MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR
(A Govt. Aided UGC Autonomous Institute Affiliated to RGPV, Bhopal)

BOARD OF STUDIES MEETING
APRIL 2019

DEPARTMENT OF ARCHITECTURE

Contents

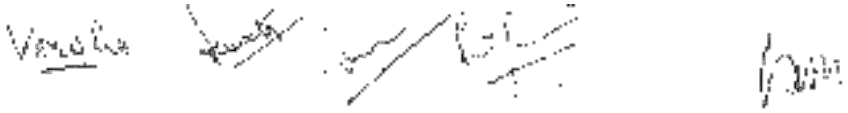


Table 1 : Courses where revision was carried out

Total No. of Courses offered during July-December 2019 Session	Revision of Syllabus Carried out (No. of Courses & Course Details)	% of Courses where syllabus revision was done	% change in syllabus from existing	Item/Agenda No.	Pg. No.
43	Total = 8 Architectural Design - V (210501)	**Change in Credits**	**20%**	-	75
	Building Construction - IV (210502)	**Change in Credits**	**80%**	-	75
	Building Services - II (210503)	**-**	**60%**	-	75
	Building Science & Energy Conservation (210504)	**Subject Introduced**	**100%**	-	75
	Site Planning & Landscaping (210505)	**Subject Introduced**	**100%**	-	75
	Constitution of India/Essence of Indian Traditional Knowledge (100006)	**Subject Introduced**	**100%**	-	75
	Disaster Management (AR504)	**Subject Dissolved**	**-**	-	75
	Ecology & Environment (AR505)	**Subject Dissolved**	**-**	-	75

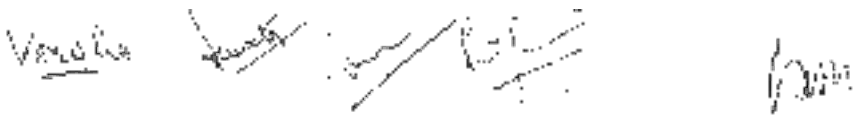
Table 2 : New courses added

Total No. of Courses offered during July-December 2019 Session	Total No. of New courses added	Name of New courses added	Agenda/ Item No.	Pg. No.
43	Nil	-	-	1

Table 3 : Courses focusing on employability/entrepreneurship/skill development

Total No. of Courses offered during July-December 2019 Session	Total No. of Courses focusing on employability /entrepreneurship/skill development	Name of Courses focusing on employability/entrepreneurship/skill development	Agenda/Item no.	Pg. No.
43	24	English Language (Architectural Appreciation)	-	5
		Workshop - I	-	5
		Graphics - III	-	7
		SIP - I	-	7
		Self Study Seminar (SWAYAM) (Sustainable Architecture)	-	9
		SIP II	-	9
		Project Management & Building Economics	-	12
		Training	-	13
		Planning History & Theories	-	73
		Socio-Economic Basis for Planning	-	73
		Planning Techniques	-	73
		Infrastructure & Transportation Planning	-	73

		Housing & Environmental Planning	-	73
		Studio Course-I	-	73
		Studio Course-II	-	73
		Inclusive Urban Planning (Elective -I)	-	75
		Planning for Tourism (Elective -I)	-	75
		Environment, Development and Disaster Management (Elective - II)	-	75
		Energy, Climate change and Urban Development (Elective - II)	-	75
		Seminar	-	75
		Dissertation	-	75



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DEPARTMENT OF ARCHITECTURE

Minutes of The meeting of Board of Study of Architecture Department Meeting

The meeting of Board of Studies of Architecture was held on 2nd April 2019 at 1.30 PM in the office of Head, Department of Architecture.

The following members were present:

1. Dr. S. S. Jadon, Professor& Head, Department of Architecture MITS, Gwalior
2. Dr. Alok Sharma, Professor. Department of Architecture MITS, Gwalior
3. Dr. A. S. Patil, Asst. Professor, Department of Architecture MITS, Gwalior
4. Ar. P. N. Mishra, Industry Corporate Member, BOS
5. Director Representative.

Leave of absence was granted to Dr. S.M.Akhtar, Prof. Sanjeev Singh, Dr. Sandeep Sankat, and Ar. Pushpak Pandit the member who could not attend the meeting.

The scheme of B. Architecture course and detailed syllabus up to third year (Sixth Semester) were discussed and recommended for consideration. Salient feature of the proposed scheme are as follows:-

1. Subject code of Technical English 100103 is changed to 210109
2. Detailed syllabus of V and VI semester is proposed.
3. List of electives and Online NPTEL courses list is prepared for July- Dec 2019 session.
4. Professional certification course (industry oriented Elective) is proposed in tenth semester.
5. No change in the scheme and syllabus is proposed in the Master of Urban Planning.

Ar. Richa Mishra
Asst. Professor, Department of Architecture
MITS, Gwalior

Ar. Pragati Jain
Asst. Professor, Department of Architecture
MITS, Gwalior

Ar. Shweta Singh
Asst. Professor, Department of Architecture
MITS, Gwalior

Ar. Versha Sinha
Asst. Professor, Department of Architecture
MITS, Gwalior

(Dr. A. S. Patil)
Asst. Professor,
Department of Architecture MITS, Gwalior

(Dr. Alok Sharma)
Professor,
Department of Architecture MITS Gwalior

(Dr. S. S. Jadon)
Professor & Head, Department of
Architecture MITS, Gwalior

(Ar P. N. Mishra)
Industry Corporate Member, BOS

(Dr Manjiri Pandit)
Dean, Academics, MITS,
Gwalior

(Dr. R.K.Pandit)
Director, MITS
Gwalior

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B. Arch. Scheme Structure & Semester-Wise Credit Distribution (Under Flexible Curriculum)

Reference Course Scheme Structure & Semester – wise credit distribution

General Definition:

Category Code	Course category
L	Lecture
T	Tutorial
PST	Practical / Studio
DC	Departmental (Professional) Core
BSAE	Building Science & Applied Engineering
DE	Departmental (Professional) Elective
OE	Open Category
PAEC	Professional Ability Enhancement Course
SEC	Skill Enhancement Course
MC	Mandatory Course

Definition of Credit

As per Council of Architecture (CoA) Recommendation

1Lecture period/ hour	1 Credit
2Lab/ Workshop/ Studio Exercise Periods/ Hours	1 Credit
1 Design Studio/ Construction Studio/ Project/ Thesis Period/ Hour	1.5 Credit

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Credit Requirements & Guidelines for MOOCs

As per the recommendation and Council of Architecture (CoA), Provision of 30 contact hours per week and 260 credits have been made to pass the B. Architecture course of five Years. More over to earn B. Arch. degree with Honours or Minor Specialization, it is required to compute 24 additional credits.

Note: In partial fulfillment of flexible curriculum, a mandate provision to earn credits through E-Learning (NPTEL/MOOC etc.) based Departmental Core/Elective (DC/DE) has been introduced. Additionally, to give the students more flexibility to orient themselves as per their interest while retaining the discipline specific knowledge and capabilities, provision for Open Category (OC) Courses have been made.

Up to 52 credits out of total 260 credits for B. Architecture students can be earned through SWAYAM /NPTEL / MOOC platform based learning for the award of UG degree in Engineering/Technology & Architecture respectively (without Honours / Minor Specialization).

To obtain **"Honours or Minor Specialization"**, 24 Credits additionally can be completed through SWAYAM /NPTEL / MOOC platform based learning. In this manner, students aspiring for minor specialization or Honours during the tenure of B. Architecture programme can earn up to **72 (52+20)credits through SWAYAM /NPTEL / MOOC platform based learning.**

The guidelines regarding **"credit transfer from MOOCs"** by **All India Council of Technical Education (AICTE) and the affiliating university, i.e RGPV Bhopal**, as issued from time to time will be binding on the institute.

The list of courses which the students can opt from the SWAYAM /NPTEL / MOOC platform against DE & OC courses in the scheme will be displayed on the website well in advance, (in November & June) so that students can select the courses of their choice.Each such Course must be of minimum 2 credits.

For the courses opted under MOOC, the equivalent credit weightage will be given to the students, for the credits earned in online examination on SWAYAM/NPTEL platform and other similar platforms as approved by the authorized bodies (BoS,ACete) , in the credit plan of the program w.e.f. 2017-18 admitted batch onwards.

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Proposed Structure of Bachelor of Architecture (B.Arch.) program

Category Code	Course Category	Weightage in terms of credits as per CoA norms (2017 regulations)	No of courses	Total credits	Weightage in terms of credits achieved
DC	Departmental Professional) Core	45%	19	125	48%
BSAE	Building Science & Applied Engineering	20%	14	55	21%
DE	Departmental Professional) Elective	10%	7	22	8%
OE	Open Category	5%	3	9	3%
PAEC	Professional Ability Enhancement Course	15%	7	33	13%
SEC	Skill Enhancement Course	5%	11	16	6%
MC	Mandatory Course	Audit Courses	2	(0)	
TOTAL		100%	61	260	100

Additional Courses

It should be term out opted earlier

Additional courses may vary every year as per availability of course experts.
Student may opt for maximum two additional courses per semester.
Each additional course will have 4 credits and the student have to achieve 24 additional credits for Honors.

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Scheme of Examination

W.E.F. JULY 2018 Batch

Bachelor of Architecture, First Year, I Semester

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	Contact Hours	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment /Sessional	End Sem.	Lab work & Sessional			L	T	P	
1	210101	Architectural Design - I	DC-1	100	30	20	50	50	250	7*	2	3	2(1.5)	8
2	210102	Architectural Materials	BSAE-1	50	30	20	-	-	100	3	2	1	-	3
3	210103	Graphics - I	DC-2	50	30	20	50	50	200	7	2	3	2	6
4	210104	Structure I	BSAE-2	50	30	20	-	-	100	3	2	1	-	3
5	210105	History of Architecture-I	DC-3	50	30	20	-	-	100	3	2	1	-	3
6	210106	Workshop - I	SEC -1	-	-	-	20	30	50	4	-	-	4	2
7	210109	Technical English	SEC -2	50	30	20	-	-	100	2	1	1	-	2
		Total		350	180	120	120	130	900	29	11	10	8	27

Induction program of three weeks duration (MC): Physical activity, Creative Arts, Universal Human Values, Literary, Proficiency Modules, Lectures by Eminent people, Visits to local Areas,

*One Design Studio/ Construction Studio/ Project/ Thesis Period/ Hour shall have 1.5 Credit

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MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

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Scheme of Examination

W.E.F. JULY 2018 Batch

Bachelor of Architecture, First Year, II Semester

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	Contact Hours	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem Exam.	Quiz/ Assignment/ Sessional	End Sem.	Lab work & Sessional			L	T	P	
1	210201	Architectural Design-II	DC - 4	100	30	20	50	50	250	7	2	3	2 (1.5)	8
2	210202	Building Construction-II	BSAE - 3	50	30	20	20	30	150	5	2	1	2 (1.5)	6
3	210203	Graphics – II	DC - 5	50	30	20	20	30	150	4	1	1	2	4
4	210208	Structure II	BSAE - 4	50	30	20	-	-	100	3	2	1	-	3
5	210205	History of Architecture-II	DC - 6	50	30	20	-	-	100	3	2	1	-	3
6	210206	Theory of Design	DC - 7	50	30	20	-	-	100	2	2	*	-	2
7	210207	Workshop – II	SEC - 3	-	-	-	20	30	50	4	-	-	4	2
		Total		350	180	120	110	140	900	28	11	7	10	27
Summer Internship Project- I (Institute level)(Qualifier): Minimum two weeks duration														

*One Design Studio/ Construction Studio/ Project/ Thesis Period/ Hour shall have 1.5 Credit .

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Scheme of Examination

W.E.F. JULY 2017

Bachelor of Architecture, Second Year, III Semester

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	Contact Hours	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem. Exam.	Quiz/ Assignment/ Sessional	End Sem.	Term work / Lab Work & Sessional			L	T	P	
1	230301	Architectural Design - III	DC - 8	100	30	20	50	50	250	7	2	3	2(1.5)	8
2	230302	Building Construction-III	DESC - 5	50	30	20	50	50	200	5	2	1	2(1.5)	6
3	230303	Graphics-III	PSEC - 1	-	-	-	50	50	100	6	-	-	6	3
4	230304	Surveying & Leveling	DESC - 6	50	30	20	-	-	100	3	1	2	-	3
5	230305	History of Architecture-III	DC - 9	50	30	20	-	-	100	3	2	1	-	3
6	230306	Structures-III	DESC - 7	50	30	20	-	-	100	3	2	1		3
7	230307	Summer Internship Project - Continuous Level Evaluation	SEC - 4	-	-	-	-	50	50	2	-	-	2	1
Total				300	150	100	150	200	900	29	9	8	12	27
8	230308	Biology for Architects (Audit Course)	MLC-1	50	30	20	-	-	100	3		-	-	3
NSS/NCC						Qualifier								

*Compulsory registration for one online course using SWAYAM/NPTEL/ MOOC, evaluation through attendance, assignments and presentation.

Four summer Workshop/ Training during winter break (Passing is optional, however a separate mark sheet will be issued to those who qualify)

*One Design Studio/ Construction Studio/ Project/ Thesis Period/ Hour shall have 1.5 Credit

*230308 Biology for Architects (Audit Course) will not be included in the aggregate and Passing is optional, however a separate mark sheet will be issued to those who qualify

DEAN (ACADEMICS)
M.I.T.S
GWALIOR

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Scheme of Examination

W.E.F. JULY 2017

Bachelor of Architecture, Second Year, IV Semester

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	Contact Hours	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem. Exam.	Quiz/ Assignment/ Sessional	End Sem.	Term work / Lab Work & Sessional						
1	210401	Architectural Design - IV	DC - 10	100	30	20	50	50	250	7	2	3	2(1.5)	8
2	210402	Building Construction - III	BSAT - 8	50	30	20	20	30	150	5	2	1	2(1.5)	6
3	210403	Building Services – I (Water Supply & Sanitation)	BSAE - 9	50	30	20	-	-	100	3	2	1	-	3
4	210404	History of Architecture-IV	DC - 11	50	30	20	-	-	100	3	2	1	-	3
5	210405	Structure -IV	BSAT - 10	50	30	20	-	-	100	3	2	1	-	3
6	210406	ELECTIVE - I	DE - 1	50	30	20	-	50	150	4	2	-	2	3
7	210407	Tour/ Seminar / Workshop/ NASA training during winter break	SLC - 5	-	-	-	-	50	50	2	-	-	2	1
Total				350	180	120	70	180	900	27	12	7	8	27
NSS/NCC										Qualifier				
Summer Internship Project- II (Softskill based): Minimum two weeks duration: Evaluation in V semester														

*Compulsory registration for one online course using SWAYAM/NPTEL/ MOOC

Seminar / Workshop/ Training during summer break

*One Design Studio/ Construction Studio/ Project/ Thesis Period/ Hour shall have 1.5 Credit

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Scheme of Examination

W.E.F. JULY 2017

Bachelor of Architecture, Third Year, V Semester

S.No	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	Contact Hours	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem Exam	Quiz/ Assignment/ Sessional	End Sem.	Lab work & Sessional			L	T	P	
1	210501	Architectural Design - V	DC - 12	100	30	20	50	50	250	7	2	3	2(1.5)	8
2	210502	Building Construction -IV	BSAE - 11	50	30	20	20	30	150	5	2	1	2(1.5)	6
3	210503	Building Services-III (Electrical	BSAE - 12	50	30	20	-	-	100	3	2	1	-	3
4	210504	Building Sciences& Energy Conservation	BSAE - 13	50	30	20	-	-	100	3	2	1	-	3
5	210505	Site Planning and Landscaping	DC - 13	50	30	20	-	-	100	4	1	1	2	3
6	210506	Self-study, Seminar (SWAYAM/NPTEL & MOOC)	SEC - 6	-	-	-	20	30	50	4	-	-	4	2
7	210507	Seminar/ Internship Project- II	SEC - 7	-	-	-	-	50	50	2	-	-	2	1
		Total		300	150	100	90	160	800	28	9	7	12	26
8	100006	Indian Constitution & Traditional knowledge (Audit course)[MC]	MC - 2	50	20	10	-	-	100	3		-		3
				Department level activity/ workshop/ awareness programme to be conducted, certificate of compliance to be submitted by HoD to the Exam Controller through Dean Academics.										
Additional Course for Honors or Minor Specialization				Permitted to opt for maximum two additional courses for the award of Honors or Minor specialization										

*Compulsory registration for one online course using SWAYAM/NPTEL/ MOOC, Evaluation through attendance, assignments and presentations.

Tour/ seminar/ Workshop/ Training during winter break will be evaluated in next semester

*One Design Studio/ Construction Studio/ Project/ Thesis Period/ Hour shall have 1.5 Credit

*100006 Constitution of India/ Essence of Indian Traditional knowledge (Audit course) will not be included in the aggregate and Passing is optional, however a separate marksheet will be issued to those who qualify.

DEAN (ACADEMICS)
M.I.T.S

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

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Scheme of Examination

[redacted]

Bachelor of Architecture, Third Year, VI Semester

S.No	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	Contact Hours	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem Exam.	Quiz/ Assignment / Sessional	End Sem.	Lab work & Sessional			L	T	P	
1	210601	Architectural Design – VI	DS - 14	100	30	20	50	100	300	9	2	2	4(1.5)	10
2	210602	Building Services-III (Acoustic & Fire Fighting)	BSAE - 14	50	30	20	-	-	100	4	3	1	-	4
3	210603	ELEC HVE -2	DE - 2	50	30	20	-	-	100	3	2	1	-	3
4	210604	Working Drawing	PAEC - 2	-	-	-	20	30	50	4	-	-	4	2
5	210605	ELEC HVE-3	DE - 3	50	30	20	-	-	100	3	1	2	-	3
6	210606	ELEC HVE - 4	DE - 4	50	30	20	-	-	100	3	2	1	-	3
7	210607	Tour/ seminar Workshop/ Training during winter break	SEC - 8	-	-	-	-	50	50	2	-	-	2	1
		Total		300	150	100	70	180	800	28	10	7	10	26
Additional Course for Honors or Minor Specialization				Permitted to opt for maximum two additional courses for the award of Honors or Minor specialization										

*Compulsory registration for one online course using SWAYAM/NPTEL/ MOOC

*One Design Studio, Construction Studio, Project/ Thesis Period/ Hour shall have 1.5 Credit

Veesha

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Scheme of Examination

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Bachelor of Architecture, Fourth Year, VII Semester

S.No.	Subject Code	Subject Name & Title	Category	Maximum Marks Allotted					Total Marks	Contact Hours	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem. Exam	Quiz/ Assignment/ Sessional	End Sem.	Term Work / Lab Work & Sessional			L	T	P	
1	210701	Architectural Design - VII	DC - 15	-	-	-	150	100	250	6	-	-	6(1.5)	9
2	210702	Building Construction - V	DC - 16	50	30	20	20	30	150	5	2	1	2(1.5)	6
3	210703	ELECTIVE - 5	DE - 5	50	30	20	-	-	100	3	2	1	-	3
4	210704	Estimating and Costing & Specifications	PAEC - 2	50	30	20	-	-	100	4	2	2	-	4
5	210705	Disaster management (Mc.)	HS - 6	50	30	20	-	-	100	3	2	1	-	3
6	210706	OPEN COURSE	OC - 4	70	20	10	-	-	100	3	2	1	-	3
		Total		**270**	**140**	**90**	**170**	**130**	**800**	**24**	**10**	**6**	**8**	**28**
Additional Course for Honors or Minor Specialization				Permitted to opt for maximum two additional courses for the award of Honors or Minor specialization										

*Compulsory registration for one online course using SWAYAM/NPTEL/ MOOC

Four Seminar/ Workshop Training during winter break will be evaluated in next semester

*One Design Studio Construction Studio Project Thesis Period/ Hour shall have 1.5 Credit

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Scheme of Examination

W.E.F. JULY 2017 batch

Bachelor of Architecture, Fourth Year, VIII Semester

S.No.	Subject Code	Subject Name & Title	Category	Maximum Marks Allotted					Total Marks	Contact Hours	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem. Exam	Quiz/ Assignment / Sessional	End Sem.	Term Work / Lab Work & Sessional			L	T	P	
1	210801	Architectural Design - VIII	DE - 17	-	-	-	150	100	250	8	-	-	8(1.5)	12
2	210802	Urban Design	DE - 18	50	30	20	20	30	150	5	2	1	2	4
3	210803	Project Management & Building Economics	HSMC - 3	50	30	20	-	-	100	3	2	1	-	3
4	210804	Dissertation	HSMC - 5	-	-	-	20	30	50	4	-	-	4	2
5	210805	OPEN ELECTIVE - 2	OE - 2	70	20	10	-	-	100	3	2	1	-	3
6	210806	OPEN ELECTIVE - 3	OE - 3	70	20	10	-	-	100	3	2	1	-	3
7	210807	Four/ six weeks Summer Workshop Training during winter break	SEC - 9	-	-	-	-	50	50	2	-	-	2	1
		Total		240	100	60	190	210	800	28	8	4	16	28
Additional Course for Honors or Minor Specialization			Permitted to opt for maximum two additional courses for the award of Honors or Minor specialization											

*One Design Studio/ Construction Studio/ Project/ Thesis Period/ Hour shall have 1.5 Credit

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

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Scheme of Examination

W.E.F. JULY 2018 batch

Bachelor of Architecture, Fifth Year, IX Semester

S.No.	Subject Code	Subject Name & Title	Category	Maximum Marks Allotted					Total Marks	Min. Working HRS/ Week	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem. Exam	Quiz/ Assignment	End Sem.	Term Work / Lab Work & Sessional			L	T	P	
1	210901	Professional Training	PAU - 6	-	-	-	400	300	700	32	-	-	32	16
2	210902	Critical Appraisal (Architectural Case Studies and Book Review)	SEC - 10	-	-	-	50	50	100	4	-	-	4	2
		Total					**450**	**350**	**800**	**36**	-	-	36	18
Additional Course for Honors or Minor Specialization			Permitted to opt for maximum two additional courses for the award of Honors or Minor specialization											

for W.E.F. JULY 2017 batch

Bachelor of Architecture, Fifth Year, IX Semester

S.No.	Subject Code	Subject Name & Title	Category	Maximum Marks Allotted					Total Marks	Min. Working HRS/ Week	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem. Exam	Quiz/ Assignment	End Sem.	Term Work / Lab Work & Sessional			L	T	P	
1	210901	Professional Training	PAU - 6	-	-	-	400	300	700	36	-	-	36	18
2	210902	Critical Appraisal (Architectural Case Studies and Book Review)	SEC - 10	-	-	-	50	50	100	4	-	-	4	2
		Total		-	-	-	**450**	**350**	**800**	**40**	-	-	40	20
Additional Course for Honors or Minor Specialization			Permitted to opt for maximum two additional courses for the award of Honors or Minor specialization											

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A Govt. Aided UGC Autonomous Institute Affiliated to RGPV, Bhopal)

for JULY 2017batch only

Bachelor of Architecture, Fifth Year, X Semester

S.No.	Subject Code	Subject Name & Title	Category	Maximum Marks Allotted					Total Marks	Contact Hours	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem. Exam	Quiz/ Assignment / Sessional	End Sem.	Term Work / Lab Work & Sessional			L	T	P	
1	214001	Thesis Project	DC-10	0	0	0	300	200	500	14	0	0	14(15)	21
2	214002	Professional Practice & Ethics	PAEC-5	50	30	20	0	0	100	3	2	1	-	3
3	214003	Innovative Technical Contribution	SEC-11	0	0	0	20	30	50	4	0	0	4	2
	214004	ELECTIVE – 7 PROFESSIONAL CERTIFICATION COURSE	DC-7	50	30	20	20	30	150	5	2	1	2	4
		Total		100	60	40	340	260	800	26	4	2	20	30
Additional Course for Honors or Minor Specialization				Permitted to opt for maximum two additional courses for the award of Honors or Minor specialization										

*Thesis/Design Studio/ Construction Studio/ Project/ Thesis Period/ Hour shall have 1.5 Credit

Contribution in NASA work/ Architecture competition participations, etc will also be evaluated in Subject 214003 through five year work records and presentation

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A Govt. Aided UGC Autonomous Institute Affiliated to RGPV, Bhopal)

Scheme of Examination

Bachelor of Architecture, Fifth Year, X Semester

S.No.	Subject Code	Subject Name & Title	Category	Maximum Marks Allotted					Total Marks	Contact Hours	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem. Exam	Quiz/ Assignment / Sessional	End Sem.	Term Work Lab Work & Sessional			L	T	P	
1	211001	Thesis Project	DS - 10	0	0	0	300	200	500	12	0	0	12(1.5)	18
2	211002	Professional Practice & Ethics	PAVA - 7	50	30	20	0	0	100	3	2	1	0	3
3	211003	Innovative Technical Contributions	SUC - 11	0	0	0	20	30	50	2	0	0	2	1
	211004	ELECTIVE - 7 PROFESSIONAL ELECTIVE COURSE	ID - 7	50	30	20	20	30	150	5	2	1	2	4
		Total		100	60	40	340	260	800	22	4	2	16	26
Additional Courses for Honors or Minor Specialization				Permitted to opt for maximum two additional courses for the award of Honors or Minor specialization										

*One Design Studio/ Construction Studio/ Project/ Thesis Period/ Hour shall have 1.5 Credit

Contributions in NASA work, Architecture competition participations, etc will also be evaluated in Subject 211003 through five year work records and presentation.

First Year First Semester

1. Architecture Design – I (Code - 210101)

Objectives –

The course aims to obtain the fundamentals of design – elements and principles that govern the aesthetic aspects of design, experimental understanding on graphic elements and compositions in 2D / 3D, experimental understanding of colours, textures and compositions. Experimental understanding of form building, experimental understanding of design.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CTHRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
1	210101	Architecture Design – I	DC-1	100	30	20	50	50	250	7	2	3	2(1.5)	8

UNIT-1 GRAPHIC ELEMENTS, COMPOSITIONS & COLOURS – 2D

Impart elements and principles of design theory with sample exercises supported by illustrative PowerPoint presentations.

