

PROPOSED

COMMON SYLLABUS FOR ARCHITECTURE COLLEGES UNDER GUJARAT UNIVERSITY

FOR 2015 ONWARD BATCH

DT. 13.1. 2016

JYA- MATRIX

'Jya' means 'Prithvi' in Sanskrit language; 'Matrix' means the womb, or environment, A framework which allows a particular syllabus or topic to grow from 'the phenomenon of the nature' to Indian mythology. Like, word 'Geometry' which originates from Sanskrit word 'Jya-miti' means 'Measurement of Earth'

Jya-matrix will be

New method of teaching which evolves, new education techniques and references on the bases of **Indian origins with primacy of nature.**

APPLYING JAYAMATRIX FOR FOUNDATION BATCH (2ND SEMESTER) B.ARCH COURSE (34HRS.)

FIRST YEAR SECOND SEMESTER - B. ARCH									
Code	Subject	Hours/Week					Evaluation System		TOTAL MARKS
		L	S	WS LAB	Viva	Total hours	Exam	TW.	
AR-201	DESIGN ACTIVITIES -02	–	4	–	1	5	0	200	200
AR-202	CONSTRUCTION -02	2	1	–	1	4	100	100	200
AR-203	FUNDAMENTALS OF PHYSICAL FORCES-02	2		–	–	2	50	50	50
AR-204	INDIAN HISTORY-02	2	–	–	–	2	50	50	50
AR-205	UNIVERSAL DESIGN-02	–	4	–	1	5	0	200	200
AR-206	GEOMETRY-02	3			1	4	50	50	100
AR-207	ARCHITECTURAL LANGUAGE-02	2	2	–	–	4	0	200	200
AR-209	SKILL DEVELOPMENT-02	–	–	2	–	2	0	100	100
AR-210	SELF DEVELOPMENT-02 (CHILD HOOD CONNECTION-2,YOG, PRANAYAM,)	1		2		3		100	100
AR-211	MATERIAL WORKSHOP-01			2		2		50	50
AR-212	STUDY TOUR					2			100
	TOTAL					35			1350

WS Lab - Workshop base subject

TW- Term work,

L- Lecturer

S- Studio based subject

JYA - METRIX

New Syllabus for Architecture Education on bases of 'Indian origin with primacy of Nature
FOR 2015 ONWARD BATCHES

Prepared by **H.E.M.R.A.J.K.A.M.D.A.R.ARCHITECT**

M 09825005333E mail earthconsortium@gmail.com

Subject	DESIGN ACTIVITY - 02
CODE AR201	
FOCUS	Applying ' <i>problem solving activity</i> ' to various design problems
OBJECTIVES	<ul style="list-style-type: none"> To observe, capture, analyze, and apply nature's design fundamentals from animal, insect architecture and to derive relative designs for today's need.
CONTENT	<p>A. To observe and capture principles of form making process of nature</p> <p>B. Understanding, under laying principles like, liner, cluster, radial, axial formation etc.</p> <p>C. To work on need base design problems, focusing on nature's principle</p> <p>D. To work out functional design inspired from natural objects, situations or phenomena for dwelling, shelter or cave.</p> <p>E. To derive new design tools, like scale, proportions, ratio, color schemes, textures etc, based on nature's schemes.</p> <p>F. To find an answer by asking 'why' from nature</p> <p>G. To develop rational thinking for design activities</p>
METHODOLOGY	<ol style="list-style-type: none"> Several visits to biology, physics laboratories, natural, zoology museums Several site visits to old pole housing in old Ahmadabad city/ nearby villages To work out design inspired from inanimate specimen from natural surroundings. To study its geometry, dimensions, purpose essence of it in nature To design a space for children, in school, home, play area or garden. To work out habitat for either pets, wild animals, birds, insects combine design activities with universal design, fundamental of physical forces, construction student will study nature Grand Design Time problem exercises
REFERENCES	<ul style="list-style-type: none"> Animal architecture Architecture without architect hassan fathy Lourie baker Nature, mother of invention: The engineering of plant life by Felix R Paturi

