



SATHYABAMA
INSTITUTE OF SCIENCE AND TECHNOLOGY
 (PERMITTED TO BE UNIVERSITY)
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 Appalar Nagar, Rajiv Gandhi Salai, Chennai - 600 118
 www.sathyabama.ac.in



SCHOOL OF BUILDING & ENVIRONMENT

Department of Architecture

Board of Studies meeting for M.Arch.(Building Management) held on 02-07-2020

Venue: Virtual meet in ZOOM platform

Time: 9:20 AM – 12:00 PM

Members present:

External Members	Internal Members	Signature
AR. SARATH C KANTH Design Tech Architects Chennai	DR. DEVYANI GANGOPHAHY Dean & Head Department of Architecture School of Building & Environment	
Signature 	DR. SURESH KUPPUSAMY Senior Professor & Design Chair Department of Architecture	
	AR. SUKIRTHA SURESH Associate Professor	
	AR. RAMESH KUMAR.A Associate Professor	

Special invitees present:

S.No	Name and Designation	Signature
1.	AR. EBIN HARRISON Associate Professor	
2.	AR. SURYA RAJKUMAR Associate Professor	

The proposed curriculum and syllabus 2020 for M.Arch. (Building Management) was accepted with the suggestions made by the external member as given below in the minutes of meeting.

Minutes of the Board of Studies 2020 meeting

A Board of Studies meeting was held as Virtual mode in ZOOM platform on 2nd July 2020 with the following agenda:

1. Welcome address, Opening remarks on the proposal to introduce REGULATION 2020 and the methodology adopted.
2. Comparative analysis of existing R 2015 and proposed R 2020 curriculum structure, R 2020 curriculum structure and Salient Features of Regulation 2020.
3. Detailed discussions on the proposed syllabus (from semester 1 to semester 4) and proposed Regulation 2020.
4. Any other matter with the permission of Chair.

Agenda notes for (R15 / 2) / 1 - Welcome address, Opening remarks on the proposal to introduce REGULATION 2020 and the methodology adopted.

Dr. Devyani gangopadhyay welcomed the Board of Studies External member Ar. Sarath C Kanth and thanked him for accepting the invitation of SIST at a very short notice. She informed the member about the purpose of Board of Studies meeting with particular reference on the revision in M.Arch Building Management course. The syllabus is revised every 5 years to update the course with recent advancements on tools, techniques, and software's knowledge and to rectify the shortfalls in the current course structure. After the welcome note and introduction, the external committee member Ar.Sarath expressed his appreciation about the course that the M.Arch Building Management course is really doing good. Thanking note was given to the committee member by Dr.Devyani.

Dr. Devyani presented the Regulations 2015 - a retrospective, the good practices in the current curriculum about the importance of Dissertation and Pre-Thesis, documentation and analysis in Building management Studio, Professional training of 30 working days and providing common elective subjects to widen the professional choice. She further added the scope of improvement in the regulations 2015 to provide more importance in project scheduling, the need for more quantitative analysis modules and software's workshop for making the course more practical oriented and there is lack of knowledge in technology and sequencing of construction activities. Finally the methodology adopted in the formulation of the new regulations 2020 syllabus and curriculum is coordinated by



Ar.Sukirtha Suresh with the discussions and comments from core committee under the guidance of our Design chair Dr.Suresh Kuppaswamy and myself.

Agenda notes for (R2020) / 2 - Comparative analysis of existing R 2015 and proposed R 2020 curriculum structure, R 2020 curriculum structure and Salient Features of Regulation 2020

Ar. Sukirtha Suresh presented the concepts involved in the proposed Regulations 2020 curriculum. She informed in tune with the SIST's requirement, the syllabus 2020 included the Programme educational Objectives (PEO), Programme outcomes and Programme specific outcomes (PSO) for all the courses and detailed for M.Arch Building Management. Course. She further discussed on the comparative analysis of R 2010, R 2015 and R 2020 and briefed on the inclusion of new theory and practical subjects, the subjects that are merged, the shifting of subject to other semesters.