Exercises:

Dots, lines, shapes & forms

Hatching patterns

2D compositions with geometric & organic shapes

Impart colour theory with sample exercises supported by illustrative ppt presentations.

Colour compositions on 2d compositions.

Textures replacing colours.

UNIT-2 3DCOMPOSITIONS / COLOUR & TEXTURE APPLICATIONS

Texture portfolio

3D compositions with geometric & organic forms (model)

Color compositions on 3D compositions (model)

Texture applications& material compositions (model)

UNIT-3 2D & 3D ABSTRACTIONS

2D image abstraction (colour, black/white, grey tone/mono colour, textures)

3D image abstraction (colour, black/white, grey tone/mono colour, textures)

3D model abstraction (colour)

UNIT-4 FORM BUILDING(MODELS)

Make a vivid PowerPoint presentation / video presentation on form building models with ample samples

Exercises:

3D sculpture exercises (additive& subtractive forms – solids & voids)

Space frame model using a linear module (space creation)

Origami models (space creation + solids & voids)

Life scale models (group)

UNIT-5 PRODUCT DESIGN

Make a vivid PowerPoint presentation on product design with emphasis on user, purpose, material & form.

Exercises:

- Small scale product design
- Life scale furniture design (group)
- 3D model abstraction (colour)

COURSE OUTCOME: After completion of this course student will be able to-

CO1	**Identify** the elements and principle of design theory
CO2	**Associate** various graphical elements
CO3	**Apply** principle of design/additive & subtractive form (using 2d/ 3d compositions)
CO4	**Illustrate** the color theory principles using color compositions & texture
CO5	**Evaluate** the geometric & organic forms (2D & 3D in building)
CO6	**Develop** analytical thinking towards spatial analyses of visual culture

REFERENCES:

1. Charles Wallschlacgerm& Cynthia Busic-Snyder, Basic Visual Concepts and Principles for Artists, Architects and Designers, McGraw Hill, New York 1992.
2. V.S. Pramar, Design fundamentals in Architecture, Somaiya Publications Pvt. Ltd., New Delhi, 1973.
3. Francis D. K. Ching - Architecture - Form Space and Order Van Nostrand Reinhold, Co., (Canada), 1979.
4. Elda Fezei, Henry Moore, Hamlyn, London, New York, Sydney, Toronto, 1972.
5. Exner. V, Pressel. D, Basics Spatial Design, Birkhanser, 2009

Note: Five questions shall be asked. All questions may have equal or varied weightage in end semester exams.

2. Architectural Materials (Code - 210102)

Objectives –

The course aims to obtain various materials and systems, their properties and applications, develop a fundamental understanding of the relationship of materiality to construction systems and techniques, the intrinsic relationship of building materials to structural systems and environmental performance.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
2	210102	Architectural Materials	BSAE-1	50	30	20	-	-	100	3	2	1	-	3

UNIT-1

- Clay and clay products (bricks, tiles), stones
- Cement, lime, sand, aggregate mortar and concrete blocks.

UNIT-2

- Timber types, qualities and defects in timber seasoning etc. complete.
- Processed materials- plywood, laminates, fiberboards, light weight boards, panels etc. & clay products.

UNIT-3

- Special functional need and category of building materials abrasives, adhesives, asbestos, asphalt, bitumen, cork, electrical insulators, fuels, gypsum, heat insulation materials, lubricants, rubber sheets, roof coverings, solders, sound absorb materials, tar, turpentine etc.
- Proprietary building materials:- Paints, Varnishes, distempers wall paper, floor coverings, tiles, vinyl's, polyesters, fittings, furnishing materials for interiors & exteriors polymers, plastics resins and advanced surface finishes for interior and exterior etc.

UNIT-4

- Metals- ferrous and non ferrous, glass and its uses in building industries
- Prefabricated and pre-stressed building component: roof slabs, wall units, beams, columns, lintels, shelve etc. of different types, their specification & technique of construction and its use in architecture.

UNIT-5

- Low-cost construction techniques and materials, combinations in mud, terra - cotta, Bamboo as plant classification, species, geographical distribution, Anatomy of Bamboo, Properties, strength, processing, harvesting, working of Bamboo tools – Treatment and preservation of Bamboo and uses of Bamboo. Termite protection, sewage protection, fire protection materials etc. of special need.
- Industrial, agricultural and mineral wastes and their utilization as building materials: Fly ash, blast furnace slag, calcium carbonate, lime kiln rejects, by-product, gypsum, red mud, throw-away packages, rice husk, saw dust, wooden chips, choir waste, wood wool, tailings etc. their application in components of different types of buildings.

Note: Assignments should be in the form of small reports, market surveys, seminars and notes on above mentioned topics. The works of CBRI, NBO, HUDCO and other related institutions be referred and discussed.

COURSE OUTCOME: After completion of this course student will be able to-

CO1	**Classify** different types of building materials used primarily in building construction work
CO2	**Analyze** building materials and its influence on prevailing architectural styles
CO3	**Illustrate** specific use of materials and ascertain their application
CO4	**finalize** specific building materials for different types of buildings
CO5	**Consider** local material and its application techniques for low cost construction
CO6	**Integrate** the market survey of different types of material

TEXT BOOKS:

1. S.C. RANGWALA, "Engineering Materials" Published 2012
2. S.P. ARORA & BINDRA, "Building Construction" Published Dec 2010

REFERENCE BOOKS:

1. Advances in Building Materials and Construction, CBRI.
2. Specification Year Book

3. Graphics – I (Code – 210103)

Objectives –

The course aims to obtain presentation skills, visual expression and representation, imaginative thinking and creativity through a hands on working with various mediums and materials, grammar of art by involving them in a series of free hand exercises both indoor and outdoor to understand form, proportion, scale, etc., exercises that look at graphic and abstract representations of art, concepts and fundamentals of Architectural Drawing, language of architecture & buildings as two dimensional and three dimensional representations.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
3	210103	Graphics – I	DC- 2	50	30	20	50	50	200	7	2	3	2	6

UNIT-1 INTRODUCTION TO DRAWING

Introduction to drawing instruments and their use

Lettering and Dimensioning: Introduction to architectural lettering, styles, proportion and scale, Methods of dimensioning

Lines: different types of lines, their thickness and applications in architectural drawing.

Scale: Architectural Metric scale, necessity of scaled drawing, selection of scale while preparing architectural drawing.

UNIT-2 GEOMETRICAL DRAWING

Introduction to plane geometry: Construction and development of planar surface-square, rectangle, polygon etc.

Construction of conic sections: Ellipse, parabola and hyperbola

Introduction to orthographic projection: Representation of geometric solids in terms of plan, elevation and side elevation in first angle projection – exercise on simple solids.

UNIT-3 ISOMETRIC VIEW / AXONOMETRIC VIEW

Isometric view: Isometric view of solids, Isometric application in building–buildings with different shape and different types of roofs to include pitched roof, hipped roof, flat roof, vault, cone, dome etc. Conversion of solids to orthographic projection and vice versa.

UNIT-4 BUILDING ELEMENTS AND BUILDING COMPONENTS

Building Elements: Techniques of representing building elements such as doors, windows, steps, chajja, porch, canopy, balcony, parapet, foundation, walls, roofs, column, staircase, difference of levels, furniture fittings such as hand wash basins, WC pans, traps etc. on drawings in plan, elevation and section.

Material Indications: Symbolic representation of building materials as specified by Indian Standard Code of practice.

Building components: Components of a simple residential building through plan, elevation and section.

UNIT-5 ISOMETRIC VIEW / AXONOMETRIC VIEW OF BUILDINGS

Isometric view: Exterior view of a simple residential building showing all building components.

Axonometric view: Axonometric view of a room interior showing all interior components.

COURSE OUTCOME: After completion of this course student will be able to-

CO1	**Visualize** the language of architecture & buildings through as two dimensional and three dimensional representations
CO2	**Interpret** architectural geometry by applying fundamental principles of drawing
CO3	**Develop** the capability of ideation and 3D modeling using drafting tools
CO4	**Describe** spatial relationship using sequential thinking
CO5	**Solve** basic problems involving graphics and spatial manipulations for architectural applications to represent the future forms of her/his projects
CO6	**Express** her/his ideas by drawing using representation techniques and tools in the spatial concept and

REFERENCES:

1. K. Venugopalet al., "Engineering Drawing + AutoCAD", New Age International Publishers, 2010.
2. Francis D.K Ching, "Architectural Graphics- Fifth Edition", John Wiley and Sons, New Jersey,2009.
3. N.D. Bhatt et al., "Engineering Drawing" (53rd Edition), Charotar Publishing House, Anand, India,2014.
4. Morris et al., "Geometrical Drawing for Art Students", Universities press, 2012.
5. Leslie Martin C., "Architectural Graphics", The Macmillan Company, New York, 1978.

Note: Four questions shall be asked. First question will contain 20marks & will be compulsory. Other three questions will be of equal marks and one question may have option.

4. Structure – I (Code – 210108)

Objectives –

The course aims to obtain understanding the basic knowledge & overview of structural systems used in buildings, historical development of structural form and the evolution of structural design knowledge, from Gothic cathedrals to long span structural systems, principles of structural mechanics & how bending moment and shear force diagrams are used to analyze simple structural behavior.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
6	210108	Structure -I	BSA E- 2	50	30	20	-	-	100	3	2	1	-	3

UNIT-1

Statics of a particle, composition and resolution of forces, moment of a force, parallel forces, couples, general conditions of equilibrium.

UNIT-2

Center of gravity and moment of inertia of composition and cut out sections, parallel and Perpendicular axes theorem, stability of equilibrium

UNIT-3

Simple stresses and strains, direct stresses, compound stresses

UNIT-4

Shear force and bending moments for strained beams subjected to concentrated load and Distributed loadings (Simply supported and cantilever only) support reactions.

UNIT-5

Stress in beams: Direct, bending and shearing stress in beams.

Note: Assignments work should include design and analysis of simple elements as stated above with drawings.

COURSE OUTCOME:- After completion of this course student will be able to-

CO1	**Elaborate** various principles of strength of materials and behavior of forces
CO2	**Establish** relationship between the bending to the material property and geometry
CO3	**Apply** pure bending and shear equation
CO4	**Analysis** the stress and strain conditions due to bi-axial stress system
CO5	**Compute** stresses at various level of beam
CO6	**Compute** support reactions in simply supported, cantilever and over-hang beams for a given set of loading

TEXT BOOKS:

1. S.B. JUNNARKAR, "Applied Mechanics"2015
2. RAMAMURTHAM, "Applied Mechanics"2010
3. S.B. JUNNARKAR/H.J. SHAH, "Mechanics of Structure Vol.1" : 32nd Edition : 2016
4. DR. B.C. PUNAMIA, "Strength of Materials" 2018

REFERENCE BOOKS:

IS Codes

1. IS 465: 2000
2. SP-16 3
3. SP-34

5. History of Architecture- I (Code – 210105)

Objectives –

The course aims to obtain knowledge of evolution with regarding to Indian architecture, in India as this is an integrated expression of art, culture, vernacular material and techniques of the place, designs that are rooted in this country and suitable to the lifestyle of its people, varied culture and the resulting architectural productions which are unique in time and place.

Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
			Theory Slot			Practical Slot				L	T	P	
			End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
210105	History of Architecture- I	DC- 3	50	30	20	-	-	100	3	2	1	-	3

UNIT-1RIVER VALLEY CIVILIZATIONS OF INDIA

Pre historic civilization, Neolithic & Paleolithic.Indus Valley Civilization: culture and pattern of settlement.- Aryan civilization – theories and debates of origin- origins of early Hinduism - Vedic culture - Vedic village and rudimentary forms of bamboo and wooden construction - origins of Buddhism and Jainism

UNIT-2 BUDDHIST ARCHITECTURE

Evolution of Ashoka's School of art and architecture - Examples – Ashokan Pillar at Sarnath andSanchistupa.Chaitya hall and Vihara - Buddhist rock cut architecture Examples - Chaitya hall at Karli, Viharas at Nasik.

UNIT-3 EGPYTIAN ARCHITECTURE

Study of the influences & architectural character of ancient Egypt with relevant examples of Tomb & Temple structures (Cult and Mortuary temples), Mastaba – development and typical components of Pyramids – Complex of Zoser, Pyramid of Cheops and Cephren

UNIT-4 WEST ASIATIC ARCHITECTURE Study of Mesopotamian architecture, Urbanization in the Fertile Crescent – Sumerian, Babylonian, Assyrian and Persian (with examples of Ziggurat, Sargon palace & Palace of Persepolis).Mayan Civilization- Ceremonial platforms, palaces, pyramids and temples.

UNIT-5INTRODUCTION TO SOUTH EAST ASIAN AND EAST ASIAN ARCHITECTURE

Study of architectural character of south Asian countries- Burma, Thailand, Cambodia etc.Study of relevant examples like Angkor wat Cambodia etc.

Introduction to Chinese architecture and typical examples of Pagoda, Pylons, Great Wall of China, temples etc.

Introduction to Japanese architecture, its characteristic features and typical examples Pagoda, temples, monasteries, tea house etc.

COURSE OUTCOME: After completion of this course student will be able to-

CO1	**Visualize** basic concepts regarding the historical and architectural development in ancient civilization as an integrated expression of art, culture, vernacular material and techniques of the place
CO2	**Observe** diverse artistic and architectural expressions with regard to the historical context in which they are developed
CO3	**Illustrate** visual and verbal vocabularies of Indian, Egyptian, west Asiatic and Eastern Architecture
CO4	**Evaluate** architectural forms and space with reference to technology, style and character
CO5	**Reproduce** with sketches, audio and visuals various architectural forms and styles
CO6	**Develop** an appreciation of varied cultures and the resulting architectural productions which are unique in time and place & suitable to the lifestyle of its people

TEXT BOOKS:

1. SATISH GROVER, "The Architecture of Indian (Buddhist & Hindu)"
2. A VOLWANSEN, "Living Architecture (Indian)", Oxford & IBH London
3. Pier LuigiNervi, General Editor, "History of World Architecture – Series"

REFERENCE BOOKS:

1. PERCY BROWN, "Indian Architecture (Buddhist & Hindu), Taraporewala & Sons, Bombay. 2nd Edition
2. CHRISTOPHERTADGILL, "History of Architecture in India", Phaidon Press
3. History Of Architecture by Sir Bannister Fletcher 20th edition
4. The Story Of Architecture by Patrick Nuttgens 2nd Edition
5. Space, Time And Architecture by Siegfried Gideon 5th Edition

6. Workshop – I (Code – 210107)

Objectives –

The course aims to obtain the ability to appreciate the three dimensional implications of design and to introduce the students to the techniques of model making, basics of rendering, presentation skills &model making with various materials.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
6	210107	Workshop – I	SEC -1	-	-	-	20	30	50	4	-	-	4	2

UNIT-1 VISUAL ART

General characteristics of visual art/Fundamentals of visual art: Space, Form, size, Shape, Line, Color, Tone values, Perspective, Design and aesthetic organization of Visual elements in art object (Composition).The use of two and three dimensions in visual art. Tactile quality in art.Environment and art.Perceptual and conceptual aspects in art. Use of various kinds of papers in art making.

UNIT-2 CARPENTRY

Introduction to the carpentry tools, processes, joints and wood working machines. Preparation of various carpentry joints, fixing of plywood,Blackboards, commercial boards and their application in furniture. Models in appropriate materials for understanding of joinery in wooden construction.

UNIT-3 FOUNDRY

Introduction, type of patterns, pattern making, preparation of moulds and moulding equipment details.

UNIT-4 FABRICATION

Introduction to welding equipments, processes and its applications.

UNIT-5 PAINTING & POLISHING

Classification of paints, varnishes ingredients of paints, painting methods-brush, spray, hot spray etc.

COURSE OUTCOME: After completion of this course student will be able to-

CO1	**Review** various tools and techniques in visual communication and model making
CO2	**Incorporate** basics of rendering, presentation skills &model making with various materials
CO3	**Associate** properties of different materials and products for designing and model making
CO4	**Apply** two dimension and three dimension compositions to designing and model making
CO5	**Produce** art works from various materials individually and in team
CO6	**Integrate** these materials in creating their design models in further studies

REFERENCES

1. BENN, the book of the house .Ernest Benn limited London
2. Jannsen, Constructional Drawings & Architectural models, Kari Kramer Verlag Stuttgart, 1973.
3. Harry W.Smith, The art of making furniture in miniature, E.P.Duttor Inc., New York, 1982.
4. Thames and Hudson Manual of Rendering with Pen and Ink-Robert W Gill.

7. **Technical English (Code – 210109)**

Objectives –

The course aims to obtain communication skills in English by developing their listening, speaking, reading and writing skills, speaking skills with specific reference to prospective/actual clients, suppliers, business partners and colleagues, reading ability of journals, research articles etc & develop their writing skills especially writing project proposals and reports.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
7	210109	Technical English	SEC -2	50	30	20	-	-	100	2	1	1	-	2

Unit -1 Introduction to Language & Linguistics

An Introduction to Linguistics, IPA, English Phonetic Symbols/Sign & Sounds, Place & Manner of Articulation.

Unit -2 Communication

Communication: Approaches, Elements, Types, Process,Models; Management Communication (Levels of Communication) and Grapevine Communication, Verbal and Nonverbal Communication; Barriers to Communication; Johari Communication Window.

Unit-3 Application of Linguistic Ability

1. Listening: Factors Affecting Listening and Improving Listening.
2. Speaking: Making Speeches, Presentation, Group Discussion, Meeting, Interview, Debate.

Unit-4 Grammar & Vocabulary:

Grammar: Parts of Speech, Subject-verb Agreement, Active and Passive Voice, conditional sentences.
Vocabulary: Using the dictionary and thesaurus, word formation, prefix & suffix, idioms, phrasal verbs.

Unit-5 Report Writing:

Reading Comprehension: Stories, Passages, Poetry and Scientific Text
Writing: Essentials of good writing, Technical Descriptions of Simple Engineering Objects; Formal (Application, Email, CV, Résumé, Memo, Report writing)

*Material for story and prose is to be selected by concerned teacher in class.

COURSE OUTCOME: After completion of this course student will be able to-

CO1	**Speak** clearly effectively and appropriately in a public forum to a variety of audiences and purposes (LOTS1)
CO2	**Prepare and deliver** oral presentations and arguments acceptable within the Engineering Profession effectively (LOTS3)
CO3	**Demonstrate** knowledge and comprehension of major text and traditions in language as well as its social, cultural and historic context (LOTS3)
CO4	**Read** a variety of text critically and analytically so as to demonstrate in writing and / or speech the interpretations of those texts (HOTS4)
CO5	**Interpret** text written in English assessing the result in written and oral arguments using appropriate material for support (HOTS3)
CO6	**Implement** professional work habits, including those necessary for effective collaboration and corporation with others (HOTS4)

Reference Books: -

- Technical Communication — By Meenakshi Raman, OUP. 2015
- Understanding Human Communication — By Ronald Alderman by OUP2016
- Communication Skills for Engineers – Pearson Education.
- Effective Business communication – Tata McGraw Hill 2008
- Business Communication – OUP, Tata McGraw. 2005
- Practical English Grammar by Thomson Martinet – Oxford University Press 1986
- A Handbook of Language laboratory by Cambridge University Press 2009

First Year Second Semester

1. Architecture Design – II (Code – 210201)

Objective –

The course aims to obtain o learn the basic principles of space making, the forms of building through intensive design studio practice.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
1	210201	Architecture Design – II	DC- 4	100	30	20	50	50	250	7	2	3	2(1.5)	8

PROCESS:

- Fragment the pre design process and help students build formats/templates for analysis. Guide to derive architectural design data through various studies
- Guide to program and to understand the causes for architectural spaces Guide to understand context & its influences
- Guide to learn and experiment the design process
- Guide to conceptualize the design/evolution of architecture Guide to document the design project

Note: minimum four design problem s shall be introduces in the semester out of which, one major problem one small problem and two shall be time bound problem.Learning the basic principles of space making and form building through intensive design studio practice

PROJECT 1(Prototype): SINGLE SPACE DESIGN

Enlighten the student on the design project overview & the design process to be followed through relevant presentations.

Present an analytical discourse on an identical architectural design project covering

a) Architectural elements & relevant architectural terms
b) Space planning (response to user & purpose with logic & application of standards)
c) Material, form & structure
d) Aesthetics & visual perceptions

PROJECT 2(Prototype): SMALL SCALE MULTI-SPACE DESIGN

Enlighten the student on the design project overview & the design process to be followed through relevant presentations.

Present an analytical discourse on an identical architectural design project covering

a) Architectural, elements, spaces & terms
b) Noted projects & architects
c) Space planning (response to user & purpose with logic & application of standards)
d) Site planning (contextual response, response to the natural environment, response to views + general site planning guidelines)
e) Material, form & structure
f) Aesthetics & visual perceptions

PROJECT 3 & 4(Prototype). Time bound Problems of 6 hours to 48 hours

COURSE OUTCOME: After completion of this course student will be able to-

CO1	**Interpret** architectural design fundamentals (Relationship between people to built forms & built forms to environment)
CO2	**Summarize** different functional spaces and their space requirements
CO3	**Identify** human standards of design based on ergonomics
CO4	**Analyze** pre-design process, design process & conceptualization stages in design
CO5	**Design** objects based on the concept of space and form by modifying and evaluating an existing space
CO6	**Express** their designs through communication skills – verbal, script & graphics

REFERENCES:

1. Mike W.Lin, Drawing & Designing with confidence – A step by step guide, John Wiley &sons,USA,1998
2. CrissB Mills, Designing with models : A Studio guide to making & using architectural models, Thomson & Wadsworth, USA,2000. 1st Edition
3. DeChiara and Callender, Time saver standards for building types, McGraw hill company 1990
4. BousmahaBaiche& Nicholas Walliman, Neufert Architect's data, Blackwell science ltd. 3rd Revised editio
5. Ramsey / Sleeper,National Architectural graphic standards, The American Institute of Architects 12th Edition (AGS 12e) , 2016
6. Space Planning Basics - Mark Karlen 2016

Note: Two small design problems shall be given in End Semester Examination.

6 hours examination.

2. Building Construction – I (Code – 210202)

Objective –

The course aims to obtain knowledge basic building components and doors, windows, different types of materials and their use in construction, the different materials& technology available & their application, the various types of roofing and its materials.

Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
			Theory Slot			Practical Slot				L	T	P	
			End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
210202	Building Construction - I	BSAE- 3	50	30	20	20	30	150	5	2	1	2(1.5)	6

UNIT-1 BUILDING MATERIALS

Stones, Wood, Bricks & Clay products

Basic knowledge of different building materials available, Contextual relevance- what are buildings made of- Natural and artificial materials- where they are used. Materials shall be studied by understanding their properties & applications.

UNIT-2 BASIC BUILDING COMPONENTS

Cross section of a G+1 building to understand foundation, plinth beam ,flooring, sill, lintel, roof beam and slabs, parapet & weathering course

Foundation: typical types of foundation in stone, brick & RCC. Timbering of trenches, tool, plants and equipments for excavation.

UNIT-3 Wall and Masonry

Walls: Types of bricks and stone and their uses.

Brick, definition and types of masonry- types of bond: English, Flemish & rat trap bond for one brick and half thick wall for corners and T- Junctions, Garden wall bond & ornamental bond.

Piers and Quoins.

UNIT -4 Openings

Doors , Braced, panel, flush doors, carved entrance doors, and partially glassed doors, Windows casement window (Without Mullion) , bay window, and French window. Ventilators, Louvered & Top hung ventilator.

Different types of arches, arches in brick and stone (flat, segmental, semi circular and pointed, plastering and pointing)

Lintels and sills (inbrick and stone)

UNIT-5 ROOFS

Simple configurations and details of various forms of roofs. (flat, sloped, pyramids and dome)

COURSE OUTCOME- After completion of this course student will be able to-

CO1	**Elaborate** materials and systems, their properties and applications, and their intrinsic relationship to structural systems and environmental performance
CO2	**Compare** the material and construction techniques through site visit and market surveys
CO3	**Develop** a fundamental understanding of the relationship of materiality to construction systems and techniques
CO4	**Illustrate** basic components of a building with its construction details such as Foundation Footing, Wall section, Roofs, and Interior details
CO5	**Produce** detail construction drawings sets of building components and construction techniques
CO6	**Demonstrate** the Studio work using communication skills

REFERENCES:

1. W.B. Mckay – Building construction Vol. 1 (5th edition), Vol. 2 (4th edition) and Vol. 3 (5th edition). ***Fifth edition*** (2013)
2. S.C.Rangwala – Engineering materials (Fortieth edition, 2013) – Charotar Publishing pvt.ltd. ***40th*** Revised and Enlarged ***2013***
3. Harold B.Olin, John L. Schmidt – Construction principles, Materials and Methods – John Wiley & Sons, Inc. 1995
4. Dr. B.C Punmia – Building construction (10th edition) - Laxmi Publications.
5. Roy Chudley (Author), Roger Greeno (Author) -construction Technology, 4th Edition, 1995
6. S.K. Duggal- Building materials (4th edition) – New age international publishers. 4th revised edition 2012
7. Bureau of Indian standards - Handbook on Masonry Design and Construction (First Revision) 1991
8. Hans Bans –Building construction details practical drawing, 2001.

Note: Total five questions shall be asked. Each question will consist of two parts, one of which will be of 7 marks (which shall be compulsory) and another with 3 marks(which shall be optional).

