UNIVERSITY OF PUNE

COURSE STRUCTURE & SYLLABUS

FOR

MASTER OF ARCHITECTURE

M.ARCH.
(Digital Architecture)

FACULTY OF ENGINEERING
BOARD OF STUDIES IN ARCHITECTURE

PREAMBLE

Digital Architecture is the new revolution in the history of architecture. The focus will be on invention rather than application of predefined ideas. With this approach this course is assumed to become a centre of innovative ideas as a solution for the conventional and future problems. This will bring the academic world of architecture in the forefront of design explorations and theories to have great impact on the professional world as an expected outcome. MArch in Digital Architecture takes a first step with an agenda of "Parametric Explorations". Based on this agenda, the studios, lectures and the supportive content will be channelized accordingly. The agenda will be changed after every 4 years to update the knowledge of Digital Architecture and creating a responsive architecture for the particular time line.

PROVISION OF INFRASTRUCTURE

The provision of infrastructure for the Masters course shall be done as per the guide lines laid down by the Council of Architecture, New Delhi, in respect to intake of students, classrooms studios, laboratories seminar rooms, library facilities, student amenities and all the appurtenant requirements to carry out the teaching activity effectively.

APPOINTMENT OF TEACHING STAFF

The appointment of teaching staff shall be done as per the norms laid by the Council of Architecture, New Delhi and other statutory bodies as applicable.

RULES OF COURSE STRUCTURE FOR MASTER OF ARCHITECTURE

RULE NO. 1: ELIGIBILITY CRITERIA

A student seeking admission to Master of Architecture Course must have secured minimum 50% aggregate in Bachelor of Architecture degree course or equivalent courses recognized by the apex body with/without valid GATE score. The student with valid GATE score shall be given preference. The student without GATE score shall be considered subject to vacancy.

RULE No. 2: SCHEME OF ASSESMENT:

A candidate to be eligible for the Masters degree in Architecture will be required to appear for and pass examinations as under:

1. First Year M. Arch: Sem I and Sem II
2. Second Year M. Arch: Sem III and Sem IV

The University will declare results of:
Sem I + Sem II at the end of First year and
Sem III and Sem IV at the end of Second year.

RULE No. 3: GRANTING OF TERM:

Academic year will consist of TWO SEMISTETRS of 90 teaching days each. Sessional work/assignments prepared by the students shall be continuously assessed by the Internal teacher throughout the semester.

The candidate will be permitted to appear for the examinations at the end of each semester only if he/she keeps term at college affiliated to the university and produces testimonials from the principal for:

1. 75% attendance in each head of passing of Theory and/or Sessional work as prescribed by the University.
2. Satisfactory completion of Sessional Work prescribed for each subject and secured atleast 50% marks in the Internal Assessment for the same.
3. Good Conduct.

RULE No. 4: EXAMINATIONS:

At each examination:
- Theory Paper
- Sessional Work
- Sessional viva-voce based on Sessional work, as prescribed in the syllabus for the examination at the end of each Semester, shall constitute separate heads of passing.

RULE No. 5: SESSIONAL WORK ASSESSMENT:

a. In respect of the sessional work in First, Second, Third and Fourth Semisters, a target date shall be fixed for completion of each assignment. All assignments shall be continuously assessed by the internal teacher during each semester.
b. For the First, Second and Third Semester examinations Sessional and Viva assessment will be done by an external examiner, who is external to the college i.e. teacher from college other than one, whose students are being examined.
c. For Fourth Semester examination, external assessment shall be carried out by a professional not teaching in any of the colleges under University of Pune.

An examiner for any of the subjects of the examination from First to Third semester shall have minimum of 3 years of teaching/professional experience and shall be approved post graduate teacher from Pune University.

To qualify as an External Examiner at Final semester, the examiner shall have a minimum of 5 years of teaching /professional experience.

RULE No. 6: PRE REQUISITES FOR ADMISSION TO HIGHER CLASSES:

This course has been considered as an integratred one and students will be allowed to take admission to second and third semesters irrespective of the number of subjects in which they are failing.

RULE No. 7: CRITERIA FO PASSING:

To pass the first and Second year examination, a candidate must obtain minimum 50% marks in each paper, 50% marks in Sessional/Viva voce and 50% aggregate.

RULE No. 8: GRADING SYSTEM:

The class shall be awarded to the student on the aggregate marks obtained by him in first and second year taken together.

