, etc.• Furnishing detail drawings of fixtures and fastenings, cupboards, wardrobes, kitchen platform and Kitchen cupboards, Sanitary and Plumbing installations etc.• Drainage Layout showing soil, waste and rainwater disposal/drainage system. Sanitary fittings, traps, inspection chambers etc.• Water supply layout indicating supply tapping point with meter, supply line to storage tanks and connections to different installations/equipment's in building.• Electrical layout showing meter board and power supply lines to different parts of building and different installations/equipment.• Site development plans showing landscaping, approaches, paving etc.• Other special services layout and various installations related to it. Sessional work: Preparing drawings on above topics to larger scales in studio.		
Method of Assessment: Drawings on above topics prepared in the studio for continuous evaluation. Continuous evaluation same as P type course at institution		
Expected Outcome: Imparts enough skill to prepare working drawings for the ease of construction with proper workmanship assurance in accordance with the specifications and the contract document and to the satisfaction of the Architect.		
References: <ol style="list-style-type: none">1. E. Allen and P. Rand, “Architectural Detailing: Function, Constructability, Aesthetics”, 20162. Stephen Emmitt and John Olie, “Principles of Architectural Detailing”, 20043. Caleb Hornbostel, “Architectural Detailing Simplified”, 19854. Robert C. McHugh, “Working Drawing Handbook”, 19775. Keith Styles and Andrew Bichard, “Working Drawing Handbook”, 20156. M. Shah, “Principles of Building Drawing”, 20077. M. Shah “Building Drawing with an integrated approach to Built Environment”, 20118. M. Shah and C. Kale and Patki, “Building Drawing”, 19789. K. Gatz, “Modern Architectural Detailing”, 2000		
Pre-requisite: Nil		





SUBJECT NAME : CONSTRUCTION VI	SUBJECT CODE: ARL 359 (DC) L-T-P (Credits): 3-0-4 (5)	B. ARCH. SEMESTER: VI
Objective:		
<ul style="list-style-type: none">To understand construction details and types of long span structures and High Rise Structures in different materials like timber, steel and RCC.		
Course:		
<ul style="list-style-type: none">Long span structure: Concept, design & types of long span structure in steel and RCC using advanced light weight construction systemsGrid Structures: Skeletal structures, Space Frames, Domes, etc. Their types, constructional aspects, merits and demerits etc.Stressed Skin Structure: Shell structures, Domes, Vaults and Folded plate Structures: Their types, constructional aspects, merits and demerits etc.Other Long Span Structures: Suspension structures, Catenary structures, Membrane structures and pneumatic structures: Types, materials used, merits, demerits and examples.Construction Techniques to cover large spans using short length timber and laminated timber material: lamella roofing, portal frames, solid beams and web beams.High Rise Building: Foundations and various loads and their distribution patterns, various structural systems, space planning, vertical transportation design and architectural design considerations.Earthquake Resistant Buildings: Earthquakes and its effect on buildings, Architectural design considerations and constructional detailing for Earthquake resistance.		
Sessional work Field studies, Sketches and Drawings		
Method of Assessment:		
Follow Assessment Method for combined Lecture and Studio Course Sessional and End term Examination. Continuous evaluation of student work and Teacher assessment.		
References:		
<ol style="list-style-type: none">Arora, S.P. & Bindra, S.P., “A Text Book of Building Construction”, Dhanpat Rai & Sons, New Delhi, 1994.Barry R., “The Construction of Buildings 1-5 Vol.”, Orient Longman Ltd., 1999Chudley Roy, “Building Construction Handbook”, British library cataloguing, 2008.Chudley Roy, Greeno Roger, “Construction Technology”, Pearson Prentice Hall, 2005“Explanatory Handbook on Codes for Earthquake Engineering”, IS -1893- 1975 & IS – 4326- 1976, Bureau of Indian Standards.Francis D. K. Ching, “Building Construction Illustrated”, Van Nostrand Reinhold Ltd.Lynn S. Beedle, “Advances in Tall Buildings”, Van Nostrand Reinhold, 1986Mario George Salvadori, Robert Heller, “Structure in Architecture: The Building of Buildings”, Prentice Hall, 1975Michael Barnes, Michael Dickson, “Widespan Roof Structures”, Thomas Telford, 2000“National Building Code, India, Bureau of Indian Standards, Latest EditionSubramanian N., Principles of Space Structures, A. H. Wheeler Publishing Company Limited, 1999Stephen Emmitt, Christopher A. Gorse, “Barry's Advanced Construction of Buildings”, Wiley-Blackwell, 2010Stroud Foster J., “Mitchell's Advanced Building Construction”, B.T. Batsford , 1963		
Pre-requisite:		
Nil		



SUBJECT NAME: BUILDING SERVICES III	SUBJECT CODE: ARL 354 (DC) L-T-P (Credits): 3-0-0 (3)	B. ARCH. SEMESTER: VI
Objective:		
<ul style="list-style-type: none">• The aim of the course is to respond to the space and system requirements for Mechanical Systems and Services associated with the building and its premises including electro-mechanical means of vertical transportation in buildings and HVAC services in the building.• Understanding of intelligent buildings / Building Automation System and their major components and integration.		
Course:		
<ul style="list-style-type: none">• Introduction to Electro-mechanical means of vertical transportation in buildings, requirements, occupancy, load etc.• Study of elevators and escalators on the basis of quality and quantity of service, various components, standard space requirements, various types, construction details and architectural implications.• Ventilation of buildings, Natural and mechanical ventilation, need of mechanical ventilation – an overview. Induced ventilation components like Exhaust fans, Axial flow fans, Blowers for Industrial ventilation.• Principles of Psychometrics and heat transfer in the context of HVAC systems.• Study of Air Conditioning systems and their applicability, Unit AC's, Central AC's, Split AC's . Components of AC systems such as chilling plants, cooling towers, air handling units, Calculation of AC loads. Air distribution systems, ducts and ducting layouts, – VAV & VRV Systems• Concept and details of Service and Mechanical Floor in building design with the help of case studies or site visits.• Design criteria for selecting the Air conditioning system for small and medium sized buildings and layouts with emphasis on space requirement, orientation of the building and energy conservation measures.• Code requirements for these installations, with an emphasis on National Building Code for India.• Introduction to Intelligent Buildings and Building Automation Systems, components and application of BAS and architectural implications.		
Sessional Work:		
<ul style="list-style-type: none">• Case Studies along with site visits and documentation of the studied systems.• Market survey to collect the information about the energy efficient and alternative techniques.		
Method of Assessment:		
<ul style="list-style-type: none">• Term tests and continuous evaluation of presentations based on site visits and market surveys		
Expected Outcome:		
<ul style="list-style-type: none">• To inculcate a fair understanding of integration of various mechanical systems and services and their implication on architectural space design and facilitation.		
References:		
<ol style="list-style-type: none">1. F. Hall , “Building Services and Equipment, Volume 1,2 & 3'”, Routledge; 3rd edition 19942. “National Building Code for India”, Bureau of Indian Standards, Latest Edition3. John E. Flynn and Jack A. Kremers, “Architectural Interior Systems” , Van Nostrand Reinhold; 3 Sub edition, 19924. P. N. Ananthanarayan, “Basic Refrigeration and Air Conditioning” , Tata McGraw-Hill Education, 20135. Strakosch, George R. “Vertical transportation: elevators and escalators”, John Wiley & Sons Inc, 1983.6. Lechner, Norbert, “Heating, cooling, lighting: Sustainable design methods for architects”, John wiley & sons, 2014.		
Pre-requisite:		
Nil		



SUBJECT NAME: ACOUSTICS	SUBJECT CODE: ARL 355 (DC) L-T-P (Credits): 3-0-0 (3)	B. ARCH. SEMESTER: VI
Objective: <ul style="list-style-type: none">• The course is based on Architectural Acoustic theory and practice.• It shall deal with the physics and perception of sound, the characteristics of sound and vibration in spaces, and their influence in the development of holistic design concepts.		
Course: <ul style="list-style-type: none">• Introduction to perception of sound in architectural spaces and necessity of manipulating acoustical environment in buildings.• Study of Fundamentals like anatomy of Human ear, Sensitivity of hearing, behaviour of sound in space, Decibel scales for intensity, pressure and power, Loudness perception.• Evolution of form of performing spaces, with respect to the change in socio-cultural organization, advances in technology, origin of different forms of music, chorus, speech, dramatics etc. from the prehistoric times to the contemporary period.• Sound absorption, reflection, diffusion, diffraction. Sound Absorbing materials and their classification.• Reverberation and reverberation time calculation. Dead and live rooms, Speech interference criteria and noise criteria, Speech Transmission Index, Articulation index.• Sound Isolation, Transmission loss, Mass law, STC rating, TL for single and double walls, composite transmission loss, sound leaks and flanking.• Noise and Noise Control: Noise and people, noise criteria curves, noise from ventilating and air conditioning systems. Floor and ceiling construction for noise isolation. Floating floors, outdoor barriers for noise control.• An introduction to qualitative and quantitative measurement methods in architectural acoustics• Sound Reinforcement Systems, Central and Distributed loudspeaker systems, Components and Design Criteria• Basic guidelines for designing open air theatres, cinemas, broadcasting studios, concert halls, class rooms, lecture halls, schools etc.		
Sessional Work: <ul style="list-style-type: none">• Exercises based on acoustic measurement / Design or analysis of a space based on the guidelines.• Seminar Presentations and discussions with respect to selected case studies.		
Method of Assessment: <ul style="list-style-type: none">• Term tests and continuous evaluation of the above sessional work.		
Expected Outcome: <ul style="list-style-type: none">• Inculcate a general understanding of the importance of acoustics in buildings.• It will develop an ability to address Architectural Design in terms of space and form for areas of Acoustic design concerns.		
References: <ol style="list-style-type: none">1. M.David Egan , "Concepts in Architectural Acoustics" , McGraw-Hill Inc.,US; Reprint edition, 19722. Marshall Long , "Architectural Acoustics", Elsevier Academic Press, 20053. Michael Barron, "Auditorium Acoustics and Architectural Design", Spon Press, 20104. Heinrich Kuttruff, "Room Acoustics", Spon Press, 20095. National Building Code for India . Bureau of Indian Standards, Latest Edition6. Dr. R. G. Edkie, "Architectural Acoustics and Illumination" , EkweeraPrakashan,		
Pre-requisite:		
Nil		