3. Graphics – II (Code – 210203)

Objectives –

The course aims to obtain the skill of representation in advance drawing techniques, perspective, sciography and Measured Drawing.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CTHRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
3	210203	Graphics – II	DC- 5	50	30	20	20	30	150	4	1	1	2	3

UNIT-1 ELEMENTS AND PRINCIPLES OF PERSPECTIVE DRAWING

Principles of perspective drawings and understanding of all relevant terms like Picture Plane, Centre line of vision, Eye Level, Height Line, Vanishing Points, Cone of Vision, Station Point, Horizon line, Ground line etc. Basic principles of perspective drawing , Various types of perspectives - One point perspective, Two point perspective and three point perspective

Exercise on two point exterior perspectives of simple objects and their combination by changing positions of picture plane and stand point in form of Worm's eye view, Normal eye view and Birds eye view.

UNIT-2 TWO POINT PERSPECTIVE VIEW OF BUILDINGS

Construction of Two point perspective grid.

Exercise on Two point Perspective of building Interior by Direct projection Method / Approximate Method.
Exercise on Two point Perspective of building exterior by Direct projection Method / Approximate Method.
Exercise on Sectional perspective

UNIT-3 ONE POINT INTERIOR PERSPECTIVE

Construction of One point perspective grid

Exercise on One point Interior view of any room viz Bed Room, Kitchen, Drawing room etc. by Direct projection Method / Approximate Method

UNIT-4 SCIOGRAPHY

(a) Principles of Shades and shadows - Techniques of drawing shades and shadows of lines, planes, solids and Architectural Building Elements.

(b) Exercise on Shade and shadow of typical building on Elevation and Site Plan
(c) Exercise on Shades and Shadows in perspective.

UNIT-5 MEASURED DRAWING

Measured drawing of single storied building(s) : To measure and draw the Ground Floor Plan along with plot boundaries, four side elevations, two sections, block plan, site plan of existing single storied building (maximum of 100.0 sq. m. Plinth area). In addition to this drawings shall be prepared based on examples of buildings by giving a sketch design (maximum of 100.0 sq. m Plinth area).

Exercises to include application of shade and shadow in site plan, elevation and exterior perspective.

COURSE OUTCOME: After completion of this course student will be able to-

CO1	**Communicate** their ideas through various drawings
CO2	**Visualize** the design ideas from various angles
CO3	**Represent** advance drawing techniques involving perspective, sciography
CO4	**Produce** architectural drawings using perspective, sciography
CO5	**Prepare** Measured Drawing of any historical building
CO6	**Integrate** these techniques in creating their design drawings in further studies

REFERENCES:

Robert W.Gill, "Perspective From Basic To Creative", Thames and Hudson, London, 2006
1. Francis D.K Ching, "Architectural Graphics- Fifth Edition", John Wiley and Sons, New Jersey,2009.
2. John Montague, "Basic perspective Drawing A Visual Approach", John Wiley and Sons, NewJersey, 2009.
3. MilindMulick, "Perspective", Jyotsnaprakashan, 2006
4. Ernest Norling, "Perspective Made Easy", Dover publications, 1999
5. M.G. Shah & C.M. Kale, "Principles of Perspective Drawing", Asia publishing House, 1965

Note: Four questions shall be asked. First question will contain 20marks & will be compulsory. Other three questions will be of equal marks and one question may have option.

4. Structure – II (Code – 210208)

Objectives –

The course aims to obtain basic knowledge & overview of structural systems used in buildings, the structural form and the evolution of structural design knowledge, from Gothic cathedrals to long span structural systems, simple structural behavior.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
6	210208	Structure -II	BSAE- 4	50	30	20	-	-	100	3	2	1	-	3

UNIT-1 OVERVIEW OF VARIOUS TYPES OF STRUCTURAL SYSTEMS IN ARCHITECTURE

Simple RCC frame system used for small span buildings –vaults & domes of various spans – types of trusses & their application for industrial buildings – various configurations in rcc roof slab – RCC folded plate roofing systems – Various types of shell structures – Space frames in steel used for large spans – Tensile structural systems – Suitable examples for all these structural systems.

UNIT-2 BASIC STRUCTURAL CONCEPTS

Various types of loads in buildings – compression and tension in structures – Effect of temperature & settlement on buildings – properties of structural materials such as steel, concrete, RCC, wood, brick & stone – Evolution of the concept of span from architectural history. Temples in Egypt, Greece, South India, Indo-Aryanetc – Vaults & domes in historical buildings; Domes in Pantheon&Hagia Sophia, Vaults during Romanesque, Gothic & Mughal period .

UNIT-3 REINFORCED CEMENT CONCRETE STRUCTURES

Simply spanned RCC slabs & load bearing walls – one way &two way RCC slabs – coffer slab, grid beam slab in RCC – vault, dome, pitched roof, hipped roof in RCC -simple RCC frame structural system up to 5 floors – their application with suitable examples. Concept &various configurations of the folded slab roof – Concept of thin shells – simply curved & doubly curved shells, interpenetrating cylindrical shells, hyperbolic paraboloids, HyPars etc.

UNIT-4 STEEL STRUCTURAL SYSTEMS

Simple steel truss - members in tension & compression – various types of trusses – Warren, Pratt, Fink, Howe, Bowstring, mansard etc – girders & trusses in saw tooth roof configuration. Steel frame domes – Fuller, Geodesic, schwedler dome configurations - Concept of Space frames: various types, single, double & triple layered tubular steel space frames & their use as long span structural system – Concept of tensile roofing system – saddle roof, mast supported, Arch supported, Point supported & their combinations – tensegrity roof structures.

UNIT-5 STRUCTURAL MECHANICS

Composition and Resolution of Forces – concept of stress / strain, young's modulus, typical stress strain curve for ductile & rigid materials, Hooke; law – Theory of Bending Moment & Shear force – their application in buildings for various loads & support conditions (Simply supported, Cantilevered, continuous etc). Simple problems on the above mentioned.

COURSE OUTCOME: After completion of this course student will be able to-

CO1	**Identify** the concept of various structural elements and system
CO2	**Illustrate** the use of different structural systems in building industry
CO3	**Analyze** the structural geometry based on strength and stability criteria
CO4	**Appraise** the built environment based on specific structural system
CO5	**Analyze** simple structural behavior using bending moment and shear force diagrams
CO6	**Apply** basic principles of structural mechanics

REFERENCES:

1. Henry J.Cowan, Forrest Wilson, *Structural Systems*, Van Nostrand Reinhold Company, New York. 1981
2. Bjorn N Sandekar et al, The structural basics of Architecture – 2nd edition, Routledge, Newyork, 2011.
3. Mario Salvadori, Robert Heller, *Structure in Architecture*, Prentice International Series in Architecture, New Jersey, 15th Printing edition (**1963**)
4. Wayne Place, Architectural structures, John wiley& sons, Canada, 2007
5. Curt Siegel, Structure and Form in Modern architecture, Reinhold publishing corporation, Newyork, (1966)
6. Rowland J. Mainstone, Developments in Structural form, Architectural press, Oxford, 1975,1999

5. **History of Architecture- II (Code – 210205)**

Objectives –

The course aims to obtain knowledge of evolution with regarding to Indian architecture, in India as this is an integrated expression of art, culture, vernacular material and techniques of the place, designs those are rooted in this country and suitable to the lifestyle of its people, varied culture and the resulting architectural productions which are unique in time and place.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
5	210205	History of Architecture- II	DC- 6	50	30	20	-	-	100	3	2	1	-	3

UNIT-1 EVOLUTION OF HINDU TEMPLE ARCHITECTURE:

Hindu forms of worship – evolution of temple form - meaning, symbolism, ritual and social importance of temple - categories of temple - elements of temple architecture - early shrines of the Gupta and Chalukyan periods Tigawa temple - Ladh Khan and Durga temple, Aihole - Papanatha, Virupaksha temples, Pattadakal- Kailasanatha temple, Ellora.

UNIT-2 NORTHERN INDIAN TEMPLES :

Temple architecture of Gujarat, Orissa, Madhya Pradesh and Rajasthan - their salient features.

Lingaraja Temple, Bhubaneswar - Sun temple, Konark. – Somnathtemple, Gujarat, Surya kund, Modhera, Khajuraho, Madhya Pradesh - Dilwara temple, Mt. Abu.

UNIT-3 DRAVIDIAN STYLE TEMPLES :

Brief history of South India - relation between Bhakti period and temple architecture - of templetowns - Dravidian Order - evolution and form of GopuramRock cut productions under Pallavas . Dravidian style – Definition / explanation of Mandapas&Rathas. Masonry temples & Rock cut architecture of Pallavas - Shore temple and five rathas at Mahabalipuram and Kailasanathar temple at Kanchipuram - Dravidian Orders – evolution of Dravidian orders under pallavas, chola's and pandya's. Example of Chola style - Brihadeeswara temple at Tanjore - Evolution of Gopuram& temple complexes – Example of Pandyan style - Meenakshiamman temple, Madurai, temple towns: Madurai,Srirangam and Kanchipuram.Hoysale architecture: Belur and Halebid.

UNIT – 4 INDO ARYAN ARCHITECTURE

Classification of Indo-Aryan temples, Salient features of an Indo Aryan Temple - Examples of Orissa style - Lingaraja temple at Bhubaneswar& Sun temple at Konark - Example of Madhya style - KandariyaMahadev temple at Khajuraho - Example of Gujarat style - Surya Temple at Modhera.

UNIT-5 ISLAMIC AND MUGHAL ARCHITECTURE

Introduction to Islamic culture worldwide, Classification of Islamic architecture in Indian, religious and secular typologies of Islamic architecture, Features of an Indian mosque, concept of squinch arches, and its variation. Examples under imperial style - Qutub Complex, Qutubminar and Alai Darwaza at Delhi - Tomb of GhiasuddinTughlaq, Lodi garden at Delhi. Characteristics of the provincial styles in different regions through examples - Punjab style - Tomb of shah RukniAlam - Bengal style - Chotasona masjid at Gaur - Gujarat style - Jami masjd at Ahmadabad - Deccan style –Golgumbaz at Bijapur and Charminar at Hyderabad.

Characteristics of Mughul architecture, planning, dome construction, materials. Development of the Mughal style under different rulers - Humayun- Humayuns Tomb at Delhi, Akbar- examples -FatehpurSikhri (planning, Bulanddarwaza, DiwaniKhas, Tomb of SalimChisti) and Akbars Tomb at Sikandara. Shahjahan - examples - The TajMahal at Agra - Red Fort at Delhi (Diwan-i- Aam, Diwanikhas, Mumtazmahal and Rang mahal)

COURSE OUTCOME: After completion of this course student will be able to-

CO1	**Summarize** basic concepts regarding the historical and architectural development in ancient India
CO2	**Observe** the diverse artistic and architectural expressions with regard to the historical context
CO3	**Illustrate** visual and verbal vocabularies of Indian Architecture
CO4	**Analyze** the diversity of imperial Indian Temple Architecture, Indian Mosques, Tombs, Forts, Cities, etc including the buildings viewed as architectural masterpieces, and their urban settings
CO5	**Appreciate** varied culture resulting in architectural productions which are unique in time and place & suitable to the lifestyle of its people
CO6	**Reproduce** with sketches, audio and visuals various architectural forms and styles

REFERENCES:

1. Percy Brown, Indian Architecture (Islamic Period) - Taraporevala and Sons, Bombay, 1983 revised edition 1995
2. Satish Grover, The Architecture of India (Buddhist and Hindu period), Vikas Publishing House, New Delhi, 1981
3. Satish Grover, The Architecture of India (Islamic)Vikas Publishing House Pvt. Ltd., New Delhi, 1981 revised edition 2009
4. Christopher Tadgell, The History of Architecture in India, Longman Group, U.K. Ltd., London, 1990
5. A.Volwahsen, Living Architecture - India (Buddhist and Hindu), Oxford and IBM, London, 1969.
6. George Mitchell, Monuments of India, Vol I, Buddhist, Jain, Hindu; Penguin books, 1990
7. Gateway to Indian Architecture, GuruswamyVaidyanathan, Edifice Publication, 2003
8. Architecture of the Islamic World - George Michell - (its history and social meaning), Thames and Hudson, London, 1978.
9. Islamic Architecture, Form, Function and Meaning, Robert Hillenbrand, Edinburgh University Press, 1994

6. **Theory Of Design (Code – 210206)**

Objectives –

The course aims to obtain the theoretical aspects of design and understand how it could be manifested in architectural design, the ideologies from works of architects and planners, the design communication skills to enable to put forth the design ideas in graphics and literature.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
6.	210206	Theory Of Design	DC- 7	50	30	20	-	-	100	2	2	-	-	2

UNIT-1 PRIMARY ELEMENTS IN ARCHITECTURE

Geometry in Architecture - points, lines and shapes.-Linear elements -planar elements and volumetric elements. Patterns in nature and building design.Order to chaos. Regularity and irregularity.

UNIT-2 FORM AND SPACE

Elements of spatial definition – form defining space - elevated base plane, depressed base plane-vertical and horizontal elements defining space -depth and density of space - spatial juxtaposition and interpenetration – spatial characteristics of elementary shapes - qualities of architectural space - degree of enclosure. Analysis of works of F.L Wright and Le Corbusier.

UNIT-3 ORDERING PRINCIPLES AND MEANING IN ARCHITECTURE

Ordering Principles-Axis -Symmetry -Hierarchy - Datum -Rhythm -Repetition -Transformation - Measure and balance – spaces on human scale - proportion -- Golden Section, Le modular, Fibonacci series – Renaissance Theories - anthromorphism and architecture - Figure and ground, positive and negative spaces.

UNIT-4 CONCEPTS IN ARCHITECTURAL DESIGN

Concept – types- Ideas and Intent in design - Intuitive, contextual, Iconic, Experiential, Symbolic, Modular. Ideologies and philosophies of architects' Case Studies. Importance of graphics in architectural design. Study of site plans, city plans, conceptual drawings. Interpretation of architects' conceptual sketches and the respective buildings. Vernacular Architecture. Western & Indian Philosopher.

UNIT-5 RESPONSIVE AND RESPONSIBLE ARCHITECTURE

Phenomena of perception – looking, listening, feeling and moving through architecture –light and shade – Architecture as Making Frames -. Environmental-Energy based

COURSE OUTCOME: After completion of this course student will be able to-

CO1	**Integrate** the design communication skills to enable to put forth the design ideas in graphics and literature
CO2	**Interpret** the ideologies from works of architects and planners
CO3	**Develop** awareness of the natural and built environments (past and present) through critical observation
CO4	**Analyze** ideas from abstract thinking
CO5	**Develop** an approach to architectural thinking
CO6	**Apply** theoretical aspects of design to architectural design

REFERENCES:

1. Francis D.K.Ching, Architecture-Form, Space and Order, Van Nostrand Reinhold Company, New York. 2007.
2. Simon Unwin, Analysing Architecture, Rouledge, London, 2003
3. V.S.Pramar, Design Fundamentals in Architecture, Somaiya Publications Private Ltd , New Delhi, 1973.
4. Peter von Meiss -Elements of architecture - from form to place, Spon Press 1992.
5. Steen Eiler Rasmussen - Experiencing architecture, MIT Press, 1964.

7. **Workshop – II (Code – 210207)**

Objectives –

The course aims to obtain the ability to appreciate the three dimensional implications of design and to introduce the students to the techniques of model making, basics of rendering , presentation skills &model making with various materials.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
7	210207	Workshop – II	SEC- 3	-	-	-	20	30	50	4	-	-	4	2

UNIT-1 MODEL MAKING

Use of clay, Plaster of Paris, metal scrap, metal sheets, jute fibre etc. for study of forms through models. Making models of the various structural systems used in buildings like Space frames – using Match sticks, wires. Different forms of shell roofs using POP, Clay, Soap Tensile structures using fabric.

UNIT-2

Development of surfaces of simple and composite forms using paper, Thermocol, wire, Wax, acrylic, sheets and similar materials. Introduction to metallic sections, joinery tools, joinery processes and working with them. Bonds in masonry based on the programme of building construction to make the various forms of masonry structures. Mixing of concrete, preparation of various objects

UNIT-3 INTRODUCTION TO MODEL MAKING AND BLOCK MODELLING

Introduction to concepts of model making and various materials used for model making Preparation of base for models using wood or boards. Introduction to block models of buildings (or 3D Compositions) involving the usage of various materials like Thermocol, Soap/Wax, Boards, Clay etc.

UNIT-4 DETAILED MODELLING

Making a detailed model which includes the representation of various building elements like Walls, Columns, Steps, Windows/glazing, Sunshades, using materials like Mount board, Snow-white board, and acrylic sheets. Representing various surface finishes like brick/stone representation, stucco finish etc. Various site elements– Contour representation, Roads/Pavements, Trees/Shrubs, Lawn, Water bodies, Street furniture, Fencing etc.

UNIT-5 PHOTOGRAPHY

Introduction to photography, use of camera, techniques in architectural photography.

COURSE OUTCOME: After completion of this course student will be able to-

CO1	**Incorporate** basics of rendering, presentation skills &model making with various materials
CO2	**Appreciate** three dimensional implications of design and techniques of model making
CO3	**Criticize** the properties of different materials for various products for designing and model making
CO4	**Review** requirements and design consideration of complementing field of architecture and designing such as photography and set designing
CO5	**Develop** small scale models using various building construction techniques
CO6	**Design** a functional model for real life situation

REFERENCES:

1. BENN, the book of the house ,Ernest Benn limited London
2 Jannsen, Constructional Drawings & Architectural models, Karl Kramer Verlag Stuttgart, 1973

Second Year Third Semester

1. Architectural Design – III (Code – 210301)

Objectives –

The course aims to obtain knowledge of Architecture as responding to site conditions, the designing process, spaces and relationship of architecture with personal traits, information and choices such as occupation, life style, religion etc.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
1.	210301	Architectural Design – III	DC- 8	100	30	20	50	50	250	7	2	3	2(1.5)	8

PROJECT 1(Prototype): TOWN HOUSE / VILLA

Study of contemporary practices & design for town houses and villas in urban areas, to sensitize the students towards life style, individual preferences, space – activity relationship and exploration of how material, color, texture and light affect the quality of spaces is the main focus. It is also intended as an exercise in massing & configuration of façade elements such as the balancing of solids & voids, adoption of a system of proportioning and elements of contemporary detailing. This design exercise will also attempt to involve the student in the built form / open space relationship & explore the connectivity between indoor & outdoor spaces.

PROJECT 2(Prototype): NUSERY / PRIMARY / SECONDARY SCHOOL

Case studies on contemporary trends in school design to know how various architects have responded to the design program, site conditions, student age group etc. The project aims to enlighten the student on how the school design responds to various education philosophy and grooming methods. The analysis of important functional aspects such as space adequacy, circulation in the built form and play areas, locating the various spaces according to functional adjacency and careful design of toilet areas is intended. The objective is to also optimize the variables of the physical environment such as thermal comfort, daylighting and noise control in design.

PROJECT 3 & 4(Prototype): Time bound Problems of 6 hours to 48 hours.

REFERENCES:

1. Time saver standards for building types, DeChiara and Callender, McGrawhill company.
2. Neufert Architect's data, Bousmaha Baiche& Nicholas Walliman, Blackwell science ltd.

Note: minimum four design problems shall be introduces in the semester out of which, one major problem one small problem and two shall be time bound problem.

Note: One design problem shall be given in End Semester Examination. 6X2 hours examination.

COURSE OUTCOME:-

After completion of this course student will be able to-

CO1	**Identify** spaces responding to site condition and personal issues such as occupation, lifestyle, religion etc.
CO2	**Analyze** how school designs respond to various education philosophy and grooming methods with help of case studies.
CO3	**Explore** the integration of classroom spaces with outdoor play areas in school buildings.
CO4	**Produce** sketches, models and photographs for analysis and design.
CO5	**Design** school buildings that respond to a particular educational philosophy.
CO6	**Design** independent residential buildings in urban areas with concepts that respond to personal preference & taste, family lifestyle, culture & site conditions.

2. Building Construction – II (Code - 210302)

Objectives –

The course aims to obtain knowledge about doors, windows, different types of materials and their use in construction, the different water proofing, damp proofing materials& technology available & their application, the vertical transportation designing& detailing.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
2.	210302	Building Construction - II	BSAE- 5	50	30	20	50	50	200	5	2	1	2(1.5)	6

UNIT-1 BUILDING MATERIALS

Non-Ferrous metals & Plastics

Properties and uses of aluminum, zinc, lead, copper etc., Thermoplastics and thermosetting plastics – properties and architectural uses of plastics. Structural plastics – Reinforced plastics and Decorative laminates-plastic coatings, Adhesives and sealants – Modifiers and Plasticizers – Fabrications of plastics. Primary plastic building products for walls, roof and partitions. Secondary building products for rooms, windows, roof lights, domes, gutters and handrails.

UNIT-2 FOUNDATION AND WALLS

Foundation and walls: Introduction of foundation and wall in stone masonry (Random rubble & Ashlar)foundation and walls in stabilized mud,rammed earth and compact earth blocks.
Introduction of different types of Foundation as per structure needs, soil condition and materials need.

UNIT-3 DOORS, WINDOWS & VENTILATORS

Timbers doors Study of various types of wooden joint. Different types of doors as per their utility, function., Details of single and double leaf ledged and battened doors , legged braced door, framed braced and battened door Paneled door, flush door, composite door etc.
Timbers Windows and ventilators, Different type of windows as per their utility and functions.
Casement window and side hug, top hug, fixed light of different size and shape.
Sliding pivoted (horizontal and vertical) folding and bay windows.
Combined doors and windows and ventilators

UNIT-4 STAIRCASES AND MASONRY

Staircases: Types according to profile–straight flight, doglegged, quarter turn half turn, bifurcated, spiral & Helical. Structural system for the above types sloped slab, cranked slab, cantilevered slab, continuous slab& folded plate, foundation for RCC stair case. Vertical transportation.

UNIT-5 DAMP PROOFING AND WATER PROOFING

Damp proofing: Hot applied and cold applied–Emulsified asphalt, Bentonite clay. Butyl rubber,silicones, Vinyl's, Epoxy resins and metallic water proofing materials, their properties and uses. Water proofing: water proofing membranes such as rag, asbestos, glass felt, plastic and synthetic rubber vinyl, butyl rubber, neoprene, polyvinyl chilnide – prefabricated membranes sheet lead, asphalt their properties and uses.
Application: application of the above in basement floor, swimming pool, and terraces.

COURSE OUTCOME:-

After completion of this course student will be able to-

CO1	**Classify** Non-ferrous metals in terms of their properties, manufacturing and their applications in architectural construction.
CO2	**Explain** the concept of foundation and wall in different type of masonry.
CO3	**Classify** various types of foundation according to structure, considering necessary parameters.
CO4	**Draw** types of timber doors, windows, ventilators and its joinery detail.
CO5	**Define** types of Vertical transportation systems in a building.
CO6	**Identify** Different water proofing and damp proofing materials and applied technology.

REFERENCES:

1. W.B. Mckay – Building construction Vol. 1 (5th edition), Vol. 2 (4th edition) and Vol. 3 (5th edition)
2. R.Chudley&R.Greeno – Building Construction Handbook, ninth edition
3. S.C.Rangwala – Engineering materials (Fortieth edition) – Charotar Publishing pvt ltd
4. P.C Varghese, "Building Materials", Prentice Hall of India Pvt. Ltd., New Delhi, 2005
5. Use of Bamboo and Reeds in building Construction – UNO Publications

Note: Total five questions shall be asked. Each question will consist of two parts, one of which will be of 7 marks (which shall be compulsory) and another with 3 marks(which shall be optional).

3. Graphics –III (Code – 210303)

Objectives –

The course aims to obtain knowledge of various softwares used for drafting, 3D model making, rendering and presentation, such as AutoCAD, Revit, 3Ds MAX, Photoshop, CorelDraw, etc. according to availability of experts.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
3.	210303	Graphics -III	PAEC- 1	-	-	-	50	50	100	6	-	-	6	3

COMPUTER AS A DRAFTING TOOL: Productivity tools in CAD, organization of layers for working drawings, use of blocks and symbols hatch patterns. Dimensioning systems extracting of areas from drawings, concept of paper space plotting the drawings

COMPUTER AS A DESIGN TOOI: Repetition of forms mirroring, coping, and array etc. calculation of areas, volumes. Creating and using templates, blocks, and symbols and using them in architectural drawings. - Managements of large drawing files. - Working in a network environment-Security systems-converting drawing files into Internet compatible files.

VISUAL COMMUNICATION

Photoshop: Creating and saving images, basic image editing, Photoshop tool box and tools, using layers, special effects.

MEASUREMENT DRAWING WITH THE HELP OF CAD

Exercise will be a group activity; to measure and draw the floor plan along with the plot boundaries, four side elevations, four sections, block plan, site plan of a large building or a settlement with the help of CAD. In addition to this drawing shall be prepared based on examples of buildings by giving a sketch design. Drawings shall be detailed enough to explain thecomplete design.

Note: Exercises of measurement drawings may be clubbed with study tour.

COURSE OUTCOME: -

After completion of this course student will be able to-

CO1	**Explain** fundamental principles of using graphical Software
CO2	**Develop** Basic skills in visual composition using Graphics
CO3	**Apply** productivity tools of 2D drawings
CO4	**Produce** presentations for corporate clients-using CAD drawings, pictures, 3Dimages, text etc.

REFERENCES:

1. User manual & tutorials of Google Sketch Up software.
2. Auto CAD reference manual – Autodesk UNC, 1998
3. Auto CAD architectural users guide – Autodesk Inc. 1998
4. Sham Tickoo, Advance Technique in Auto CAD Re 14 – 1977 6. Sham Tickoo. Understanding Auto CAD – 14 (windows) – 1977
5. Photoshop CS Bible – Deke McClelland.
6. Adobe Photoshop 7.0 classroom in a book – Adobe creative team.

Note: Four questions shall be asked. First question will contain 20marks & will be compulsory. Other three questions will be of equal marks and one question may have option.