Subject	CONSTRUCTION-2
CODE AR202	
FOCUS	Applying different construction methods.
OBJECTIVES	<ul style="list-style-type: none"> To learn <i>shelter making</i> from nature Understanding- with Gravity, against Gravity method of Constructions. To evolve new method from present practice, To innovate new methods, on consumption of time, money and energy in present construction Nature is always economical in her creation, To learn <i>energy efficiency</i>.
CONTENT	<p>A. To study various enclosures, openings, roofing from nature</p> <p>B. To replicate spider webs, beehives, tailorbird nest from wire rope and mud.</p> <p>C. To make precast RCC blocks, Ferro Cement structure on site</p> <p>D. Brick and stone masonry Mud block construction</p> <p>E. Thermal qualities of different materials.</p> <p>F. Geometry of construction</p> <p>G. To study present day materials</p> <p>H. To explore wood and bamboo as a material</p> <p>I. Timber Carpentry & Joinery</p> <p>J. Building Elements ,Arches, lintels, weather sheds</p> <p>K. Flooring, vernacular and contemporary</p>
METHODOLOGY	<ol style="list-style-type: none"> 1. Introductory sessions on different topics, slide presentations, 2. To do actual masonry works in field. 3. Classroom exercises like pencil drafting, scale models 4. Site visits for major or typical construction work. 5. Write-ups for observations 6. group work 3to5 students for mock up and dummy Constructions work 7. To combine with Material workshop and fundamental of physical forces-2 8. To construct walls and foundation. 9. To make precast RCC blocks, Ferro Cement structure on site 10. To connect with material work shop, building material-2
REFERENCES	<ul style="list-style-type: none"> Animal architecture Architecture without architect Building construction illustrated- Fransis D.K.Ching. building materials and construction technique of ancient India by dr.a.s.nene

Subject	FUNDAMENTALS OF PHYSICAL FORCES -02
CODE AR203	
FOCUS	To pursue and practice different formulas derived from natural world
OBJECTIVES	<ul style="list-style-type: none"> • Study of structural qualities of living and non living organisms in nature. • To Analyze and design elements of structure through natural world. • simplifying Complex formulas of mathematical equations by relating it with natural objects
CONTENT	<p>A. continue further to learn fundamentals and formulas derived from physical forces</p> <p>B. To learn basic formulas like application of Pythagoras theorem, probability basics of trigonometry, Newton's law</p> <p>C. To understand form arises because of function and forces.</p> <p>D. The external effect on form is because of physical forces</p> <p>E. To study how endless varieties of form arises even though function and forces are same?</p> <p>F. To study basic structural systems such as post-beam, bearing wall system, trusses, rigid frames</p> <p>G. Why symmetry in nature?</p> <p>H. To observe drop of ink in water and Splash of milk</p> <p>I. To understand tension and compression</p> <p>J. Form and strength like rolled paper becomes acts as a stiff Rod, cylindrical shape of paper Takes more load. Folded beams</p> <p>K. How mathematics can help giving some of nature efficiency two manmade objects?</p> <p>L. Geometrical efficiency of forms, and shapes.</p>
METHODOLOGY	<ol style="list-style-type: none"> 1. To observe capture and study animate and in-animate specimen from nature like grass, leaves, stems, bones. 2. laboratory analysis of selected forms 3. microscopic studies 4. making of scale model wire frame structures 5. To connect with geometry-2, and Universal design-2, material workshop-1
REFERENCES	<p>Structure in Architecture - Mario Salvadori</p> <p>Elements of Structure – Morgan</p> <p>Nature, mother of invention: The engineering of plant life- by Felix R Paturi</p>