After the detailed discussion on the comparative analysis of the current and proposed regulations, the external committee member Ar.Sarath remarked on the merging of all the building services to one semester is fine. The external member further added his query about the focus of the our Building Management course to be focused in one segment or to be focused on all the segments referred with the course focus of Building economics at NICMAR and Building services and Energy analysis at SPA, New Delhi. The external committee member also highlighted his thought on the proposed curriculum of regulations 2020 that it has covered everything and its good thing to have choice based subjects as electives.

Furthermore the external committee member Ar.Sarath enquired to Dr.Devyani about the criteria for joining the M.Arch Building Management course and he wished to have a mix of candidates from civil engineering to learn more on managing of whole project in a more analytical approach. Dr.Devyani welcomed the suggestion. Ar.Sarath finalized on the changes are perfectly good and mix of all is good work. The focus can be to certain subjects required like Project Scheduling, Building services, Building economics and life cycle of building can be as elective. It is a good system to introduce electives in semester 3 and 4 to give strength to electives.

Agenda notes for (R2020) / 3 – Detailed discussions on the proposed syllabus (from semester 1 to semester 4) and proposed Regulation 2020.



Ar. Ramesh Kumar presented the detailed syllabus of all the subjects in semester 1. He highlighted the introductory of unit 5 included as constructive assignment to give exposure on the case studies or hands on exposure. He further explained the detailed syllabus of all the subjects in semester 1 and the importance of new course Construction technology for providing knowledge in technology and sequencing of construction activities, Research methodologies in built environment for introducing research activities in the early semester of the course, financial management for broader understanding on the project evaluation of feasibility and life cycle costing for linking up two different stake holders promoter and buyer, the practical subject for introducing project management software 1 to equip with the knowledge on the software's widely available.

After the detailed discussion on the semester 1 subjects, the BOS external committee member Ar.Sarath opened up with his suggestions to bring in industrial exposure to collaborate with industries for sponsored research projects and for all the constructive assignments and projects, the student can work on one small project to integrate between the subjects. Further the member added to include Energy management software's also in project management workshops.

Ar. Ramesh Kumar presented the detailed syllabus of all the subjects in semester 2. The BOS external committee member Ar.Sarath opened up with his suggestions to do project scheduling with limited resources in their Management studio because often project scheduling does not show on the resource constraints. The member added his comment on the subject Quantitative techniques for which the subject faculty from mathematics or civil engineering need to integrate and work out the statistics to be applicable for Building science. Further the member added a point to expose the students to more software's so that each group of students can explore and share their knowledge with rest of the class.

Ar. Sukirtha continued with the detailed discussion of the subjects in semester 3 and 4, the introduction of two new subjects the operations management, cost accounting and cost benefit analysis. The BOS external committee member Ar.Sarath opened up with his suggestions to mention the size of the company in which the students need to do their professional training. Further the member added a point in finalizing the dissertation topic before they proceed to professional training which helps the student to identify the right choice of the company.

Ar.Sukirtha enquired to the external member for the passing criteria can we mention one publication is mandatory for the candidate in the regulations. The external member Ar.Sarath



commented instead of having a rule, the dissertation work is as good as a paper and he suggested to compile all the dissertation work into a journal.

Thereafter the discussion continued with the detail discussions on elective subjects by Ar.Ramesh kumar and Ar.Sukirtha. The BOS external committee member Ar.Sarath opened up with his suggestion to have expert's lectures from industry and government for all the elective subjects. Rework on the subject responsible community action to facilitate large community of people. He further added some of the elective subjects like Building energy analysis and management can be toned down as a principle to go about as a policy and application just as pin-pointed and also suggested to include facility management as an elective because it is important for post occupancy of buildings. Our external committee member Ar.Sarath finally confirmed with the curriculum and appreciated that the elective subjects have become business verticals for the aspirants.