4. Surveying and Leveling (Code – 210304)

Objectives –

The course aims to obtain knowledge of the basic process of land surveying and fundamentals of various types of surveys adopted in architecture and civil, use various surveying methods in practice, field survey and to prepare a layout for understanding.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
4.	210304	Surveying and Leveling	BSAE-6	50	30	20	-	-	100	3	1	2	-	3

UNIT-1

Aspects of surveying for the Architect. Surveying instruments classification by function. Useful data and formulae.

UNIT-2

Scales-Plain scale, diagonal scale, comparative scale, shrunk scale, vernier scale.

UNIT-3

Study, test, degree of accuracy, use and care of surveying instruments and accessories.

UNIT-4

Site survey techniques: Chain surveying, compass surveying, plain table, and theodolite.

UNIT-5

Leveling and contouring.

Note: Class work and field work of the above subject should be oriented towards the layout of buildings. Students should also be taken to site visits for explaining the practical aspects of surveying.

COURSE OUTCOME:-

After completion of this course student will be able to-

CO1	**Classify** Surveying instruments by their function
CO2	**Explain** the various types of modern survey
CO3	**Perform** the contour surveying with the help of leveling instrument
CO4	**Apply** the fundamental of chain and compass surveying for field survey
CO5	**Perform** site survey and make layout of buildings

LIST OF TEXT AND REFERENCE BOOKS:

1. T. P. KANETKAR & S.V. KULKARNI, "Surveying & Leveling", Pune VidyarthiGriha Pub.
2. DR. B.C. PUNAMIA, "Surveying Vol.1", Laxmi Pub.
3. SHAHANE AND IYENGAR, "A Text book of Surveying & Leveling", Engineering Book Co.
4. BERNARD H. KNIGHT, "Surveying and leveling for students"

5. **History Of Architecture-III (Code – 210305)**

Objectives –

The course aims to obtain knowledge about the development of architecture in the ancient Europe and the culture and context which produced it such as climate, religion, social practices & the politics, the evolution of architectural form & space with reference to Technology, Style and Character using sketches as the principal method of learning - about the prehistoric world, Ancient Egypt, West Asia, Greece ,Rome, Medieval times and Renaissance period.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CTHRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
5	210305	History Of Architecture-III	DC- 9	50	30	20	-	-	100	3	2	1	-	3

UNIT-1 GREEK ARCHITECTURE

Evolution of City states in Greece, the Hellenic & Hellenistic art & architecture, Evolution of the classical orders & the features of the Greek temple, the building of the Acropolis with one outstanding example of Doric (Parthenon), Ionic (Erechtheon) & Corinthian. Public architecture: Theatre of Epidaurus and Agora, Optical illusions in Greek architecture.

UNIT-2 ROMAN ARCHITECTURE

Formation of Roman republic & Empire & influence of geology, culture & lifestyle. Roman architectural character using concrete, marble, travertine etc& masonry types used for walls. Tuscan & Composite orders, Roman forums and basilicas – methods of Vault & Dome construction with examples of Pantheon, Thermae of Caracalla, Colosseum, & Basilica of Constantine.

UNIT-3 EARLY CHRISTIAN&BYZANTINE ARCHITECTURE

Spread of Christianity, the evolution of early Christian Church form from the Roman basilica (St.Clemente), Centralized plan concept (St.San Vitale, Ravenna). The creation of eastern & western roman empire, the development of domes &pendentive, Byzantine architectural character with study of St.Sophia (Hagia Sophia) at Istanbul.

UNIT-4 ROMANESQUE & GOTHIC ARCHITECTURE IN FRANCE, ITALY & ENGLAND

Romanesque period. Monastic orders & development of Craft and merchant guilds, Influences & architectural character of Romanesque churches in Italy (Pisa complex), France (Abbey Aux Hommes) and England (Tower of London)- Development of vaulting. Development of Gothic architecture in France, evolution of Gothic Cathedral & structural system using vaulting & flying buttress, the example of Notre dame cathedral at Paris. Gothic architecture in Italy & the example of Milan cathedral. Development of English gothic vaulting & the example of Westminster Abbey at London.

UNIT-5 RENAISSANCE ARCHITECTURE IN EUROPE

Idea of rebirth and revival of classical architecture & the development of art & science. Italian renaissance character. Early renaissance & the example of Palazzo Ricardi, Brunelleschi & urban renaissance style exemplified at the Florence cathedral and High renaissance period. Michelangelo &St Peters cathedral at Rome. The villa architecture of Palladio exemplified at Villa Capra, Vicenza. French renaissance during classical & rococo period – examples of Chateau de Chambord & Louvre Palace.

English Renaissance – works of Sir Christopher Wren (St. Paul Cathedral, London) &Inigo Jones (Banqueting House at Whitehall)- Domestic architecture during Elizabethan, Jacobean & Georgian period.

COURSE OUTCOME:-

After completion of this course student will be able to-

CO1	**Outline** the chronological development of Civilizations across the globe
CO2	**Observe** different styles of Western (Christian) Architecture and it's historical importance
CO3	**Illustrate** visual and verbal vocabularies associated with christian architecture
CO4	**Explain** the evolution of architectural form & space with reference to Technology, Style and Character of the era.
CO5	**Analyze** Architecture as an outcome of various social, political and economic upheavals.
CO6	**Draw** sketches as the principal method of learning - about the prehistoric world, West Asia, Greece, Rome, Medieval times and Renaissance period

REFERENCES:

1. Sir Banister Fletcher, A History of Architecture, CBS Publications (Indian Edition), 1999.
2. Spiro Kostof – A History of Architecture – Setting and Rituals, Oxford University Press, London, 1985.
3. Leland M Roth, Understanding Architecture: Its elements, history and meaning, Craftsman House, 1994.
4. Pier Luigi Nervi, General Editor – History of World Architecture – Series, Harry N. Abrams, Inc Pub., New York, 1972.
5. S.Lloyd and H.W. Muller, History of World Architecture – Series, Faber and Faber Ltd., London, 1986.
6. Gosta, E. Samdstrp, Man the Builder, Mc.Graw Hill Book Company, New York, 1970.
7. Webb and Schaeffer, Western Civilisation Volume I; VNR: NY: 1962.
8. Vincent Scully: Architecture; Architecture – The Natural and the Man Made : Harper Collins Pub: 1991

6. **Structures-III (Code – 210306)**

Objectives –

The course aims to obtain understanding of the basic principles of limit state design in reinforced concrete structural systems and the interpretation of detail structural drawings for the purpose of construction, the structural behavior of RCC buildings from an architect's perspective and hence does not delve into the process of detailed structural analysis design which is the forte of the structural engineer.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
6	210306	Structures-III	BSAE-7	50	30	20	-	-	100	3	2	1	-	3

UNIT- 1 FOUNDATIONS IN BUILDINGS

Soil load bearing capacity – concept of RCC spread footing - Types of R.C.C. foundation – Individual, Combined, Strip footings – Raft foundation (Theory only) – Eccentric footings with projection on one side only- the situations in which the various footings are used – friction pile foundation used in clayey soil (section & understanding of the principle)- pile foundation used in sandy soil & the pile foundation used in multi-storied buildings (section & principle only).Interpretation of typical structural details in foundation drawings .Site visits necessary for understanding the above.

UNIT – 2 ROOF SLABS & STAIRCASE

Exposure to the basic design concepts of Limit state method of design – recommendations in the code book -Classification of slabs – Estimation of loads – Design of one way, two way, circular and continuous slabs using SP – 16(Theory only). Interpretation of reinforcement details in a typical structural drawing for one way, two way slab & continuous slab. Understanding the reinforcement details for a RCC waist slab in dog legged staircase and for a folded slab staircase using typical structural drawings.

UNIT-3 BEAMS& LINTELS

Exposure to the basic design concepts - Estimation of loads on beams – Transfer of load from slab to beam – Understanding the design of simply supported beams, cantilevered &continuous beams using code coefficients & detailing using SP-16 for the design (Theory only). Steel detailing of beams for earthquake proofing (section only) – the function of plinth beam belt & continuous lintel belt –ring beam for RCC dome roof, typical reinforcement detail for waffle (coffer) slab (section only).Site visits to understand typical details in RCC slabs & beams.

UNIT - 4 COLUMNS

Understanding the estimation of loads on columns – Load transfer from slab and beam to columns. Structural behavior of Long and short columns –Distinction between rectangular and circular columns – Difference between columns subjected to uniaxial and those subjected to bi-axial bending. Knowledge about the design of columns using column interaction diagrams (Theory only) – Use of SP-16 for reinforcement detailing. Interpretation of typical structural drawing for columns& footings.

UNIT- 5 FLAT SLABS

Understanding the situations in which flat slabs are used - advantages of flat slab construction. Components of flat slab – Configuration of columns – Design of flat slab by direct design method as per BIS codes (Theory only). Site visit to understand flat slab construction.

COURSE OUTCOME:-

After completion of this course student will be able to-

CO1	**Outline** the features of IS code provisions regarding limit state method for designing concrete structures
CO2	**Explain** basic principles of limit state design in reinforced concrete structural systems with detail structural drawings for the purpose of construction.
CO3	**Analyze** the structural behavior of RCC buildings from an architect's perspective without detailed structural analysis
CO4	**Model** design of different R.C. Structural components: Beam, Slab, Column, Stair and Foundation.

REFERENCES:

1. Victor E. Saouma, Structural Engineering- analysis & design, University o Colorado,2011
2. Simha .N.C and Roy .S.K, Fundamentals of Reinforced Concrete, S.Chand& Co. Ltd, Delhi,2001

7. Summer Internship Project –I (Institute Level Evaluation) (Code – 210307)

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
7.	210307	Summer Internship Project –I (Institute Level Evaluation)	SEC- 4	-	-	-	-	50	50	2	-	-	2	1

Second Year Fourth Semester

1. Architectural Design – IV (Code – 210401)

Objectives –

The course aims to obtain knowledge of Architecture as responding to Social issues such as community, culture, religion, politics etc, designing for special groups such as the villagers, elderly, and the handicapped.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CTHRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
1.	210401	Architectural Design – IV	DC- 10	100	30	20	50	50	250	7	2	3	2(1.5)	8

PROJECT 1(Prototype): VILLAGE SURVEY & RURAL HOUSING

Study of the physical, socio economic and cultural aspects of a selected village by conducting various surveys to understand the settlement pattern, housing stock and amenities that are existing or required – To understand the linkages between Occupation, Social structure and Religious beliefs and its physical manifestation in the form of the settlement – Identification of a suitable Design intervention that would improve the quality of life – Ex. Design of housing prototypes for a particular community / occupation using rural building materials & cost effective technology. Design exercise may include the design of any facility required such as Primary health center / Community hall / Farm training center, etc.

PROJECT 2(Prototype): DESIGN OF COMMUNITY FACILITIES

Community facilities –Design of Community hall, Nursing home, Youth hostel, Old age home etc., encourage the student to explore concepts an agglomeration of simple spaces with particular emphasis on the special needs of elderly, handicapped etc. It also focuses on the bioclimatic approach to the design of the building envelope i.e. articulation of openings, choice of materials for roof & walls of different orientations etc. Concepts integrating the use of passive, active & hybrid solar technologies with the design proposals are encouraged

PROJECT 3 & 4(Prototype): Time bound Problems of 6 hours to 48 hours.

COURSE OUTCOME:-

After completion of this course student will be able to-

CO1	**Explain** the Settlement pattern in village and socio-cultural, geographic and economic aspects that shape the built environment.
CO2	**Analyze** design of any rural settlement that evolved organically over a period of time.
CO3	**Analyze** housing typology, locally available materials, craftmanship and integration of landscape with the built environment.
CO4	**Explore** concepts of agglomeration of simple spaces with particular emphasis on the special needs of elderly, handicapped etc.
CO5	**Develop** presentation of concepts through 2D and 3D presentation including sketches and models.

REFERENCES:

1. Time saver standards for building types, DeChiara and Callender, McGrawhill company.
2. Neufert Architect's data, BousmahaBaiche& Nicholas Walliman, Blackwell science ltd.
3. National Building Code – ISI.
4. Time saver standards for landscape architecture – Charles W Harris – McGraw Hill.
5. New Metric Handbook – Patricia Tutt and David Adler – The Architectural Press.

Note :Design exercises that explore Architecture as responding to Social issues such as community, culture, religion, politics etc. Students familiarize themselves with designing for special groups such as the villagers, elderly, and the handicapped.

Note: One design problem shall be given in End Semester Examination. 6X2hour's examination.

2. Building Construction –III (Code – 210402)

Objectives –

The course aims to obtain knowledge of the preparation of concrete, construction methods, special concrete and concreting methods, the properties and its use in foundation, beams and slabs, various exterior finishes and advanced structural systems.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
2.	210402	Building Construction –III	BSAE- 8	50	30	20	20	30	150	5	2	1	2(1.5)	5

UNIT-1 BUILDING MATERIALS

Cement, Concrete & Glass

Cement: Composition of cement, properties & various types of cement and their uses. Concrete proportioning of concrete, grading of aggregates, water cement ratio, and workability of concrete Estimating yield concreting.

Concreting: form work for concreting, mixing, transporting and placing, consolidating and curing of concrete. Various types of cement concrete, the properties and uses. Types of Special concrete and concreting method.

Glass- Classification of glass, types of glass, curtain walls & glass block construction physical properties and uses of glass, special varieties of glass and Architectural glass.

UNIT -2 RCC FOUNDATION

Introduction to RCC framed structures, concrete foundation: types of footing – Isolated, combined, continuous, strip raft & piles.

Definition, functions and Design factors of pile foundation.

Tool equipment and plants for piling.

Pre cast pile – timber, concrete and steel

Friction pile and bearing pile, bore pile.

Cast in situ & Steel and Concrete, Pile Cap

UNIT-3 BEAMS AND SLABS

Concrete slabs: One-way, two ways, continuous & cantilever. Detailing of RCC beams, columns, slabs (one way slabs, 2-way slab, continuous, flat slab etc.)Concrete beams: singly reinforced, doubly reinforced, cantilever & continuous beams, R.C.C. Colum, beams, slabs, lintel, chajja, staircase, canopy, coffer slab & pergola.

UNIT-4

Detailing of R.C.C. retaining wall & constructions of beams, Expansion Joints. Walls, roofs and flooring, detailing of apertures (lintels, sunshades, arches etc.). Study of Various types of pre cast concrete blocks, their extensive uses in Building construction.Water proofing basement, construction of pools, fire places and fules. Fire safety construction techniques.

Exercises of the above through case studies and drawings of selected building types.

UNIT-5

• CLADDING SYSTEMS & FINISHES

Types of Cladding systems – Stone, timber, weatherboard, Fiber cement, Brick, Vinyl, Metal (aluminum composite panels (ACP), Precast concrete cladding panel, Curtain wall, Rain screen wall system. Exterior insulation& Finishes

Wall Finishes – Paints, Varnishing, distemper, plastering, wall dadoing, wall paper, veneer, stucco, whitewashing and color washing for walls. Floor finishes – Ceramic Tiles & Wood.

COURSE OUTCOME:-

After completion of this course student will be able to-

CO1	**Explain** the preparation of concrete, its construction methods, and its properties
CO2	**List** properties, characteristics, strength, manufacturing, processing and application of materials such as cement, glass, paints and other finishing materials
CO3	**Draw** details of water proofing construction, fire proofing construction details
CO4	**Outline** types of Cladding systems and finishes
CO5	**Draw** details of RCC Beams, Columns, Slabs, Staircases, etc

REFERENCES:

1. Dr. B C Punmia – Building construction (10th edition) - Laxmi Publications
2. Roy Chudley (Author), Roger Greeno (Author) -construction Technology, 4th Edition
3. Francis D K Ching – Building Construction illustrated, 4th edition, 2015
4. M.S Shetty, concrete Technology, S.Chand publishing

Note: Total five questions shall be asked. Each question will consist of two parts, one of which will be of 7 marks (which shall be compulsory) and another with 3 marks(which shall be optional)

3. **Building Services-I (Water supply & Sanitation) (Code – 210403)**

Objectives –

The course aims to obtain knowledge of water supply and waste water management, in residential unit, small campus, and commercial buildings, plumbing layouts for various building typology, best practices for Solid waste management.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
3.	210403	Building Services-I (Water supply & Sanitation)	BSAE-9	50	30	20	-	-	100	3	2	1	-	3

UNIT-1 WATER SUPPLY

Sources of water supply – Water Quality - Water requirements for different types of buildings and for town, simple method of removal of impurities, Rainwater harvesting to include roof top harvesting, type of spouts, sizes of rainwater pipes and typical detail of a water harvesting pit. System of supply - continuous and intermittent supply, sump, overhead tanks, pumps, distribution pipes, cold water and hot water supply for single and multi-storied buildings. Pipes sizes, types – GI, CPVC, Copper, Cast Iron (CI) Pipes, Steel Pipes, Asbestos Cement (AC) Pipe, Concrete Pipes fittings, valves, and types of taps.

UNIT-2 DRAINAGE AND SEWAGE DISPOSAL

Recycling/Reuse of Wastewater. Systems of drainage – separate, combined and partially separate system, surface drainage, sizes and construction, system of plumbing - single stack, one pipe system, one pipe partially ventilating system and two pipe system.

House drainage – principles, traps-floor trap, multi-trap, gully trap, grease and oil trap, Anti Siphonage pipe, Types of fixtures and materials, Arrangements of fixtures in a bathroom. Design of Septic tank, Treatment and disposal of septic tank effluents – Design of soak pit and dispersion trench, Biological filter, up flow anaerobic reactors.

Sewage treatment technologies: Activated sludge process, Membrane bioreactors, packaged treatment plants, Root zone treatment system, Decentralized Wastewater Treatment Systems (DEWATS), Sci Bio technology.

UNIT-3 SOLID WASTE DISPOSAL

Solid waste management: Generation of Solid waste, Collection & Transportation of solid waste to the secondary/ locality storage/community bins, Storage of solid waste at locality level, Transport of solid waste to dumping sites and treatment plants, Treatment and Dumping of Solid Waste, Methods of Disposal of solid waste.

Approaches to Solid Waste Management: Waste minimization / reduction at source, recycling, waste processing (with recovery of resources and energy), waste transformation(without recovery of resources) and disposal on land.

UNIT-4 EMERGING PROCESSING TECHNOLOGIES

Emerging processing technologies : Vermicomposting, Biogas from MSW, Pyrolysis (including plasma arc technology), refuse derived fuel, Bio reactor landfill - Biomethanation plant at koyambedu, wholesale vegetable market Chennai, Door-to-door collection, transportation and waste processing services by Exnora Green pammal.

UNIT-5 PLUMBING AND FIRE FIGHTING LAYOUT OF SIMPLE BUIDINGS

Designing of toilet blocks in residential and public buildings showing complete details of fittings and plumbing required for water supply and drainage.

Designing and preparing a complete water supply and drainage layout of an academic Architectural design project, with all required calculations.

COURSE OUTCOME:-

After completion of this course student will be able to-

CO1	**Outline** water distribution components, sanitation systems and their functioning process
CO2	**Explain** Water supply, treatments and plumbing system for all type of buildings
CO3	**Design** Plumbing layout with working drawing and specifications for buildings
CO4	**List** waste water management, solid waste management and drainage systems for various building typologies
CO5	**Apply** all the above systems to Buildings, Small Campus and a Residential neighborhood
CO6	**Produce** plumbing and fire fighting layouts for various building typologies

REFERENCES:

1. Birdie G. SandBirdie J. S WaterSupply& Sanitary Engineering, DhanpatRai Publishing Company (p) Ltd (2010)
2. Sanitary Engineering by R S Deshpande
3. S. K. Garg , Water Supply Engineering Environmental Engineering v. khanna publishers 2010
4. Charangith shah, Water supply and sanitary engineering, Galgotia publishers.
5. Kamala & DL KanthRao, Environmental Engineering, Tata McGraw – Hill publishing company Limited.
6. Technical teachers Training Institute (Madras), Environmental Engineering, Tata McGraw Hill publishing Company Limited.
7. M.David Egan, Concepts in Building Fire Safety.
8. V.K.Jain, Fire Safety in Building 43
9. National Building Code 2005.
10. Toolkit for Solid Waste Management, Jawaharlal Nehru National Urban Renewal Mission, November 2012, Ministry of Urban Development Government of India.

4. History Of Architecture-IV (Code- 210404)

Objectives –

The course aims to obtain knowledge of Design philosophies of colonial, post independent and contemporary architecture in Indian context, modern design philosophies in the evolution of innovative architectural forms and designs, the effect of industrial revolution on architecture.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
4.	210404	History Of Architecture-IV	DC-11	50	30	20	-	-	100	3	2	1	-	3

1.UNIT-1 INDUSTRIAL REVOLUTION

Impact of the Industrial Revolution on Architecture. Transformation from iron to steel and the demand for a new Architecture.

2.UNIT -2 MODERNISM

Context of Origin, Characteristics, Key Movements – Arts and Crafts, Constructivism, Bauhaus, Expressionism, International Style, Minimalism, Brutalism. Works of notable conforming Architects: Frank Lloyd Wright, Ludwig Mies van der Rohe, Le Corbusier, Walter Gropius, Erich Mendelsohn, Oscar Niemeyer and Alvar Aalto.

3.UNIT-3 DECONSTRUCTIVISM

Origin and influences breaking away from Modernism and Postmodernism. Deconstructivist philosophy– metaphysics of presence, trace and erasure; Influence on Architectural practice; Criticisms ; Works of notable conforming Architects: Frank Gehry, Daniel Libeskind, Rem Koolhaas, Peter Eisenman, Coop Himmelb(l)au, and Bernard Tschumi.

4.UNIT-4 NEO-MODERNISM AND OTHER POST-POST MODERN REACTIONS

Origin and prevalence, Characteristics, Other associated movements: Metamodernism, Re-modernism, Neo-futurism, Neo-Historism. Works of Richard Meier, Charles Gwathmey, I.M. Pei, Tadao Ando, Aratalsozaki, ZahaHadid, and Santiago Calatrava.

UNIT-5CONTEMPORARY INDIAN ARCHITECTURE

Architecture in colonial India and after independence, Modernism, Post independent Architecture, Works of contemporary Architects.

COURSE OUTCOME:-

After completion of this course student will be able to-

CO1	**Explain** the basic terminology of the subject and know the chronology and typology of western architecture in the 20th/21st century.
CO2	**Identify** the stylistic characteristics of different epochs in different western, Indian countries and relate them to structural/tectonic systems, architectural theories and socio economic and cultural conditions of their emergence.
CO3	**Outline** the life and masterpieces of the most renowned world architects.
CO4	**Explain** types of Cladding systems and finishes.
CO5	**Summarize** modern design philosophies in the evolution of innovative architectural forms and designs.

REFERENCES:

1. Kenneth Frampton, Modern Architecture: A Critical History, Thames and Hudson, London.
2. Sigfriedgiedion, Space time and Architecture: The Grwoth of a New tradition, Harvaid University Press.
3. Tzonis Alexander, Santiago calatrova , International Publications, January 2005, New York.
4. Steele James, Hassan fathy - The complete works , London : Thames and Hudson.

5. Structures-IV (Code – 210405)

Objectives –

The course aims to obtain knowledge about the structural behavior of various types of steel structural systems those are commonly employed in the building construction industry presently, methods those are used to design a steel structural system for a specific condition & loading. Interpretation of structural detail drawings in the site is also intended.

Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
			Theory Slot			Practical Slot							
			End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
210405	Structures-IV	BSAE- 10	50	30	20	-	-	100	3	2	1	-	3

UNIT- 1 PROPERTIES OF STEEL SECTIONS & TYPES OF CONNECTIONS

Introduction Properties of Indian standard rolled steel section – Use of IS 800 and steel tables – Permissible and stresses in tension, compression and shear. Connections: Welded and bolted connections – Types of failure – Design of welded and bolted connections for members subjected to axial forces. Site visit to a steel fabrication unit.

UNIT-2 TENSION AND COMPRESSION MEMBERS

Steel structures – Identification of tension and compression members in trusses & girders– Understanding the process of design of single angle and double angle sections in tension– understanding the method to design compression members – signify cance of Slenderness ratio– Design of simple and compound sections (Theory only) – Design of lacings and battens.

UNIT -3 STEEL BEAMS

Identification of principal & secondary beams in a structural system - Allowable stresses in Principal beams, General specifications for steel beams, Understanding the design process for simply supported & cantilevered beams – Comprehending the design of laterally supported beams.(Simple problems).

UNIT-4 STEEL TRUSSES & GIRDERS

Study of the various types of roof trusses & where a particular truss can be used – Selection of trusses according to the span – Estimation of gravity loads and wind loads on roof – Use of BIS and book SP-38 in analyzing and design of trusses – gusseted plate connections (Theory Only).

UNIT-5 INTRODUCTION TO LONG SPAN STEEL STRUCTURAL SYSTEMS

Space frame structural system in tubular steel – various types of connectors – single / double & triple grid space frames and the span for which they can be employed – various types of space frame configurations. Tensile structural systems using steel cables – Examples of space frame & tensile structural systems

COURSE OUTCOME:-

After completion of this course student will be able to-

CO1	**Analyze** structural behavior of various types of steel structural systems that are commonly employed in the building construction industry presently.
CO2	**Explain** methods that are used to design a steel structural system for a specific condition & loading
CO3	**Design** simple and compound sections. Design of lacings and battens
CO4	**Design** trusses – gusseted plate connections

REFERENCES:

1. Ramachandra .S Design of steel structures Vol. I, Standard publication, New Delhi, 1992
2. Vazirani V.N, and RatwaniM.M,Steel structures, Khan
3. Handbook of Typified Designs for Structures with steel roof trusses, SP 38 (S&T) – 1987, BIS, NewDelhi, 1987
4. Code of practice for Earthquake Resistant Design and Construction of Buildings IS4326-1976, BIS,New Delhi.