SUBJECT NAME: ESTIMATION AND VALUATION	SUBJECT CODE: ARL 356 (DC) L-T-P (Credits): 3-0-0 (3)	B. ARCH. SEMESTER: VI
Objective: To develop ability to estimate the quantity and the cost of the building and project from given set of drawings and detailed specifications and understand the important factor of the profession as valuation of land and property for various purpose.		
Course:		
Estimate and Estimating: <ul style="list-style-type: none">• Purposes of Estimating, Types of Estimates, Methods of Building Estimates, Units of Measurement of Various Items. Methods of Detailed Estimates, Detailed Estimation of Civil Engineering Works: Building (Load Bearing and RCC Framed Structures), Culverts, Hydraulic Structures and Water Supply and Sanitary Works and Road Works.• Specifications: Definition, Objectives, Use, Types, Classification, Design of Specifications, Principles of Specification Writing, Sources of Information and Typical Specifications.• Contracts: Definition, Essential Requirements, Trade usages, Forms of contract, Termination of Contracts, Labour Contract Negotiated Contracts, Schedule of Prices Contracts, Package Deal Contracts, Demolition Contracts, Responsibilities of the Engineer, Contractor and Owner, Earnest Money and Security Deposits, Mobilization Fund, Tender, Opening of Tenders, Scrutiny of Tenders, Acceptance of Tender, Revocation of Tender, Tender form, Unbalance Tender, Liquidated Damages, Advertisement, contract Documents, Qualification of Contractors, Direct and Indirect Costs, Basic price Contracts. Conditions of Contract: Definition, Object, Importance, Peculiarities, General Provisions, Typical Clauses of the Conditions of Contract, Conditions of Contract in Outlines.• Rate Analysis: Purposes of Rate Analysis, Factors affecting, importance, Schedule of Rates, Task works per Day, Rate analysis of typical Items.		
Valuation: <ul style="list-style-type: none">• Purposes, Cost, Price and Value, Forms of Value, Classification of Property, Freehold and Leasehold Properties, Sinking Fund, Amortization, Depreciation and Obsolescence, Outgoings, Gross Income and Net Income, Capitalized value, Deferred Land Value, Year's Purchase, Rate of Interest, Mortgage, Legal Mortgage, Accommodation Land and Accommodation Works, Annuity, Land Valuation, Methods of Land Valuation, Rent fixation. P.W.D. Accounts and Procedure for Works: Organization of Engineering Department, Works, Classification of Works, Methods of Carrying out Works, Measurement Book, Stores, Stock, Issue Rates, Tools and Plants, Mode of Payment, Public Works Account, Power of Sanction, Duties of Overseers Travelling Allowances.		
Sessional work: Notes, Exercises on above topics. Study and preparation of valuation report.		
Method of Assessment:		
Sessional Exams, Teacher's Assessment, End Term Exam		
Expected Outcome: <ul style="list-style-type: none">• Estimate the cost of any building• Design technical specifications for any project• Invite tenders and arrange contracts on behalf of Govt.,• Carry out rate analysis of various items in construction,• Fix the value of built up properties and land, fixation of rent for a property,		
References: <ol style="list-style-type: none">1. Rangawala S.C., "Estimating ,Costing and Contracts", Charotar Publications, 2004.2. Dutta B.N., "Estimating and Costing in Civil Engineering: Theory and Practice, including Specifications and Valuation", UBS Publication, 20063. M.Chakraborty, "Estimating and Costing", Authors' Publication, 2006.4. Namavati R., "Theory & Practice of Valuation", Published by Lakhani Book Depot, 2010,5. Rangwala S. C., "Valuation of Real Properties", Charotar Publishing House P Ltd., 20156. SyamalesDatta, "Valuation Of Real Property: Principles And Practices", Eastern Law House P Ltd., 2004		
Pre-requisite:		
Nil		





SUBJECT NAME : STEEL STRUCTURES	SUBJECT CODE: AML 481 (ES) L-T-P (Credits): 3-1-0 (4)	B. ARCH. SEMESTER: VI
Objectives:		
To introduce structural material i.e. structural steel and their mechanical properties, familiarize various elements/ component of steel structures, analysis of structure and behaviour of each element under static gravity loading and introduce the concept of design of structural members of steel structure building subjected to tension, compression, shear and bending.		
Course:		
IS800: Study of IS800 IS875: Study of IS875- Part 3, wind loads for trusses and industrial buildings Tension members: Design of tension members Compression members: Design of compression members Flexural members: Design of bending members with standard rolled section Connections: Design of simple connections, splices.		
Method of Assessment:		
Sessional Exams, Teacher's Assessment, End Term Exam		
References:		
1. Duggal, S.K. " Design of Steel Structure ", Tata McGraw Hill, New Delhi, 2005. 2. Negi, L. " Design of Steel Structure ", Tata McGraw Hill.		
Pre-requisite:		
Nil		



MAPPING OF COURSE
B. ARCHITECTURE
YEAR OF ADMISSION 2015-16

SEM	SR. NO	CODE	COURSES	STRUCTURE			CRE DITS	CATEGOR Y	TOTAL CREDIT S	Hours
				L	T	P				
VII	1	ARP 481	Architectural Design VI	1	0	8	5	DC	5	
	2	ARL 458	Landscape Design	2	0	4	4	DC	4	
	3	ARL 454	Urban Planning and Design	3	0	0	3	DC	3	
	4	ARL 455	Professional Practice	3	0	0	3	DC	3	
	5/6	ARL 461	Disaster Mitigation and Management	3 +	0	0	3 +	DE (5 & 6)	3+3	
		ARL 462	Appropriate Technology							
		ARL 463	Rural Planning and Development							
		ARL 464	Building Repair and Restoration							
		AML483	Earthquake Resistant Structures							
				15	0	12	21	21	27	



SUBJECT NAME: ARCHITECTURAL DESIGN VI	SUBJECT CODE: ARP 481 (DC) L-T-P-(Credits) 1-0-8 (5)	B. ARCH. SEMESTER: VII
Objectives:		
<ul style="list-style-type: none">• To understand and analyse built to un-built relationships• To develop design skills and creative abilities to understand and explore complex architectural relationships integrating design elements to create meaningful built spaces.• To develop the ability to generate design alternatives through site analysis and Site Planning• To explore structural possibilities and their impact on architectural form in service intrinsic high rise buildings• To understand space organisation, analysis and evaluation of design criteria and concepts for specialized buildings.• To integrate place making and symbolism to impart a sense of identity and image to architectural solutions		
Course:		
<ul style="list-style-type: none">• Detailed study of methodology for design conception, development and detailing, with special emphasis on site planning, building services and structure• Application of cost effective techniques innovative structural systems, building materials and application of urban design elements in campus design including rigorous Site Planning exercises.• Introduction of multi-level, high rise building complexes.• Application of building regulations, bye-laws, and development control rules to architectural design• Integration of building services and climatic concerns in architectural solutions. <p>Recommended building types are Educational Campus, Civic Centre, Convention Centre, Cultural Centre, Hospitals, Museum, Group Housing, Institutional Buildings, and Residential cum Commercial Complex, Shopping Mall and Multiplex, hospitality architecture and other hybrid structures involving various buildings within the same site.</p> <p>Sessional work: Live Case Studies, Literature based tasks, Data Presentation and analysis Architectural design of one Project of appropriate scale.</p>		
Method of Assessment:		
Continuous Evaluation same as P type courses at institution. Design studio should have Minor assignment, Major assignment and Time problem. External Viva.		
Expected Outcome:		
Ability to Design, analyse and generate creative alternatives for moderately complex Architectural Design issues		
References:		
<ol style="list-style-type: none">1. Broadbent, Geoffrey: “Emerging Concepts in Urban space design”, Van Nostrand Reinhold, New York, 19902. Ching, D.K. Francis: “Architecture: Form, Space and Order”, Van Nostrand Reinhold, New York, 19963. Gibbert Fredrick: “Town Design”4. Giedion, Siegfried: “Space, Time and Architecture”, Harvard University Press 1963		
Pre-requisite:		
Nil		