The award of class shall be as follows:

a. Aggregate 66% or more: First Class with Distinction.
b. Aggregate 60% or more but less than 66% marks: First Class.
c. Aggregate 55% or more but less than 60% marks: Higher Second Class.
d. Aggregate 50% or more but less than 55% marks: Second Class.

RULE No. 9: EXEMPTIONS AND SUPPLEMENTARY EXAMINATION:

In case a candidate fails and desires to appear again,

- He/She will be exempted from appearing in the head/s of passing in which he/she has passed.
- A candidate will have to appear for the examination of backlog subjects along with the examination of current semester.

RULE No. 10: OTHER RULES:

The University/Affiliated colleges may frame additional rules and regulations or modify these regulations if required, and once approved by the university, they would be binding on the students.

FIRST YEAR M.ARCH - DIGITAL ARCHITECTURE (SEM I)

Subject Code	Subject	Teaching Scheme			Examination Scheme						
					Studio/ Seminar					Total Marks	Credits
		Lecture	Studio/ Seminar	Total	Paper	Sessional		Oral/Viva			
						Int	Ext	Int	Ext		
DA - T1	Digital Architecture Process Theories and History 2	3	1	4	75	25	-	_	_	100	2
DA - T2	Digital Architecture & Psychology	1	3	4	75	25	_	_	_	100	2
DA - F1	Digital Fabrication 1	-	3	3	_	50	50	_	_	100	1
DA – S1	Paramteric Software's	3	2	5		75	25	-	-	100	2
DA – DS1 /DS2	Digital Design Studio I	-	9	9	_	100	100	25	25	250	6
DA-DT1/DT2	Digital Theory Studio I	5	-	5		75	25	-	-	100	2
Total		12	18	30	150	350	200	25	25	750	15

- The institute has freedom to offer any listed or additional subjects based on the availability of the experts

FIRST YEAR M.ARCH - DIGITAL ARCHITECTURE (SEM II)

Subject Code	Subject	Teaching Scheme			Examination Scheme						
					Studio/ Seminar					Total Marks	Credits
		Lecture	Studio/ Seminar	Total	Paper	Sessional		Oral/Viva			
						Int	Ext	Int	Ext		
DA – T3	Digital Architecture Process Theories and History 2	3	1	4	75	25	-	_	_	100	2
DA – T4	Material science and Digital Architecture	1	3	4	75	25	_	_	_	100	2
DA – F2	Digital Fabrication 2	-	3	3	_	50	50	_	_	100	1
DA – S2	Analysis Software's	3	2	5		75	25	-	-	100	2
DA-DS3/DS4	Digital Design Studio II	-	9	9	_	100	100	25	25	250	6
DA-DT3/DT4	Digital Theory Studio II	5	-	5	75	25	-	-	-	100	2
Total		12	18	30	225	300	175	25	25	750	15

- The institute has freedom to offer any listed or additional subjects based on the availability of the experts

SECOND YEAR M.ARCH - DIGITAL ARCHITECTURE (SEM III)

Subject Code	Subject	Teaching Scheme			Examination Scheme						
					Studio/ Seminar					Total Marks	Credits
		Lecture	Studio/ Seminar	Total	Paper	Sessional		Oral/Viva			
						Int	Ext	Int	Ext		
DA – T5	Research in DA	3	3	6	-	75	75	_	_	150	2
DA – T6	Parametric Urbanism and Urban Mapping	3	3	6	75	25	_	_	_	100	2
DA – F3	Digital Fabrication 3 (Installation)	-	6	6	_	100	-	_	_	100	2
DA – T7	Workshops And Seminars	6	-	6		50		-	-	50	1
DA-DS5/DS6	Digital Design Studio III	-	9	9	_	100	100	25	25	250	6
DA-DT5/DT6	Digital theory Studio III	5	-	5	75	25	-	-	-	100	2
Total		12	18	30	150	375	175	25	25	750	15

SECOND YEAR M.ARCH - DIGITAL ARCHITECTURE (SEM IV)

Subject Code	Subject	Teaching Scheme			Examination Scheme					Total Marks	Credits
		Lecture	Studio/ Seminar	Total	Paper	Sessional		Viva voce / Oral			
						Int	Ext	Int	Ext		
DA - S7	Thesis Design Studio	3	21	24	-	300	300	25	25	650	12
DA - T8	Culmination of Old and New Theories in Architecture	3	3	6	75	25	_	_	_	100	3
Total		6	24	30	75	325	300	25	25	750	15

First Year M.Arch (Digital Architecture) SEM I

SUBJECT CODE: DA T1

NAME OF SUBJECT: Digital Architecture Process Theories and History 1

Teaching Scheme		Examination Scheme	Marks
Lecture Periods	3	Paper	75
Seminar / Lab / Studio Periods	1	Sessional (Internal)	25
		Sessional (External)	-
Total Contact Periods/Week	4	Jury (Viva-Voce)	-
		Total Marks	100
		Credits	2

OBJECTIVE:
To introduce new digital Design Process, digital theories and Historical background of past 20 years formation period of Digital Architecture.