6. **Elective – 1 (Code – 210406)**

Objectives –

The course aims to obtain knowledge about ecology, society, culture, environment, the use of ecology, etc. in architecture design and site planning

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
6	210406	Elective – 1	DE- 1	50	30	20	-	50	150	4	2	-	2	3

i) **ECOLOGY & ENVIRONMENT**

UNIT-1 INTRODUCTION TO THE STUDY OF ECOLOGY & ENVIRONMENT

Introduction, Structure and Function: Introduction to ecology, its meaning and growing importance in daily life. Basic terms used in ecology and their meanings. Fundamental concepts of ecology. Ecology – Environment relationship. Concept of spaceship as earth. Structure and function of eco-system, Eco- system equilibrium, natural cycles, ecological foot print, climate change

UNIT-2 RELATIONSHIP WITH NATURE:

Man's relationship with nature in the present: Industrial activities, urbanization, de-forestation, mining and similar incursions on nature for technological progress. Environmental impacts of these activities. The ecological crisis.

UNIT-3 IMPORTANCE OF ECOLOGY

Importance of Ecology: Relevance and growing importance of ecology in a highly urbanized and technological world with reference to dwindling resources, increasing demands and advancing technology. Adaptation of life-styles, and adoption of alternate technologies to harmonize with the natural environment. Discussion on alternatives available. Guiding environmental principles

UNIT-4 ECOLOGICAL APPLICATIONS TO ARCHITECTURE AND PLANNING

Ecological applications to Architecture and Planning. Preserving and improving the human settlement in harmony with nature. Conservation of natural resource for improving the quality of life on earth and attempting to ensure its continuity for the future of humanity. Eco cities, eco-communities and eco buildings: Archeology. Designing settlements and other man-made eco-systems. Ecological and environmental cities for sustainable future.

UNIT-5 ECOLOGY AND ENVIRONMENT FOR SUSTAINABLE FUTURE.

Eco building materials and construction – Bio mimicry, Low impact construction and recyclable products and embodied energy. Life cycle analysis. Energy sources-Renewable and non-renewable energy.

COURSE OUTCOME:

After completion of this course the student will be able to :

CO1	**Outline** the importance of ecology and environment along with basic concepts of ecosystem.
CO2	**Analyze** the relationship between man and its natural surroundings, focusing on negative impacts of man made activities on environment.
CO3	**Apply** various practical applications of ecology in field of architecture to form new concepts of sustainability.
CO4	**Design** with innovative methods by using sustainable materials to reduce the impacts of construction and urbanization.
CO5	**Develop** environmental sensitivity.

REFERENCES:

1. Fundamentals of Ecology by E. P. Odum
2. The Ecology of Man: An Ecosystem Approach by Robert Leo Smith
3. Introduction to Ecology by Kurmundi
4. Review Our Dying Planet by Sarala Devi
5. Ecological Crisis: Reading for Survival by G. A. Love & R.M. Love

ii) SOCIETY, CULTURE AND ARCHITECTURE

Unit-1

- Gain an understanding of anthropological theory and its lateral application
- Develop an appreciation for and understanding of cultural difference
- To gain a relativistic view of themselves and their own culture as one particular system.
- Fundamentals of sociology and its relationship to architecture.
- Culture and social identity with reference to architecture
- Fundamentals of society, culture and politics with reference to architectural history.
- Forms of social organization in history
- Various definitions of culture and civilization.

Unit-2

- Architectural Traditions
- To appraise the potential dimension of architecture as medium of (spatial) communication and mediation
- Develop an awareness of the evolution of architecture across the centuries
- Cosmological models and architectural form
- Articulation of people and built environments
- House form and communication
- Asian traditions in architecture
- Concept of vernacular architecture

Unit-3

- To gain understanding of society, culture and civilization
- To appraise the dynamic relationship between these three attributes.
- Architecture and its context
- Social and cultural aspects of building practices
- Architecture-expression of power
- Architecture as an agent of change
- Architecture as an identity.

Unit-4

- To make architects respond and develop an attitude that emphasizes the needs and experiences of people over concerns of form or aesthetics
- To equip the students for comprehending process of transformation of forms in history and culture.
- Transformations and changes in forms of historical architecture
- Localization and globalization –cases and examples
- Loss of architectural identify and role of culture
- Definition of Renewal, transformation, redevelopment, rejuvenation in architectural context and basic concepts

COURSE OUTCOME:

After completion of this course the student will be able to:

CO1	**Explain** the importance of architecture and design through time and across cultures
CO2	**Outline** what have been the major issues in the development of architectural design in socio- cultural context
CO3	**Analyze** the place specific nature of architectural design
CO4	**Evaluate** the architecture and its relationship to its historical, political, social, economic, technological contexts
CO5	**Evaluate** the aesthetics related to more general systems of ordering within a particular society or a group

REFERENCES:

1 Conformity and Conflict: Readings in Cultural Anthropology by McCurdy, David W., Dianna Shandy, and James Spradley, eds.

2 Case examples of research on cultural anthropology

3. Field studies of communities

4. House, Form and Culture by Amos Rapoport

5. Case studies of various examples from India, Madhya Pradesh Region

6 Case studies of various examples on social and cultural issues relating to architectural history in India and world.

7. Architecture in Cultural Change: Essays in Built Form and Culture Research by David G. (ed) Saile (Author)

7. Tour/ Seminar / Workshop/ NASA Training during winter break (Code – 210407)

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
7.	210407	Tour/ Seminar Workshop/ NAS Training durir winter break	SEC- 5	-	-	-	-	50	50	2	-	-	2	1

Third Year Fifth Semester

1. Architectural Design – V (Code – 210501)

Objectives –

The course aims to obtain knowledge Architecture as a design response to the culture of a place, artistic expressions with common building materials such as brick, concrete, steel & glass, building components using the same building material, designing various services and spaces required specifically for a particular use.

S. No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
1.	210501	Architectural Design – V	DC- 12	100	30	20	50	50	250	7	2	3	2x (1.5)	8

PROJECT I: MATERIAL STUDIO

Studio project: Cultural Center / Multiplex with mall. The cultural center project exposes the student to the design issues such as effects by manipulating day light in the art gallery space, designing for clear sight lines and sound in the auditorium space & optimizing day light for reading in the library space. The additional challenge is to create spaces for fine arts & performing arts by creating artistic expressions with building materials such as brick, concrete etc. The multiplex project expects the student to the design issues involved in entertainment spaces such as cinema halls and the challenges in creating commercial spaces such as food courts, shops, gaming parlours etc. Moreover it exposes the student to contemporary materials such as steel, aluminum & glass.

PROJECT II: HEALTHCARE BUILDINGS

Hospitals and Nursing homes are a special category of buildings where functional aspects such as planning, building services & the creation of a sterile environment become important design issues. This project aims to familiarize the student with the design of critical health care spaces such as operation theatres, diagnostic facilities, outpatient department and inpatient rooms. The modern trends in hospital design challenge the architect to create world class ambience.

COURSE OUTCOME:-

After completion of this course student will be able to-

CO1	**Analyze** the culture of a place – building types such as the cultural center comprising of spaces such as the art gallery, auditorium for performing arts, library etc.
CO2	**Identify** the various common building materials such as brick, concrete, steel & glass.
CO3	**Examine** the same building material through Material studio.
CO4	**Illustrate** with materials to find suitable artistic & commercial expressions and the learning of design methods for healthcare buildings.
CO5	**Design** commercial buildings integrating entertainment spaces, where the student is given exposure to the finer aspects of auditorium design.
CO6	**Express** the design with drawings and model to support the concept.

REFERENCES:

1. Richard Weston, Plan sections & elevations of key buildings of the 20th century, Lawrence king publishing, London,2004
2. Time saver standards for building types, DeChiara and Callender, McGraw hill company
3. Neufert Architect's data, BousmahaBaiche& Nicholas Walliman, Blackwell science ltd.
4. National Building Code – ISI
5. Time saver standards for landscape architecture – Charles W Harris – McGraw Hi

Note: One design problem shall be given in End Semester Examination. 6X3 hours examination.

2. Building Construction –IV (Code – 210502)

Objectives –

The course aims to obtain knowledge of detail the various materials used in construction, various advanced structural components, modern masonry units, and its components, types of insulation and temporary structures.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
2.	210502	Building Construction -IV	BSAE - 11	50	30	20	20	30	150	5	2	1	2(1.5)	6

UNIT-1 BUILDING MATERIALS –IV

Steel: Properties and uses of cast iron, wrought iron, pig iron and steel. Market forms of steel. Structural steel, stainless steel, steel alloys – properties and uses.

UNIT -2 STEEL

Steel trusses – saw tooth roof truss with north light glazing, simple trusses in steel, and types of connections – to foundations, steel stanchion, and beams etc. Space frames - single, double & triple layered tubular space frames with globe connections, Gates: collapsible gate, , entrance gate, rolling shutter. Steel components: Steel doors, (hinged, sliding) steel windows (casement window & sliding window) Steel stairs (dog legged, spiral stair) steel hand rails and balustrade grill designs for windows

UNIT-3 WALL & FLOOR

Wall : Modern masonry units - Fly ash brick, Aerated concrete blocks, Hollow concrete blocks &Hollow clay blocks

Floor finishes– Indian patent stone (IPS), Terrazzo flooring , Granolithic flooring stone flooring, Resilient flooring & Carpeting.

UNIT-4 PARTITIONS & FALSE CEILING:

Simple paneled and glazed partitions (Timber, Glass, Aluminium & PVC)–fixed sliding, folding, sliding &folding& Revolving door.

False-ceiling: false ceiling of interior spaces using wood panels, glass, Thermacol, gypboard, plaster of Paris, aluminum strips & perforated metal sheets.

Jam casing, skirting, molding , architrave & pelmet

UNIT-5 THERMAL INSULATION AND ACOUSTICS INSULATION

Thermal insulation: vapor barriers and rigid insulations, blanket, poured and reflective insulation–properties and uses of spun glass foamed glass, cork, vegetable fibers Gypsum plaster of Paris, hydride gypsum properties and uses.

Acoustics insulation: porous, baffle and perforated materials such as Acoustic plastic, Acoustic tiles,wood, partition board, fiber board, cook, quilts and mats – their properties and uses – current developments. Applications of the above insulations in seminar hall, theatre and cold storage.

COURSE OUTCOME:-

After completion of this course student will be able to-

CO1	**Summarize** Properties and uses of cast iron, wrought iron, pig iron and steel. Market forms of steel: Structural steel, stainless steel, steel alloys .
CO2	**Identify** various steel members and joints for building industry.
CO3	**Prepare** detail drawings of steel doors, rolling shutters etc.
CO4	**Illustrate** modern methods of wall and floor construction
CO5	**Design** interior wall panelling and suspended ceiling detail drawings
CO6	**Summarize** thermal insulation techniques, acoustical treatment details for different spaces.

REFERENCES:

1. W.B. Mckay – Building construction Vol. 1 (5th edition), Vol. 2 (4th edition) and Vol. 3 (5th edition)
2. R.Chudley&R.Greeno – Building Construction Handbook, ninth edition
3. Francis D.K.Ching – Building Construction illustrated, 4th edition, 2015
4. R.Chudley&R.Greeno – Building Construction Handbook, ninth edition
5. Arthur Lyons, Materials for Architects and Builders – Oxfordshire, England,New York : Routledge, 2014
6. Don A.Watson, construction materials and process, McGraw Hill Co, 1972
7. Stephen Emmitt, Christopher A. Gorse - Barry's Advanced Construction of Buildings, 3rd Edition
8. The American Institute of Architects - Architectural Graphics standards – 11th edition

Note: Total five questions shall be asked. Each question will consist of two parts, one of which will be of 7 marks,(which shall be compulsory) and another with 3 marks(which shall be optional)

3. **Building Services-II (Electrical & Mechanical) (Code – 210503)**

Objectives –

The course aims to obtain knowledge of various services in a building such as electrical, illumination, etc., an understanding of layouts of electrical, plumbing, AC ducts, lighting, etc., Air conditioning system and its working.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
3.	210503	Building Services-II (Electrical & Mechanical)	BSAE-12	50	30	20	-	-	100	3	2	1	-	3

UNIT-1 ELECTRICAL SERVICES

Electrical systems – Basic of electricity – single/Three phase supply , Electrical installations in buildings – Types of wires, Wiring systems and their choice, planning electrical wiring for building – Main and distribution boards, HT transformers, electrical panel rooms, cable trenches, controls, Circuits, fuses, main switch box, meter box, circuit breakers. Uninterrupted power supply, inverters, protective devices in electrical installation – Earthing for safety – Types of earthing – ISI Specifications, Lighting protection Electrical installations in various building types, Residential bungalow, apartments, commercial recreational buildings and factory buildings etc. Market survey of Electrical materials and electrical appliances.

UNIT-2 ILLUMINATION AND LIGHTING DESIGN

Principles of Illumination: Basics of Lighting Technology and Terminology. Classification of lighting– Artificial light sources. Systems of lighting such as direct, indirect, diffused etc.,

Design of modern lighting: Lighting for stores, offices, schools, hospitals and house lighting.Elementary idea of special features required and minimum level of illumination required for physically handicapped and elderly in building types. Seeing light: learn about vision and perception, color, and - understanding shade and shadow

Light fixture :Controlling light, luminaire optics and distributions - introduction to light fixture materialsand construction, and components Light in Architecture and the Psychology of Light,

Lighting Design Concepts, Lighting in terms of energy efficiency, ergonomic aspects and aesthetic aspects.

Light a surface: Horizontal and vertical - present various approaches and techniques - finding lightfixtures. For a Task - present various approaches and techniques, simple lighting effects.

Calculating Light: learn light metrics and calculation methods - review energy and the environment Lighting calculations

Lighting Design :Residential lighting, Office and Corporate Lighting, Hospitality Lighting Design, Health Care/Institutional Lighting Design, Lighting for Stores, Lighting Common Spaces

UNIT-3 AIR CONDITIONING

Components of an air-conditioning system & their function-Refrigeration cycle, different systems of AC, window, split, small standalone unit, and air cooled direct expansion system used for auditorium spaces, chill water systems with air handling units, estimating the cooling load of different spaces in a building with simple calculation, duct lay out for both types of systems. Intelligent building systems in air conditioning, Sick building syndrome, effect of pollutants, improving air quality in air-conditioned buildings

UNIT-4 PUMPS AND MACHINERIES

Pumps: Different types of Pumps, working, applications. Water pumps, sewage pumps, Centrifugal,Reciprocating pump, turbine (diagrams & functioning only)

Compressors: Different types of Compressors and their applications.

Lifts And Escalators : Elevators (Lifts) and escalators–Brief history-types of Elevators like traction,Hydraulic etc., Double-decker, sky lobby, lift lobby, lift interiors etc., Definition and components Elevatoring a building: environmental considerations i.e , location in building, serving floors, grouping, size, shape of passenger car, door arrangement etc., Service requirements: Quality of service, quantity of service, time, passenger handling capacity, space and physical requirements, machine room spaces and its typical layout Escalators – Definition, Application, Location and arrangement in buildings. Space requirement, Conveyor belts-movement of passengers and goods

UNIT-5 ELECTRICAL AND AC DUCT LAYOUT OF SIMPLE BUILDINGS

Fixtures and accessories used in electrical installation –Preparing an electrical layout for part of design project, with simple load calculations. Design consideration for AC plant location and size. Ac ducting layout for an office building, shopping complex etc.

COURSE OUTCOME:-

After completion of this course student will be able to-

CO1	**Classify** various technical aspects of electrical services.
CO2	**Summarize** basic principles of illumination and practical application of lighting while designing a building.
CO3	**Explain** the importance, installation and working of essential services in buildings.
CO4	**Elaborate** the importance and application of mechanical services while designing a building.
CO5	**Develop** electrical distribution plans and layout for installation purposes.
CO6	**Develop** a comfortable mechanical system for a building by means of various natural and mechanized measures.

REFERENCES:

1. Heating, Cooling, Lighting: Sustainable Design Methods for Architects Oct 13, 2014 by Norbert LechnerDEWALT Plumbing Code Reference: Based on the 2015 International Plumbing andResidential Codes (DEWALT Series)
2. Electrical Wiring Residential Jan 1, 2011by Ray C. Mullin and Phil Simmons
3. Architectural Lighting: Designing with Light and Space (Architecture Briefs),May 4, 2011 by HervéDescottesand Cecilia Ramos
4. HVAC Design Sourcebook Oct 26, 2011, by W. Larsen Angel

4. Building Sciences & Energy Conservation (Code – 210504)

Objectives –

The course aims to obtain knowledge of building sciences such as design methodology, resource optimization and innovative approaches to eco-design, the acclaimed sustainable buildings designed within the past decade, energy conservation through building design, designing an eco-building.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
4.	210504	Building Sciences & Energy Conservation	BSAE-13	50	30	20	-	-	100	3	2	1	-	3

UNIT-1 CLIMATE &THERMAL COMFORT

Global climatic factors, elements of climate, classification & characteristics of tropical climates, site climate and Urban climate - Thermal balance of the human body, Thermal comfort indices – Effective temperature, CET, calculation of comfort zone & determination of overheated& under heated periods.

UNIT-2 SOLAR GEOMETRY &DESIGN OF SUNSHADING DEVICES

Apparent movement of the sun, sun path diagrams (solar chart) - Solar angles, Shadow angles, solar shading masks. etc - Exercises on plotting isopleths, transfer of isopleths to solar chart, fitting a shading mask over the overheated period & design of sun shading devices for different orientations.

UNIT-3 PRINCIPLES OF THERMAL DESIGN IN BUILDINGS

Thermal quantities – heat flow rate, conductivity (k–value)& resistivity, conductance through a multilayered body, surface conductance, transmittance – U value of different materials – convection , radiation , concept of sol-air temperature & solar gain factor - heat loss & heat gain .Periodic heat flow in building – time lag & decrement factor & its application in selection of appropriate materials for walls & roof. Effect of Insulation & cavity on time-lag.

UNIT-4 VENTILATION & DAY LIGHTING

Functions of ventilation – stack effect due to the thermal forces, wind velocity – wind rose diagram, wind pressure - Air movement through building & around buildings – factors affecting indoor air flow, wind shadow etc. - The nature of light , its transmission , reflection – colored light, the Munsell system – Photometric quantities – illumination, day lighting prediction – the daylight design graph.

UNIT-5 DESIGN FOR CLIMATIC TYPES

Building design & layout planning consideration for warm humid, hot dry, composite & tropical upland climates, climatic data sets – analysis – climate graph – the Mahoney tables & its recommended specification - Exercises on design of small Buildings for various climates.

COURSE OUTCOME:

After completion of this course student will be able to-

CO1	**Classify** various climatic parameters on micro and macro level of site and design shelters according to different climatic conditions.
CO2	**Elaborate** the concept of thermal balance in human beings and its statistical parameters.
CO3	**Apply** various aspects of solar geometry in building orientation.
CO4	**Apply** various principles of thermal design in buildings.
CO5	**Develop** designs considering sustainable design tools, design methodology and innovative approach towards eco-designs.
CO6	**Explore** various design strategies for building in different type of climatic zones.

REFERENCES

1. O.H. Koenigsberger, Manual of Tropical housing and building – Climatic Design, Orient Longman, Chennai, 1975.
2. M. Evans – Housing, Climate &Comfort , Architectural Press, London ,1980.
3. E.Schild&M.Finbow – Environmental Physics in construction & its application in Architectural Design ,Granadar , London, 1981
4. B.Givoni - Man, Climate & Architecture, Applied Science, Essex 1982.
5. Donald Watson & Kenneth labs – Climatic Design – Mcgraw hill NewYork 1983.
6. A.Konya- Design Primer for Hot Climates, Architectural Press, London, 1980.

5. Site Planning &Landscaping (Code – 210505)

Objectives –

The course aims to obtain understanding of environment, human interventions and its impacts on nature and knowledge about various measures of protecting it, various concepts, ideas and techniques prevalent in landscape architecture, concepts of site planning and effective measures of doing it, the historic development of landscaping and site planning to students.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
5.	210505	Site Planning &Landscaping	DC-13	50	30	20	-	-	100	4	1	1	2	3

UNIT-1 INTRODUCTION& ELEMENTS OF LANDSCAPE ARCHITECTURE AND LANDSCAPE DESIGN

Introduction to landscape architecture, ecology, ecological balance, landscape conservation, reclamation and landscaping of derelict lands, environmental impact assessment. Elements of landscape – land elements, land form plants and planting, water, lighting etc. characteristics and classification of plant materials, basic principles of landscape design; Factors to be considered, Use and application of plant materials in landscape design, and other components involved

UNIT-2 HISTORY OF LANDSCAPE ARCHITECTURE & URBAN LANDSCAPE

Development of landscape design: Detailed study of selected examples from Eastern, Central and Western traditions; Ancient Heritage - Mesopotamia, Egypt, Greece, Rome; Western Civilization – Europe: Italy, France, and England; The middle-east - The Persian tradition and its far reaching influence Eastern Civilization: China and Japan Ancient and medieval period in India; Mughal and Rajput Landscapes and study of contemporary landscape architecture.

Basic principles and elements of Urban landscape, Significance of landscape in urban areas, introduction to street furniture, road landscaping, waterfront development, landscaping of residential areas, Industrial Landscaping.

UNIT-3 INTRODUCTION TO SITE ANALYSIS & SITE INFLUENCING FACTORS

Introduction to Site analysis, Importance of site analysis; interrelationship between nature and human interventions , thematic traditions in site design, history of site design as a source for precedent analysis On site and off site factors; Analysis of natural, cultural and aesthetic factors; topography, hydrology, soils, landforms, vegetation, climate, microclimate, influence of water bodies

UNIT-4 DESIGN OF LANDFORMS IN A SITE & SITE PLANNING PRINCIPLES AND TECHNIQUES

Contours - representation of landforms and landform design, interpolation of contours, slope analysis, uses and function. Grading - Symbols and grading and alignment of paths/roads, angle of repose and use of retaining walls. Grading terraces. Drainage - surface drainage, functional and aesthetic considerations. Site Zoning. Organization of vehicular and pedestrian circulation; parking; street widths; turning radii, street intersections; steps and ramps. Site planning considerations in relation to water systems, sewage disposal, outdoor electrical systems.

UNIT-5 SITE CHARACTERISTICS AND DESIGN REQUIREMENTS& LANDSCAPE EXERCISE

Landscape design of a neighborhood open space (area of 2000 to 3000 sq. meters)

Exploration of site planning options for residential, commercial, office, industrial and mixed-use projects; street network, civic space, and open space planning; emphasis on walkable, mixed-use, transit-oriented sustainable development.

COURSE OUTCOME:

After completion of this course the student will be able to :

CO1	**Summarize** various elements of landscape architecture and design
CO2	**Analyze** different aspects of landscape architecture history through various design principles of urban landscape
CO3	**Examine** various parameters of site analysis along with different site influencing factors like topography, hydrology, soil ,landforms etc
CO4	**Illustrate** contours as representation of landforms and its application in analysis of various physical characteristics like grading, drainage pattern, etc
CO5	**Apply** the various techniques in landscape exercise which includes different site planning projects

REFERENCES:

1. T S S for Landscape Architecture, McGrawHill,Inc, 1995
2. Grant W Reid, From Concept to Form in Landscape Design, Van Nostrand Reinhold Company,1993
3. Brian Hacket, Planting Design
4. T K Bose and Chowdhury, Tropical Garden Plants in Colour, Horticulture And Allied Publishers,Calcutta, 1991
5. Motloch, J.L., "Introduction to Landscape Design", Van Nostrand Reinhold Publishing Co., New York, 1991 , McGraw Hill Book Co., New York, 1981.Sam kubba, " Green construction project management and cost oversight", Elseiver, 2010
6. Kevin Lynch , "Site Planning", MIT Press, 1967
7. Time Savers Standards for Site Planning, McGraw Hill, Inc, 1995
8. Richard Untermann and Robert Small, "Site planning for cluster housing", Van Nostrand ReinholdCompany, 1977
9. Michael Laurie, "An Introduction to Landscape Architecture", Elsevier, 1986
10. TSS for Landscape Architecture, McGraw Hill, Inc, 1995
11. John Ormsbee Simonds, "Landscape Architecture: A manual of site planning & design", McGra

6. **Self study, Seminar (SWAYAM/NPTEL & MOOC) (Code – 210506)**

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
6	210506	Self study, Seminar (SWAYAM/NPTEL & MOOC)	SEC- 6	-	-	-	20	30	50	4	-	-	4	2

Note: Any one of the course available on SWAYAM shall be opted as Elective –IIand shall not be repeated throughout the course (B.Arch)

7. **Summer Internship Project- II (Code – 210507)**

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
7	210507	Summer Internship Project- II	SEC- 6	-	-	-	-	50	50	2	-	-	2	1

Seminar / Workshop/ Training during previous Summer break will be evaluated

8. Constitution of India/ Essence of Indian Traditional knowledge (Code – 100006)

Objectives –

The course aims to obtain knowledge of traditional knowledge system in Indian context and its usage in building construction and architecture, constitution of India and various reforms and political, social, civil rights and movements.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
8.	100006	Constitution of India/ Essence of Indian Traditional knowledge (Audit course)	MC- 2	70	20	10	-	-	100	3	-	-		3

Unit-1

- Introduction to Basic Structure of Indian Knowledge System
- Homogeneity of modern science and Indian Knowledge Tradition
- Yoga: Promoting positive health and personality
- Case Studies

Unit-2

- Indian Philosophy or Darshanas: Jainism, Buddhism, Yoga, Śaiva and Vedanta
- Indian Linguistic Tradition:PaniniʹsAshtadhyayi
- Indian Art: Mauryanart, Buddhist art, Gupta art, Muslim Art &CultureContemporary art
- Case Studies

UNIT 3 INTRODUCTION TO POLITICAL SCIENCE

- Nature and scope of political science
- Definition, elements and theories of origin of State (Social Contract and Evolutionary)
- Meaning and features of Civil Society
- Indian Political Thought: Raja Ram Mohan Roy, Swami Vivekanand, Gandhi, Ambedkar

Unit 4 Concept of Government and Its Organs

- Government: Definition and its characteristics
- Types and meaning of Legislature: Composition, Function and Role of the Parliament (LokSabha and RajyaSabha)
- The Powers, Position and Role of the President, Prime Minister and the Cabinet
- The Powers, Position and Role of the Governor and the Chief Minister; Composition and the role of Supreme Court, Judicial Review and Judicial Activism

UNIT 5 SALIENT FEATURES OF INDIAN CONSTITUTION

- Preamble, Conventions, Sovereignty of the Constitution and the Rule of Law
- Parliamentary Democracy, Federalism, Secularism and Socialism
- Fundamental Rights, Directive Principles of State Policies and Fundamental Duties
- Election Commission and Electoral Reforms

COURSE OUTCOME - After completion of this course student will be able to-

CO1	**Elaborate** basic concept of Traditional and modern knowledge system of India
CO2	**Explain** the significance of Yoga with respect to health
CO3	**Elaborate** the concept, significance and evolution of political science.
CO4	**Summarize** the political views of various great Indian politicians
CO5	**Apply** the various aspects of Indian philosophy and art in contemporary architecture
CO6	**Apply** the various laws of the Indian government in implementation of projects.