Vote of Thanks

Ar. Ramesh kumar thanked the expert member Ar. Sarath C Kanth for accepting the invitation of SIST in attending the BOS at a short notice. He thanked him for his valuable suggestions on the agenda items presented. He also thanked the Management, Chancellor Mam and President Sir for the support on conducting the BOS in the licensed digital platform, our Dean and Head, Dr. Devyani Gangopadhyay, Senior professor and Design chair Dr.Suresh Kuppusamy, Ar. Ebin Horrison, Ar. Sukirtha Suresh for coordinating the syllabus revision as Core committee and Ar.Surya Rajkumar for their contribution towards the conduct of this BOS meeting.

Minutes approved by:



Dr. Devyani Gangopadhyay
Dean & Head, Department of Architecture,
School of Building & Environment
Internal Member



Dr. Suresh Kuppuswamy
Senior Professor & Design Chair,
School of Building & Environment
Internal Member



Ar. Sarath C Kanth
Design Tech Architects, Chennai
External Expert Member



**PROGRAMME: M.ARCH BUILDING MANAGEMENT
REGULATIONS 2015**

LIST OF SUBJECTS

SEMESTER 1

SI. No.	COURSE CODE	COURSE TITLE	L	T	P	C	MARKS		PAGE No.
							Cont. Asst.	End Sem. Exam / Viva	
1.	SAR 5101	Construction Project Management	3	-	-	3	50	50	1
2.	SAR 5102	Building Services I	3	-	-	3	50	50	2
3.	SAR 5103	Functional Efficiency of Buildings	2	1	-	3	50	50	3
4.	SAR 5104	Contract Management	3	-	-	3	50	50	4
5.	SMT 5101	Quantitative Techniques*	3	1	-	4	50	50	5
6.	SAR 6530	Building Management Studio I	-	-	14	7	150	50	6
						Total Credits	23	Total Marks	700

SEMESTER 2

SI. No.	COURSE CODE	COURSE TITLE	L	T	P	C	MARKS		PAGE No.
							Cont. Asst.	End Sem. Exam / Viva	
1.	SAR 5105	Project Planning and Control	3	-	-	3	50	50	7
2.	SAR 5106	Building Services II	3	-	-	3	50	50	8
3.	SAR 5107	Quality Management	3	-	-	3	50	50	9
4.	SAR 5108	Construction Equipment Management	3	-	-	3	50	50	10
5.		Elective 1	3	-	-	3	50	50	
6.	SAR 6531	Building Management Studio II	-	-	15	8	200	100	11
						Total Credits	23	Total Marks	800



SEMESTER 3

SI. No.	COURSE CODE	COURSE TITLE	L	T	P	C	MARKS		PAGE No.
							Cont. Asst.	End Sem. Exam / Viva	
1.	SAR 5201	Human Resource and Materials Management	3	-	-	3	50	50	12
2.		Elective 2	3	-	-	3	50	50	
3.		Elective 3	3	-	-	3	50	50	
4.		Elective 4	3	-	-	3	50	50	
5.	S84 INT	Professional Training	-	-	-	5	-	200	13
6.	SAR 6532	Dissertation	-	-	12	9	200	100	14
7.	S84 PROJ1	Pre Thesis	-	-	6	4	50	50	15
Total Credits						30	Total Marks		1000

SEMESTER 4

SI. No.	COURSE CODE	COURSE TITLE	L	T	P	C	MARKS		PAGE No.
							Cont. Asst.	End Sem. Exam / Viva	
1.	SAR 5202	Financial Management	3	-	-	3	50	50	16
2.		Elective 5	3	-	-	3	50	50	
3.	S84 PROJ2	Thesis	-	-	24	18	400	200	17
Total Credits						24	Total Marks		800

Total Credits for the Programme 100


LIST OF ELECTIVES
DEPARTMENT ELECTIVES (BUILDING MANAGEMENT)