STUDIO CONTENT:
New design process in architecture will be explained in this elective with intermediate stages. Comparison between conventional approach of architects' style oriented process and Digital design process will be introduced. A micro scale project will be taken as design problem to know the whole process.

SESSIONAL WORK :
Theoretical aspect will lead to the formation of the content for written exams. Submission in the form of reports, discussions and debates will make the students interested in the Historical aspect of the particular subject. The outcome will also be in the form of individual perceptions on historical theories.

SESSIONAL ASSESSMENT:
The sessional work as stipulated above will be assessed internally of 25 marks

REFERENCES:

Contemporary Processes in Architecture – by Ali Rahim

Digital Cities AD: Architectural Design – Prof. Neil Leach

Performative Architecture : Beyond Instrumentality – by Branko Kolarevic

Versatility and Vicissitude: Performance in Morpho-Ecological Design- by Michael Hensel

SUBJECT CODE: DA T2

NAME OF SUBJECT : Digital Architecture and Psychology

Teaching Scheme		Examination Scheme	Marks
Lecture Periods	3	Paper	75
Seminar / Lab / Studio Periods	1	Sessional (Internal)	25
		Sessional (External)	-
Total Contact Periods/Week	4	Jury (Viva-Voce)	-
		Total Marks	100
		Credits	2

OBJECTIVE:
This module is designed to set the minds of students to initialize the first stage exploration. It will set a psychological base to understand and develop individual theories on the lines of Digital Architecture.

STUDIO CONTENT :
Small introductory exercises which will include the use of recyclable materials, new assembly techniques to achieve the desired psychological effect for a particular space will be conducted.

SESSIONAL WORK :
Teachers will be able to assess students understanding and mental ability based on the physical outcomes in terms of models and theoretical development stages. The paper work at the initial stage of the course is less considered and practical experiments are more encouraged.

SESSIONAL ASSESSMENT:
The sessional work as stipulated above will be assessed internally of 25 marks

REFERENCE BOOK:

Phylogenesis - FOA's ark

NOX - Machining Architecture - by Lars Spuybroek

Catalytic Formations - Ali Rahim

Emergence: Morphogenetic Design Strategies - by Micheal Hensel

SUBJECT CODE : DA F1

NAME OF SUBJECT: Digital Fabrication 1

Teaching Scheme		Examination Scheme	Marks
Lecture Periods	-	-	
Seminar / Lab / Studio Periods	3	Sessional (Internal)	50
		Sessional (External)	50
Total Contact Periods/Week	4	Jury (Viva-Voce)	-
		Total Marks	100
		Credits	2

OBJECTIVE:
This studio will explore fabrication process in Digital Architecture which is useful to bring the software models into reality. It gives a hands on experience of joinery details and working with the machines.

STUDIO CONTENT:
The interdependencies of software and machines will be explained in this module. The technical details of how the hardware works with the software for future modification suggested on analytical thinking will be possible.

SESSIONAL WORK:
Students will be introduced to the machines and the workability of it. They are expected to the practical work more than the modeling and theoretical studies. The models will be assessed based on the detailing of the form on the basis of innovative joinery details and fixings and material combinations.

SESSIONAL ASSESSMENT:
Internal and external assessment with equal weightage of 50 marks for sessional work

REFERENCE BOOKS:

Chemical sensors and biosensors – by Brian R Eggins

Biosensor principles and Application – by Loic J.Blum, Pierre R.Coulet

Biosensors for environmental monitoring – by Ursula Bilitewski, Anthony Turner

Enzymes and microbial biosensors- by Ashok Mulchandani , Kim R.Rogers

SUBJECT CODE : DA S1

NAME OF SUBJECT: Parametric Software's

Teaching Scheme		Examination Scheme	Marks
Lecture Periods	3	-	
Seminar / Lab / Studio Periods	2	Sessional (Internal)	75
		Sessional (External)	25
Total Contact Periods/Week	4	Jury (Viva-Voce)	-
		Total Marks	100
		Credits	2

OBJECTIVE:
This studio will explore some parametric software as a first stage of learning software. These software are developed as design tools and not for 3d modeling the architects sketches.