SUBJECT NAME: LANDSCAPE DESIGN	SUBJECT CODE: ARL 458 (DC) L-T-P (Credits): 2-0-4 (4)	B. ARCH. SEMESTER: VII
Objective: <ul style="list-style-type: none">• The scope of the subject is to make students aware of architecture beyond building, in the outdoor environment and spaces, and,• The role and importance of landscaping and site planning in enhancing and improving the quality of building environs, functionally and aesthetically.		
Course:		
Contents <ol style="list-style-type: none">1. Introduction to Landscape Architecture, definitions, importance, need and scope. Levels of landscape planning and design. Relationship between landscape design and architectural design.2. Historical development of landscape architecture. Origin of gardens. Design principles, salient features and elements of various gardens in history-like Egyptian, Persian, Spanish, Italian, French, English, American, Japanese, Mughal, Indian etc.3. Modern garden development. Changed scenario for contemporary garden designs. Effect of industrialization on garden designs. Company towns, Parks movement, green belts, urban parks, residential gardens, Small gardens.4. Different factors and components of a landscape. Social and economical factors. Psychological considerations of spaces and enclosures. Brief idea about manmade components like walls, fences, entrances, gates, barriers, screens, planters, roads & pathway, street furniture, signages, services - electrical, water supply and drainage.5. Basic natural components-land trees, water and climate.<ol style="list-style-type: none">a. Land: Different aspects of land as a landscape element - soils, geology, topography, earth forms, levels, foundations, grading, drainage, paved and un paved surfaces.b. Plants: Different aspects of trees, shrubs, climbers, hedges, lawns as landscape elements. Basic horticultural idea about plants, plant selection, planting design and care of plantsc. Water: Various forms of water elements in a landscape - fountains, waterfalls, pools, cascades, channels, irrigation etc. Construction of various water elementsd. Climate: Macro and micro-climatic considerations in landscape architecture. Effect of climate on the landscape and various components of landscape on the microclimate. Relationship between climate, landscape and architecture. The importance of these natural components and use of aspects as a landscape design element.6. Site Planning, Methodology and process of site study. Site survey, data collection, compilation, presentation and analysis techniques. Importance of site planning for landscape design and architecture. Landscape design at individual house and community level.7. Specially landscaped places like interiors, terrace gardens, wall gardens, window landscaping etc. - their landscape designing and construction detailing.		
Method of Assessment:		
Tutorial work: Notes, sketches, tests and seminars based on the above topics.		
Sessional work: Case Studies & Site visits reports and design problems based on the above topics.		
Expected Outcome: <ul style="list-style-type: none">• Awareness amongst students of the architecture beyond building, in the outdoor environment.• Exploring the role and importance of landscaping and site planning in enhancing and improving the quality of building environs, functionally and aesthetically.		
References: <ol style="list-style-type: none">1. Norman “Residential Landscape Architecture: Design Process for the Private Residence”, Booth, Prentice Hall, 20122. M. Laurie, “Introduction to Landscape Architecture” Elsevier, 19863. Geoffrey Alan Jellicoe, “The Landscape of Man: Shaping the Environment from Prehistory to the Present Day”, Thames and Hudson, 19954. J.O. Simonds, “Landscape Architecture- A manual of site planning and design”, McGraw Hill Publications, 2006.5. Kevin Lynch, “Site Planning”, MIT Press, 1984.6. R. Genebrooks, “Site Planning”, Prentice Hall Publication, 1988.7. Ian McHarg, “Design with Nature”, Turtleback Books, 19958. J.O. Simonds “Earthscape”, McGraw Hill Publications, 1978.9. Albert J. Rutledge “Anatomy of a park: The essentials of recreation area planning and design”, McGraw-Hill, 197110. Norman “Basic elements of landscape Architectural design” Booth, Waveland press, 1990		
Pre-requisite:		
Nil		



SUBJECT NAME: URBAN PLANNING AND DESIGN	SUBJECT CODE: ARL454 (DC) L-T-P (Credits): 3-0-0 (3)	B. ARCH. SEMESTER: VII
Objective: To introduce the scope and nature of Urban Planning and Urban Design as disciplines.		
Course: <ol style="list-style-type: none">1. Objectives, domains and principles of town planning2. Modern urban planning concepts and approaches.3. Types, levels and methods of planning.4. Urbanization trends in India - Issues, concerns and experiences; City planning process and Implementation framework in Indian context5. Introduction to scope, objectives and relevance of Urban Design; Relation between Architecture, Urban design and Urban planning.6. Level of Urban design - City level, Neighbourhood level, Street level, Individual site level.7. Introduction to Urban Fabric, Urban Morphology, Urban Space and Urban Place, Public Realm, Place making, Concept of Pedestrianisation, etc.		
Sessional Work: Notes, Seminars, assignments on above topics.		
Method of Assessment: Continuous Evaluation – I and II Sessional Examination, End Semester Examination and Assignments.		
Expected Outcome: Enhanced understanding of the issues and concerns of urban environment and probable approaches in addressing them through planning and design.		
References: <ol style="list-style-type: none">1. Broadbent, Geoffery: “Emerging Concepts in Urban Space Design”, Van Nostand Reinhold, 1990.2. Edmund Bacon, “Design of Cities”, Penguin, 1976.3. Francis Tibbalds, “Making people-friendly towns: improving the public environment in towns and cities”, Longman, 1992.4. Rob Krier, “Urban Space”, Random House Incorporated, 1979.5. Jonathan Barnett, “Urban design as public policy: practical methods for improving cities”, Architectural Record Books, 1974.		
Pre-requisite: Nil		



SUBJECT NAME : PROFESSIONAL PRACTICE	SUBJECT CODE: ARL 455 (DC) L-T-P (Credits): 3-0-0 (3)	B. ARCH. SEMESTER: VII
Objective: The study of this subject is to acquaint the students, while giving basic information about various aspects of the profession, conduct and responsibilities and procedures of Architectural profession.		
Course: <ul style="list-style-type: none">• Introduction. Architectural profession as a vocation. Nature, characteristics, history and its importance in Indian context.• Architects responsibilities and relationships, duties and liabilities, clientele aspects and social obligations in profession. Engaging an Architect and important considerations for engaging Architectural services.• Education of an Architect and various avenues open. Setting up of practice, various forms and their considerations. Office management – organization and types of organization structure.• Conditions of engagement, scale of charges, stages of comprehensive Architectural services and sample letter of appointment.• The Architects Act 1972 and its effect on profession and education. Registration of Architect and code of professional conduct.• Professional organizations and Architectural competition.• Contract & tender documents.		
Sessional work: Notes, assignments, tutorials and report writing		
Method of Assessment: Sessional exams, Teachers evaluation and End term exam.		
Expected Outcome: To acquaint students with their roles and responsibilities of dealing with various related agencies and the freedom/ limitations as a professional as well as their real status in the society.		
References <ol style="list-style-type: none">1. IIA, “Hand book of profession”2. COA, N Delhi, “Handbook of Professional document”. 20143. Dr. R H Namavati, “Professional practice”, 20014. Ar. V S Apte, “Architectural Practice and Procedure”, 20085. Dr. K G Krishnamurthy and Prof. S V Ravindra, “Professional Practice”, 2004		
Pre-requisite: Nil		



SUBJECT NAME: DISASTER MITIGATION AND MANAGEMENT	SUBJECT CODE: ARL 461 (DE- 5/6) L-T-P (Credits): 3-0-0 (3)	B. ARCH. SEMESTER: VII
Objective: <ul style="list-style-type: none">• Introduction to fundamentals of disaster mitigation & management issues• Awareness for Disaster Management issues in relevance of Architecture & surrounding built environment.		
Course: <ul style="list-style-type: none">• Introduction to Disaster and Natural environment• Natural and Manmade disaster their causes and impacts such as Earthquake, Floods, Avalanches, Landslides and Manmade such as Building collapse, Hijacking, Stampede, Building Fire etc. with examples• Disasters and Manmade environment• Definitions of hazard, Risk, vulnerability and disasters with examples• Disaster management policy outline in India, Institutional setup• Salient features of Disaster Management Act 2005• Brief of Disaster and development, disaster management plans• Preparedness Response Recovery and Mitigation strategies• Different agencies:- Institutions, Government agencies, NGO, Community participation, Social Media• Building bye laws and disaster for some of disasters like Earthquake, fire hazards, Tsunami• Post Disaster Management and amendments in policy• Mitigation measure for Safe construction practices with examples, Process of building permit for special buildings and occupancies		
Sessional work: Assignments and seminars		
Method of Assessment: <ul style="list-style-type: none">- Sessional 1, Sessional, 2 End semester examination,- Examination,		
Expected Outcome: <p>Broad understanding of Disaster Management issues and Awareness related to Disaster issues to be incorporated in Architectural Design</p>		
References: <p>Introduction to International Disaster Management, D Coppola</p> <ol style="list-style-type: none">1. “Policy of Disaster Management India”,2. “Disaster Management Act”. Act 2005,3. “Disaster Management”, Harsh K. Gupta		
Pre-requisite: <p>Nil</p>		