Sl. No.	COURSE CODE	COURSE TITLE	L	T	P	C	PAGE No.
1.	SAR 5601	Maintenance and Rehabilitation of Structures	3	-	-	3	35
2.	SAR 5602	Facilities Planning and Management	3	-	-	3	36
3.	SAR 5603	Sustainable Building Practices	3	-	-	3	37
4.	SAR 5604	Structural Systems	3	-	-	3	38
5.	SAR 5605	Building Energy Analysis and Management	3	-	-	3	39
6.	SAR 5606	Lighting Planning and Design	3	-	-	3	40
7.	SAR 5607	Risk and Safety Management	3	-	-	3	41
8.	SAR 5608	Real Estate management	3	-	-	3	42

FACULTY ELECTIVES

Sl. No.	COURSE CODE	COURSE TITLE	L	T	P	C	PAGE No.
1.	SAR 5609	Adaptive Reuse and Retrofit	3	-	-	3	49
2.	SAR 5610	Research Methodologies in Built Environment	3	-	-	3	50
3.	SAR 5611	Renewable Energy Technologies	3	-	-	3	51
4.	SAR 5612	Business Strategies & Corporate Planning	3	-	-	3	52



**PROGRAMME: M.ARCH BUILDING MANAGEMENT
CURRICULUM**

SEMESTER-3										
Sl. No.	COURSE TYPE	COURSE CODE	COURSE TITLE	L	T	P	C	Marks		PAGE No.
								CAE	ESE	
1.	Theory	SARA5301	Construction Operations Management	3	0	0	3	50	50	20
2.	Theory		Elective 1	3	0	0	3	50	50	
3.	Theory		Elective 2	3	0	0	3	50	50	
4.	Theory	SBAA5341	Cost Management*	3	0	0	3	50	50	21
5.	Practical	S84APT	Professional Training	0	0	0	3	50	50	22
6.	Project	S84APROJ1	Dissertation	0	2	10	6	200	100	23
7.	Project	S84APROJ2	Pre Thesis	0	2	4	3	100	100	24
				12	4	14	24	550	450	
<i>Total Credits for 3rd semester = 24</i>										
<i>Total Marks for 3rd semester = 1000</i>										

L - LECTURE HOURS, T – TUTORIAL HOURS, P – PRACTICAL HOURS, C – CREDITS

CAE – CONTINUOUS ASSESSMENT EXAMINATION

ESE – END SEMESTER EXAMINATION

SEMESTER-4										
Sl. No.	COURSE TYPE	COURSE CODE	COURSE TITLE	L	T	P	C	Marks		PAGE No.
								CAE	ESE	
1.	Theory	SARA5401	Cost Benefit Analysis for Building & Infrastructure projects	3	0	0	3	50	50	25
2.	Theory		Elective 3	3	0	0	3	50	50	
3.	Project	S84APROJ3	Thesis	0	4	20	12	400	200	26
				6	4	20	18	500	300	
<i>Total Credits for 4th semester = 18</i>										
<i>Total Marks for 4th semester = 800</i>										

L - LECTURE HOURS, T – TUTORIAL HOURS, P – PRACTICAL HOURS, C – CREDITS

CAE – CONTINUOUS ASSESSMENT EXAMINATION

ESE – END SEMESTER EXAMINATION.

Semester	Theory courses (including elective courses)			Practical Courses (including PT and project)		
	Total no.	Total Credits	Total Marks	Total no.	Total Credits	Total Marks
1	5	15	500	2	9	400
2	5	16	500	2	9	400
3	4	12	400	3	12	600
4	2	6	200	1	12	600
Overall Total	16	49	1600	8	42	2000