STUDIO CONTENT:
The new modeling technique called as Associative modeling will be taught as one of the approach for form development. As a result the software plays a different role than replicating ideas in to 3D form. It becomes the base to develop digital concepts.

SESSIONAL WORK:
Students will be given different small exercises which will be based on the primary stage form development in the parametric software. This work will be assessed on the basis of digital concept development and not on the rendering criteria's of the software. Formation of new tools, application and intercompatibility of the software will be analyzed.

SESSIONAL ASSESSMENT:
Internal assessment of 75 marks and external assessment of 25 marks for sessional work

REFERENCE BOOKS:

Digital Cities AD: Architectural Design – Prof. Neil Leach

Performative Architecture : Beyond Instrumentality – by Branko Kolarevic

Biosensors for environmental monitoring – by Ursula Bilitewski, Anthony Turner

SUBJECT CODE : DA-DS1

NAME OF SUBJECT: Design Studio Algoarchitecture

Teaching Scheme		Examination Scheme	Marks
Lecture Periods	-	Paper	-
Seminar / Lab / Studio Periods	9	Sessional (Internal)	100
		Sessional (External)	100
Total Contact Periods/Week	4	Jury (Viva-Voce)	50
		Total Marks	250
		Credits	6

OBJECTIVE:
This studio will explore the relationships and dependencies of mathematics and architecture through the language of Algorithm. The exploration will be completely based on geometrical ideologies to develop new mathematical spatial relationships and design process for form generation.

STUDIO CONTENT:
This studio will explore generative design methodologies through the application of algorithmic techniques - we will be looking at fundamental coding principles (recursion, feedback, modularity and I/O) while working within an object-oriented framework, opening the door to complex simulation and animate formation. Artificial life, material intelligence, interactivity, and other second-order principles will be approached from the vantage point of "dynamics" and "search" – or the introduction of directed intelligence into a dynamic process of making.

Development: A process in which something passes by degrees to a different stage.
Behavior: The aggregate of responses to internal and external stimuli.

Behavior and development are understood to be a sum, or aggregate, of a multitude of innocuous decisions. Each is a 'dynamic', or a process 'in time' that necessarily feeds-back and regulates procedures to promote higher levels of form, organization, and movement. Students will develop a focused inquiry into a specific area of algorithmic dynamics. Here, "dynamics" is meant as a inclusive term for all kinds of activity: formal development, flocking, embryology, automata, FEA, fractals and l-systems are all examples of time-based recursive practices. The class is meant to flesh out a vocabulary and structural understanding of a wide array of algorithms, to look for correspondences among dynamics, mapping and search heuristics. By casting a wide net, we hope to see opportunities for portability and the development of a critical stance towards algorithmic 'tooling.'

SESSIONAL WORK:
Students will work on geometric transformations, deformations, Boolean algebra and other mathematical concepts. The expected outcome will be in terms of scripts, definitions for a small scale design project which will consider only mathematical approach and not the functional approach for form generation. Models from the 3D printer and CNC machines will be the physical outcome for the individual explorations.

SESSIONAL ASSESSMENT:
Internal and external assessment with equal weightage of 100 marks for sessional work along with external jury of equal weight age of 50 marks each for Viva – voce.

REFERENCE BOOKS:

Chemical sensors and biosensors – by Brian R Eggins

Biosensor principles and Application – by Loic J.Blum, Pierre R.Coulet

Biosensors for environmental monitoring – by Ursula Bilitewski, Anthony Turner

Enzymes and microbial biosensors- by Ashok Mulchandani , Kim R.Rogers

SUBJECT CODE: DA -DS2

NAME OF SUBJECT: Design Studio Biodigitecture

Teaching Scheme		Examination Scheme	Marks
Lecture Periods	-	Paper	-
Seminar / Lab / Studio Periods	9	Sessional (Internal)	100
		Sessional (External)	100
Total Contact Periods/Week	4	Jury (Viva-Voce)	50
		Total Marks	250
		Credits	6

OBJECTIVE:
The studio will examine emergence in biological systems with its relation to the formulation of architecture by using digital techniques for generation of growth and evaluation of patterns in development of forms.

STUDIO CONTENT :

The ambition for the studio is to achieve a continuous transformation in a building with scaler shifts. The studio will explore different stages of a biological system which will give parameters to specify scale, function along with smooth merger of spaces.

SESSIONAL WORK:
Students will work on analytical and design projects of simple function area of smaller scale and produce the work in the form of sheets, a report and a model produced with the help of 3D printing machines and techniques.