Basic Readings:

1. O.P. Gauba, *Political Theory*, Macmillan, (latest edition).
2. D.D. Basu, *Introduction to the Constitution of India*, (Latest Edition).
3. N.G. Jayal&PratapBhanu Mehta, *The Oxford Companion of Politics in India*, 2000
4. W.H. Morris-Jones, *The Government and Politics of India*.
5. Swami Jitamanand, Holistic Science and Vedam, BhartiyaVidyabhawan
6. V. Shivramakrishnan (Ed.), Cultural Heritage of India, BhartiyaVidyabhawan, Mumbai Fifth Edition, 2014.
7. Yoga sutra of Patanjali, Ramakrishnan Mission, Kolkata.
8. Panini Shiksha, MotilalBanarsidas

9 VN Jha, Language, Thought and Reality
10 Krishna Chaitanya, Arts of India, Abhinav Publications, 1987
11 SC Chatergee and DM Datta, An Introduction to Indian Philosophy, university of Calcutta, 1984
12 A L Basham, The Wonder That was India

Third Year Sixth Semester

1. Architectural Design – VI (Code – 210601)

Objectives –

The course aims to obtain knowledge of Architecture as a design response to Technology, hospitality industry in the first project & requires the student, large scale building with Innovation & experimentations.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
1.	210601	Architectural Design – VI	DC- 14	100	30	20	50	100	300	9	2	3	4(1.5)	11

PROJECT I: DESIGN FOR HOSPITALITY INDUSTRY

The project requires the understanding of the special nature and functioning of the hotel industry and to respond with suitable concepts of space planning, circulation, interior design, materials and lighting. Example: Hotels- Business, resort, heritage, boutique etc. The student needs to concentrate on site planning, space planning, circulation, services and the various aspects of interior design such as furniture, flooring, ceiling, lighting etc. Students get exposure to the difference between a business hotel & a resort as well as the special needs of heritage and Boutique hotels. Exercises in interior space visualization using computer software is attempted.

PROJECT II: URBAN INFRASTRUCTURE PROJECTS

Contemporary transportation terminals and stadiums are large buildings with multiple entries & exits dealing with large crowds and having multiple levels with large spans, complex services & demanding environmental conditions. Function, convenience and security will become the basic design parameters. Example - Bus terminal / Railway station / Indoor sports complex / Aquatic complex etc. This studio challenges the designer to come up with a feasible structural solution after undertaking a study of large span structural systems. Moreover planning for transport terminals requires understanding of safety norms & to design sport facilities understanding of optimum environmental parameters is the requisite.

OUTCOME:

After completion of this course the student will be able to:

CO1	**Summarize** basic concept of spatial planning of different types of buildings such as Hospitality and Infrastructure projects
CO2	**Apply** large span structural systems in design
CO3	**Apply** building bye laws in building design.
CO4	**Apply** various essential services in complex buildings
CO5	**Analyze** the project with respect to various environmental parameters.
CO6	**Design** Hospitality and Infrastructure projects

REFERENCES:

1. Time saver standards for building types, DeChiara and Callender, McGraw hill company
2. Neufert Architect's data, Bousmaha Baiche& Nicholas Walliman. Blackwell science ltd
3. National Building Code - ISI
4. New Metric Handbook – Patricia Tutt and David Adler – The Architectural Press

Note: One design problem shall be given in End Semester Examination.

6X3 hours examination.

2. **Building Services-III (Acoustic & Fire Fighting) (Code – 210602**

Objectives –

The course aims to obtain knowledge of the basic principles of ac ustics in buildings and their integration with architectural design, suitable materials in the design f auditoria and the method to achieve noise control in built spaces, fire fighting services and desig alteration for it, Layout of fire fighting integrated system in building design.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
2	210602	Building Services-III (Acoustic & Fire Fighting)	BSAE-14	50	30	20	-	-	100	4	3	1	-	4

UNIT-1 INTRODUCTION TO THE STUDY OF ACOUSTICS & SOUND TRANSMISSION, ABSORPTION, INSULATION

Acoustics-Definition, terms related to acoustics. Theory of sound: generation, propagation, transmission, reception of sound, sound waves, frequency, intensity wavelength, sound pressure, measurement of sound scales-decibel scale. Calculation of reverberation time using Sabine's formula, Recommended RT/Volume for different spaces. Acoustical defects-echoes, focusing of sound, dead spots, flutter echo. Room resonances, small enclosures, standing waves, proportioning of room dimensions. Room acoustic phenomena: Reflection (plane, concave and convex surfaces), diffusion, reverberation, absorption. Acoustical requirements of different types of building, sound absorption, absorption co-efficient and their measurements, Sound insulation, materials, STC ratings, sound isolation. Sound absorptive materials and their choices, absorption coefficients and their measurements, NRC value.

UNIT-2 NOISE CONTROL AND SOUND REINFORCEMENT & ACOUSTICS IN BUILDING DESIGN AND CONSTRUCTION

Sources and types of noise, characteristics and effect of noise impact on human beings/behavior, noise curves, transmission of noise – airborne and structure borne, transmission loss, Means of noise control-source (enclosures), path (Barriers and insulations) and receiver (personal controls) Measure of noise control for different constructions – construction details of cavity walls, composite walls, floating floor, wood-joist floors, plenum barriers.

Design: Site selection, shape, volume, treatment for interior surface, basic principles in designing open air theatres, cinemas, broadcasting studios, concert halls, class rooms, lecture halls, theatres – Auditorium.

Construction: Constructional detailing, relation to walls/ partition, floor / ceiling/ opening/ windows/ doors. Acoustical requirement of different types of buildings.

UNIT-3 FIRE FIGHTING SERVICES

Fire extinction / suppression technology: constituents of fire, methods of fire extinguishment, Extinguishing agents / media Fire suppression equipment & installations (active fire protection

asures) : fire detection and alarm systems (automatic fire alarm systems), Heat Detectors, Smoke ectors, flame detectors, Choice / Selection of Fire Detectors

frant systems / installations- stand post and Underground type of hydrants (Sluice Valve Type). Internal rant Systems - Dry-riser system, Wet-riser system, Wet-riser-cum -down-comer system and Down-cc er-system. Sprinkler system types. Early Suppression Fast Response Sprinklers (ESFR), water spray systems, automatic drencher systems.

UNIT-4 FIRE FIGHTING SYSTEMS & BUILDING NORMS

Extinguishing Systems - Foam, CO2 and Halon Fire System, first aid firefighting equipment: portable fire extinguishers and its types, graphic symbols for fire protection plans, fire protection - safety signs. Building fire hazards. Relationship of Building Fire Hazards with Life Safety, Hazards from Building Contents, Fire Load and Fire Effects, Exposure Hazard, Hazards from Interior Finish and services. Hazards in Buildings from Collapse, Explosion. Life hazards in buildings and means of escape / egress / exit. Factors affecting Life Safety of Occupants, Growth and Spread of Fire and Smoke, Design Considerations of Means of Exit, Exit Requirements, Lifts and Escalators as Means of Exit, Occupant load, capacities of exits, internal staircases, fire lifts, Firefighting Shafts, external stairs, horizontal exit, illumination of exits ,fire compartmentation, fire tower, refuge areas and ramps.

UNIT-5 FIRE FIGHTING LAYOUT OF BUILDINGS & DESIGN AND DETAILING FOR ACOUSTICS OF MULTIPURPOSE HALLS

Analyze a Fire fighting layout for a commercial building, Reflected ceiling plan of smoke detectors / sprinklers, etc. for a multistoried building.

Discuss and analyses fire accident case studies.

Case studies of acoustically designed and treated multipurpose halls. Onsite measurement with Sound measurement equipment's. Design of a multipurpose hall for optimum acoustics - drawings and construction details of acoustical treatment on walls, ceilings and floors.

COURSE OUTCOME :

After completion of this course the student will be able to:

CO1	**Summarize** concept of acoustics and its various aspects.
CO2	**Identify** effect of noise while designing a building.
CO3	**Apply** basic concept of fire fighting systems in different types of buildings.
CO4	**Identify** various suitable sound insulation materials and techniques for construction.
CO5	**Apply** the basic principles of acoustics in design.
CO6	**Explore** various techniques of fire fighting services in large scale buildings.

REFERENCES:

1. Architectural Acoustics- David Egan,J. Ross Publishing Classics
2. Acoustical Designing in Architecture- Vern.O.Knudsen and Cyril M. Harris,Wiley Publisher
3. Acoustics, noise and buildings- Peter.H.Parkins and H.R.Humphreys, Pitman *publishing* corporation, New York, Chicago
4. Master Handbook of Acoustics–F. Alton Everest and Ken.C.PohlmannPaperback*Publisher*

3. ELECTIVE – II (Code – 210603)

Objectives –

The course aims to obtain knowledge of sustainability and sustainable development, some of the acclaimed sustainable buildings designed within the past decade, building practices with case studies, the various techniques of Energy-efficient design and recycling technologies for water & wastes is mandatory for incorporating these in the design proposals, with technological evolution Intelligent buildings area must to learn, this will help in gaining basic knowledge about intelligent buildings and the ways to design it, technological advancements in designing building that incorporate smart solutions and sustainable features.

S.No.	Subject	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
3.	210603	ELECTIVE -2 i)Sustainable Architecture ii) Intellegent Buildings	DE-2	50	30	20	-	-	100	3	2	1	-	3

i)SUSTAINABLE ARCHITECTURE

UNIT -1 INTRODUCTION AND GLOBAL SCENARIO

Concept of Sustainability, sustainable development – Ethics and Visions of sustainability.

UNIT-2 ECO SYSTEM

Eco system and food chain, natural cycles – Ecological foot print – Climate change and Sustainability.

UNIT-3 PLANNING AND DESIGN FOR SUSTAINABILITY

Selection of materials Eco building materials and construction – Bio mimicry. Low impact construction and recyclable products and embodied energy. Life cycle analysis. Energy sources – Renewable and non-renewable energy.

UNIT-4 CERTIFICATION & AUTHORITIES

Green building design – Rating system – LEED, GRIHA, BREEAM etc., case studies.

India: Gurgaon Development Centre-Wipro Ltd. Gurgeon; Technopolis, Kolkata; Grundfos Pumps India Pvt Ltd, Chennai; Olympia Technology Park, Chennai; World Bank Chennai Building Chennai; Bpo Park At Chennai. Others: the Chicago Center for Green Technology Chicago, USA; Green Operations Building White Rock, Canada; U.S.Courthouse, Orlando, USA.

UNIT-5 URBAN SCENARIO

Urban ecology, social and economic dimensions of sustainability, urban heat Island effects, sustainable communities – Case studies.

COURSE OUTCOME:

After completion of this course the student will be able to:

CO1	**Explain** the concept of sustainability and various aspects of sustainable development.
CO2	**Elaborate** the concept of urban ecology and its various dimensions.
CO3	**Analyze** the concept of ecosystem and its related significant terms.
CO4	**Examine** modern building materials and methods which can be used for a sustainable design.
CO5	**Evaluate** various green building rating systems based on their respective parameters.
CO6	**Classify** different green building certified projects through their case studies.

REFERENCES:

1. Dominique Gauzin – Muller "Sustainable Architecture and Urbanism. Concepts, Technologies and examples", Birkhauser, 2002.
2. Ken Yeang, "Ecodesign: A manual for Ecological Design", Wiley Academy, 2006.
3. Arian Mostaedi, "Sustainable Architecture : Low tech houses", CarlesBroto, 2002.
4. Sandra F.Mendler&Willian Odell, "HOK Guidebook to Sustainable Design", John willey and sons, 2000.
5. Richard Hyder, "Environmental brief: Pathways for green design", Taylor and Francis, 2007.
6. Brenda Vale and Robert Vale, "Green Architecture: Design for a sustainable future", Thames and Hudson 1996.
7. N.D. Kaushika, Energy, Ecology and Environment, Capital Publishing Company, New Delhi.

ii) INTELLEGENT BUILDINGS

COURSE OUTCOME: After completion of this course the student will be able to:

CO1	**Elaborate** the Concept And Significance Of Intelligent Buildings.
CO2	**Integrate** IT Technologies With Building Systems.
CO3	**Analyze** Space Utilization, development of briefing process including design activity and building life cycles.
CO4	**Evaluate** Site Issues, Shell Issues, Skin Issues, Building Services And Technology Issues.
CO5	**Manage** planning and operation of Intelligent buildings.

UNIT 1: Introduction & Origins of the Intelligent Building Concept:

a. Definition and characteristics of Intelligent Buildings, A brief history of the Development of I.B. Concept through recent times highlighting.
b. Automated buildings (1981-1985)
c. Responsive buildings (1986-1991)
d. Effective Buildings (1992-1997)

UNIT 2: Study of Concepts of Building Management (facility management), Effective Space Management, Business management and the various models of Building Intelligence.

UNIT 3: Technology Evolution and the IT market place: Present technological context, Exploration of user IT systems, IT demands on building and services, Building Control systems, study of development of Computer Integrated Building from single function systems to integrated
solutions.

UNIT 4: Key Issues for Intelligent Buildings: Multiple activity settings, Generic analysis of space utilization, Models for shared space use. The development of briefing process including design activity and building element life- cycles, the match between organizational requirements and building technologies, A brief study related to Site issues, Shell issues, Skin issues, Building services and technology issues.

UNIT 5: Managing the Building: Study and importance of facility management planning & operation techniques.
Intelligent Design & Construction: Client expectations, use of IT for effective communication of architectural ideas to clients, locating people and information, introduction to building efficiency studies with respect to life cycle costs.

NOTE: There will be study assignments given to students on various Units.

LIST OF TEXT AND REFERENCE BOOKS:

1. Payne, F. William, "Strategies for energy efficient Plants and intelligent buildings" Fairmont Press, USA, Distributor Prentice Hall India, New Delhi.
2. Derek Clements – Croom(ed), "Intelligent Buildings: Design, Maintenance and Operation, Thomas Telford, London, 2004.
3. Michael Nigginton & Jude Harris, "Intelligent skins" Architectural Press, Oxford, 2002.
4. Albert Ting-Pat so & Wai Lokchan, "Intelligent Building Systems (The international series on Asian studies in computer and information science). Springer, 1999.
5. Andrew Harrison & Eric Loe, "Intelligent Buildings in South East Asia", Spon Press, 1997.

4 . Working Drawing (Code – 210604)

Objectives –

The course aims to obtain understanding of standards and conventions used for preparation of architectural drawings to develop the skills of preparing various architectural drawings and details used for construction of buildings, drawings in sufficient details such that the contractor is able to construct a building as per the design, Graphical presentation of all the components of a building along with dimensioning and annotations, application of IS Codes, Conventions/ methods of preparing a working drawing along with tabulation of schedules of materials, finishes and hardware/ Linking up working drawings / specifications in an architectural project.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
4.	210604	Working Drawing	PAEC - 2	-	-	-	20	30	50	4	-	-	4	2

UNIT- 1 BUILDING DRAWING

Centre line plan, Foundation plan, Structural grid plan (in case of framed structures), Basement floor plan, Ground floor plan, Typical floor plan, All elevations, All sections: one at least through staircase and one through toilet, Terrace floor plan giving details of surface drawing etc.

UNIT- 2 SERVICES

Sanitation drawings showing fixtures etc, Electrical layout plan, Typical wall profiles sections, Detailed drawings of special rooms like kitchens, toilets, staircase etc.

UNIT- 3 SPECIFICATION

In addition to the above, students are expected to prepare a detailed clause by chance specifications for at least one of the 3 projects Specifications writing include the following aspects: Materials, Pre and post installation work., Test if any, Mode of measurements, Knowledge of manufacturers specifications as a database for writing specifications for the following materials, based on surveys:

UNIT- 4 MATERIALS

Glass Plywood and laminates Hardware Electrical wires and accessories Water supply and plumbing fittings and fixtures Flooring and cladding.

UNIT- 5 EXERCISE

One working drawing of a previous year architectural design project having load bearing structure with minimum 150 sq. m. carpet area not exceeding 2 stories. Two details such as doors/windows/railings/kitchen etc.

COURSE OUTCOME:

After completion of this course the student will be able to:

CO1	**Analyze** various finishing materials along with their installation methods
CO2	**Illustrate** various relevant architectural and structural layouts of respective buildings
CO3	**Incorporate** various specification aspects during execution of a project
CO4	**Develop** necessary service layout plans of different buildings.
CO5	**Produce** working drawing sets for load bearing and a frame structure architectural Design project.

REFERENCES:

1. Building construction specification – Jack Lerrs
2. Standard specification of state governments
3. Specification in detail –Frank W Makay
4. Building Drawing – M.G.Shah, C.M.Kale, S.Y.Paoui
5. Architectural Working Drawings –Ralph W Liebing, Mimi Ford

5 ELECTIVE-3 (Code – 210605)

Objectives –

The course aims to obtain knowledge of fundamental concepts and theories of Housing and apply them in their design projects, various types of Housing and its components, the vocabulary of interior design, interior and furniture design and design movements through history, components of interior space and treatment and finishes for the same, the various components of interior design like lighting, landscaping and furniture.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
5.	210605	ELECTIVE-3 i)Housing ii)Interior Design	DE-3	50	30	20	-	-	100	3	1	2	-	3

(i) HOUSING -

UNIT- 1 INTRODUCTION TO HOUSING AND HOUSING ISSUES.

Housing demand and need, Role of Government and public agencies in Housing development, National housing policy, comparison of housing policies and programmes of developed and developing country, Housing agencies, housing programmes and resources, Housing finance.

UNIT- 2 SOCIO ECONOMIC ASPECTS.

Social factors influencing Housing Design – identity, safety, convenience, access, amenities etc, economic factors -affordability and its relationship to house income, incremental housing concept, Slum Upgrading and sites and services schemes and reconstruction process.

UNIT- 3 HOUSING STANDARDS.

Different types of housing standards – spatial standards, safety standards, standards for amenities, Methodology of formulating standards, UD PFI – guide lines, standard and regulations – DCR – performance standards for housing, TCPO, New norms and amenities

UNIT- 4 MODERN TECHNIQUES IN HOUSING CONSTRUCTION.

Prefabrication techniques –modular house, panelized and precast homes, sustainable practices – zero energy home, eco housing, green homes - Teri – Griha and its rating system, Recent advancement in materials, Design guidelines, Environmental impact of Building materials, Environmental quality.

UNIT- 5 HOUSING DESIGN AND PROCESS.

Traditional housing, row housing, cluster housing – apartments and high-rise housing, gated community, Government housing – HUDCO financed project for economically weaker section, their Advantages and disadvantages. Methods and approaches to housing design. Various stages and tasks in project development – feasibility study, detailed study.

COURSE OUTCOME:

After completion of this course the student will be able to:

CO1	**Comprehend** the history, demand, policies, and various stakeholders in housing.
CO2	**Define** the socio-economic aspects, schemes and reconstruction process.
CO3	**Identify** various housing standards, guidelines, regulations, norms, amenities, etc.
CO4	**Summarize** modern housing construction techniques in context of changing scenario and globalization.
CO5	**Elaborate** design process, stages, tasks, methods, approaches of different type of housing projects with respect to varying requirements.
CO6	**Apply** the housing principles hereafter.

REFERENCES:

- KavitaDatta and GA Jones,'Housing and Finance in Developing Countries', Routledge, London,1999.
- Housing Design –Eugene Henry Klaber – Reinhold publishing corp.
- Daniel Vallero and Chris Brasier, Sustainable Design – The science of sustainability and Green Engineering,Wiley,2008
- Thomas E Glavinich, Green Building Constction, Wiley,2008
- GeofreyK Payne, Low Income Housing in the Development World, John Wiley and Sons, Chichester,1984
- Martin Evans, Housing, Climate and Comfort, Architectural Press, London, 1980
- An introduction to Urban Housing Design –Graham Towers -2

ii) **INTERIOR DESIGN**

UNIT-1 INTRODUCTION TO INTERIOR DESIGN

Introduction to interior design, Design process, style, Behaviour psychology, perception. Basic elements of evolution of creativity, dot line, plane, volume,2D, 3D. Basic principles of design Axis, Symmetry, Balance, Focus, Rhythm, Harmony, Unity,Variety Contrast, Hierarchy, Scale& Proportion, Movement, Emphasis, Dominance, Fluidity, etc

UNIT-2 HISTORY OF INTERIOR AND FURNITURE DESIGN

Brief study of the history of interior design context to western through the ages, Relating to historical context and design movement.Brief study of Indian folk arts and crafts with reference to interior design and decoration.

UNIT-3 ELEMENTS OF INTERIOR DESIGN INTERIOR TREATMENT AND FINISHES

Introduction to various elements of interior like floor, ceiling, walls, staircase, opening, services elements, incidental elements etc. And various methods of their treatment involving use of modern building materials and methods of construction in order to obtain certain specific functional aesthetic and psychological effects.

iii) **UNIT-4 ELEMENTS OF INTERIOR DESIGN-LIGHTING & INTERIOR LANDSCAPING**

Study of interior lighting –different types of lighting ,types of lighting fixtures their effects and suitability in different context. And accessories used for enhancement of interior .Interior Landscaping-elements like rocks, plants, water ,flower, fountains, paving, artifacts etc. Their physical properties and effects on interior space.

iv)

v) **UNIT-5 ELEMENTS OF INTERIOR DESIGN- FURNITURE & SPACE PLANNING**

Study of human relationship between furniture and spaces, furniture design as related to human comfort and function. Material of furniture types of interior. office furniture, children's furniture, residential furniture, display systems etc. construction, changing trends and lifestyles innovations and design ideas. Study on furniture.

vi)

COURSEOUTCOME

After completion of this course the student will be able to:

CO1	**Explain** basic principles, multiple dimensions and concepts of interior design.
CO2	**Elaborate** concept of interior lighting which includes various lighting fixtures and their effects.
CO3	**Analyze** human relationship between furniture and interior spaces considering material and types of furniture according to different spaces.
CO4	**Summarize** the history of interior design in western context followed by various design movements.
CO5	**Analyze** various elements of interior design and their methods of treatment by using modern building materials so that attractive and efficient design can be achieved.
CO6	**Examine** various interior landscaping elements, their physical properties and effects on interior space.

REFERENCES:

1. Francis D.K.Ching, " interior design illustated" U.N.R publication.NY1987
PremavathySeetharaman, ParveenPannv" Interior Design and Decoration" CBS publication, 2015
2. Julius Penero and Martin Zelnik, 'Human Dimensions and Interior Space' Whitney library of design, NY 1979
3. SyanneSlesinAnd Stafford Ceiff 'Indian Style,ClarksonN Potter', New York 1990
4. Gary Gordon 'Interior Lighting For Designers' John Willey&Sons-2003.
5. Kathryn.B HiesingerAnd George H.Marcus,Landmarks Of Twentieth Century Design, Appey Ville Press,1993.
6. IncaInterior Design Register,Inca Publications, Chennai,1989.
7. Steprt-DevanKness, Logan And Szebely,'Introduction To Interior Design' Macmillan Publication Co. Newyork 1980
8. NBC,2016 (Part 4)

6. ELECTIVE- 4 (Code – 210606)

Objectives –

The course aims to obtain knowledge of eminent Town planners and their contribution to planning thought. To understand the contemporary issues in urban planning, overall understanding of classification of settlements, land-use, zoning and types of development plan, simple Town planning techniques, various types of journalism, various techniques of Architectural Journalism, changing scenario in the context of globalization, Architectural Journalism in practical.

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional						
6	210606	ELECTIVE- 4 i)Planning for Small & medium cities ii) Architectural Journalism	DE-4	50	30	20	-	-	100	3	2	1	-	3

(i) PLANNING FOR SMALL AND MEDIUM TOWNS

Unit-1 Evolution

Evolution of small and medium towns through ages all over the world. SMTs in developed and developing countries.

Unit-2 Regional Development

Role of small and medium towns in regional development. Migration mitigation, employment generation,

Unit-3 Urban Governance

Schemes, programs by government, Urban management including various schemes for small and medium towns by GOI, JNNURM

Unit-4 Resource Mobilization

Use of available resources in the region, optimum mobilization of natural and manmade resources. Nonconventional energy resources, Industrial location. Human resource utilization through schemes and use of PPP

Unit-5 Infrastructure development

Urban services and infrastructure development –

water supply, electricity, sewage disposal, transport network and others.

