Maharashtra State Board Of Technical Education, Mumbai

Learning and Assessment Scheme for Post S.S.C Diploma Courses

Programme Name	**: Diploma In Architecture Assistantship / Architecture / Interior Design & Decoration / Interior Design**		
Programme Code	**: AA / AT / IX / IZ**	**With Effect From Academic Year**	**: 2024-25**
Duration Of Programme	**: 6 Semester**	**Duration**	**: 16 WEEKS**
Semester	**: First** **NCrF Entry Level : 3.0**	**Scheme**	**: K**

Sr No	Course Title	Abbrevation	Course Type	Course Code	Total IKS Hrs for Sem.	Learning Scheme					Credits	Assessment Scheme												
						Actual Contact Hrs./Week			Self Learning (Activity/ Assignment /Micro Project)	Notional Learning Hrs /Week		Paper Duration (hrs.)	Theory				Based on LL & TL				Based on Self Learning		Total Marks
																	Practical						
						CL	TL	LL					FA-TH	SA-TH	Total		FA-PR		SA-PR		SLA		
													Max	Max	Max	Min	Max	Min	Max	Min	Max	Min	
(All Compulsory)																								
1	BASIC MATHEMATICS	BMS	AEC	311302	6	4	2	-	2	8	4	3	30	70	100	40	-	-	-	-	25	10	125
2	COMMUNICATION SKILLS (ENGLISH)	ENG	AEC	311303	-	3	-	2	1	6	3	3	30	70	100	40	25	10	-	-	25	10	150
3	FUNDAMENTALS OF ARCHITECTURE	FAR	DSC	321317	-	4	-	4	2	10	5	3	30	70	100	40	50	20	50@	20	50	20	250
4	FUNDAMENTALS OF ICT	ICT	SEC	311001	-	1	-	2	1	4	2	-	-	-	-	-	25	10	25@	10	25	10	75
5	YOGA AND MEDITATION	YAM	VEC	311003	1	-	-	1	1	2	1	-	-	-	-	-	25	10	-	-	25	10	50
6	ARCHITECTURAL GRAPHICS & DRAWING	AGD	DSC	321006	-	2	-	4	-	6	3	-	-	-	-	-	50	20	50@	20	-	-	100
7	ARCHITECTURAL WORKSHOP	ARW	SEC	321007	-	-	-	4	-	4	2	-	-	-	-	-	50	20	50@	20	-	-	100
Total					**7**	**14**	**2**	**17**	**7**		**20**		**90**	**210**	**300**		**225**		**175**		**150**		**850**

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																	Practical						
						CL	TL	LL					FA-TH	SA-TH	Total		FA-PR		SA-PR		SLA		
													Max	Max	Max	Min	Max	Min	Max	Min	Max	Min	

Abbreviations : CL- Classroom Learning , TL- Tutorial Learning, LL-Laboratory Learning, FA - Formative Assessment,SA -Summative Assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment
Legends : @ Internal Assessment, # External Assessment, *# On Line Examination , @$ Internal Online Examination
Note :
1. FA-TH represents average of two class tests of 30 marks each conducted during the semester.
2. If candidate is not securing minimum passing marks in FA-PR of any course then the candidate shall be declared as "Detained" in that semester.
3. If candidate is not securing minimum passing marks in SLA of any course then the candidate shall be declared as fail and will have to repeat and resubmit SLA work.
4. Notional Learning hours for the semester are (CL+LL+TL+SL)hrs.* 15 Weeks
5. 1 credit is equivalent to 30 Notional hrs.
6. * Self learning hours shall not be reflected in the Time Table.
7. * Self learning includes micro project / assignment / other activities.

Course Category : Discipline Specific Course Core (DSC) , Discipline Specific Elective (DSE) , Value Education Course (VEC) , Intern./Apprenti./Project./Community (INP) , AbilityEnhancement Course (AEC) , Skill Enhancement Course (SEC) , GenericElective (GE)

Maharashtra State Board Of Technical Education, Mumbai

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Semester	**: Second** **NCrF Entry Level : 3.0**	**Scheme**	**: K**

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						Actual Contact Hrs./Week			Self Learning (Activity/ Assignment /Micro Project)	Notional Learning Hrs /Week		Paper Duration (hrs.)	Theory				Based on LL & TL				Based on Self Learning		Total Marks
																	Practical						
						CL	TL	LL					FA-TH	SA-TH	Total		FA-PR		SA-PR		SLA		
													Max	Max	Max	Min	Max	Min	Max	Min	Max	Min	
(All Compulsory)																								
1	APPLIED MATHEMATICS	AMS	AEC	312301	2	3	1	-	-	4	2	3	30	70	100	40	-	-	-	-	-	-	100
2	CONSTRUCTION MATERIALS	CMT	DSC	322328	2	4	-	5	1	10	5	3	30	70	100	40	25	10	-	-	25	10	150
3	HISTORY OF ARCHITECTURE & CULTURE	HOA	DSC	322329	2	4	-	2	-	6	3	3	30	70	100	40	25	10	25@	10	-	-	150
4	THEORY OF DESIGN	TOD	AEC	322330	-	3	-	2	1	6	3	3	30	70	100	40	25	10	-	-	25	10	150
5	PROFESSIONAL COMMUNICATION	PCO	SEC	312002	-	-	-	2	-	2	1	-	-	-	-	-	25	10	25@	10	-	-	50
6	SOCIAL AND LIFE SKILLS	SFS	VEC	312003	-	-	-	-	2	2	1	-	-	-	-	-	-	-	-	-	50	20	50
7	BASIC DESIGN	BAD	DSC	322010	6	2	-	6	2	10	5	-	-	-	-	-	50	20	50@	20	50	20	150
Total					**12**	**16**	**1**	**17**	**6**		**20**		**120**	**280**	**400**		**150**		**100**		**150**		**800**