SESSIONAL ASSESSMENT:
The sessional work as stipulated above will be assessed internally and externally with equal weight age of 100 marks for sessional work along with external jury of equal weight age of 50 marks each for Viva – voce.

REFERENCE BOOKS:

Digital Tectonics – Prof. Neil Leach

Contemporary techniques in Architecture – by Ali Rahim

Digital Fabrications: Architectural and Material Techniques- by Lisa Ewamoto

From control to design –by Michael Meredith

SUBJECT CODE: DA –DT1

NAME OF SUBJECT: Design Theories - Algotheory

Teaching Scheme		Examination Scheme	Marks
Lecture Periods	5	Paper	-
Seminar / Lab / Studio Periods	9	Sessional (Internal)	75
		Sessional (External)	25
Total Contact Periods/Week	4	Jury (Viva-Voce)	-
		Total Marks	100
		Credits	2

OBJECTIVE:
To develop the theoretical background of the students to come up with their own theoretical output of their concepts.

STUDIO CONTENT :

The studio will cover the theoretical aspect of Algoarchitecture. The new terminologies alongwith recent therotical development happened on the lines of Algoarchitecture will be explained.

SESSIONAL WORK:

The sessional work will be in the form of reports and theoretical presentations to explore the systematic way of putting Digital Architecture terminologies.

SESSIONAL ASSESSMENT:

The sessional work as stipulated above will be assessed internally for 75 marks and externally for 25 marks.

REFERENCE BOOKS:

Digital Tectonics – Prof. Neil Leach

Contemporary techniques in Architecture – by Ali Rahim

Digital Fabrications: Architectural and Material Techniques- by Lisa Ewamoto

From control to design –by Michael Meredith

SUBJECT CODE: DA T3

NAME OF SUBJECT: Digital Architecture Process Theories and History 2

Teaching Scheme		**Examination Scheme**	**Marks**
Lecture Periods	**3**	**Paper**	**75**
Seminar / Lab / Studio Periods	**1**	**Sessional (Internal)**	**25**
		Sessional (External)	**-**
Total Contact Periods/Week	**4**	**Jury (Viva-Voce)**	**-**
		Total Marks	**100**
		Credits	**2**

OBJECTIVE:

The seminar will examine architectural vision of the city from emergence of the metropolis to the contemporary city. Emphasizing the concepts of form, movement, infrastructure, network, pattern and landscape, the seminar will investigate different agendas, strategies, manipulations that were employed in relation to the city, forcing a new understanding of the urban realm to emerge.

COURSE CONTENT:

The seminar through proceedings along historical trajectory advances the theories of architectural vision of the current architecture. By revising projects and writings of the architects who were concerned with or having simply facilitated the creation of a new urbanity, the seminar will provide

1. A knowledge of architectural theory on modern city,
2. An understanding of strategic mechanisms of architecture within urban realm, and
3. An insight into contemporary implications of these approaches.

Whereas an understanding of the historical background of the different architectural projects is essential, the course ultimately aims to investigate and account for workings of architecture with urban domain.

SESSIONAL WORK :

Assignment will be in the form of individual in-depth study of the topic related to any one of the subject or any other additional subject based on availability of experts which is presented in the form of presentation and a written report of the same.

SESSIONAL ASSESSMENT:

The sessional work as stipulated above will be assessed internally of 75 marks along with a paper set according to university norms.

REFERENCE BOOKS:

Contemporary Processes in Architecture – by Ali Rahim

Digital Cities AD: Architectural Design – Prof. Neil Leach

Performative Architecture : Beyond Instrumentality – by Branko Kolarevic

Versatility and Vicissitude: Performance in Morpho-Ecological Design- by Michael Hensel

SUBJECT CODE: DA T4

NAME OF SUBJECT: Nanoarchitecture

Teaching Scheme		Examination Scheme	Marks
Lecture Periods	1	Paper	75
Seminar / Lab / Studio Periods	3	Sessional (Internal)	25
		Sessional (External)	-
Total Contact Periods/Week	4	Jury (Viva-Voce)	-
		Total Marks	100
		Credits	2

OBJECTIVE:
To introduce the materialistic approach towards form generation process from nanoscale.

STUDIO CONTENT:
The microscopic experiments based on the materialistic approach will be studied. It will include laboratory experiments with micro sensors, human sensors etc to venture into material properties and their behavior with each other.

SESSIONAL WORK :
Theoretical aspect will lead to the formation of the content for written exams. Submission in the form of reports, discussions and debates will make the students interested in the Historical aspect of the particular subject. The outcome will also be in the form of innovation by lab experimentation.