Subject	INDIAN HISTORY -02
CODE AR204	
FOCUS	<ul style="list-style-type: none"> To ignite students towards Indian heritage To make them feel proud about 'being Indian'
OBJECTIVES	<p>A. To study values of Indian civilizations,</p> <p>B. To study spectrum of Aryan kingdom stretching from Afghanistan to Burma</p> <p>C. Study of different Eras from Mourya, Dravid, Indus valley.</p> <p>D. scientific explanation of Hindu religion, god and goddesses, different rituals</p> <p>E. to learn Hinduism from early treatises like Veds, Upnishads, Purans</p> <p>F. To focus on similarities of different era's, dynasty and cultures, of one reason to survive</p> <p>G. To learn about purposes like territorial premises, safety, and security and relate it evolution of Fort walls, bastions, Gates etc.</p> <p>H. To learn why religion and monarchy becomes one in development of architecture?</p>
CONTENT	<ol style="list-style-type: none"> To learn evolution of group living, like Settlements, Colonies, Villages Town, Cities, and Nation. To study reasons behind it for e.g. geographical situation, natural resources like water, fertile land. Primary issues like safety, food, Trade, religion. To find out examples in nature for group living like, formation of herds, bird colonies, tribes. To study Leadership, territorial premises, protection, prosperity other common cause in different civilizations, all over the world. What is religion? Is it discipline of thinking evolved from geographical situation or a belief in one faith? To understand art as an cultural expression
METHODOLOGY	<ul style="list-style-type: none"> Group discussions, group work Individual assignment Site visits, study tours Audio visual presentation Documentation of tribal settlements, villages house form, cluster Clay modeling building, drafting, sketching
REFERENCES	<p>Ascent of Man- J. Bronowski</p> <p>History of world- Arnold Toynbee</p> <p>Humanity through the eras</p> <p>The big idea - Timothy Ferris</p>

Subject	UNIVERSAL DESIGN -02
CODE AR205	
FOCUS	Understanding nature outside as well as inside
OBJECTIVES	<ul style="list-style-type: none"> • There is a child within us if we get connected then, perhaps one can develop originality and boldness in development of ideas • To connect with inner child, to enhance creativity
CONTENT	<p>A. to continue previous exercises</p> <p>B. To find reasons behind different color schemes in nature, why behind specific colors and texture for particular purpose?</p> <p>C. to find out reason behind patterns</p> <p>D. to observe and document this phenomena in plants, animals, birds ,Insects and marine life</p> <p>E. to appreciate Indian classical music and its relevance with harmony and beauty</p> <p>F. to visualize different musical notes, Ragas and tunes, its effect on feelings and mood</p> <p>G. To re- establish vocabulary of words related to design field. For eg.1.space and volume 2. Purity, cleanliness, originality</p> <p>H. to make them natural</p> <p>I. students will unwind their mindset again connecting them self with childhood</p> <p>J. To apply schemes derived from nature's study of color, texture, pattern, shapes for appropriate function</p> <p>K. To understand purpose behind action of nature</p> <p>L. To practice above fundamentals in design activities-2</p>
METHODOLOGY	<ol style="list-style-type: none"> 1. Group workshop with 4 to 10 years kids to observe kids behavior 2. To extract their ability and to learn the originality 3. Conducting different activities like, singing, dancing, painting, different way of expressions 4. To make them observe natural objects as a design form from birds Insects plants, animals 5. To make 3d compositions from wood plaster, mud. 6. Abstract compositions with colors and texture.
REFERENCES	Nature, mother of invention: The engineering of plant life by Felix R Paturi Kindergarten chats – Louis Sullivan

Subject	GEOMETRY-02(jya- miti)
CODE AR206	
FOCUS	To decode nature of nature Understanding Geometry as an obvious frame work upon which nature weaves.
OBJECTIVES	A. To learn geometrical analysis of natural object B. To peep into morphology C. What was before? What is today? And what will be tomorrow? Can be known only through geometry and mathematics.
CONTENT	1. Introduction to geometry as a function for survival in nature 2. To search and understand geometry in our surroundings 3. Geometry in nature 4. Introduction to Sacred geometry in search of use of similar principles of Indian with other civilizations of the world 5. Use of geometry by man since ages 6. Symmetry, spirality, growth patterns 7. Platonic solids
METHODOLOGY	<ul style="list-style-type: none"> • Drafting techniques • Paper folds, paper models • Demonstration • Geometrical Analysis of natural forms and its application. • Rope and tie modeling • Assignments on finding geometry in surroundings
REFERENCES	Sacred geometry- by Miranda lundy Order in space -by keith critchlow