Sr No	Course Title	Abbrevation	Course Type	Course Code	Total IKS Hrs for Sem.	Learning Scheme					Credits	Assessment Scheme											
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																	Practical						
						CL	TL	LL					FA-TH	SA-TH	Total		FA-PR		SA-PR		SLA		
													Max	Max	Max	Min	Max	Min	Max	Min	Max	Min	

Abbreviations : CL- Classroom Learning , TL- Tutorial Learning, LL-Laboratory Learning, FA - Formative Assessment,SA -Summative Assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment
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Course Category : Discipline Specific Course Core (DSC) , Discipline Specific Elective (DSE) , Value Education Course (VEC) , Intern./Apprenti./Project./Community (INP) , AbilityEnhancement Course (AEC) , Skill Enhancement Course (SEC) , GenericElective (GE)

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BASIC MATHEMATICS **Course Code : 311302**

Programme Name/s	**: Architecture Assistantship/ Automobile Engineering./ Artificial Intelligence/ Agricultural Engineering/ Artificial Intelligence and Machine Learning/ Automation and Robotics/ Architecture/ Cloud Computing and Big Data/ Civil Engineering/ Chemical Engineering/ Computer Technology/ Computer Engineering/ Civil & Rural Engineering/ Construction Technology/ Computer Science & Engineering/ Fashion & Clothing Technology/ Digital Electronics/ Data Sciences/ Electrical Engineering/ Electronics & Tele-communication Engg./ Electrical and Electronics Engineering/ Electrical Power System/ Electronics & Communication Engg./ Electronics Engineering/ Food Technology/ Computer Hardware & Maintenance/ Instrumentation & Control/ Industrial Electronics/ Information Technology/ Computer Science & Information Technology/ Instrumentation/ Interior Design & Decoration/ Interior Design/ Civil & Environmental Engineering/ Mechanical Engineering/ Mechatronics/ Medical Electronics/ Production Engineering/ Printing Technology/ Polymer Technology/ Computer Science/ Textile Technology/ Electronics & Computer Engg./ Textile Manufactures/**
Programme Code	**: AA/ AE/ AI/ AL/ AN/ AO/ AT/ BD/ CE/ CH/ CM/ CO/ CR/ CS/ CW/ DC/ DE/ DS/ EE/ EJ/ EK/ EP/ ET/ EX/ FC/ HA/ IC/ IE/ IF/ IH/ IS/ IX/ IZ/ LE/ ME/ MK/ MU/ PG/ PN/ PO/ SE/ TC/ TE/ TX**
Semester	**: First**
Course Title	**: BASIC MATHEMATICS**
Course Code	**: 311302**

I. RATIONALE

Basic Mathematics plays a crucial role in diploma programmes as it fosters the development of critical thinking skills, enhances quantitative literacy, prepares students for higher education, promotes problem-solving abilities, cultivates logical and abstract thinking and fosters mathematical literacy. By engaging with Mathematics, students acquire logical reasoning, problem-solving techniques and analytical thinking, which are valuable for lifelong learning and professional growth. Calculus is a branch of Mathematics that calculates how matter, particles and heavenly bodies actually move. Derivatives are useful to find maxima and minima of the function, velocity and acceleration are also useful for many engineering optimization problems. Statistics can be defined as a type of mathematical analysis which involves the method of collecting and analyzing data and then summing up the data into a numerical form for a given set of factual data or real-world observations. It equips individuals with the ability to interpret numerical information, make informed decisions and navigate real-world situations. Moreover, Mathematics provides a foundation for further studies in various disciplines and prepares students to tackle complex challenges. By exploring abstract concepts and logical structures, students develop their ability to reason, make connections, and approach problems with clarity and precision. Furthermore, studying Mathematics helps students appreciate the historical and cultural significance of Mathematics and its applications in diverse fields, thereby fostering mathematical literacy and a deeper understanding of the world. Hence the course provides the insight to analyze engineering problems scientifically using logarithms, matrices, trigonometry, straight line, differential calculus and statistics. By incorporating these topics, students comprehend to approach engineering problems from a mathematical perspective, enabling them to devise efficient and effective solutions and this leads to preparing Diploma graduates well-rounded, adaptable and capable of making significant contributions to the branch-specific problems.

II. INDUSTRY / EMPLOYER EXPECTED OUTCOME

Apply the concept of Mathematics to solve industry-based technology problems.