SESSIONAL ASSESSMENT:
The sessional work as stipulated above will be assessed internally of 25 marks and a paper of 75 marks to count the total marks of 100.

REFERENCES:

Nanoarchitecture : A new species of Architecure – John M.Johnson

In Details: Building Skins – By Werner Lang

Intelligent Skins _ By Michael Wiggington

Material Connexion _ By George Beyleron

SUBJECT CODE : DA F2

NAME OF SUBJECT: Digital Fabrication 2

Teaching Scheme		Examination Scheme	Marks
Lecture Periods	-	-	
Seminar / Lab / Studio Periods	3	Sessional (Internal)	50
		Sessional (External)	50
Total Contact Periods/Week	4	Jury (Viva-Voce)	-
		Total Marks	100
		Credits	2

OBJECTIVE:
This studio will explore fabrication process in Digital Architecture which is useful to bring the software models into reality. It gives a hands on experience of joinery details and working with the machines.

STUDIO CONTENT:
The interdependencies of software and machines will be explained in this module. The technical details of how the hardware works with the software for future modification suggested on analytical thinking will be possible.

SESSIONAL WORK:
Students will be introduced to the machines and the workability of it. They are expected to the practical work more than the modeling and theoretical studies. The models will be assessed based on the detailing of the form on the basis of innovative joinery details and fixings and material combinations.

SESSIONAL ASSESSMENT:
Internal and external assessment with equal weightage of 50 marks for sessional work

REFERENCE BOOKS:

Chemical sensors and biosensors – by Brian R Eggins

Biosensor principles and Application – by Loic J.Blum, Pierre R.Coulet

Biosensors for environmental monitoring – by Ursula Bilitewski, Anthony Turner

Enzymes and microbial biosensors- by Ashok Mulchandani , Kim R.Rogers

SUBJECT CODE : DA S2

NAME OF SUBJECT: Analysis Software's

Teaching Scheme		Examination Scheme	Marks
Lecture Periods	3	-	
Seminar / Lab / Studio Periods	2	Sessional (Internal)	75
		Sessional (External)	25
Total Contact Periods/Week	4	Jury (Viva-Voce)	-
		Total Marks	100
		Credits	2

OBJECTIVE:
This studio will explore some Analysis software as a first stage of learning software. These software are developed as analytical tools for structural and environmental analysis

STUDIO CONTENT:
Computation analysis modeling will be taught as one of the approach for form analysis. The form will be structurally and environmentally justified with the help of structural analysis software and environmental software.

SESSIONAL WORK:
Students will be given different small exercises which will be based on the primary stage form development in the analysis software. This work will be assessed on the basis of Formation of new tools, application and intercompatibility of the software will be analyzed.

SESSIONAL ASSESSMENT:
Internal assessment of 75 marks and external assessment of 25 marks for sessional work

REFERENCE BOOKS:

Digital Cities AD: Architectural Design – Prof. Neil Leach

Performative Architecture : Beyond Instrumentality – by Branko Kolarevic

Biosensors for environmental monitoring – by Ursula Bilitewski, Anthony Turner

SUBJECT CODE: DA -DS3

NAME OF SUBJECT: Design Studio Performative Digitecture

Teaching Scheme		**Examination Scheme**	**Marks**
Lecture Periods	**3**	**Paper**	**75**
Seminar / Lab / Studio Periods	**1**	**Sessional (Internal)**	**25**
		Sessional (External)	**-**
Total Contact Periods/Week	**4**	**Jury (Viva-Voce)**	**-**
		Total Marks	**100**
		Credits	**2**

OBJECTIVE:

The specific conditions of site become framework of research, focusing on scale, movement and infrastructure. Students will investigate with the unconventional materials at different scale from local to urban extent and will then link the conceptual ideas and form through architecture design.

COURSE CONTENT:

In the first part of semester, students investigating conceptual and spatial conditions through exercise abstracted from architectural context. Through a series of iterative manipulations of a specific material, students researched physical properties and develop unit modules.

SESSIONAL WORK:

Students will work on analytical and design projects of simple function area of smaller scale and produce the work in the form of sheets, a report and a model produced with the help of 3D printing machines and techniques.

SESSIONAL ASSESSMENT:

The sessional work as stipulated above will be assessed internally and externally with equal weight age of 100 marks for sessional work along with external jury of equal weight age of 50 marks each for Viva – voce.