SUBJECT NAME: APPROPRIATE TECHNOLOGY	SUBJECT CODE: ARL462 (DE-5/6) L-T-P (Credits) 3-0-0-(3)	B. ARCH. SEMESTER: VII
Objectives: <ul style="list-style-type: none">• Introduction to the concept of appropriate building technology and services, suitable in Indian context, for both rural and urban applications.• To endeavour to enrich the conventional knowledge with alternative innovative material and construction techniques where traditional building knowledge systems shall be studied for their contemporary applications.		
Course: <ul style="list-style-type: none">• Study of soil & its composition & properties, suitability of soil for mud walls, soil composition test, plasticity test, test for optimum water content, soil stabilization, etc.• Wattle & daub walls, rammed earth walls, adobe walls.• Walls, vaults, domes using soil cement, compressed mud blocks,• Nubian arch roof.• Use of bamboo as building material its properties, available in the country.• Burnt clay tile roofing, ferro-cement roofing units, doubly curved tile roofing, and pre-cast joists.• Types of Bio gas plants, design considerations and construction methods.• Solar energy, its advantages and limitations, solar collectors, solar water heaters, photovoltaic cells, solar lanterns and its applications.• Case study of new buildings constructed with improved/appropriate/unconventional techniques and their analysis.		
Sessional work: Case Studies, Literature based home assignments and Presentations		
Method of Assessment:		
Internal assessment, Sessional I, Sessional II and End Semester examination		
Expected Outcome:		
Exposure to alternative Low Cost Local Technologies, Materials and Services for construction.		
References:		
1. Vinoo Kale, VenuBharati, AproopNirman, Nagpur. 2. Research and documented work in the field 3. HUDCO Publications		
Pre-requisite:		
Nil		



SUBJECT NAME: RURAL PLANNING AND DEVELOPMENT	SUBJECT CODE: ARL 463 (DE-5/6) L-T-P (Credits) 3-0-0 (3)	B. ARCH. SEMESTER: VII
Objectives: <ul style="list-style-type: none">• To create awareness about Low Cost Housing Techniques used in Rural areas• To create a knowledge base about the Government Initiatives and Interventions in the field of Rural Development		
Course: <ul style="list-style-type: none">• Rural house types from various states in India• Low-Cost Construction Materials, Technology and Services used in various parts of the country for Rural Housing• Use of Locally available Materials in various regions• Community based Rural Planning• Resource Planning and management for Rural Areas• Special Area Development Programmes like Hilly Region, Drought Prone, and Flood Prone Tribal Area etc.• Rural Development Schemes currently available• Policies and Programmes related to Rural Development like NREP, IRDP etc.		
Sessional work: Case Studies, Literature based home assignments and Presentations		
Method of Assessment:		
Internal assessment, Sessional I, Sessional II and End Semester examination		
Expected Outcome:		
Issues and Concerns of Rural Housing Knowledge about various Government Schemes, Programmes for Rural areas		
References: <ol style="list-style-type: none">1. S.N. Prajapati, "Rural Development in India"2. Manie Ahuja, "Rural Development: Indian Context"3. GPH Panel of Experts, "Rural Development Programmes (MRD)"4. B.D.Sharma, "Rural Development and Policies"5. Vinod Kumar, "Rural Development", ABD Publishers6. B.K.Pandey, "Rural Development –Towards Sustainability"7. P. Gopinadhan Pillai, "Rural Development in India", Neha Publishers and Distributors, 2008		
Pre-requisite:		
Nil		



SUBJECT NAME: BUILDING REPAIRS AND RESTORATION	SUBJECT CODE: ARL 464 (DE-5/6) L-T-P (Credits): 3-0-0 (3)	B. ARCH. SEMESTER: VII
Objective:		
<ul style="list-style-type: none">To enrich the students about the concepts and practicalities of restoration, conservation and preservation including the suitability of repairing, maintaining, servicing, adapting, and strategically managing the buildings.		
Course:		
<p>Introduction Life expectancy of different types of building, Influence of environment elements, Effect of biological agents, Chemical attack on building materials and components, Aspects of fire and fire prevention on building, Impact of pollution on buildings.</p> <p>Building Defects Common defects in building, Causes and effects building failures, Cracks in building.</p> <p>Preventing and Strengthening Measures to prevent and control common defects in building, Phases of maintenance – routine preventive and curative maintenance, Fundamental strengthening measures.</p> <p>Building Repairs Materials for repair – special cement, mortar and concrete, chemicals, Techniques of repairs - material selection, surface preparation, rust eliminators and polymers coating, Methods of repair - epoxy injection, Mortar repair for cracks – guniting and shotcreting, Waterproofing of concrete roofs. Repair of cracks in concrete and masonry.</p> <p>Introduction to Conservation Materials and methods for conservation and restoration work with specific case studies, Adaptive reuse of buildings, Retrofitting, Recycling of building components and materials with case studies.</p>		
Method of Assessment:		
Sessional and End term Examination and Teacher assessment		
Expected Outcome:		
Understanding of concepts, methods and techniques of restoration, conservation and preservation.		
References:		
<ol style="list-style-type: none">Chander I., “Repair and Renovation of Modern Buildings”, McGraw Hill, 1992.Danish Standards Association, “Repair of Concrete Structure” to En 1504 :A guide for renovation of concrete structures repairs materials and systems according to the EN 1504 series”, Boston: Elsevier.Guha P.K.,” Maintenance and Repairs of Buildings”, New Delhi, New Central Book Agency, 2011.Nayak B.S., “A Manual of Maintenance Engineering”, New Delhi, Routledge, 2013.		
Pre-requisite:		
Nil		



SUBJECT NAME : EARTHQUAKE RESISTANT STRUCTURES	SUBJECT CODE: AML 483 (DE-5/6) L-T-P (Credits): 3-0-0 (3)	B. ARCH. SEMESTER: VII
Objectives: This course is aimed at introducing the basic principles of earthquake resistant structures to Architecture students. With the help of past performances, the effect of various architectural features on seismic behavior of structures will be explained.		
Course: <ul style="list-style-type: none">• Introduction on Earthquakes, Magnitude and Intensity, Zones, etc• Seismic Effects on Structures, Calculation of Seismic forces on simple regular buildings, factors affecting seismic loads.• Architectural features affecting buildings during earthquakes, building irregularities,• Introduction to IS:1893 and IS:13920.• Building behavior during past earthquakes• Earthquake effect on RCC, Steel and masonry buildings, precautions, dos and donts.• Introduction to earthquake effect on non-structural elements.		
Method of Assessment: Sessional Exams, Teacher's Assessment, End Term Exam		
References: <ol style="list-style-type: none">1. Dowrick, D. L. "Earthquake Resistance Design for Engineers and Architects", John Willey & Sons, 2nd Edition, 1987.2. Agarwal, P. and Shrikhande, M., "Earthquake Resistant Design of Structures", Prentice Hall of India, New Delhi, 20063. "IITK-BMTPC Earthquake Tips", National Information Center of Earthquake Engineering, IIT Kanpur. www.nicee.org4. "Guidelines for Earthquake Resistant Non-Engineered Construction", National Information Centre of Earthquake Engineering, IIT Kanpur. www.nicee.org		
Pre-requisite: Nil		



MAPPING OF COURSE B. ARCHITECTURE YEAR OF ADMISSION 2015-16

SEM	SR. NO	CODE	COURSES	STRUCTURE			CREDITS	CATE GORY	TOTAL CREDITS	Hou rs
				L	T	P				
VIII	1	ARP 482	Architectural Design VII	1	0	8	5	DC	5	
	2	ARL 459	Interior Design	2	0	4	4	DC	4	
	3	ARL 453	Construction and Project Management	3	0	0	3	DC	3	
	4	ARL 466	Project Proposals and Documentations	3	0	0	3	DE (7)	3	
		ARL 467	Architectural Conservation							
		ARL 468	Architectural Research Methods							
5	HUL	Building Economics & Real Estate Development	3	0	0	3	HU	3		
				12	0	12	18		18	24



SUBJECT NAME: ARCHITECTURAL DESIGN VII	SUBJECT CODE: ARP 482 (DC) L-T-P (Credits): 1-0-8 (5)	B. ARCH. SEMESTER: VIII
Objective: To understand the complexities involved in multi-functional large scale architectural projects and the impact of architectural design, at an urban design scale To understand the role of context and the response to it through appropriate architectural design To understand the concepts of re-designing and re-development for an urban precinct To explore various construction and structural techniques contributing to desired space planning and derivation of built forms		
Course: <ul style="list-style-type: none">• Development of architectural response in contextual situations; the context of place, time, culture and tradition, heritage, climate, architectural styles, etc. to be understood• Development of design skill and creative abilities to design complex, multi-level, high rise, specialized building complexes• Introduction to contemporary architectural issues and concerns of cultural aspects• Settlement level issues like architectural conservation, development controls, etc. to be part of the holistic design approach• Emerging construction techniques, services and their impact on architectural form• A field study to set the context and case studies		
Suggested projects: Community group housing/township, Institutional & Cultural complexes, Civic Centres, High rise Commercial and residential buildings, Sports complexes, re-development or re-designing projects for a given urban precinct, etc.		
Sessional work: One major design project, along with two related minor tasks or assignments, etc.		
Method of Assessment: Continuous Evaluation same as P type courses at institution. Design studio should have Minor assignment, Major assignment and External Viva-voce.		
Expected Outcome: Analysis, Architectural design solutions, 3D visualization / models		
References: <ol style="list-style-type: none">1. Antoniades, C. Anthony: “Epic Space: Towards roots of Western Architecture”, John Wiley & Sons Inc., 19922. Broadbent, Geoffery: “Emerging Concepts in Urban Space Design”, Van Nostrand Reinhold, New York, 19903. Brolin, Brent: “Failure of Modern Architecture”, Van Nostrand Reinhold Co., 19764. Ching, D. K. Francis. “Architecture: Form, Space and Order”, Van Nostrand Reinhold, New York, 19965. Gibbered, Fredrick: “Town Design”, Architectural Press, 19706. Giedion, Siegfried; “Space, Time and Architecture”, Harvard University Press, 1963		
Pre-Requisites: Nil		