III. COURSE LEVEL LEARNING OUTCOMES (COS)

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BASIC MATHEMATICS **Course Code : 311302**

Students will be able to achieve & demonstrate the following COs on completion of course based learning

- CO1 - Apply the concepts of algebra to solve engineering (discipline) related problems.
- CO2 - Utilize trigonometry to solve branch specific engineering problems.
- CO3 - Solve area specific engineering problems under given conditions of straight lines.
- CO4 - Apply differential calculus to solve discipline specific problems.
- CO5 - Use techniques and methods of statistics to crack discipline specific problems.

IV. TEACHING-LEARNING & ASSESSMENT SCHEME

Course Code	Course Title	Abbr	Course Category/s	Learning Scheme					Credits	Assessment Scheme											
				Actual Contact Hrs./Week			SLH	NLH		Paper Duration	Theory				Based on LL & TL				Based on SL		Total Marks
															Practical						
				CL	TL	LL					FA-TH	SA-TH	Total		FA-PR		SA-PR		SLA		
											Max	Max	Max	Min	Max	Min	Max	Min	Max	Min	
311302	BASIC MATHEMATICS	BMS	AEC	4	2	-	2	8	4	3	30	70	100	40	-	-	-	-	25	10	125

Total IKS Hrs for Sem. : 6 Hrs

Abbreviations: CL- ClassRoom Learning , TL- Tutorial Learning, LL-Laboratory Learning, SLH-Self Learning Hours, NLH-Notional Learning Hours, FA - Formative Assessment, SA -Summative assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment

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4. Notional Learning hours for the semester are (CL+LL+TL+SL)hrs.* 15 Weeks
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V. THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.
1	TLO 1.1 Solve the given simple problem based on laws of logarithm. TLO 1.2 Solve given system of linear equations using matrix inversion method. TLO 1.3 Obtain the proper and improper partial fraction for the given simple rational function. TLO 1.4 Solve simultaneous equations by using concept given in Ancient Indian Mathematics.	**Unit - I Algebra** 1.1 Logarithm: Concept and laws of logarithm. 1.2 Matrices: Matrices, algebra of matrices, transpose, value of determinant of matrix of order 3x3, adjoint and inverse of matrices. 1.3 Matrices: Solution of simultaneous equations by matrix inversion method. 1.4 Partial Fractions: Types of partial fraction based on nature of factors and related Problems. 1.5 Algebra in Indian Knowledge System: Solution of simultaneous equations (Indian Mathematics)..	Improved Lecture Tutorial Assignment Demonstration Simulation

BASIC MATHEMATICS **Course Code : 311302**

Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.
2	TLO 2.1 Apply the concept of Compound angle, allied angle and multiple angles to solve the given simple engineering problem(s). TLO 2.2 Apply the concept of Sub-multiple angle to solve the given simple engineering related problem(s). TLO 2.3 Apply concept of factorization and de-factorization formulae to solve the given simple engineering problem(s). TLO 2.4 Investigate given simple problems by utilizing inverse trigonometric ratios. TLO 2.5 Use concept given in Ancient Indian Mathematics for trigonometry to solve given problems.	**Unit - II Trigonometry** 2.1 Trigonometric ratios of allied angles, compound angles, multiple angles (2A, 3A), submultiples angles. (without proof) 2.2 Factorization and De factorization formulae. (without proof). 2.3 Inverse Trigonometric Ratios and related problems. 2.4 Principle values and relation between trigonometric and inverse trigonometric ratios. 2.5 Trigonometry in Indian Knowledge System: The Evolution of Sine Function in India. 2.6 Indian Trigonometry: Basic Indian Trigonometry- Introduction and Terminology (From Ancient Beginnings to Nilakantha). 2.7 Trigonometry in Indian Knowledge System: Pythagorean triples in Sulabasutras.	Improved Lecture Tutorial Assignment Demonstration Simulation Flipped Classroom approach
3	TLO 3.1 Calculate angle between given two straight lines. TLO 3.2 Formulate equation of straight lines related to given engineering problems. TLO 3.3 Identify perpendicular distance from the given point to the line. TLO 3.4 Calculate perpendicular distance between the given two parallel lines. TLO 3.5 Use geometry given in Sulabasutras to solve the given problems.	**Unit - III Straight Line** 3.1 Straight line and slope of straight line: Angle between two lines, Condition of parallel and perpendicular lines. 3.2 Various forms of straight lines: Slope point form, two-point form, Double intercept form, General form. 3.3 Perpendicular distance from a point on the line. 3.4 Perpendicular distance between two parallel lines. 3.5 Geometry in Sulabasutras in Indian Knowledge System (construction of square, circling the square). (Indian Mathematics).	Improved Lecture Tutorial Assignment Demonstration Simulation
4	TLO 4.1 Solve the given simple problems based on functions. TLO 4.2 Solve the given simple problems based on rules of differentiation. TLO 4.3 Obtain the derivatives of composite, implicit, parametric, inverse, logarithmic, exponential functions. TLO 4.4 Apply the concept of differentiation to find given equation of tangent and normal. TLO 4.5 Apply the concept of differentiation to calculate maxima, minima and radius of curvature for given function. TLO 4.6 Familiar with concept of calculus given in Indian Mathematics.	**Unit - IV Differential Calculus** 4.1 Functions and Limits: Concept of function and simple examples. 4.2 Functions and Limits: Concept of limits without examples. 4.3 Derivatives: Rules of derivatives such as sum, Product, Quotient of functions. 4.4 Derivatives: Derivative of composite functions (chain Rule), implicit and parametric functions. 4.5 Derivatives: Derivatives of inverse, logarithmic and exponential functions. 4.6 Applications of derivative: Second order derivative without examples, Equation of tangent and normal, Maxima and minima, Radius of curvature. 4.7 Calculus in Indian Knowledge System: The Discovery of Calculus by Indian Astronomers.(Indian Mathematics).	Improved Lecture Tutorial Assignment Demonstration Simulation