Overall Total Credits for M. Arch. BM 91



**LIST OF ELECTIVES
M. ARCH BUILDING MANAGEMENT**

DEPARTMENT ELECTIVES FOR 3rd SEMESTER

Sl. No.	COURSE TYPE	COURSE CODE	L	T	P	C	Marks		Page No.
							CAE	ESE	
1	SARA7301	Advanced Structural Systems & Maintenance and Rehabilitation of Structures	3	0	0	3	50	50	27
2	SARA7302	Risk and Safety Management	3	0	0	3	50	50	29
3	SARA7303	Advanced Building Materials & Construction Techniques	3	0	0	3	50	50	31
4	SARA7304	Infrastructure Development and Management	3	0	0	3	50	50	32
5	SARA7305	Functional Performance of Buildings	3	0	0	3	50	50	33
6	SARA7306	Facilities Planning and Management	3	0	0	3	50	50	34

DEPARTMENT ELECTIVES FOR 4th SEMESTER

Sl. No.	COURSE TYPE	COURSE CODE	L	T	P	C	Marks		Page No.
							CAE	ESE	
1	SARA7401	Business Strategies & Corporate Planning	3	0	0	3	50	50	35
2	SARA7402	Environmental Compliance Management	3	0	0	3	50	50	36
3	SARA7403	Lean Construction Management	3	0	0	3	50	50	38
4	SARA7404	Quality Management	3	0	0	3	50	50	39

COMMON ELECTIVES

Sl. No.	Course code	Course title	L	T	P	C	Marks		Page No.
							CAE	ESE	
1	SARA8201	Building Energy Analysis and Management	3	0	0	3	50	50	40
2	SARA8202	Disaster Resilient Planning & Reconstruction	3	0	0	3	50	50	41
3	SARA8203	Responsible Community Action	3	0	0	3	50	50	42

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NOTE:	THE CONTENTS HIGHLIGHTED IN YELLOW COLOUR ARE NEWLY ADDED IN THE REVISED SYLLABUS
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SAR 5602	FACILITIES PLANNING AND MANAGEMENT	L	T	P	Credits	Total Marks
		3	0	0	3	100

COURSE OBJECTIVE

- To develop students capability to manage various building services to increase safe and healthy utilisation of buildings and properties with minimal breakdown time.

UNIT 1 FUNDAMENTALS OF FACILITIES MANAGEMENT**12 Hrs.**

Principle duties of a facility manager - Business aspects of facilities management - Diverse responsibilities and decision-making processes from building infrastructure to fleet services – Architectural Programming.

UNIT 2 FACILITIES DESIGN AND SPACE PLANNING**14 Hrs.**

Applications of facilities design in defining the requirements of a project- Developing design strategies, implementing corporate philosophies and methodologies, and understanding the Project Development Process - Flexibility and facilities planning - Optimal space planning and cost minimization through facility layout.

UNIT 3 FACILITY PLANNING AND DECISION SUPPORT SYSTEM**10 Hrs.**

Knowledge based facility planning and decision support system - Application of artificial intelligence – Graphical & theoretic approach to multi-floor building design - Facility layout algorithm using graphics - Simulation in facility planning and efficiency analysis.

UNIT 4 FACILITY MANAGEMENT DURING CONSTRUCTION PHASE AND HANDOVER**12 Hrs.**

Types of facility management options - Functionality of Building Automation systems - Wear and Tear of technical installations, recording operating costs, safety concepts, energy supply and waste management - Service tenders and contracts.

Max. 48 Hours**COURSE OUTCOMES**

On completion of the course the student will be able to

- CO1:** Acquire knowledge on the role of facility manager and the decision making processes involved.
CO2: Understand the Architectural programming in detail with relation to facilities from building infra-structure to fleet services.
CO3: Apply and evaluate the facilities design and space planning through overlays.
CO4: Upgrade on the facilities planning and decision support system with the upcoming technologies like intelligent building management system.
CO5: Analyze the given facilities planning, design and its efficiency realization.
CO6: Evaluate the processes undergone during construction and handing over stage by facility manager.