REFERENCE BOOKS:

Phylogenesis - FOA's ark

NOX - Machining Architecture - by Lars Spuybroek

Catalytic Formations - Ali Rahim

Emergence: Morphogenetic Design Strategies - by Micheal Hensel

SUBJECT CODE: DA T5

NAME OF SUBJECT: Research in DA

Teaching Scheme		**Examination Scheme**	**Marks**
Lecture Periods	**3**	**Paper**	**75**
Seminar / Lab / Studio Periods	**3**	**Sessional (Internal)**	**25**
		Sessional (External)	**-**
Total Contact Periods/Week	**6**	**Jury (Viva-Voce)**	**-**
		Total Marks	**100**
		Credits	**2**

OBJECTIVE:

The title of the research paper to be taken such that it could support the thesis subject and help to develop an appropriate methodology and research approach regarding the same.

COURSE CONTENT:

The thesis will be defined upon a pre determined theme, which will set a specific research direction. The particular direction will need a research and study, so as to have the base material ready for the next semester's thesis studio. The students will be asked to identify and carry out individual strands of research within this lager framework of parametric designing.

SESSIONAL WORK:

Assignment will be in the form of individual in-depth study of the topic related to any one of the subject or any other additional subject based on availability of experts which is presented in the form of presentation and a written report of the same.

SESSIONAL ASSESSMENT:

The sessional work as stipulated above will be assessed internally of 75 marks along with a paper set according to university norms.

SUBJECT CODE: DA T6

NAME OF SUBJECT: Parametric Urbanism

Teaching Scheme		**Examination Scheme**	**Marks**
Lecture Periods	**3**	**Paper**	**75**
Seminar / Lab / Studio Periods	**1**	**Sessional (Internal)**	**25**
		Sessional (External)	**-**
Total Contact Periods/Week	**4**	**Jury (Viva-Voce)**	**-**
		Total Marks	**100**
		Credits	**2**

OBJECTIVE:

The class will survey different theoretical and ecological approaches to urban design and provides students with a comprehensives understanding of urban development and parametric designing.

COURSE CONTENT:

The students will investigate programmatic and formal precedents through readings, discussions, field trips which will be in support of the thesis research. The goal will be to understand current urban conditions and practices, and reveal underlying patterns of the fields of research within the domain of parametric designing.

SESSIONAL WORK:

Assignment will be in the form of individual in-depth study of the topic related to any one of the subject or any other additional subject based on availability of experts which is presented in the form of presentation and a written report of the same.

SESSIONAL ASSESSMENT:

The sessional work as stipulated above will be assessed internally of 75 marks along with a paper set according to university norms.

SUBJECT CODE: DA F3

NAME OF SUBJECT: Digital Fabrication 3

Teaching Scheme		**Examination Scheme**	**Marks**
Lecture Periods	**3**	**Paper**	**75**
Seminar / Lab / Studio Periods	**1**	**Sessional (Internal)**	**25**
		Sessional (External)	**-**
Total Contact Periods/Week	**4**	**Jury (Viva-Voce)**	**-**
		Total Marks	**100**
		Credits	**2**

OBJECTIVE:

The class will survey different theoretical and ecological approaches to urban design and provides students with a comprehensives understanding of urban development and parametric designing.

COURSE CONTENT:

The students will investigate programmatic and formal precedents through readings, discussions, field trips which will be in support of the thesis research. The goal will be to understand current urban conditions and practices, and reveal underlying patterns of the fields of research within the domain of parametric designing.

SESSIONAL WORK:

Assignment will be in the form of individual in-depth study of the topic related to any one of the subject or any other additional subject based on availability of experts which is presented in the form of presentation and a written report of the same.

SESSIONAL ASSESSMENT:

The sessional work as stipulated above will be assessed internally of 75 marks along with a paper set according to university norms.

SUBJECT CODE: DA T7

NAME OF SUBJECT: Workshops and Seminars

Teaching Scheme		**Examination Scheme**	**Marks**
Lecture Periods	**3**	**Paper**	**75**
Seminar / Lab / Studio Periods	**1**	**Sessional (Internal)**	**25**
		Sessional (External)	**-**
Total Contact Periods/Week	**4**	**Jury (Viva-Voce)**	**-**
		Total Marks	**100**
		Credits	**2**

OBJECTIVE:

The class will survey different theoretical and ecological approaches to urban design and provides students with a comprehensives understanding of urban development and parametric designing.

COURSE CONTENT:

The students will investigate programmatic and formal precedents through readings, discussions, field trips which will be in support of the thesis research. The goal will be to understand current urban conditions and practices, and reveal underlying patterns of the fields of research within the domain of parametric designing.