BASIC MATHEMATICS **Course Code : 311302**

Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.
5	TLO 5.1 Obtain the range and coefficient of range of the given grouped and ungrouped data. TLO 5.2 Calculate mean and standard deviation of ungrouped and grouped data related to the given simple engineering problem(s). TLO 5.3 Determine the variance and coefficient of variance of given grouped and ungrouped data. TLO 5.4 Justify the consistency of given simple sets of data.	**Unit - V Statistics** 5.1 Range, coefficient of range of discrete and grouped data. 5.2 Mean deviation and standard deviation from mean of grouped and ungrouped data. 5.3 Variance and coefficient of variance. 5.4 Comparison of two sets of observation.	Improved Lecture Tutorial Assignment Demonstration Simulation Flipped Classroom approach

VI. LABORATORY LEARNING OUTCOME AND ALIGNED PRACTICAL / TUTORIAL EXPERIENCES.

Practical / Tutorial / Laboratory Learning Outcome (LLO)	Sr No	Laboratory Experiment / Practical Titles / Tutorial Titles	Number of hrs.	Relevant COs
LLO 1.1 Solve simple problems of Logarithms based on given applications.	1	Solve simple problems of Logarithms based on given applications.	2	CO1
LLO 2.1 Solve elementary problems on Algebra of matrices for branch specific engineering related applications.	2	Solve elementary problems on Algebra of matrices for branch specific engineering related applications.	2	CO1
LLO 3.1 Apply the concept of matrix to solve engineering problems.	3	Solve solution of Simultaneous Equation using inversion method.	2	CO1
LLO 4.1 Apply the concept of matrix to solve engineering problems.	4	Apply Matrix Inversion method to determine currents through various branches of given electrical networks.	2	CO1
LLO 5.1 Apply the concept of matrix to solve engineering problems.	5	Determine inverse of a non-singular matrix by using open source software.	2	CO1
LLO 6.1 Apply the concept of partial fraction to solve engineering problems.	6	Resolve into partial fraction using linear non-repeated, repeated, and irreducible quadratic factors.	2	CO1
LLO 7.1 Solve problems on Compound, Allied, multiple and sub multiple angles for related shapes.	7	Solve problems on Compound, Allied, multiple and sub multiple angles for related shapes.	2	CO2
LLO 8.1 Utilize the concept of trigonometry to solve engineering problems.	8	Practice problems on factorization and de factorization.	2	CO2
LLO 9.1 Utilize the concept of trigonometry to solve engineering problems.	9	Solve problems on inverse trigonometric ratios based on applications.	2	CO2
LLO 10.1 Solve branch specific engineering problems under given conditions of straight lines.	10	Practice problems on equation of straight lines using different forms.	2	CO3
LLO 11.1 Solve branch specific engineering problems under given conditions of straight lines.	11	Solve problems on perpendicular distance, distance between two parallel lines and angle between two lines.	2	CO3
LLO 12.1 Solve branch specific engineering problems under given conditions of straight lines.	12	Use given form of straight line to calculate the speed, distance and time of moving object.	2	CO3

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Practical / Tutorial / Laboratory Learning Outcome (LLO)	Sr No	Laboratory Experiment / Practical Titles / Tutorial Titles	Number of hrs.	Relevant COs
LLO 13.1 Apply the concept of derivative to solve engineering problems.	13	Solve problems to find derivatives of implicit function and parametric function.	2	CO4
LLO 14.1 Apply the concept of derivative to solve engineering problems.	14	Solve problems to find derivative of logarithmic and exponential functions for engineering applications.	2	CO4
LLO 15.1 Apply the concept of equation of tangent and normal to solve engineering problems.	15	Solve problems based on finding equation of tangent and normal for engineering applications.	2	CO4
LLO 16.1 Apply the concept of maxima, minima and radius of curvature to solve engineering problems.	16	Solve problems based on finding maxima, minima of function and radius of curvature at a given point for engineering applications.	2	CO4
LLO 17.1 Apply the concept of equation of tangent and normal to solve engineering problems.	17	Use the concept of tangent and normal to solve the given problem of Engineering Drawing.	2	CO4
LLO 18.1 Apply the concept of Maxima and Minima to solve engineering problems.	18	Use the concept of Maxima and Minima to obtain optimum value for given engineering problem.	2	CO4
LLO 19.1 Apply the concept of radius of curvature to solve engineering problems.	19	Use the concept of radius of curvature to solve given branch specific engineering problem.	2	CO4
LLO 20.1 Utilize the concept of derivative to solve engineering problems.	20	Use the concept of derivative to find the slope of a bending curve for given engineering problem.	2	CO4
LLO 21.1 Use concept of range and mean deviation to crack branch specific problems.	21	Solve problems on finding range, coefficient of range and mean deviation for given applications.	2	CO5
LLO 22.1 Use concept of standard deviation and coefficient of variance to crack branch specific problems.	22	Solve problems on standard deviation, coefficient of variation and comparison of two sets.	2	CO5
LLO 23.1 Use concept of standard deviation to crack branch specific problems.	23	Calculate the Standard Deviation for Concrete with the given data for given engineering applications.	2	CO5

Note : Out of above suggestive LLOs -

- '*' Marked Practicals (LLOs) Are mandatory.
- Minimum 80% of above list of lab experiment are to be performed.
- Judicial mix of LLOs are to be performed to achieve desired outcomes.