SUBJECT NAME: INTERIOR DESIGN	SUBJECT CODE: ARL 459 (DC) L-T-P (Credits): 2-0-4 (4)	B. ARCH. SEMESTER: VIII
Objective: Understanding and development of space into functional Interior space design		
Course: Historical review of Interiors in Indian and Western context - Elements & Principles of Interior Design - Anthropometry, Ergonomics and Interior Standards - Modern Interiors with respect to Materials Ceiling, Panelling, Furniture etc. - Integration of Plumbing, Electrical, HVAC and Illumination design in Interior design - Modular approach in system furnishing. - Principles of Interior landscaping and plant species - Specialized interiors - Eminent Interior designers works and their themes. with specifications and technology used Sessional work: Conceptual design proposals followed by material highlights and detailing.		
Method of Assessment: <ul style="list-style-type: none">• Sessional 1, Sessional, 2 End semester examination,• Case studies & site visits, reports and design problems based on the above topics.		
Expected Outcome: Understanding Interior as basic for design with respect to Function, comfort and aesthetics.		
References: <ol style="list-style-type: none">1. Corky Binggeli, “Interior Design Illustrated”, 3rd Edition Francis D.K. Ching,2. Joseph De Chiara, Julius Panero, Martin Zelnik, “Time-Saver standards for Interior design and Space planning”,3. John F. Pile, “A history of interior Design”4. Bridger May, Curt Sherman, “Architecture and Interior Design through the 18th Century : An Integrated History Buie Harwood”,5. Susie Mckellar Penny Sparke, “Interior Design and Identity”6. Corky Binggeli, “Building Systems for Interior Designers”		
Pre-Requisites: Nil		



SUBJECT NAME: CONSTRUCTION AND PROJECT MANAGEMENT	SUBJECT CODE: ARL 453 (DC) L-T-P (Credits): 3-0-0 (3)	B. ARCH. SEMESTER: VIII
Objective: <ul style="list-style-type: none">• To introduce different management techniques suitable for planning and constructional projects.• To introduce and explore the management system for accomplishing the task efficiently in terms of both time and cost.		
Course: <ul style="list-style-type: none">• Introduction to the relevance and importance of management skills in the present day profession, as suggested by various authors.• Historical review of large construction projects and management techniques. Fundamentals of project management.• Construction Machinery, Equipments and Methods.• Construction Planning: Planning for construction and site facilities; Preparation of construction schedules for jobs, scheduling and control of construction work, materials, equipment, labour and budgets, manpower management, safety and labour laws.• Control of Construction: Construction quality control and inspection; Significance of variability and estimation of risks; Construction cost control; steps in cost optimization, time-cost analysis, crashing of networks, Fundamentals of CPM and introduction to PERT.		
Sessional work: Sketches, reports and problems on networks.		
Method of Assessment:		
Sessional Exams, Teacher's Assessment, End Term Exam		
Expected Outcome: <ul style="list-style-type: none">• To introduce different management techniques suitable for planning and constructional projects.• The course of a work from the start to the finish to analyses before the commencement of the project.		
References: <ol style="list-style-type: none">1. B. Satyanarayana, S. C. Saxena, "Construction Planning and Equipments".2. B. C. Punmia, K. K. Khandelwal, "Project Planning and Control with PERT and CPM".3. Alison Dykstra, "Construction Project Management: A Complete Introduction".4. Anthony Walker, "Project Management in Construction".		
Pre-Requisites:		
Nil		



SUBJECT NAME: PROJECT PROPOSALS AND OFFICE DOCUMENTS	SUBJECT CODE: ARL 466 (DE 7) L-T-P-(Credits) 3-0-0-(3)	B. ARCH. SEMESTER: VIII
Objectives: <ul style="list-style-type: none">• To create a foundation for understanding architectural Practice in Large Architectural / Construction firms, and Multinationals.• To understand various peripheral services• To learn how to frame Proposals for resource mobilization, funding, project proposals and other documents along with report writing.		
Course: <ul style="list-style-type: none">• Writing Project Proposals (Architectural)• Introduction to Feasibility Studies and Impact studies• An Understanding about Financial and Technical Proposals• Company Profiles And Organizational Set ups / Charts, CVs• Study of Review Reports• Drafting of DPRs and Competition Drafts• Appointment of Consultants, Associates and Partners• An introduction to the contents of a typical EOI and RFP and their responses		
Sessional work: Case Studies, Literature based home assignments and Presentations		
Method of Assessment: Sessional Exams, Teacher's Assessment, End Term Exam		
Expected Outcome: Writing a Project Proposal		
References: <ol style="list-style-type: none">1. S. Joseph Levine, "Guide for writing a funding proposal",2. Jane C. Geever, "Foundation Centre's Guide to Proposal Writing"3. "Sample formats and existing reports of World Bank," SDC, Large Indian firms, Multi-nationals, Government, NGOs and Corporate		
Pre-requisite: Nil		



SUBJECT NAME: ARCHITECTURAL CONSERVATION	SUBJECT CODE: ARL 467 (DE 7) L-T-P (Credits): 3-0-0 (3)	B. ARCH. SEMESTER: VIII
Objective: <ul style="list-style-type: none">To understand the significance of built heritage as a resourceTo identify causes of deterioration and suggest remedial measures		
Course: <ul style="list-style-type: none">Conservation, concepts, history, principles and methods. Pioneers of conservation. Definitions and Terminology, Continuity, Transformation, Historicity, Values, Authenticity, Preservation, Restoration, and Conservation.Broad concepts of terms such as Reuse, Rehabilitation, Revitalization, Regeneration, Up-gradation, etc. Concept of integrated conservation, related problems, Issues and solutions.Inventory and Documentation Techniques. Adaptation and introduction of change at site level, and area level.Conservation scene in India, Recent works done by various agencies in India: International, National & local, International charters - INTACH, UNESCO, etc., Introduction to approaches to conservation with relevant case studies from India and abroad.Development of conservation in Europe. Pilot projects in Britain during the 1960's and later. Comprehensive scope of Architectural conservation, lessons for Indian situation.The scope of the profession. Legislation pertaining to conservation of area (urban and renewal) conservation, community participation in Conservation, introduction to concept of World Heritage Sites.Conservation legislation at national level and legislation pertaining to specific conservation area.		
Sessional work: Notes, Seminars, assignments on above topics.		
Method of Assessment: Sessional Exams, Teacher's Assessment, End Term Exam		
Expected Outcome: To sensitize students towards role of conservation in human habitats.		
References: <ol style="list-style-type: none">Bernard Feilden, "Conservation of Historic Buildings", Third Edition 2003,.Aylin Orbasli, "Architectural Conservation: Principles and Practice".Picard Gilbert, Charles, "Encyclopaedia of Archaeology".A. S. Bizht, I. K. Bhatnagar, "Conservation of cultural property in India".		
Pre-Requisites: Nil		