COURSE OUTCOME

After completion of this course the student will be able to :

CO1	**Elaborate** the Evolution of the Small and medium towns.
CO2	**Comprehend** the development process of each, their factors and similarities.
CO3	**Identify** various schemes, policies for the towns level development
CO4	**Define** the mobilization of resources in small and medium town level stage.
CO5	**Incorporate** the development process of Infrastructures.
CO6	**Apply** the planning principles and techniques hereafter.

REFERENCES:

1. Arthur B. Gallion and Simon Eisner, The Urban Pattern – *City planning and Design*, Van Nostrand Reinhold company
2. Rangwala, *Town Planning*. Charotar publishing house
3. Guidelines For Urban Infrastructure Development, GOI.
4. 8th Five Year Plan (Vol-2) - Planning Commission, GOI
5. RameGowda, *Urban and Regional planning*
6. *Town Planning*, A Bandopadhyay, Books and Allied, Calcutta 2000

(ii) **ARCHITECTURE JOURNALISM**

UNIT-1 JOURNALISM

Introduction to journalism, key concepts and objectives of Journalism – Specialized journalism: with emphasis on architectural journalism - Journalism skills: research, reporting, writing, editing, criticism.

(iii) **UNIT- 2 DISCUSSIONS AND ISSUES**

Regional, National and International discussion forums, Changes in contemporary and historical design practices. Discussions on topics needed in an architectural journal and current issues - types of journals, works of key architectural journalists, Public Discourse on the Internet, Mass Media and Public Opinion – critique on selected pieces of journalism.

(iv) **UNIT – 3**

Contemporary Architectural Journalism, Digital journalism, Cinematography, Critical appraisal of Technical, Literature, Visual and Media.

UNIT-4 FIELD PROGRAM

Exercise on integrating photography in architectural journalism.

COURSE OUTCOME

After completion of this course the student will be able to :

CO1	**Elaborate** basic concepts of journalism with the main focus on various aspects of architectural journalism.
CO2	**Analyze** theoretical and contextual needs for conducting journalism through research.
CO3	**Prepare** architectural report (critical, appraisal or research) of a project.
CO4	**Prepare** architectural photography report

REFERENCE

Huckerby, Martin., The Net for Journalists: A Practical Guide to the Internet for Journalists in Developing Countries. UNESCO/Thomson Foundation/ Common wealth Broadcasting Association, 2005

7. **Tour/ seminar / Workshop/Training during winter break (Code – 210607)**

S.No.	Subjet Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment	End Sem.	Lab work & Sessional			L	T	P	
7.	210607	Tour/ seminar Workshop/Training during winter break	SEC-8	-	-	-	-	50	50	2	-	-	2	1

Study Tour/ Seminar / Workshop/ Training during previous winter break will be evaluated

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A Govt. Aided UGC Autonomous Institute Affiliated to RGPV, Bhopal)

Scheme of Examination

W.E.F. JULY 2018 Batch

Bachelor of Architecture, First Year, I Semester

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem.	Quiz/ Assignment /Sessional	End Sem.	Lab work & Sessional			L	T	P	
1.	210101	Architectural Design – 1	DC-1	100	30	20	50	50	250	7	2	3	2(1.5)	8
2.	210102	Architectural Materials	BSAE-1	50	30	20	-	-	100	3	2	1	-	3
3.	210103	Graphics – 1	DC-2	50	30	20	50	50	200	7	2	3	2	6
4.	210108	Structure I	BSAE-2	50	30	20	-	-	100	3	2	1	-	3
5.	210105	History of Architecture- I	DC-3	50	30	20	-	-	100	3	2	1	-	3
6.	210107	Workshop – I	SEC -1	-	-	-	20	30	50	4	-	-	4	2
7.	210109	Technical English	SEC -2	50	30	20	-	-	100	2	1	1	-	2
		Total		**350**	**180**	**120**	**120**	**130**	**900**	**29**	**11**	**10**	**8**	**27**
Induction program of three weeks (MC): Physical activity, Creative Arts, Universal Human Values, Literary, Proficiency Modules, Lectures by Eminent people, Visits to local Areas, Familiarization to Dept/ Branch Innovation														

*One Design Studio/ Construction Studio/ Project/ Thesis Period/ Hour shall have 1.5 Credit

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A Govt. Aided UGC Autonomous Institute Affiliated to RGPV, Bhopal)

Scheme of Examination

W.E.F. JULY 2017

Bachelor of Architecture, Second Year, III Semester

S.No.	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot				L	T	P	
				End Sem.	Mid Sem. Exam.	Quiz/ Assignment / Sessional	End Sem.	Term work / Lab Work & Sessional						
1.	210301	Architectural Design – III	DC- 8	100	30	20	50	50	250	7	2	3	2(1.5)	8
2.	210302	Building Construction -II	BSAE- 5	50	30	20	50	50	200	5	2	1	2(1.5)	6
3.	210303	Graphics -III	PAEC- 1	-	-	-	50	50	100	6	-	-	6	3
4.	210304	Surveying &Leveling	BSAE- 6	50	30	20	-	-	100	3	1	2	-	3
5.	210305	History of Architecture-III	DC- 9	50	30	20	-	-	100	3	2	1	-	3
6.	210306	Structure-III	BSAE- 7	50	30	20	-	-	100	3	2	1	-	3
7.	210307	Summer Internship Project –I (Institute Level Evaluation)	SEC- 4	-	-	-	-	50	50	2	-	-	2	1
Total				**300**	**150**	**100**	**150**	**200**	**900**	**29**	**9**	**8**	**12**	**27**
8.	210308	Biology for Engineers/ Architects (Audit Course)	MC-1	50	30	20	-	-	100	3	3	-	-	3
NSS/NCC					**Qualifier**									

***Compulsory registration for one online course using SWAYAM/NPTEL/ MOOC, evaluation through attendance, assignments and presentation.**

Tour/ seminar/ Workshop/ Training during winter break

*One Design Studio/ Construction Studio/ Project/ Thesis Period/ Hour shall have 1.5 Credit

*210308 Biology for Architects (Audit Course) will not be included in the aggregate and Passing is optional, however a separate marksheet will be issued to those who qualify

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

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Scheme of Examination

[redacted]

Bachelor of Architecture, Third Year, V Semester

S.No	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HRS	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem Exam	Quiz/ Assignment/ Sessional	End Sem.	Lab work & Sessional			L	T	P	
1.	210501	Architectural Design – V	DC- 12	100	30	20	50	50	250	7	2	3	2(1.5)	8
2.	210502	Building Construction -IV	BSAE-11	50	30	20	20	30	150	5	2	1	2(1.5)	6
3.	210503	Building Services-II (Electrical & Mechanical)	BSAE-12	50	30	20	-	-	100	3	2	1	-	3
4.	210504	Building Sciences& Energy Conservation	BSAE-13	50	30	20	-	-	100	3	2	1	-	3
5.	210505	Site Planning and Landscaping	DC- 13	50	30	20	-	-	100	4	1	1	2	3
6.	210506	Self study, Seminar (SWAYAM/NPTEL & MOOC)	SEC- 6	-	-	-	20	30	50	4	-	-	4	2
7.	210507	Summer Internship Project- II	SEC- 7	-	-	-	-	50	50	2	-	-	2	1
		Total		**300**	**150**	**100**	**90**	**160**	**800**	**28**	**9**	**7**	**12**	**26**
8.	100006	Constitution of India/ Essence of Indian Traditional knowledge (Audit course)	MC- 2	70	20	10	-	-	100	3	-	-		3
				Department level activity/ workshop/ awareness programme to be conducted, certificate of compliance to be submitted by HoD to the Exam Controller through Dean Academics										
Additional Course for Honors of Minor Specialization				Permitted to opt for maximum two additional courses for the award of Honors or Minor specialization										

'Compulsory registration for one online course using SWAYAM/NPTEL/ MOOC, Evaluation through attendance, assignments and presentations.

Tour/ seminar/ Workshop/ Training during winter break will be evaluated in next semester

*One Design Studio/ Construction Studio/ Project/ Thesis Period/ Hour shall have 1.5 Credit

*100006 Constitution of India/ Essence of Indian Traditional knowledge (Audit course) will not be included in the aggregate and Passing is optional, however a separate marksheet will be issued to those who qualify

April 2019

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR – 474005

(An Autonomous Institute under rajivGandhiProudyogikiVishwavidyalaya, Bhopal)

CBCS SCHEME OF EXAMINATION- BACHELOR OF ARCHITECTURE WEF 2016

For Batch2015-20
2016-21

FOURTH YEAR SEVENTH SEMESTER

S.No	Subject Code	Subject Name	Maximum Marks Allotted						Credit Allotted		Total credits
			Theory			Practical					
			End Sem	Mid Sem Test	Assignment/ Quiz	End Sem	Studio Work	Assignment/ Quiz	Theory	Practical	
1	AR701	Architectural Design – VII	-	50	10	100	200	10	4	3	7
2	AR702	Advance Building Construction – I	50	20	10	50	50	10	3	1	4
3	AR703	Advanced Structure Design	50	20	10	-		-	3	-	3
4	AR704	Project Management & Building Economics	50	20	10	-	-	-	3	-	3
5	AR705	Elective-II 1. Conservation 2.Disaster Management & Earthquake resistance Structures, 3.GIS and Remote Sensing	50	20	10	50	50	-	3	1	4
7	AR706	Dissertation	-	-	-	50	50	-	--	3	3
		Total	**200**	**130**	**50**	**250**	**350**	**20**	**16**	**8**	**24**

Elective-III – 1. Conservation, 2.Disaster Management & Earthquake resistance Structures, 3.G.I.S and Remote Sensing

21.2.

Department of Architecture & Planning * M.I.T.S. GWALIOR

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR – 474005

(An Autonomous Institute under rajivGandhiProudyogikiVishwavidyalaya, Bhopal)

CBCS SCHEME OF EXAMINATION- BACHELOR OF ARCHITECTURE WEF 2016

For Batch2015-20
2016-21

FIFTH YEAR NINETH SEMESTER

S.No	Subject Code	Subject Name	Maximum Marks Allotted						Credit Allotted		Total credits
			Theory			Practical					
			End Sem	Mid Sem Test	Assignment/ Quiz	End Sem	Studio Work	Assignment/ Quiz	Theory	Practical	
1	AR901	Training	-	-	-	300	200	-	-	20	20
		Total	-	-	-	300	200	-	-	20	20

04/01/2020

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Department of Architecture & Planning
M.I.T.S. GWALIOR

MUP

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE

(A Govt. Aided UGC Autonomous Institute Affiliated to RGPV, Bhopal)

Department of Architecture

SCHEME OF EXAMINATION

(FOR 2018- 2020)

&

Detailed Syllabus

For

Master of Urban Planning

CO_5 to be added to all courses syllabus MUP

MADHAV INSTITUTE OF TECCNOLGY AND SCIENCE, GWALIOR-5

(A Govt. Aided UGC Autonomous Institute Affiliated to RGPV, Bhopal)

Department of Architecture

Minutes of the Meeting of Board of Study of Architecture Meeting

The minutes of board of studies of Master of Urban Planning (MUP) was held on 06/10/2018 at 11:30AM in the office of Head, Department of Architecture.

The following members were present:

1. Ar. P.N.Mishra, Retr. Add. Director, T & C, MP, Govt. Bhopal M.P.
2. Dr. Alok Sharma, Professor & Head, Department of Architecture MITS, Gwalior
3. Dr. S.S. Jadon, Professor, Department of Architecture MITS, Gwalior
4. Dr. A.S. Patil, Asst. Professor, Department of Architecture MITS, Gwalior

Leave of absence was granted to Dr.S.M. Akhtar, Dr. Sanjeev Singh, Dr Sandeep Sankat and Ar.Pushpak Pandit,the members who could not attend the meeting.

The syllabus for Master of Urban Planning grading scheme first year & second year is prepared & reserved. The following scheme of evaluation and detailed syllabus were discussed and recommended for consideration.

- Nomenclature of subject 670101 – Planning History and Theory is changed to Planning Principles and Theory.
- 'Planning Practices worldwide'- Content is added to the module of subject 670101 Planning Principles and Theory.
- The Module 'Community and Settlement' is deleted from 670102 – Socio-Economic basis for Planning and is added to subject 670201 – City and Metropolitan Planning.
- Nomenclature of subject 670105– 'Housing and Environmental Planning' is changed to 'Housing'.
- Studio assignments are restructured in Studio II - 670107 - Review of City Development Plan, content is revised.
- 670106 – Studio I – Area appreciation exercise is changed to group assignment from individual assignment.
- Studio assignments are restructured in Studio I - 670206 - Preparation of City Development Plan, content is revised.
- Course is revised in subject 670301 – Elective I.
- Course is revised in subject 670302 - Elective II.
- Content is revised in subject 670303 – Seminar.
- Content is revised in subject 670304 – Pre-dissertation.
- The content is revised in subject 670401 – Dissertation.
- The details of professional training are added.

6/10/18

(Ar. P.N Mishra)
Retd. Add. Director,
T & C, MP Govt.
Bhopal M.P

6.10.18

(Dr. A. S. Patil)
Asst. Professor, Department of
Architecture MITS, Gwalior

06.10.18

(Dr. S. S. Jadon)
Professor, Department of Architecture MITS,
Gwalior

6/10/2018

(Dr. Alok Sharma)
Professor & Head
Department of Architecture MITS, Gwalior

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR – 474005

(An Autonomous Institute under Rajiv Gandhi Prodyogiki Vishwavidhyalaya, Bhopal)

SCHEME OF EXAMINATION - **MASTER OF URBAN PLANNING** WEF July 2018

FIRST YEAR FIRST SEMESTER

S.No	Subject Code	Subject Name	Maximum Marks Allotted					Teaching Hours per Week			Total credits	
			Theory			Practical		Lectures (L)	Tutorials (T)	Practical /Studios (P/S)		
			End Sem	Mid Sem Test	Assign ment/ Quiz	End Sem	Studio Work/ Sessiona					
1.	670101	PLANNING PRINCIPLES AND THEORY	70	20	10	-	-	3	1	-	4	100
2.	670102	SOCIO-ECONOMIC BASIS FOR PLANNING	70	20	10	-	-	3	1	-	4	100
3.	670103	PLANNING TECHNIQUES	70	20	10	-	-	3	1	-	4	100
4.	670104	INFRASTRUCTURE AND TRANSPORTATION PLANNING	70	20	10	-	-	3	1	-	4	100
5.	670105	HOUSING	70	20	10	-	-	3	1	-	4	100
6.	670106	STUDIO COURSE-I STUDIO ASSIGNMENTS/FILM APPRECIATION/ LITERATURE REVIEW/ AREA APPLICATION	-	-	-	90	60	-	-	6	6	150
7.	670107	STUDIO COURSE-II SITE PLANNING/ CITY DEVELOPMENT PLAN	-	-	-	90	60	-	-	6	6	150
			350	100	50	180	120	15	5	12	32	800

Scheme and syllabus approved on 06/10/2018

6.10.18

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR – 474005

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SCHEME OF EXAMINATION - **MASTER OF URBAN PLANNING** WEF July **2018**

FIRST YEAR SECOND SEMESTER

S.No	Subject Code	Subject Name	Maximum Marks Allotted					Teaching Hours per Week			Total credits	
			Theory			Practical		Lectures (L)	Tutorials (T)	Practical/ Studios (P/S)		
			End Sem	Mid Sem Test	Assignment / Quiz	End Sem	Studio Work/ Sessional					
1.	670201	CITY AND METROPOLITAN PLANNING	70	20	10	-	-	3	1	-	4	100
2.	670202	URBAN HERITAGE CONSERVATION	70	20	10	-	-	3	1	-	4	100
3.	670203	URBAN DEVELOPMENT FINANCE & PROJECT PLANNING	70	20	10	-	-	3	1	-	4	100
4.	670204	LEGAL ISSUES & PROFESSIONAL PRACTICE	70	20	10	-	-	3	1	-	4	100
5.	670205	RESEARCH METHODOLOGY	70	20	10	-	-	3	1	-	4	100
6.	670206	STUDIO-I	-	-	-	90	60	-	-	6	6	150
7.	670207	STUDIO-II	-	-	-	90	60	-	-	6	6	150
			350	120	60	180	120	15	5	12	32	800

*Note: The student is required to undertake summer training of minimum 5weeks after 2 semesters of course work in any government, private or research organization undertaking urban and regional planning works. The practical training will commence during the summer break between second and third

Scheme and syllabus approved on 06/10/2018

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6.10.18

semester. The students are required to give a presentation specifying the work they were involved in during their internship period. The marks for the same will be incorporated with the marks of Seminar 670303.

SECOND YEAR THIRD SEMESTER

S.No	Subject Code	Subject Name	Maximum Marks Allotted					Teaching Hours per Week			Total credits	
			Theory			Practical		Lectures (L)	Tutorials (T)	Practical/ Studios		
			End Sem	Mid Sem Test	Assignment / Quiz	End Sem	Studio Work/ Sessional					
1.	670301	ELECTIVE –I	70	20	10	-	-	3	1	-	4	100
2.	670302	ELECTIVE- II	70	20	10	-	-	3	1	-	4	100
3.	670303	SEMINAR	-	-	-	-	100	-	-	6	6	100
4.	670304	PRE-DISSERTATION	-	-	-	120	80	-	-	6	6	200
			140	40	20	120	180	6	2	12	20	500

Elective I- 1. Inclusive Urban Planning, 2. Planning for Tourism

Elective II- 1. Environment, Development and Disaster Management, 2. Energy, Climate change and Urban Development

Scheme and syllabus approved on 06/10/2018

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MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR – 474005

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SCHEME OF EXAMINATION - **MASTER OF URBAN PLANNING** WEF July 2018

SECOND YEAR FOURTH SEMESTER

S.No	Subject Code	Subject Name	Maximum Marks Allotted					Teaching Hours per Week			Total credits	
			Theory		Practical			Lectures (L)	Tutorials (T)	Practical/ Studios		
			End Sem	Mid Sem Test	Assignment / Quiz	End Sem	Studio Work/ Sessional					
1.	670401	DISSERTATION	-	-	-	200	300	-	-	20	20	500
		TOTAL	-	-	-	200	300	-	-	20	20	500

Scheme and syllabus approved on 06/10/2018

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670101- PLANNING PRINCIPLES AND THEORY

S.No	Subject Code	Subject Name	Maximum Marks Allotted					Teaching Hours per Week			Total credits	
			Theory			Practical		Lectures (L)	Tutorials (T)	Practical/ Studios (P/S)		
			End Sem	Mid Sem Test	Assignment/ Quiz	End Sem	Studio Work/ Sessional					
1.	670101	PLANNING PRINCIPLES AND THEORY	70	20	10	-	-	3	1	-	4	100

Evolution of City Building

Relevance of the study of evolution of settlements; Hunter, gatherer, farmer and formation of organized society; Cosmological and other influences, origins and growth of cities, effects of cultural influence on physical form; Human settlements as an expression of civilizations; Basic elements of the city; Concepts of space, time, scale of cities.

Planning History

Town Planning practices worldwide, Town planning in ancient India; Medieval, renaissance, industrial and post industrial cities; City as a living spatial entity; Concepts of landmark, axis, orientation; City form as a living space; City as a political statement: New Delhi, Chandigarh, Washington D.C. Brasilia etc.; Contribution of individuals to city planning: Lewis Mumford, Patrick Geddes, Peter Hall, etc; Dynamics of the growing city, impact of industrialization and urbanization, metropolis and megalopolis.

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Definitions and Objectives of Planning

Definitions of town and country planning; Orthodoxies of planning; Goal formulation, objective, scope, limitations; Sustainability and rationality in planning; Components of sustainable urban and regional development.

Theories of City Development and Planning Theories

Theories of city development including Concentric Zone Theory, Sector Theory, Multiple Nuclei Theory and other latest theories; Land-use and land value theory of William Alonso; Ebenezer Howard's Garden City Concept; and Green Belt Concept; City as an organism: a physical, social, economic and political entity; Emerging Concepts: global city, inclusive city, safe city, etc.; City of the future and future of the city; Shadow cities, divided cities; Models of planning: Advocacy and Pluralism in Planning; Systems approach to planning; rationalistic and incremental approaches, mixed scanning and middle range planning; Equity planning; Political Economy Model; Types of development plans, plan making process.

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR – 474005

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SCHEME OF EXAMINATION - **MASTER OF URBAN PLANNING** WEF July 2018

670102 - SOCIO-ECONOMIC BASIS FOR PLANNING

S.No	Subject Code	Subject Name	Maximum Marks Allotted					Teaching Hours per Week			Total credits	
			Theory			Practical		Lectures (L)	Tutorials (T)	Practical/ Studies (P/S)		
			End Sem	Mid Sem Test	Assignment/ Quiz	End Sem	Studio Work/ Sessional					
1.	670102	SOCIO-ECONOMIC BASIS FOR PLANNING	70	20	10	-	-	3	1	-	4	100

Nature and Scope of Sociology

Sociological concepts and methods, man and environment relationships; Socio-cultural profile of indian society and urban transformation; Tradition and modernity in the context of urban and rural settlements; Issues related to caste, age, sex, gender, health safety, and marginalized groups; Displacement, resettlement and rehabilitation due to compulsory land acquisition.

Elements of Micro and Macro Economics

Concepts of demand, supply, elasticity and consumer markets; concept of revenue costs; Economies of scale, economic and social costs, production and factor market; Different market structures and price determination; market failures, cost-benefit analysis, public sector pricing; Determinants of national income, consumption, investment, inflation, unemployment, capital budgeting, risk and uncertainty, and long-term investment planning.

Development Economics and Lessons from Indian Experiences

Economic growth and development, quality of life; Human development index, poverty and income distribution, employment and livelihood; Economic principles in land-use planning; Policies and strategies in economic planning, balanced versus unbalanced growth, public sector dominance; changing economic policies, implications on land.

Scheme and syllabus approved on 06/10/2018

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR – 474005

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SCHEME OF EXAMINATION - MASTER OF URBAN PLANNING WEF July 2018

670103 - PLANNING TECHNIQUES

S.No	Subject Code	Subject Name	Maximum Marks Allotted					Teaching Hours per Week			Total credits	
			Theory			Practical		Lectures (L)	Tutorials (T)	Practical/ Studios (P/S)		
			End Sem	Mid Sem Test	Assignment/ Quiz	End Sem	Studio Work/ Sessional					
1.	670103	PLANNING TECHNIQUES	70	20	10	-	-	3	1	-	4	100

Survey Techniques and Mapping

Data base for physical surveys including land-use, building use, density, building age, etc., and socio-economic surveys; Survey techniques; Land-use classification or coding and expected outputs; Techniques of preparing base map including understanding the concepts of scales, components and detailing for various levels of plans like regional plan, city plan, zoning plan, and local area plan.

Analytical Methods

Classification of regions, delineation techniques of various types of regions, analysis of structure of nodes, hierarchy, nesting and rank size; Sociogram, sociogram, etc.; Planning balance sheet; Threshold analysis; Input output analysis; SWOT analysis;

Scheme and syllabus approved on 26/12/2018

Demographic Methods

Methods of population forecasts and projections; Lorenz Curve, Ginni Ratio, Theil's index, rations: urban – rural, urban concentration, metropolitan concentration; Location dimensions of population groups – social area and strategic choice approach – inter connected decision area analysis.

Planning Standards

Spatial standards, performance standards and benchmarks, and variable standards; UDPFI guidelines, Zoning regulations and development control rules and regulations.

670104 - INFRASTRUCTURE AND TRANSPORT PLANNING

S.No	Subject Code	Subject Name	Maximum Marks Allotted					Teaching Hours per Week			Total credits	
			Theory			Practical		Lectures (L)	Tutorials (T)	Practical/ Studios (P/S)		
			End Sem	Mid Sem Test	Assignment/ Quiz	End Sem	Studio Work/ Sessional					
1.	670104	INFRASTRUCTURE AND TRANSPORT PLANNING	70	20	10	-	-	3	1	-	4	100

Role of Infrastructure in Development

Elements of Infrastructure (physical, social, utilities and services); Basic definitions, concepts, significance and importance; Data required for provision and planning of urban networks and services; Resource analysis, provision of infrastructure, and land requirements; Principles of resource distribution in space; Types, hierarchical distribution of facilities, Access to facilities, provision and location criteria, Norms and standards, etc.

Planning and Management of Water, Sanitation and Storm Water

Water – sources of water, treatment and storage, transportation and distribution, quality, networks, distribution losses, water harvesting, recycling and reuse, norms and standards of provision, institutional arrangements, planning provisions and management issues; Sanitation – points of generation, collection, treatment, disposal, norms and standards, grey water disposal, DEWATS, institutional arrangements, planning provisions and management issues

Storm water – rainfall data interpretation, points of water stagnation, system of natural drains, surface topography and soil characteristics, ground water replenishment, storm water collection and disposal, norms and standards, institutional arrangements, planning provisions and management issues

Planning and Management of Municipal Wastes, Power and Fire

Municipal and other wastes – generation, typology, quantity, collection, storage, transportation, treatment, disposal, recycling and reuse, wealth from waste, norms and standards, institutional arrangements, planning provisions and management issues.

Power – Sources of power procurement, distribution networks, demand assessment, norms and standards, planning provisions and management issues. Fire – History of fire hazards, vulnerable locations, methods of firefighting, norms and standards, planning provisions and management issues.

City Development and Transport Infrastructure Planning, Management and Design

Role of transport, types of transport systems, evolution of transport modes, transport problems and mobility issues; Urban form and Transport patterns, land-use – transport cycle, concept of accessibility; Hierarchy, capacity and geometric design elements of roads and intersections; Basic principles of Transport infrastructure design; Traffic and transportation surveys and studies, traffic and travel characteristics; Urban transport planning process – stages, study area, zoning, data base, concept of trip generation Transport, environment and safety issues; principles and approaches of traffic management, transport system management.