VII. SUGGESTED MICRO PROJECT / ASSIGNMENT/ ACTIVITIES FOR SPECIFIC LEARNING / SKILLS DEVELOPMENT (SELF LEARNING)

Micro project

- Create a function that takes a matrix as input and returns its inverse matrix if it exists. Also Implement a program that finds the inverse of a square matrix.
- Collect the Data of Marks obtained by your class in mid sem test. Compute the variance and coefficient of variance of the data and interpret the result using the free open source software ORANGE.
- Prepare models using matrices to solve simple problems based on cryptography.
- Collect Model on quality control analysis, energy efficiency assessment, environmental monitoring, and process optimization, for these models, analyze data and calculate variance and standard deviation, make a presentation including short videos.

- Prepare the model using the concept of tangent and normal bending of roads in case of sliding of a vehicle, express geometrically the same through any open source software.
- Prepare the model using the concept of radius of curvature to bending of railway tracks, express geometrically the same through any open source software.
- A window in the form of a rectangle surmounted by a semicircular opening. The total perimeter of the window to admit maximum light through the whole opening, prepare a model using concept of Maxima and Minima for the above problem and verify the result.
- Visualize trigonometric waveforms and create animations utilizing sine or cosine functions and make a presentation.
- Develop a program of trigonometric function calculator that computes sine, cosine, and tangent values.
- Collect applications of the radius of curvature on lens design and optics, mirror and reflective surface properties, road and highway design, structural behavior, roller coaster track design, and composite material manufacturing and make a video of 5-minutes duration.
- Prepare models using trigonometry based on at least 10 engineering problems.
- Apply trigonometric principles to calculate angles, distances, forces, and dimensions relevant to the chosen area and make a poster presentation.
- Prepare charts using determinant to find area of regular shapes.
- Design a puzzle based on matrices. Create a grid of numbers and operations.
- Develop a math game based on operations of matrices.
- Use matrices as a tool for music composition. Assign different musical elements (e.g., notes, chords, rhythms) to matrix elements, and experiment with combining and transforming the matrices to create unique musical compositions. You can use musical notation open software or even traditional instruments to bring your compositions to life.
- Attempt any 10-12 Micro Projects, out of the given list.

Assignment

- Collect examples based on real world applications of logarithm and prepare a pdf file.
- Solve the simultaneous system of equation in two variables by Matrix Inversion Method. Write down a Mathematical programming using any open source software to verify the result.
- Collect an examples on coding theory using applications of matrices and prepare a pdf file.
- Represent the Graph of Trigonometric function, Logarithmic function on Geogebra and interpret the nature of graph and Make a pdf file.
- Measure height of trees in surrounding locations using trigonometry and prepare presentation.
- Find the derivative of y= x^sinx and visualize the graph of the function and its derivative using any open source software geometrically.
- Find height of room or distance between two pillars by using concept of straight line.
- Collect at least 10 examples based on real world applications of standard deviation/variance.
- Collect at least 10 examples based on real world uses of applications of derivative.
- Attempt any 5-7 Assignment, out of the given list.

Note :

- Above is just a suggestive list of microprojects and assignments; faculty must prepare their own bank of microprojects, assignments, and activities in a similar way.
- The faculty must allocate judicial mix of tasks, considering the weaknesses and / strengths of the student in acquiring the desired skills.
- If a microproject is assigned, it is expected to be completed as a group activity.
- SLA marks shall be awarded as per the continuous assessment record.
- For courses with no SLA component the list of suggestive microprojects / assignments/ activities are optional, faculty may encourage students to perform these tasks for enhanced learning experiences.
- If the course does not have associated SLA component, above suggestive listings is applicable to Tutorials and maybe considered for FA-PR evaluations.