TEXT / REFERENCE BOOKS

- David G. Cotts, Kathy O. Roper, The Facility Management Handbook, Amacom, 2009
- Bernard Lewis and Richard Payant, Facility Manager's Maintenance Handbook, McGraw Hills, 2007
- Keith Alexander, Brian Atkin, Jan Bröchner, and Tore Haugen, Facilities Management: Innovation and Performance, Routledge, 2004
- Eric Teicholz, Facility Design and Management Handbook, McGraw Hill Professional, 2001
- Frank Booty, Facilities Management Handbook, Fourth Edition, Butterworth- Heinemann, 2006

**End semester examination question paper pattern
(To be distributed uniformly among all the units)**

Max. Marks: 100**PART A : 2 questions from each unit, each carrying 4 marks.****PART B : 2 questions from each unit with an internal choice, each carrying 15 marks****Exam Duration: 3 Hrs.****: 08 x 05 = 40 Marks****: 04 x 15 = 60 Marks**


SARA7306	FACILITIES PLANNING AND MANAGEMENT	L	T	P	Credits	Total Marks
		3	0	0	3	100

COURSE OBJECTIVES:

- To introduce the fundamentals of facilities planning and an effective management.
- To develop students capability to manage various building services in the built facility to increase safe and healthy utilisation of building properties.

UNIT 1	INTROUCTION	9 Hrs.
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Principle duties of a facility manager - Business aspects of facilities management - Diverse responsibilities and decision-making processes from building infrastructure to fleet services – Architectural Programming.

UNIT 2	FACILITIES DESIGN AND SPACE PLANNING	12 Hrs.
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Applications of facilities design in defining the requirements of a project- Developing design strategies, implementing corporate philosophies and methodologies, and understanding the Project Development Process - Flexibility and facilities planning - Optimal space planning and cost minimization through facility layout.

UNIT 3	FACILITY PLANNING AND DECISION SUPPORT SYSTEM	9 Hrs.
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Knowledge based facility planning and decision support system - Application of artificial intelligence – Graphical & theoretic approach to multi-floor building design - Facility layout algorithm using graphics - Simulation in facility planning and efficiency analysis.

UNIT 4	FACILITY MANAGEMENT DURING CONSTRUCTION PHASE AND HANDOVER	9 Hrs.
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Types of facility management options - Functionality of Building Automation systems - Wear and Tear of technical installations, recording operating costs, safety concepts, energy supply and waste management - Service tenders and contracts.

UNIT 5	CONSTRUCTIVE ASSIGNMENTS	6 Hrs.
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Understand and present the importance of design and space planning requirement in building facilities. To analyse and present the facility planning aspects to be considered in design and space planning of large building facility and discuss / debate on the various facility management aspects required during post occupancy of building facilities.

Max.45 Hours**COURSE OUTCOME:**

CO1	Understand the concept of facilities planning of large building facilities.
CO2	Comprehensive understanding of building and other services for the better management of facilities.
CO3	Explore the best space planning measures to be taken during design stage for the best built facilities
CO4	Analyse the importance of facilities planning requirements during construction and handing over phase of buildings
CO5	Critical analysis of facilities planning and its impact over the post occupancy of buildings.
CO6	Comprehend the understanding with the recommendation of best practices for effective functioning of building facilities.

TEXT / REFERENCE BOOKS

- David G. Cotts, Kathy O. Roper, *The Facility Management Handbook*, Amacom, 2009
- Bernard Lewis and Richard Payant, *Facility Manager's Maintenance Handbook*, McGraw Hills, 2007
- Keith Alexander, Brian Atkin, Jan Bröchner, and Tore Haugen, *Facilities Management: Innovation and Performance*, Routledge, 2004
- Eric Teicholz, *Facility Design and Management Handbook*, McGraw Hill Professional, 2001
- Frank Booty, *Facilities Management Handbook, Fourth Edition*, Butterworth- Heinemann, 2006

END SEMESTER EXAM QUESTION PAPER PATTERN**Max. Marks : 100****PART A : 2 questions from each unit, each carrying 4 marks.****PART B : 2 questions from each unit with an internal choice, each carrying 15 marks****Exam Duration: 3 Hrs.****: 08 x 05 = 40 Marks****: 04 x 15 = 60 Marks**