SUBJECT NAME: ARCHITECTURAL RESEARCH METHODS	SUBJECT CODE: ARL 468 (DE-7) L-T-P (Credits): 3-0-0 (3)	B. ARCH. SEMESTER: VIII
Objective:		
<ul style="list-style-type: none"> To understand basic research principles and research methods in architecture. To inculcate technical writing skills 		
Course:		
<ul style="list-style-type: none"> Introduction: Concepts, theories and methodologies in research. Research and Research Methods: General idea and concept of research in social sciences. Research methods and characteristics with reference to architecture. Tools and Strategies: Qualitative Research, Quantitative Research, Historical Research, Correlational Research, Experimental and Quasi-Experimental Research, Simulation Research, Logical Argumentation, Combined Strategies, etc. Data and Sampling Design: Attributes and Variables, Categorical and Numerical Data, Measurement Scales (Nominal, Ordinal, Interval and Ratio), Sample Selection Data Collection Methods: Primary- Measurements, Observations, Interview, Questionnaire, Schedules, Surveys, etc. Secondary (Through Literature) - Reports, Books, Journal, Visuals, Drawings, Maps, etc. Case study Method Introduction to Statistical Tools for data collection and analysis Writing and Ethical issues: Technical writing (paper and report), Sources, Citation, Plagiarism and Publications 		
Sessional work: Review of Technical Papers, Presentation		
Method of Assessment:		
Sessional Exams, Teacher's Assessment, End Term Exam		
Expected Outcome:		
<ul style="list-style-type: none"> The students will understand research methods in Architecture. They will develop analytical, presentation and writing skills. 		
References:		
<ol style="list-style-type: none"> Andrew Knight Editor and Les Ruddock, "Advanced Research Methods in the Built Environment", Wiley-Blackwell, 2008 Cozby, Paul C. (2001), "Methods in Behavioral Research", Seventh Edition. Mountain View: Mayfield Publishing. Web Resources: http://methods.fullerton.edu/ D. G. Evans, Paul Gruba and Justin Zobel, "How to write a better thesis", Carlton, Vic. : Melbourne University Press, 2011 Groat L. and D. Wang, "Architectural Research Methods", New York: Wiley, 2002 Nesbitt K., "Theorizing a New Agenda for Architecture: An Anthology of Architectural Theory 1965-1995", New York: Princeton Architectural Press, 1996 Leach N., "Rethinking Architecture", London Routledge 2004 Linda L. Nussbaumer, "Evidence-based design for interior designers", New York : Fairchild ; Oxford : Berg distributor, 2009 Peter Hamilton, "Visual research methods", London: Sage, 2006 Richard F. Fellows and Anita M. M. Liu, "Research Methods for Construction", 4th Edition Oxford : Wiley-Blackwell, 2004 Taeke M. de Jong and D. J. M. van der Voordt, "Ways to study and research urban, architectural, and technical design", Delft, The Netherlands : DUP Science, 2002 Whyte, William Foote, "Learning from the Field", Thousand Oaks, CA: Sage, 1984 		
Pre-Requisites:		
Nil		





HUL - BUILDING ECONOMICS & REAL ESTATE DEVELOPMENT

YET TO BE SUBMITTED



**MAPPING OF COURSE
B. ARCHITECTURE
YEAR OF ADMISSION 2015-16**

SEM	SR. NO	CODE	COURSES	STRUCTURE			CREDITS	CATEGORY	TOTAL CREDITS	Hours
				L	T	P				
IX	1	ARC 401	Practical Training	0	0	8	8	DC	8	
				0	0	8	8		8	



SUBJECT NAME: PRACTICAL TRAINING	SUBJECT CODE: ARC 401 (DC) L-T-P (Credits): 0-0-16 (8)	B. ARCH. SEMESTER: IX
Objective:		
<ul style="list-style-type: none">• To provide exposure to the professional work experience• To facilitate an understanding of the evolution for an architectural project from design to execution		
Contents:		
<ul style="list-style-type: none">• Practical training of Six months duration (under a Registered Architect only) envisages the following varied experience in order to ensure the exposure of a student to various tasks.• Office Training: Office experience in respect of preparation of sketch design, working drawing, detail working drawing, perspectives, preparation of architectural models, estimation and specification of small buildings, client meetings, coordination with structural, HVAC, sanitary, electrical and fire services consultants study of filing systems of documents, and preparation of tender document.• Field study: Site experience in respect of supervision of construction activity, observation, layout on site, study of stacking methods of various building materials, taking the measurement and recording. Systematic study of any particular architectural phenomena or an element to see how it behaves. Idea is to systematically observe record and analyze the observations and to draw lessons from the study of any particular aspect. Aspects can be 1. Spaces (outdoor recreational area in a housing community, square in a village, plaza in a city, etc.); 2. Types (sloping roof in a particular place, special opening, etc.); 3. System (movements in a shopping area, circulation system in a station, etc.); 4. Material (paving materials in public squares, flooring in a workshop, etc.); 5. Visual Aspects (way-finding in a market, signage in a hospital, etc.). Study should emphasize on relationship between physical layout, details and efficiency, highlighting performance under different conditions, maintenance and fixing problems.• Documentation of Innovative Details: Documentation of innovative details from personal observations, office records or field studies. This may include historical as well as contemporary details. Critical observations of performance, usefulness etc. The selection of details should be based on their special nature due to practical field situation and must be presented in a folder.• Students will have to maintain record of their engagement for the period of training. This will be recorded in a log-book to be counter signed by Architect.• At the end of training period student will have to procure a certificate of training and satisfactory performance from the concerned office in the prescribed format. Certificate of satisfactory completion of training shall be submitted to the Institution immediately after the training through the Practical Training Coordinator, Department of Architecture & Planning along with the report and drawings made during the training period. The student shall appear for Viva - Voce examination on the work rendered by the student during training.		
Sessional work:		
Method of Assessment:		
Assessment by a panel of Internal & External Examiner.		
Expected Outcome:		
Students learn office and field practices associated with architectural projects.		
References:		
Not Required		
Prerequisite		
Minimum 140 credits to be earned.		



**MAPPING OF COURSE
B. ARCHITECTURE
YEAR OF ADMISSION 2015-16**

SEM	SR. NO	CODE	COURSES	STRUCTURE			CREDITS	CATEGORY	TOTAL CREDITS	Hours
				L	T	P				
X	1	ARD 401	Project I (Seminar and Dissertation)	0	0	6	3	DC	3	
	2	ARD 402	Project II	0	0	20	10	DC	10	
	3	ARL 469	Housing	3	0	0	3	DE (8)	3	
		ARL 470	Infrastructure Planning and Design							
		ARL 471	Industrial Architecture							
				3	0	26	16	16	29	



SUBJECT NAME: PROJECT I (SEMINAR AND DISSERTATION)	SUBJECT CODE: ARD 401 (DC) L-T-P (Credits): 0-0-6 (3)	B. ARCH. SEMESTER: X
Objective: <ul style="list-style-type: none">To undertake research individually in a given subject relating to architecture and present research process through seminars and reports presented at different stages.To equip the students to develop analytical, presentation and writing skills.		
Course: <p>Seminars are intended to develop the capacity of students to undertake a research in a given subject relating to architecture. It is divided in two parts.</p> Seminar I <p>Review a Paper and a Book Student will select a reputed journal paper or a book on a topic related to Architecture for review. Seminar I will help students to understand, analyze, reproduce and review the technical papers or a book in the form of report review. This review writing is aimed at understanding the method of writing, organization and presentation of arguments attempted by the author of the paper or book.</p> Seminar – II <p>Seminar II allows students to identify the study area and conduct a systematic research. This seminar is an independent study by student on the subject related to their Thesis project or subject of their interest (as approved by the mentor). A comprehensive list of various topics are given below:</p> <ul style="list-style-type: none">History of Architecture, Traditional, Vernacular, Contemporary Architecture, etc.Appreciation / Critical Appraisal of Architectural projects or Architect's philosophyResearch in ArchitectureRole of Allied / Applied Sciences in ArchitectureAny other subject (as approved by the mentor) <p>Seminar II would include analytical study of the subject, supported by following stages as literature study, data collection, interpretations, observations, analysis, discussion, etc. Students will require to present progressive seminars (audio-visual presentation) supported by the dissertation report.</p>		
Sessional work: Oral and Visual Presentations, Review reports and Dissertation report		
Method of Assessment: Progressive Seminar Presentations and Report submission		
Expected Outcome: <ul style="list-style-type: none">Dissertation is to enlighten students on the fundamentals of research methods and technical writing which will also help them in Project ThesisThis is to equip the students to present thesis project efficiently and effectively.		
References: <ol style="list-style-type: none">Andrew Knight Editor and Les Ruddock, “Advanced Research Methods in the Built Environment”, Wiley-Blackwell, 2008Cozby, Paul C. (2001), “Methods in Behavioral Research”, Seventh Edition. Mountain View: Mayfield Publishing. Web Resources: http://methods.fullerton.edu/D. G. Evans, Paul Gruba and Justin Zobel, “How to write a better thesis”, Carlton, Vic. : Melbourne University Press, 2011Groat L. and D. Wang, “Architectural Research Methods”, New York: Wiley, 2002Nesbitt K., “Theorizing a New Agenda for Architecture: An Anthology of Architectural Theory 1965-1995”, New York: Princeton Architectural Press, 1996Leach N., “Rethinking Architecture”, London Routledge 2004Linda L. Nussbaumer, “Evidence-based design for interior designers”, New York : Fairchild ; Oxford : Berg distributor, 2009Peter Hamilton, “Visual research methods”, London: Sage, 2006Richard F. Fellows and Anita M. M. Liu, “Research Methods for Construction”, 4th Edition Oxford : Wiley-Blackwell, 2004Taeke M. de Jong and D. J. M. van der Voordt, “Ways to study and research urban, architectural, and technical design”, Delft, The Netherlands : DUP Science, 2002Whyte, William Foote, “Learning from the Field”, Thousand Oaks, CA: Sage, 198		