VIII. LABORATORY EQUIPMENT / INSTRUMENTS / TOOLS / SOFTWARE REQUIRED

BASIC MATHEMATICS **Course Code : 311302**

Sr.No	Equipment Name with Broad Specifications	Relevant LLO Number
1	Open-source software like SageMaths, MATHS3D, GeoGebra, Graph, DPLOT, and Graphing Calculator (Graph Eq 2.13), ORANGE can be used for Algebra, Calculus, Trigonometry, and Statistics respectively.	All

IX. SUGGESTED WEIGHTAGE TO LEARNING EFFORTS & ASSESSMENT PURPOSE (Specification Table)

Sr.No	Unit	Unit Title	Aligned COs	Learning Hours	R-Level	U-Level	A-Level	Total Marks
1	I	Algebra	CO1	12	2	6	6	14
2	II	Trigonometry	CO2	16	2	6	6	14
3	III	Straight Line	CO3	6	2	2	4	8
4	IV	Differential Calculus	CO4	16	2	8	10	20
5	V	Statistics	CO5	10	2	6	6	14
Grand Total				**60**	**10**	**28**	**32**	**70**

X. ASSESSMENT METHODOLOGIES/TOOLS

Formative assessment (Assessment for Learning)

- Tests
- Rubrics for COs Assignment
- Midterm Exam
- Self-learning
- Term Work
- Seminar/Presentation

Summative Assessment (Assessment of Learning)

- End Term Exam
- Micro-project
- Tutorial Performance

XI. SUGGESTED COS - POS MATRIX FORM

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)		
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO-1	PSO-2	PSO-3
CO1	3	1	-	1	-	1	1			
CO2	3	1	-	-	1	1	1			
CO3	3	-	-	-	-	-	-			
CO4	3	1	1	1	-	1	-			
CO5	3	2	1	1	1	1	1			

Legends :- High:03, Medium:02,Low:01, No Mapping: -
*PSOs are to be formulated at institute level

XII. SUGGESTED LEARNING MATERIALS / BOOKS

BASIC MATHEMATICS **Course Code : 311302**

Sr.No	Author	Title	Publisher with ISBN Number
1	Grewal B. S.	Higher Engineering Mathematics	Khanna publication New Delhi , 2013 ISBN: 8174091955
2	Dutta. D	A text book of Engineering Mathematics	New age publication New Delhi, 2006 ISBN: 978-81-224-1689-3
3	Kreysizg, Ervin	Advance Engineering Mathematics	Wiley publication New Delhi 2016 ISBN: 978-81-265-5423-2
4	Das H.K.	Advance Engineering Mathematics	S Chand publication New Delhi 2008 ISBN: 9788121903455
5	Marvin L. Bittinger David J. Ellenbogen Scott A. Surgent	Calculus and Its Applications	Addison-Wesley 10th Edition ISBN-13: 978-0-321-69433-1
6	C. S. Seshadri	Studies in the History of Indian Mathematics	Hindustan Book Agency, New Delhi 110016. ISBN 978-93-80250-06-9
7	George Gheverghese Joseph	Indian Mathematics Engaging with the World from Ancient to Modern Times	World Scientific Publishing Europe Ltd. 57 ISBN 978-17-86340-61-0
8	Deepak Singh	Mathematics-I	Khanna Book Publishing Co. (P) Ltd. ISBN: 978-93-91505-42-4
9	Garima Singh	Mathematics-II	Khanna Book Publishing Co. (P) Ltd. ISBN: 978-93-91505-52-3
10	Gareth James, Daniela Witten, Trevor Hastie Robert and Tibshirani	An Introduction to Statistical Learning with Applications in R	Springer New York Heidelberg Dordrecht London ISBN 978-1-4614-7137-0 ISBN 978-1-4614-7138-7 (eBook)
11	Gunakar Muley	Sansar Ke Mahan Ganitagya	First Edition, Rajkamal Prakashan, ISBN-10. 8126703571, ISBN-13. 978-8126703579.
12	T.S. Bhanumurthy	A Modern introduction to Ancient Indian Mathematics	New Age International Private Limited, 1 January 2008 ISBN- 10. 812242600X, ISBN- 13. 978-8122426007
13	M.P. Trivedi and P.Y. Trivedi	Consider Dimension and Replace Pi	Notion Press; 1st edition (2018), ISBN-978-1644291795

XIII . LEARNING WEBSITES & PORTALS

Sr.No	Link / Portal	Description
1	http://nptel.ac.in/courses/106102064/1	Online Learning Initiatives by IITs and IISc
2	www.scilab.org/ -SCI Lab	Signal processing, statistical analysis, image enhancement.
3	www.mathworks.com/product/matlab/ -MATLAB	Applications of concepts of Mathematics to coding.
4	Spreadsheet Applications	Use of Microsoft Excel, Apple Numbers, Google Sheets.
5	https://ocw.mit.edu/	MIT Course ware
6	https://www.khanacademy.org/math?gclid=CNqHuabCys4CFdOJaddHoPig	Concept of Mathematics through video lectures and notes
7	http://ocw.abu.edu.ng/courses/mathematics/	List of Mathematical Courses.
8	https://libguides.furman.edu/oer/subject/mathematics	Open Education Resources (OER) in Mathematics.
9	https://phet.colorado.edu/en/simulations/filter?subjects=math&type=html,prototype	Phet Simulation for Mathematics.
10	https://libguides.cmich.edu/OER/mathematics	Mathematics with OER.