Subject	ARCHITECTURAL LANGUAGE -02
CODE AR207	
FOCUS	To Practice technical drawings
OBJECTIVES	A. To develop accuracy in drawings B. Accuracy as a means of clarity, thus building up confidence in detailing.
CONTENT	<ol style="list-style-type: none"> 1. Isometric projections: inclined objects. 2. Sciography 3. One point, two point perspectives 4. Rendering techniques 5. Projections from plan 6. Elevation, Section
METHODOLOGY	Various drawing exercises and making models of basic geometrical solids.
REFERENCES	<ul style="list-style-type: none"> • Engineering drawing - N.D.Bhatt • Essentials of drafting - B.James • Rendering with pen and ink - Gill Robert • Step by Step Perspective drawing for Architects • Perspective for Architects - Themes & Hadson • Perspective & Sciography – Shankar Mulik

Subject	SKILL DEVELOPMENT-02
CODE AR209	
FOCUS	Introduction of drawing elements
CONTENT	<p>A. Line drawing exercise for plant life</p> <p>B. To draw wire diagrams of different inanimate objects in nature.</p> <p>C. Color wheels ,Color psychology</p> <p>D. Light, shadows texture,</p> <p>E. Composition of drawing, Background, foreground</p> <p>F. Clay modeling, sculptures from different materials</p> <p>G. Analytical drawings of human body</p>
METHODOLOGY	<ol style="list-style-type: none"> 1. Outdoor sketching: natural surroundings, plant trees 2. To draw a natural situation with different mediums like pencil, water-colors, pastels, poster colors etc. 3. Model making from cardboards, paper, paper pulp. 4. Paper craft, origami, 5. Pottery clay modeling, carving
REFERENCES	<ul style="list-style-type: none"> • Design drawing - Francis D.K. Ching • Rendering with pen and ink - Robert W. Gill • Drawing/thinking - Edi. Mark Treib

Subject	SELF DEVELOPMENT -02 (Yog pranayam, child hood connection-2)
CODE AR210	
FOCUS	To harmonize our own 'Nature' with 'Nature' outside. 'Being natural' is fundamental qualities for a creative person. We want to learn that from kids.
OBJECTIVES	A. To achieve efficiency in work from yog- pranayam and meditation.
CONTENT	<ol style="list-style-type: none"> 1. Introduction of E.Q, S.Q. its relevance in present competitive world 2. Introduction of reiki, meditation, pranic healing, M.L.P 3. To know child within us. 4. To probe deeper into spiritual thinking. 5. To start Internal quest like who am I? Why am I born?
METHODOLOGY	<ul style="list-style-type: none"> • To perform physical yogasans, pranayam other breathing exercises. • In outdoor environment. it can be combine sessions for other classes also. • Introductory sessions through slides, lectures demonstration. • To conduct different interactive exercises with 1st to 3rd standards school kids.
REFERENCES	<ul style="list-style-type: none"> • Yogasan, pranayam Books written by H.H. shri Rajarshi Muniji, • 'Ageless body and timeless mind' by Deepak chopra • ' Prerna nu zarnu' gujarati Books written by dr.jitendra adhiya • Secret

Subject	BUILDING MATERIALS -01
CODE AR211	
FOCUS	To study different materials and its uses
OBJECTIVES	To understand relation between 'matter and substance'
CONTENT	<ol style="list-style-type: none"> 1. How nature uses different material for different purposes? Reasons behind it. like, material of tree, plants, insects, animals, marine life animate and in animate forms. 2. To study age old materials like stone, bamboo, wood, mud, bricks, Terra cotta etc. 3. relation between size density shapes, 4. study different vernacular materials, used in construction, based on availability in different state of our country. 5. To understand Physical, chemical qualities and strength 6. Use of different materials for different purpose based on material strength, Characteristic 7. Introduction of contemporary materials like, Iron,, M.S.steel, Metals, Concrete, G.F.R.C., F.R.P. ,Poly-Carbonate, Carbon Fibre 8. Appropriate Applications
METHODOLOGY	<p>interactive discussions laboratory testing Theory based assignments case studies exams classroom submission</p>
REFERENCES	<p>Engineering Materials – S.C. Rangwala Building Materials – B.C. Punamia Time Savers Standards – Building Materials and Systems</p>