SUBJECT NAME: PROJECT II	SUBJECT CODE: ARD 402 (DC) L-T-P (Credits): 0-0-20 (10)	B. ARCH. SEMESTER: X
Objective:		
<ul style="list-style-type: none">To demonstrate design skills and ability to synthesize complex architectural concerns through physical design		
Content		
<ul style="list-style-type: none">The subject of the architectural thesis project shall be selected by the student individually and approved by the Department. The project selected may be either a live one or one pertaining to allied discipline or of a conceptual nature relating to building or allied programmes. The project and its programming shall be worked out by the student under the guidance of the thesis advisor(s).The architectural thesis project is the culmination of the development of the students knowledge, attitudes and skills over the course of studies in architecture. The project work shall include an intensive study of relevant literature, case studies, climate and service aspects, and analysis of problems concerned with the development of functional organization of space form and structure, based on correlation and interpretation of the social, economic and physical data.		
Sessional work:		
Method of Assessment:		
Project evaluation shall be done as per the guidelines issued by the department. The progress of the student is evaluated through interim reviews and a final viva voce.		
Expected Outcome:		
Culmination of all the knowledge gained during the programme		
References:		
Not Required		
Pre-requisite:		
Credits of all previous Architectural Designs should be earned		



SUBJECT NAME: HOUSING	SUBJECT CODE: ARL 469 (DE-8) L-T-P (Credits): 3-0-0 (3)	B. ARCH. SEMESTER: X
Objective:		
To create awareness about importance of housing in Indian context and to impart knowledge for designing housing projects To sensitise students about various issues of housing pertaining to affordability, neighbourhood planning and design, etc.		
Course:		
<ul style="list-style-type: none">• Housing and human needs, influences on housing. Housing as an integral part of urban & rural development• Study of transition from traditional to contemporary pattern of Housing in India• Housing for Urban Poor, Problems and issues of rural housing. National Housing Policy 2007, various programmes run by States, role of various agencies in housing (eg HUDCO, CIDCO, State Housing Boards, etc.)• Study of housing concepts: Mass housing, Low cost housing, Self-help housing, Co-operative housing, Housing based on- income groups, density patterns and arrangement of units, temporary housing for post disaster mitigation, rehabilitation housing, Slum upgradation, etc.• Space standards for housing schemes, Design concepts with reference to socio-economic factors and community planning considerations for residential layouts. Sense of- community, safety & security, belongingness, concept of neighbourhood and community living. Case study of various contemporary housing projects• Concept of density standards and relationship of built and unbuilt in housing layouts, concept of FSI• Design concepts for cost reduction, use of prefabrication, modular co- ordination and pre-stressed components etc. Alternate technologies for housing• Understanding of site planning of housing schemes and basic infrastructure and amenities at layout level		
Method of Assessment:		
Notes, Assignments, Field Surveys, Tests on above topics		
Expected Outcome:		
Development of understanding towards housing design and the intricacies involved in it		
References:		
<ol style="list-style-type: none">1. Goethert, Reinhard, Tools for the Basic Design and Evaluation of Physical Components in New Urban Settlements.2. Das, S. K., Urban Coherence and Housing Strategies Design Ideas in Practice in India. Methods of Estimating Housing Needs, United Nations No. 67 XVII 15.3. Richard Kintermann and Robert small, "Site planning for Cluster Housing", Van Nastrand Reinhold company, Jondon/New York 1977.4. Joseph de Chiara and others, "Time Saver Standards for Housing and Residential development", McGraw Hill Co, New York 1995.5. Forbes Davidson and Geoffrey Payne, "Urban projects Manual", Liverpool University press, Liverpool 1983.6. HUDCO publications – Housing for low income, sector model.7. Christopher Alexander, "A pattern Language", Oxford University press, New York 19778. Leuris (S), Front to back: "A Design Agenda for Urban Housing", Architectural Press, 2006.9. Mohanty. L.N.P., Mohanty. S, "Slum in India" APH Publications., 200510. Saxena A. K. , "Sociological Dimensions of Urban Housing and Development ", Common wealth Publications, 200411. Geol. S. L. Dhaliwal. S. S. "Slum improvement through participatory Urban based Community structures", Deep & Deep Publications, 2004.		
Pre-Requisites:		
Nil		



Subject Name: INFRASTRUCTURE PLANNING & DESIGN (DE)	Subject Code: ARL 470 (DE-8) L-T-P (Credits) 3-0-0 (3)	B. ARCH. SEMESTER: X
Objective		
<ul style="list-style-type: none">• To orient students towards issues & challenges associated with provision of infrastructure.• To form conceptual & knowledge linkage between resource utilization / creation for sustainability of built environment.• To develop approach towards innovative & efficient infrastructure support.		
Course		
<ul style="list-style-type: none">• Built environment, its intrinsic needs on affordability, efficiency, safety & health and infrastructure.• Role players & stakeholders with regulatory environment• Demand & supply parameters with respect to basic amenities, resources and cost affordability• Innovative financing mechanisms and options• Best practices in infrastructure planning, design and operation.• Issues & contents on Contractual projects through PPP		
Method of Assessment		
Interactive learning approach and tasks/ presentations on related topics through group work, tests, etc.		
Expected Outcome		
Orientation of students towards larger domain of infrastructural needs, importance and significance of sustainability with respect to built environment.		
References		
<ol style="list-style-type: none">1. “Basic Environmental technology”, Jerry A. Nathanson2. “India Infrastructure Report”3. “Journal on Best Practice”		
Pre-Requisites:		
Nil		



SUBJECT NAME : INDUSTRIAL ARCHITECTURE	SUBJECT CODE: ARL471 (DE-8) L-T-P (Credits): 3-0-0 (3)	B. ARCH. SEMESTER: X
Objective:		
<ul style="list-style-type: none">To make the students aware about the various aspects related to planning and designing of Industrial/factory buildings and study structural/ environmental concerns and norms /standards for the same.		
Course:		
<ul style="list-style-type: none">Location and planning of industrial areas with specific emphasis on selection of site for an industry and site planning of an industry in a comprehensive manner with varied considerationsPlanning considerations for industrial working areas, study of indoor and outdoor working environment as related to industrial process of manufacture, human component as related to illumination, ventilation, noise control, etc. in working environment.Relationship between industrial spaces and structure. Review of structural systems used for industry with general idea about materials used for various components.Services essential for industries, demand calculation and system detailing of services like water supply electricity, effluent treatment, communications, etc.Study of environment as resultant of industrial activity, review of enactment for controlling the pollution and methods of treatment of industrial pollutants.Study of various acts applicable to construction and utilization of industrial structures such as Factory act, pollution control act, explosives act and review of legal formalities to be completed by an architect while working on an industrial project.Considerations of the aspect of industrial safety as related to the hazards of fire and industrial process which prove to be hazardous to persons working within the industrial structures.Architectural design considerations integration of aesthetic qualities in the designing and detailing of industrial structures with meaningful choice of architectural treatments utilizing materials on the cost, ease of maintenance and upkeep.		
Sessional work:		
Notes,report on case study of an industry, drawing and filling various proforma's to various authorities		
Method of Assessment:		
Midterm examinations with end semester examination.		
Expected Outcome:		
To create awareness amongst students about the various aspects related to planning and designing of Industrial/factory buildings and study structural/ environmental concerns and norms /standards for the same.		
References:		
<ul style="list-style-type: none">“IGBC Green Factory Building Rating System”, Version 1.0 (or recent version)“SP32 - Handbook on Functional Requirements of Industrial Buildings (Lighting And Ventilation)” Bureau of Indian Standards, New Delhi 1990IS 1893(Part 4):2005 Criteria for Earthquake Resistant Design of Structures: Part 4 Industrial Structures Including Stack Like StructuresHans-Peter Wiendahl, Jürgen Reichardt, Peter Nyhuis “Handbook Factory Planning and Design”Henn, W, “Buildings for industry. Vol.1 and 2, International examples”, London: Illiffe, 1965“Development Control Rules”, MIDC,etc.International Building Code(factory buildings)- International Code Council (http://www.iccsafe.org/)		
Pre-Requisites:		
Nil		