SESSIONAL WORK:

Assignment will be in the form of individual in-depth study of the topic related to any one of the subject or any other additional subject based on availability of experts which is presented in the form of presentation and a written report of the same.

SESSIONAL ASSESSMENT:

The sessional work as stipulated above will be assessed internally of 75 marks along with a paper set according to university norms.

SUBJECT CODE: DA -DS5

NAME OF SUBJECT: Design Studio "Artificial Intelligence"

Teaching Scheme		**Examination Scheme**	**Marks**
Lecture Periods	**3**	**Paper**	**75**
Seminar / Lab / Studio Periods	**1**	**Sessional (Internal)**	**25**
		Sessional (External)	**-**
Total Contact Periods/Week	**4**	**Jury (Viva-Voce)**	**-**
		Total Marks	**100**
		Credits	**2**

OBJECTIVE:

"Emergence" is an important concept in artificial intelligence, information theory and computation, and in the domains of economics, climatic studies, material sciences and biometric engineering. The studio will work on emergent theories to architectural design with evolutionary techniques.

COURSE CONTENT:

The course is broken down into following subjects: Programming Syntax, Modeling, Variability, Custom Functions and Relational Rules. The students will learn to script and understand the potential of using programming to generate and investigate complex forms. Over the course of the semester each student acquires technical fluency in programming and parametric 3D modeling.

SESSIONAL WORK:

Students will work on analytical and design projects of simple function area of smaller scale and produce the work in the form of sheets, a report and a model produced with the help of 3D printing machines and techniques.

SESSIONAL ASSESSMENT:

The sessional work as stipulated above will be assessed internally and externally with equal weight age of 100 marks for sessional work along with external jury of equal weight age of 50 marks each for Viva – voce.

SUBJECT CODE: DA -DS6

NAME OF SUBJECT: Design Studio - Fabritecture

Teaching Scheme		**Examination Scheme**	**Marks**
Lecture Periods	**3**	**Paper**	**75**
Seminar / Lab / Studio Periods	**1**	**Sessional (Internal)**	**25**
		Sessional (External)	**-**
Total Contact Periods/Week	**4**	**Jury (Viva-Voce)**	**-**
		Total Marks	**100**
		Credits	**2**

OBJECTIVE:
Fabritecture is an introduction to the physical properties and structural behaviors intrinsic to full scale architectural assemblies. The course highlights a range of performative and emergent principles for a series of materials. Primary to pedagogical aim of the courses a continuous analytical assessment of a variety of manually constructed and then digitally transferred assemblies for performative outcomes.

COURSE CONTENT:
The studio will design with parametrically defined material systems that are the structure and skin at the same time. The exploration towards structure as a performative skin and the skin as a differentiated structure will be divided into phases with the development of physically and digitally proliferated component systems.

SESSIONAL WORK:
Students will work on analytical and design projects of simple function area of smaller scale and produce the work in the form of sheets, a report and a model produced with the help of 3D printing machines and techniques.

SESSIONAL ASSESSMENT:
The sessional work as stipulated above will be assessed internally and externally with equal weight age of 100 marks for sessional work along with external jury of equal weight age of 50 marks each for Viva – voce.

SUBJECT CODE: DA S7

NAME OF SUBJECT: Thesis Design Studio

Teaching Scheme		**Examination Scheme**	**Marks**
Lecture Periods	**3**	**Paper**	**-**
Seminar / Lab / Studio Periods	**21**	**Sessional (Internal)**	**300**
		Sessional (External)	**300**
Total Contact Periods/Week	**24**	**Jury (Viva-Voce)**	**50**
		Total Marks	**650**
		Credits	**12**

OBJECTIVE:
Students work on the detailed design and presentation of an approved thesis subject that investigates – from a theoretical or pragmatic position – a subject of sufficient complexity an particular relevance to the thesis candidate's background or career orientation.

COURSE CONTENT:
The studio will emphasize design research that is collectively formulated through relationships among contemporary investigation into Parametric Designing. Different techniques and tools will be used to approach to the projects that engage mixtures of architecture, urbanism and landscape as well as contemporary design techniques.

SESSIONAL WORK:
Students will work on analytical and design projects of simple function area of smaller scale and produce the work in the form of sheets, a report and a model produced with the help of 3D printing machines and techniques.

SESSIONAL ASSESSMENT:
The sessional work as stipulated above will be assessed internally and externally with equal weight age of 300 marks for sessional work along with external jury of equal weight age of 50 marks each for Viva – voce.