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MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR – 474005

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SCHEME OF EXAMINATION - **MASTER OF URBAN PLANNING** WEF July 2018

670105 - HOUSING

S.No	Subject Code	Subject Name	Maximum Marks Allotted					Teaching Hours per Week			Total credits	
			Theory			Practical		Lectures (L)	Tutorials (T)	Practical/ Studios (P/S)		
			End Sem	Mid Sem Test	Assignment/ Quiz	End Sem	Studio Work/ Sessional					
1.	670105	HOUSING	70	20	10	-	-	3	1	-	4	100

Concepts and Definitions

Shelter as a basic requirement, determinants of housing form, Census of India definitions, introduction to policies, housing need, demand and supply, dilapidation, structural conditions, materials of constructions, housing age, occupancy rate, crowding, housing shortage, income and affordability, poverty and slums, houseless population

Various housing typologies viz. traditional houses, plotted development, group housing, multi- storied housing, villas, chawls, etc., slums and squatters, night shelters, public health issues related to housing, various theories of housing, concept of green housing, green rating of housing projects.

Social and Economic Dimensions

Housing as social security, role of housing in development of family and community well-being, status and prestige related to housing, safety, crime and insecurity, deprivation and social vulnerability, ghettoism, gender issues, housing for the elderly.

Contribution of housing to micro and macro economy, contribution to national wealth and GDP; housing taxation, national budgets, fiscal concessions, forward and backward linkages.

Scheme and syllabus approved on 06/10/2018

Housing and the City

Understanding housing as an important land-use component of city plan / master plan, considerations for carrying out city level housing studies, projections, land-use provisions; Suitability of land for housing, housing stress identification, projecting housing requirements, calculating housing shortages, housing allocation.

Planning for Neighborhoods

Approaches to neighborhood living in traditional and contemporary societies, elements of neighborhood structure, Planning and design criteria for modern neighborhoods, norms and criteria for area distribution, housing and area planning standards, net residential density and gross residential density, development controls and building byelaws, UDPFI guidelines, NBC 2005 provisions and Case studies of neighborhood planning.

670106 - STUDIO I

S.No	Subject Code	Subject Name	Maximum Marks Allotted					Teaching Hours per Week			Total credits	
			Theory			Practical		Lectures (L)	Tutorials (T)	Practical/ Studios (P/S)		
			End Sem	Mid Sem Test	Assignment/ Quiz	End Sem	Studio Work/ Sessional					
1.	670106	STUDIO COURSE-I STUDIO ASSIGNMENTS/FILM APPRECIATION/ LITERATURE REVIEW/ AREA APPLICATION	-	-	-	90	60	-	-	6	6	150

Film Appreciation (individual assignment)

Films related to city development and socio-economic issues will be screened for students. The purpose of these films is to educate the students' understanding of various development issues and to absorb them in the planning practice. At the end of the film, a discourse around the film will also be held.

After viewing the films, each student is expected to write about its main focus, city / region context, its applicability to Indian environment by answering the given questions in not more than half a page.

Literature Review (individual assignment)

Each student is expected to read the article given from a journal/book and write a summary of not more than a page (250 words only) highlighting the problem, approach, methodology, analysis, how the author arrived at the conclusion and its relevance to Indian context. There will be a negative marking for writing the same text as in the original (that is copying from the original text given to them).

Area Appreciation (group assignment)

The aim of the area appreciation exercise is to enable the students to understand and contextualise the location of the area in relation to the city, zone and area in which the particular place is situated. This is done in relation to the socio-economic, spatial and cultural characteristics of that city, zone, location, etc. The main purpose is to make the students appreciate the locational attributes of land parcels for future development in a city.

Due to the size of the area, this exercise is done in groups of students being assigned to a area.

The following planning issues at area level should be identified:

- Review of the Master Plan / Zonal / Area plan in relation to the selected areas.
- Appreciation / Analysis of ward level data.
- Perception of areas in terms of legal / illegal / authorized / unauthorized, Slums, UrbanAesthetics.
- Social Categorizations of people - Type of population living, people's perception about area and its planning problems.
- Land-use including Agriculture land and land-use conflicts, extent (%) of broad land-use such as commercial, industrial, residential, institutional and recreational.
- Extent of formal / informal activities present in the area including their location and conflicts. General land tenure of the area and land value for different uses.
- Major types of transport, type of roads, hierarchy of roads, type of transport modes used.
- Amenities: Location of social and physical infrastructure and their problems as perceived by local population.
- Look for specific infrastructure such as Water supply, drainage (water logging areas), waste collection and disposal system, sanitation, etc. Environmental Issues: Open Spaces – Availability and extent of open space to built-up area, garbage disposal, encroachment (through photographic evidences and sketches). Locating the study area in the zone, city and regional context with respect to all the above aspects.

670107 - STUDIO II

S.No	Subject Code	Subject Name	Maximum Marks Allotted					Teaching Hours per Week			Total credits	
			Theory			Practical		Lectures (L)	Tutorials (T)	Practical/ Studios (P/S)		
			End Sem	Mid Sem Test	Assignment/ Quiz	End Sem	Studio Work/ Sessional					
1.	670107	STUDIO COURSE-II SITE PLANNING/ CITY DEVELOPMENT PLAN	-	-	-	60	40	-	-	9	6	150

Site Planning (individual assignment)

Site planning is a process whereby the optimum utilization of potential of site is considered recognizing the constraints the site has. It uses 3-dimensional space of the site and the associated locational advantages, human activities and the regulations that are assigned to a particular site.

The site is developed using a set of standards / norms in a given context which varies from location to location. A student is expected to understand the intricacies and interface between various variables such as soil conditions, topography, environmental dimensions, location, spatial standards applicable to the site, etc.

Review of city development plan - (group assignment)

The students are required to understand the dynamics of various components of the coy and how and what level interventions can be made to achieve that vision mentioned in the CDP. A group of students are expected to study a city in terms its present problems and issues and review the futuristic vision.

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SCHEME OF EXAMINATION - **MASTER OF URBAN PLANNING** WEF July 2018

M. URBAN PLANNING – II SEMESTER

670201 - CITY AND METROPOLITAN PLANNING

S.No	Subject Code	Subject Name	Maximum Marks Allotted					Teaching Hours per Week			Total credits	
			Theory			Practical		Lectures (L)	Tutorials (T)	Practical/ Studios (P/S)		
			End Sem	Mid Sem Test	Assignment/ Quiz	End Sem	Studio Work/ Sessional					
1.	670201	CITY AND METROPOLITAN PLANNING	70	20	10	-	-	3	1	-	4	100

Urban Growth and System of Cities

Growth of cities scale, complexity and its impact on national development, cities as engines of growth, cities as ecosystems, resources in cities. City, fringe and the periphery - physical and functional linkages, peri-urban development.

Community and Settlements

Social problems of slums and squatter's communities, urban and rural social transformation and their impact on social life, safety, security; Crimes in urban areas and their spatial planning implications, social structure and spatial planning; Role of socio-cultural aspects on growth patterns of city and neighborhood communities; Social planning and policy, and community participation; Marginalization and concepts of inclusive planning, and gender concerns in planning. Settlement Policy: National Commission on Urbanization, Rural Habitat Policy and experiences from developing countries regarding settlement structure, growth and spatial distribution.

Metro and Mega Cities: Problems and Issues

Growth trends and processes, characteristics, problems, concepts and concerns of urban sustainability, issues related to diversity and unintended growth, economic, social and environmental sustainability, quality of life, inclusivity and equity, climate change, transit-oriented development, participatory planning. Inner city – issues and problems, approach to development.

Human Settlement Planning, Urban Development Policies and programmes

Concepts, approaches, strategies and tools; Policies and programmes at various levels, impact on metro and mega city development.

Land and Real Estate Development

Economic concepts of land, Land Pricing / valuation; Economic principles of land-use; demand forecasting for land use; factors affecting land supply and demand; Land development methods, Supply Management, Demand side Management; Real estate markets, type of property development and its impact on supply and demand, method of development, environmental considerations.

Information System and Urban Reforms

Spatial and Non - spatial information systems; Urban reforms and acts and policies.

670202 - URBAN HERITAGE CONSERVATION

S.No	Subject Code	Subject Name	Maximum Marks Allotted					Teaching Hours per Week			Total credits	
			Theory			Practical		Lectures (L)	Tutorials (T)	Practical/ Studios (P/S)		
			End Sem	Mid Sem Test	Assignment/ Quiz	End Sem	Studio Work/ Sessional					
1.	670202	URBAN HERITAGE CONSERVATION	70	20	10	-	-	3	1	-	4	100

Introduction to Urban Heritage

Typology / classification, inventories, mapping; Human habitation in historical context; Heritage as a motivating force in sustainable urban conservation and development.

Heritage Conservation

Natural heritage conservation - typologies, policies for conservation, regulatory measures, community participation; Concept of Historic Urban Landscapes; Built heritage conservation - determinants of built form on heritage; Historic urban infrastructure and traditional water harvesting systems.

Integration of historic monuments

Areas / cores / urban systems in the developmental process and land-use, regulatory measures and community involvement; Intangible cultural heritage and development: issues, conservation strategies. Preparation of conservation and heritage management plans.

Heritage and Tourism, Policies and Programmes, Legislation

Cultural and heritage-based tourism - nature, potential and prospects, marketing aspects; Acts and laws recognizing conservation / regeneration; Heritage toolkit; Implications of 74th Constitution Amendment Act.

Design in Human Habitation

Social / cultural / ecological / energy determinants of design; imageability of the city; Structure of urban spaces – location criteria of activities and urban uses; Urban Regeneration, renewal, rehabilitation, revitalization, reconstruction and redevelopment - concepts, interventions, processes, approaches and methods, tools.

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670203 - URBAN DEVELOPMENT FINANCE & PROJECT PLANNING

S.No	Subject Code	Subject Name	Maximum Marks Allotted					Teaching Hours per Week			Total credits	
			Theory			Practical		Lectures (L)	Tutorials (T)	Practical/ Studios (P/S)		
			End Sem	Mid Sem Test	Assignment/ Quiz	End Sem	Studio Work/ Sessional					
1.	670203	URBAN DEVELOPMENT FINANCE & PROJECT PLANNING	70	20	10	-	-	3	1	-	4	100

Legislations pertaining to Urban Governance

Social and economic context; State in India – political culture of the Indian State – Centre – State – Local political economy, institutional frame and mechanism for urban governance as envisaged in the 73rd and 74th Constitution Amendment Acts.

City and the State

State as a manager of resources – property rights, norms and standards – Government market and market by Government – Regulatory State, Reforming State, and Rent Seeking State – their spatial implications; Development planning and the Indian state – Centralisation, powerlessness and decentralization; spatial politics and competition; Politics of the State and bureaucracy; New State spaces, invited and contested spaces – changing role of the state

Scheme and syllabus approved on 06/10/2018

Municipal Finance

Urban reform incentive fund, Sources of revenues; Equities; Loans; Debt financing; City challenge fund, Pooled finance development fund, National urban infrastructure fund, Municipal Bonds, Miscellaneous sources; Structure of finances, fiscal problems and issues of financial management, implications of 74th Constitution Amendment Act for municipal finance, expenditure pattern, Bilateral and multi-lateral lending intuitions mobilizing resources for a project - financial resources, land resources, project resources, and other resources.

Investment Planning and Financing Mechanism

Link with spatial plans, process, components, investment needs, budgeting, financial investments in infrastructure and services. Financing of urban development, infrastructure and services – mechanisms and instruments, subsidy reduction, cost recovery, public private partnerships; Financial appraisal, investment appraisal; Financial Risk – Sources, Measures and perspectives on risk, Sensitivity analysis.

Project Formulation and Appraisal

Introduction to Projects; Nature of planning projects; Project Life Cycle; Identification of projects

Relationship between projects and planning issues including sectoral policy at: Local, State and National levels Project appraisal: Market analysis – Macro environment survey, survey methods, market characterization, demand forecasting; Technical Analysis – Magnitude, processes, materials, equipment, factors of production availability, implementation schedule; suitability of the plans, layout and design, location of the project; location analysis; supporting infrastructure requirements- Capital Budgeting – Estimation of costing of components; developing over project cost; Social cost benefit.

Project Management and Implementation, and Project Evaluation and Monitoring

Project characteristics - pitfalls in management of a project; Techniques of management; Planning milestones - responsibility charts and principle responsibility, principles of activity planning; Project implementation – methods, hurdles, facilitative factors; Project culture; line management, steering committee, role of project manager; Project Control: cost and time, quality - ISI standards and its application to Indian context, Introduction to Project Management Software (MS Projects) and its usage. Types of evaluation - concurrent, ex-ante and ex-post. Methods of evaluation, techniques of evaluation, end results, Presentation of evaluation findings, Techniques of Monitoring of Development Works.

670204 - LEGAL ISSUES & PROFESSIONAL PRACTICE

S.No	Subject Code	Subject Name	Maximum Marks Allotted					Teaching Hours per Week			Total credits	
			Theory			Practical		Lectures (L)	Tutorials (T)	Practical/ Studios (P/S)		
			End Sem	Mid Sem Test	Assignment/ Quiz	End Sem	Studio Work/ Sessional					
1	670204	LEGAL ISSUES & PROFESSIONAL PRACTICE	70	20	10	-	-	3	1	-	4	100

Need of Urban Policy, its nature and process of making urban policy

Recent trends in urban policy planning, growth control and decline of management. Nature of urban problems, need of urban policies and its analysis.

Theoretical frameworks, the role of institutions in the policy process, and the motivation of urban policy actors. Steps in Policy Analysis: How are policies made, who influences the policy agenda and what issues affect policy's 'success' and 'failure'? what can we learn from how different nations approach similar policy problems? Case studies in policy process analysis; policy integration: possible areas of integration.

Concept of law, Indian Constitution and planning

Sources of law: custom, legislation and precedent; Meaning and terms of law: legislation, ordinance, bill, act, regulation, and bye-laws; Significance of law and its relationship to urban and regional planning. Statutory powers and responsibilities of the Central Government with respect to Urban Development and the role of implementing agencies. Critical appraisal of the 73rd and 74th Constitutional amendments, their effect on urban governance and local bodies. Legislative competence of Local, State and Central government to deal with various matters concerning Town and Country Planning.

Evolution of planning legislation & concepts

Planning in India – Overview, an over view of legal tools connected with urban and regional planning and development. Town and Country Planning Act, Improvement Trust Act, Development Authorities Act: objectives, content, procedures for provision an implementation of regional plans, master plans and land pooling schemes. Concept of Arbitration, betterment levy development charges and public participation in statutory planning process:concept of structure plan, local plan and action plan under the Law.

Policies and acts

National Environmental Policy Act; Environmental Protection Act; Land Acquisition Act: Concepts, procedure for compulsory acquisition of property and determination of compensation. Regulatory Frameworks Governing Projects. National Rehabilitation and Resettlement Policy (2007) - Social impact mitigation; National Environmental Policy (2006) – Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP)
Various Acts related to urban governance, planning and development organizations, land resources, environment protection, and public participation in statutory planning process; Approaches of formulation of policies, appraisal of policies.

Professional Practice

Aims and objectives of professional institutes, sister bodies, professional role and responsibility of planning consultants, professional ethics, code of conduct and scale of professional charges; Formulation of project proposal and outlines, consultancy agreements and contracts, managerial aspects; Role in inter disciplinary groups: Appreciation of the decision-making processes and the process in relation to varied consultancy assignments of planning.

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670205- RESEARCH METHODOLOGY

S.No	Subject Code	Subject Name	Maximum Marks Allotted					Teaching Hours per Week			Total credits	
			Theory			Practical		Lectures (L)	Tutorials (T)	Practical/ Studios (P/S)		
			End Sem	Mid Sem Test	Assignment/ Quiz	End Sem	Studio Work/ Sessional					
1.	670205	RESEARCH METHODOLOGY	70	20	10	-	-	3	1	-	4	100

To introduce the students to basic principles & methods of Research, specifically in Design at Urban scale, and towards helping them conducting their own authentic & independent research. Research basics, defining research problem, Research Design, Developing a Research Plan, Plagiarism, IPR and other techno-legal aspects. Measurement and Scaling Techniques, Methods of Data Collection, Guidelines for Constructing Schedule. Sampling Fundamentals, analysis of variance and co-variance, testing of hypothesis, Multivariate analysis technique and importance in research.

670206 - STUDIO- I

S.No	Subject Code	Subject Name	Maximum Marks Allotted					Teaching Hours per Week			Total credits	
			Theory			Practical		Lectures (L)	Tutorials (T)	Practical/ Studios (P/S)		
			End Sem	Mid Sem Test	Assignment/ Quiz	End Sem	Studio Work/ Sessional					
1.	670206	STUDIO-I	-	-	-	50	50	-	-	6	6	150

City Development Plan (Group assignment)

A City is a multi-dimensional, dynamic and a futuristic space. Understanding city involves appreciating this multi direction and include them in the city making process. A job of physical planner does not merely understand the current conflict in development but to emerge out of this and to come out with a vision for the city. To arrive at this vision, a planner needs to understand the dynamics of various components of the city and how and what level interventions can be made to achieve that vision. A group of students are expected to study a city in terms its present problems and issues and project a futuristic vision in terms of scenario building.

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670207- STUDIO- II

S.No	Subject Code	Subject Name	Maximum Marks Allotted					Teaching Hours per Week			Total credits	
			Theory			Practical		Lectures (L)	Tutorials (T)	Practical/ Studios (P/S)		
			End Sem	Mid Sem Test	Assignment/ Quiz	End Sem	Studio Work/ Sessional					
1.	670207	STUDIO-II	-	-	-	90	60	-	-	6	6	150

Geo-Informatics Laboratory Training

I) The laboratory training will be conducted in accordance with the studio exercise. Introduction to Geo-informatics, Introduction to Remote Sensing – Aerial and Satellite; Introduction to GIS, Spatial data and Attribute data; Satellite images as input to GIS; Collection and presentation of baseline information.

II) The second exercise is a short and intensive exercise of one-month duration. It pertains to topical issues i.e. property tax reforms, informal sector, development of railway land, etc. The study is based on primary surveys and students are expected to analyze the information and arrive at recommendations.

Note: The student is required to undertake summer training of minimum 5weeks after 2 semesters of course work in any government, private or research organization undertaking urban and regional planning works. The practical training will commence during the summer break between second and third semester. The students are required to give a presentation specifying the work they were involved in during their internship period. The marks for the same will be incorporated with the marks of Seminar 670303.

PROFESSIONAL TRAINING

To expose the students to the profession of planning and foster links with the industry so as to develop an understanding of professional nature of various organizations involved in the planning profession.

M. URBAN PLANNING – III SEMESTER

670301 ELECTIVE I –

S.No	Subject Code	Subject Name	Maximum Marks Allotted					Teaching Hours per Week			Total credits	
			Theory			Practical		Lectures (L)	Tutorials (T)	Practical/ Studios (P/S)		
			End Sem	Mid Sem Test	Assignment/ Quiz	End Sem	Studio Work/ Sessional					
1.	670301	ELECTIVE –I	70	20	10	-	-	3	1	-	4	100

I) INCLUSIVE URBAN PLANNING

Module 1

Understanding Inclusive Planning Definitions and components

Module 2

Stakeholders Profile and Needs, Access to Shelter, Services and Livelihoods Urban Poor, Informal Sector, Gender, Children, Elderly, Disabled, Displaced people, etc.; Slums - dimensions, causative factors, determinants, location characteristics of settlements; Informal sector - growth, characteristics, functions, economic contributions, linkages with formal sector, impact on Urban Development

Module 3

Participatory Planning Process and Policies, Programmes and Legislation Methods, role of stakeholders (including civil society organizations), etc., Related Acts, Five-year plans, policies and programmes at various levels.

Module 4

Planning Interventions Inclusive zoning, development and building regulations, Slum Improvement.

II) PLANNING FOR TOURISM

Introduction

Introduction to Tourism Definitions, scope, nature, classification and dimension, tourism as an industry, tourism in developed and developing world.

Tourism Sector

Impacts Relationship between Tourism and Urban Development, Tourism multiplier and forecasting methods: capacity building and carrying capacity planning for tourism projects, tourism and cultural and social change: Socio-cultural problems, environmental degradation.

Planning for Tourism Nature and scope of a tourism plan

key issues and stages, data requirements, surveys, role of key players / stake holders in tourism policy and planning, sustainable tourism development planning; community planning and tourism; implementation and management, role of travel and tourism promoting agencies, monitoring the tourism development; Tourism marketing - concept, techniques and strategies.

Policies and Programmes

Tourism policies at various levels.

670302 ELECTIVE II –

S.No	Subject Code	Subject Name	Maximum Marks Allotted					Teaching Hours per Week			Total credits	
			Theory			Practical		Lectures (L)	Tutorials (T)	Practical/ Studios (P/S)		
			End Sem	Mid Sem Test	Assignment/ Quiz	End Sem	Studio Work/ Sessional					
1	670302	ELECTIVE –II	70	20	10	-	-	3	1	-	4	100

I) - ENVIRONMENT, DEVELOPMENT AND DISASTER MANAGEMENT

Environment, Development and Disaster Management

Interface Resource use, exploitation and conservation; Impact of human activities on environment; Environment and economy interaction, introduction to environmental accounting.

Environmental Assessment & Management

Environmental Impact Assessment, thresholds, indicators, audits, environmental certification, lifecycle analysis, environment and poverty links, environmental policy, Acts and regulations; Environmental education, participatory approaches, emerging concepts. Disaster classification, concepts, hazards, vulnerability, risks, human response to disaster, impacts

Disaster Mitigation and Management

Relevance of disaster management in development and environment, disaster preparedness, prevention, displacement and development, Role and responsibilities of government and non– government organizations, Disaster Education – awareness of individuals, communities and participation at various levels; Integrating disaster mitigation in the spatial planning process, provision of infrastructure for disaster mitigation.

Policies and Legislation

Environment and Disaster Management Policies and Legislation at various levels.

II) ENERGY, CLIMATE CHANGE AND URBAN DEVELOPMENT

Introduction

Energy, Climate change and Urban Development Interface.

Energy Generation and Consumption

Energy Supply and Demand, Energy Consumption in cities, determinants of energy demand, phenomenon of climate change, factors influencing climate change, impacts of climate change

Energy Planning and Management, and Mitigation and Adaptation to Climate Change

Energy efficient development, Compact city form, Transit oriented development. Mechanisms and measures for mitigating and adapting to climate change at various levels

Plans, Policies and Strategies

Policies Related to energy planning, conservation, climate change mitigation and adaptation.

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670303 – SEMINAR

S.No	Subject Code	Subject Name	Maximum Marks Allotted					Teaching Hours per Week			Total credits	
			Theory			Practical		Lectures (L)	Tutorials (T)	Practical/ Studios (P/S)		
			End Sem	Mid Sem Test	Assignments/ Quiz	End Sem	Studio Work/ Sessional					
1.	670303	SEMINAR	-	-	-	-	100	-	-	6	6	100

The students are required to present a seminar ensuring the following criterion.

- Identification of topic of interest having relevance to planning profession.
- Book reviews and journal article reviews to establish the body of work existing in the selected area of work.
- Exposure to multiple view points and colloquial arguments by the stakeholders, decision makers, urban managers, advocates, technocrats, user groups, etc. on the same topic.
- Identification of key issues related to the area of work.

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670304 – PRE - DISSERTATION

S.No	Subject Code	Subject Name	Maximum Marks Allotted					Teaching Hours per Week			Total credits	
			Theory			Practical		Lectures (L)	Tutorials (T)	Practical/ Studios (P/S)		
			End Sem	Mid Sem Test	Assignment/ Quiz	End Sem	Studio Work/ Sessional					
1.	670304	PRE-DISSERTATION	-	-	-	120	80	-	-	6	6	200

To undertake work on topics of relevance to the planning profession. Students would be encouraged to select topics of relevance in contemporary context and undertake research on past initiatives and future possibilities in the area. The work would include literature review of previous initiatives in the area of research, tools and techniques developed, survey of stake holders' and expert opinions and reporting of findings in a technical report format. The student will be required to make two seminar presentations and submit a report at the end of the semester which will qualify as the literature review and research methodology component of his/her thesis in the forthcoming semester.

M. URBAN PLANNING – IV SEMESTER

670401 – DISSERTATION

S.No	Subject Code	Subject Name	Maximum Marks Allotted					Teaching Hours per Week			Total credits	
			Theory			Practical		Lectures (L)	Tutorials (T)	Practical/ Studios (P/S)		
			End Sem	Mid Sem Test	Assignment/ Quiz	End Sem	Studio Work/ Sessional					
1.	670401	DISSERTATION	-	-	-	200	300	-	-	20	20	500

The students are required to carry out independent research and prepare a thesis on a topic on urban planning selected by them and approved the faculty under the supervision of a research guide allocated by the department. Final internal presentation of each student before a committee constituted jointly by the HOD and guide is mandatory before submission. MUP dissertation can be submitted only after atleast one paper is presented in international conference or published in journal. The students are required to proceed in the following manner: -

- Identification of topic of interest having relevance to planning profession, integration and application of the learnt research processes to the pre-thesis work. Book reviews and journal article compilation to establish the body of work existing in the selected area of work
- Collection of data and opinions by the stakeholders, decision makers, urban managers, advocates, technocrats, user groups, etc. on the topic selected.
- Based on the literature review and inputs from the colloquial arguments, the topics shall be finalized for thesis in the subsequent semester.
- Selection of study area, identification of extent and spread of intervention; collection of data for preparation of base map.
- Development of research thrust and work methodology.
- Identification of data sources.
- Data collection and analysis: sample determination, data tabulation (coding, de-coding, etc.), quantitative and qualitative data analysis. Appropriate and relevant data analysis 32 methods would need to be studied by individual students based on thesis topic and research area.

- Finalization of topic; formulation of problem statement, literature review, working hypothesis, research brief, research methodology, sample determination, data collection and analysis, report structuring.