Comprehensive list of references for Architectural Design and Construction

Design

1. Amos Rapoport :House ,form and Culture, Prentice Hall, Englewood Cliffs, N.J ,1969
2. Antoniades, C. Anthony: “**Epic Space: Towards roots of Western Architecture**”, John Wiley & Sons Inc., 1992
3. Broadbent, Geoffery, “**Emerging Concepts in Urban Space Design**”, Van Nostrand Reinhold Co., New York, 1990.
4. Brolin C. Brent, “**Failure of Modern Architecture**”, Van Nostrand Reinhold Co., New York, 1976.
5. Ching, D.K. Francis: “**Architecture: Form, Space and Order**”, Van Nostrand Reinhold, New York, 1996
6. Charles Wallschlaggerm and Cynthia Busic-Snyder, “**Basic Visual Concepts and Principles for Artists, Architects and Designers**”, Mc Graw Hill, New York 1992.
7. Doxiadis, C. A.: “**Architectural Space in ancient Greece**”.
8. Ernst Neuferts, “**Architects Data**”, Blackwell 2002.
9. Exner V., Pressel D., “**Basics Spatial Design**”, Birkhanser, 2009.
10. Francis D.K.Ching, “**Architecture: Form, Space and Order**”, Van Nostrand Reinhold Co., Canada, 1979.
11. Geoffrey H. Baker, “**Design Strategies in Architecture- An Approach to the Analysis of Form**”, Taylor & Francis, 1996.
12. Gibbered, Fredrick: “**Town Design**”, Architectural Press, 1970
13. Giedion, Siegfried; “**Space, Time and Architecture**”,., Harvard University Press, 1963
14. Jain, K. B.: “**Indian Cities of the Arid**”, West,1994
15. John Habraken N., Andrés Mignucci and Jonathan Teicher, “**Conversations With Form: A Workbook for Students of Architecture**”, Routledge 2014.
16. Joshua C. Taylor, “**Learning to Look: A Handbook for the Visual Arts**”, (Phoenix Books), University Of Chicago Press, 1981
17. Joseph De Chiara & John Callender, “**Time Saver standards for Building Types**”, McGraw-Hills International, 1983.
18. Joseph De Chiara, Julius Panero, Martin Zelnik, “**Time Saver Standards for Interior Design and Space Planning**”, McGraw Hill 2001.
19. Mark Baskinger and William Bardel, “**Drawing Ideas: A Hand-Drawn Approach for Better Design**”,
20. Nathan Knobler, “**Visual Dialogue**”, Harcourt School; 3 Sub edition, 1980.
21. Owen Cappleman and Michael Jack Jordon, “**Foundations in Architecture: An Anotated Anthology of Beginning Design Project**”, Van Nostrand Reinhold New York, 1993.
22. Paul J. Zelanski and Mary Pat Fisher, “**The Art of Seeing**”, Pearson, 2010.
23. Pramara V.S., “**Design fundamentals in Architecture**”, Somaiya Publications Pvt. Ltd., New Delhi, 1973.
24. Ramsey et al, “**Architectural Graphic Standards**”, Wiley 2000.



Construction

1. Alan J. Brookes and Maarten Meijjs, “**Cladding of Buildings**”, Taylor & Francis, 2008
2. Ambrose J.E., “**Building Construction**”, Springer, 2013
3. Arora, S.P. & Bindra, S.P., “**A Text Book of Building Construction**”, Dhanpat Rai & Sons, New Delhi, 1994.
4. Barry R., “**The Construction of Buildings 1-5 Vol.**”, Orient Longman Ltd., 1999
5. Christopher Souder, “**Temporary Structure Design**”, Wiley, 2014
6. Chudley Roy, “**Building Construction Handbook**”, British library cataloguing, 2008.
7. Chudley Roy, Greeno Roger, “**Construction Technology**”, Pearson Prentice Hall, 2005
8. “**Explanatory Handbook on Codes for Earthquake Engineering**”, IS -1893- 1975 & IS – 4326- 1976, Bureau of Indian Standards.
9. Francis DK Ching, “**Building Construction Illustrated**”, Van Nostrand Reinhold Ltd., 2001.
10. Frederick S. Merritt, Jonathan T. Ricketts, “**Building Design and Construction Handbook**”, McGRAW-HILL, 2001
11. GoI, “**Handbook on Repairs and Rehabilitation of RCC Buildings**”, Director General Works, CPWD, Government of India, New Delhi
12. Goyal, M.M , “**Handbook of Building Construction**”, Thomson Press.2004
13. James Ambrose, “**Design of Building Trusses**”, Wiley, 1994
14. Jha, J. & Sinha, S.K., “**Building Construction**”, Khanna Publishers, New Delhi, 1977.
15. Kim S. Elliott, Colin Jolly, “**Multi-Storey Precast Concrete Framed Structures**”, Wiley-Blackwell, 2013
16. Kumar S.K., “**Building Construction**”, Standard publisher. 2003.
17. Lynn S. Beedle, “**Advances in Tall Buildings**”, Van Nostrand Reinhold,1986
18. Mario George Salvadori, Robert Heller, “**Structure in Architecture: The Building of Buildings**”, Prentice Hall, 1975
19. Mckay, W.B, “**Building Construction**” - Vol. I to IV, Longman, 2005.
20. Mehta, M., Scarborough, W. and Armpriest, Diane, “**Building Construction: Principles, Materials and Systems**”, Pearson Prentic Hall, 2008.
21. Michael Barnes, Michael Dickson, “**Widespan Roof Structures**”, Thomas Telford, 2000
22. “**National Building Code, India**, Bureau of Indian Standards, Latest Edition
23. Punmia B.C., “**Building Construction**”, Laxmi Publications Pvt. Ltd., 1995.
24. Rajagopalan N., “**Prestressed Concrete**”, Alpha Science International, 2010
25. Rangwala S.C., “**Building Construction**”, Charotar Publishing House, 1963.
26. Ramamrutham S., “**Prestressed Concrete**”, Dhanpat Rai Publishing Company (P) Ltd, 2014
27. Simmons H. L, “**Olin’s Construction Principles, Materials and Methods**”, John Wiley and Sons, 2007.
28. Stephen Emmitt, Christopher A. Gorse, “**Barry's Advanced Construction of Buildings**”, Wiley-Blackwell, 2010
29. Stroud Foster J., “**Mitchell's Advanced Building Construction**”, B.T. Batsford , 1963
30. Subramanian N., **Principles of Space Structures**, A. H. Wheeler Publishing Company Limited, 1999
31. Varghese, P. C, “**Maintenance, Repair & Rehabilitation and Minor Works of Buildings**”, PHI Learning Pvt. Ltd.



CREDITS SYSTEM

Education at the Institute is organized around semester-based credit system of study. The prominent feature of the credit system is a process of continuous evaluation of a student's performance and flexibility to allow a student to progress at an optimum pace suited to his/her ability, subject to fulfilling minimum requirement for continuation. A student's performance is measured by number of credits he/she has earned (i.e. completed satisfactorily). Based on the course credits and grades obtained by the student, Semester Grade Point Average (SGPA) or Cumulative Grade Point Average (CGPA) is calculated. A minimum number of earned credits and minimum grade point average should be acquired in order to qualify for the award of graduate degree. Details are given in Rules and Ordinances Book.

Credit requirement

A student is required to earn minimum of 219 credits in ten semesters. These credits are to be earned from different category of courses like, Departmental Core (DC), Departmental Elective (DE), Basic Sciences (BS Humanities & Management (HM), Audit Course (AU) and Open Course (OC).

Calculations of SGPA & CGPA

Semester Grade Point Average (SGPA) or Cumulative Grade Point Average (CGPA) is calculated as follows,

$$SGPA = \frac{\sum_{\text{semester}} (\text{Course credits} \times \text{Grade points}) \text{ for all courses except audit}}{\sum_{\text{semester}} (\text{Course credits}) \text{ for all courses except audit}}$$

$$CGPA = \frac{\sum_{\text{semester}} (\text{Course credits} \times \text{Grade points}) \text{ for all courses with pass grade except audit}}{\sum_{\text{semester}} (\text{Course credits}) \text{ for all courses except audit}}$$

GRADING SYSTEM

Continuous evaluation process, based on student's performance in uniformly placed I & II Sessional Examinations, Teachers Assessment (TA) and End-Semester Examination for each course. At the end of semester, grades shall be awarded by course coordinator or concerned faculty as a performance indicator. Details of these grades are as given below.

Grades	Grade Points	Description of performance
AA	10	Outstanding
AB	09	Excellent
BB	08	Very Good
BC	07	Good
CC	06	Average
CD	05	Below Average
DD	04	Marginal
FF	00	Very-poor/ Unsatisfactory / Absence in End-Sem Examination
W		Attendance Less than 75 %. Not Eligible for End-Sem Examination. Shall repeat the Course
SS		Satisfactory Completion of Audit Course
ZZ		Un-satisfactory / Audit Course continuation

ATTENDANCE

100 % attendance in the class of each course is expected. However, in consideration of constrains / unavoidable circumstances, the attendance can be relaxed only to the extent not more than 25 %.

Any student having attendance less than 75 % will not be eligible to appear in End-semester Examination.



OTHER INFORMATION

Director	0712 2801370, 2223969 (Fax) director@vnit.ac.in	0712 2801782/1679 9970335592
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Dean (Faculty Welfare)	Dr. V. K. Deshpande 0712 2801301 deanadm@vnit.ac.in	Warden GH-10 Dr. Ashwini Mirajkar 0712 2801804/1288 9850837937
Dean (Planning & Development)	Dr. P M Padole 0712 2801302 deanp_f@vnit.ac.in	Warden GH Dr. Shrabony Adhikari 0712 2801206/1680 9561458832
Dean (Research & Consultancy)	Dr. R. R. Yerpude 0712 2801300 deanr_d@vnit.ac.in	Matron (GH) Mrs. Jayashree Adane 0712 28013471113/1115
Dean (Student Welfare)	Dr. A. K Chatterjee 0712 2801304 deanstd_coun@vnit.ac.in	Account Section 0712 2801242 Academic Section 0712 2801241 Examination Cell 0712 2801278 T & P 0712 2801258 Security Section 0712 2801222 Hostel Section 0712 2801233 Guest House 0712 2801221 Health Center 0712 2801342 Physical Education 0712 2801232
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Warden HB-9	Dr. G. N. Nimbarte 0712 2801435/1622 9373045542	
Warden HB-9	Dr. R. P. Vijaykumar	

For Student's Medical Emergency

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KRIMS HOSPITAL

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