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BASIC MATHEMATICS **Course Code : 311302**

Sr.No	Link / Portal	Description

Note :

- Teachers are requested to check the creative common license status/financial implications of the suggested online educational resources before use by the students

MSBTE Approval Dt. 01/10/2024 **Semester - 1, K Scheme**

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COMMUNICATION SKILLS (ENGLISH) **Course Code : 311303**

Programme Name/s	**: Architecture Assistantship/ Automobile Engineering./ Artificial Intelligence/ Agricultural Engineering/ Artificial Intelligence and Machine Learning/ Automation and Robotics/ Architecture/ Cloud Computing and Big Data/ Civil Engineering/ Chemical Engineering/ Computer Technology/ Computer Engineering/ Civil & Rural Engineering/ Construction Technology/ Computer Science & Engineering/ Fashion & Clothing Technology/ Dress Designing & Garment Manufacturing/ Digital Electronics/ Data Sciences/ Electrical Engineering/ Electronics & Tele-communication Engg./ Electrical and Electronics Engineering/ Electrical Power System/ Electronics & Communication Engg./ Electronics Engineering/ Food Technology/ Computer Hardware & Maintenance/ Instrumentation & Control/ Industrial Electronics/ Information Technology/ Computer Science & Information Technology/ Instrumentation/ Interior Design & Decoration/ Interior Design/ Civil & Environmental Engineering/ Mechanical Engineering/ Mechatronics/ Medical Laboratory Technology/ Medical Electronics/ Production Engineering/ Printing Technology/ Polymer Technology/ Surface Coating Technology/ Computer Science/ Textile Technology/ Electronics & Computer Engg./ Travel and Tourism/ Textile Manufactures/**
Programme Code	**: AA/ AE/ AI/ AL/ AN/ AO/ AT/ BD/ CE/ CH/ CM/ CO/ CR/ CS/ CW/ DC/ DD/ DE/ DS/ EE/ EJ/ EK/ EP/ ET/ EX/ FC/ HA/ IC/ IE/ IF/ IH/ IS/ IX/ IZ/ LE/ ME/ MK/ ML/ MU/ PG/ PN/ PO/ SC/ SE/ TC/ TE/ TR/ TX**
Semester	**: First**
Course Title	**: COMMUNICATION SKILLS (ENGLISH)**
Course Code	**: 311303**

I. RATIONALE

The most commonly used medium to express oneself is language. English being a global language is used in all spheres of human life i.e. personal, professional and social. English Language proficiency focuses on strong reading, writing, speaking and listening skills. It will include grammar, vocabulary, comprehension and describing skills to enhance overall language proficiency. English for professional purposes aim to equip the students with necessary language skills required for Public Speaking, presentation and negotiation. English for academic purposes will include academic writing skills and critical thinking considering the need of students to communicate in engineering domain.

II. INDUSTRY / EMPLOYER EXPECTED OUTCOME

The aim of this course is to help the student to achieve the following industry identified outcome through various learning experiences: "Communicate in written and oral form of English effectively at workplace".

III. COURSE LEVEL LEARNING OUTCOMES (COS)

Students will be able to achieve & demonstrate the following COs on completion of course based learning

- CO1 - Construct grammatically correct sentences in English.
- CO2 - Compose paragraphs and dialogues on given situations
- CO3 - Comprehend passages correctly.
- CO4 - Use contextual words in English appropriately
- CO5 - Deliver effective presentations in English using appropriate body language

IV. TEACHING-LEARNING & ASSESSMENT SCHEME

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COMMUNICATION SKILLS (ENGLISH) Course Code : 311303

Course Code	Course Title	Abbr	Course Category/s	Learning Scheme					Credits	Assessment Scheme											
				Actual Contact Hrs./Week			SLH	NLH		Paper Duration	Theory				Based on LL & TL				Based on SL		Total Marks
															Practical						
				CL	TL	LL					FA-TH	SA-TH	Total		FA-PR		SA-PR		SLA		
											Max	Max	Max	Min	Max	Min	Max	Min	Max	Min	
311303	COMMUNICATION SKILLS (ENGLISH)	ENG	AEC	3	-	2	1	6	3	3	30	70	100	40	25	10	-	-	25	10	150

Total IKS Hrs for Sem. : 0 Hrs

Abbreviations: CL- ClassRoom Learning , TL- Tutorial Learning, LL-Laboratory Learning, SLH-Self Learning Hours, NLH-Notional Learning Hours, FA - Formative Assessment, SA -Summative assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment

Legends: @ Internal Assessment, # External Assessment, *# On Line Examination , @$ Internal Online Examination

Note :

1. FA-TH represents average of two class tests of 30 marks each conducted during the semester.
2. If candidate is not securing minimum passing marks in FA-PR of any course then the candidate shall be declared as "Detained" in that semester.
3. If candidate is not securing minimum passing marks in SLA of any course then the candidate shall be declared as fail and will have to repeat and resubmit SLA work.
4. Notional Learning hours for the semester are (CL+LL+TL+SL)hrs.* 15 Weeks
5. 1 credit is equivalent to 30 Notional hrs.
6. * Self learning hours shall not be reflected in the Time Table.
7. * Self learning includes micro project / assignment / other activities.

V. THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.
1	TLO 1.1 Use transcription to pronounce words correctly. TLO 1.2 Use prefix and suffix for flexibility and precision in language TLO 1.3 Employ synonyms and antonyms to express similarity and contrast between words. TLO 1.4 Use Homophones to expand their vocabulary TLO 1.5 Make use of the collocations correctly	**Unit - I Vocabulary** 1.1 Phonetics :Vowels(12) Consonants (24) Diphthongs (8) 1.2 Prefix & Suffix : . Definition & Examples , List of common prefixes and suffixes 1.3 Synonyms & Antonyms : Vocabulary expansion , Context & Usage 1.4 Homophones : Identifying Homophones , Meaning & Context , Vocabulary Expansion 1.5 Collocations : Definition & identification , Types of collocations	Language Lab Drill Classroom learning Reference Books NPTEL
2	TLO 2.1 Formulate paragraphs with synchronized sentence structure on the given situation / topic TLO 2.2 Develop dialogues to practice language skill in a structured and meaningful way.	**Unit - II Paragraph and Dialogue Writing** 2.1 Types of paragraphs: Technical , Descriptive , Narrative 2.2 Dialogue Writing: i Greetings ii. Development iii. Closing Sentence	Classroom learning Skit Language Lab YouTube videos

COMMUNICATION SKILLS (ENGLISH) **Course Code : 311303**

Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.
3	TLO 3.1 Respond to the given questions of the specified passage. TLO 3.2 Formulate sentences using new words TLO 3.3 Use correct syntax to construct meaningful sentences for the given situation. TLO 3.4 Respond to the questions on the given seen & unseen passages.	**Unit - III Comprehension (Seen and Unseen Passages)** 3.1 1 Passages from MSBTE workbook 1.Say No to Plastic bags 2.Interview of Dr. APJ Abdul Kalam 3.Maximum Achievements 4.Be Remarkable 5.Arunima Sinha: A Biography 6.Roses of Gratitude 3.2 Importance of Comprehension 3.3 Unseen Passages 3.4 Interpretation of passages in written and Spoken form	Classroom learning interactive session Discussion
4	TLO 4.1 Describe technical objects with specifications TLO 4.2 Explain the given picture in grammatically correct language. TLO 4.3 Diary Entry on situations TLO 4.4 Translate from English to Marathi/Hindi- vice versa	**Unit - IV Communicative Language** 4.1 Technical objects : i. Heading ii. Description of technical objects 4.2 Picture Description : i. Situational picture ii. Describe in your own words 4.3 Diary Entry : i. Date ii. Content iii. Name of the writer 4.4 Translation of paragraph from English to Marathi/Hindi-Vice versa (Question not to be asked on Translation in Theory Examination)	Language Lab Pictures on situations Classroom learning
5	TLO 5.1 Cultivate/Develop habit of being presentable TLO 5.2 Formulate speeches for occasions TLO 5.3 Prepare power point presentation TLO 5.4 Use appropriate body language for effective communication	**Unit - V Presentation Skills** 5.1 Dressing & Grooming : i. Dressing for the occasion ii. Proper grooming 5.2 Speech Writing : i. Situation ii. Salutations iii. Introduction of the topic iv. Description/Body v. Conclusion 5.3 Power Point Presentation : i. Layout ii. Font size iii. Color combination 5.4 Kinesics : i. Facial expressions ii Eye contact iii Postures iv Gestures	Classroom learning Language Lab

VI. LABORATORY LEARNING OUTCOME AND ALIGNED PRACTICAL / TUTORIAL EXPERIENCES.

Practical / Tutorial / Laboratory Learning Outcome (LLO)	Sr No	Laboratory Experiment / Practical Titles / Tutorial Titles	Number of hrs.	Relevant COs
LLO 1.1 Use transcription in correct form LLO 1.2 Learn to differentiate vowel, diphthong and consonants	1	*Write 20 words using phonetic transcription	2	CO1
LLO 2.1 Learn correct pronunciation by using headphones in language lab	2	Practice pronunciation as per IPA using language lab	2	CO1
LLO 3.1 Enhance the understanding of word formation LLO 3.2 Enrich word power LLO 3.3 Construct words with the specific meanings	3	*Formulate 20 words using Prefix and Suffix	2	CO1
LLO 4.1 Use words and phrases effectively LLO 4.2 Enrich vocabulary LLO 4.3 Develop overall language skills	4	*Construct sentences using 20 collocations	2	CO1
LLO 5.1 Articulate ideas clearly and effectively LLO 5.2 Improve grammar, punctuation	5	*Write two paragraphs of 75 words each	2	CO2
LLO 6.1 Add depth to narratives LLO 6.2 Form grammatically correct sentences	6	*Compose situational dialogues (Any Two)	2	CO2

COMMUNICATION SKILLS (ENGLISH) **Course Code : 311303**

Practical / Tutorial / Laboratory Learning Outcome (LLO)	Sr No	Laboratory Experiment / Practical Titles / Tutorial Titles	Number of hrs.	Relevant COs
LLO 7.1 Promote the development of effective communication skills LLO 7.2 .Improve non -verbal communication Skills LLO 7.3 Enhance interpersonal skills LLO 7.4 Build confidence	7	Enact Role Plays as per situation and context	2	CO5
LLO 8.1 Acquire the ability to convey complex ideas in clear and concise manner LLO 8.2 Expand technical vocabulary LLO 8.3 Enhance the written communication Skills	8	*Describe any three technical objects using correct grammar	2	CO4
LLO 9.1 Develop skills in story telling LLO 9.2 Connect with the audience	9	Narrate anecdotes of various situations in English	2	CO5
LLO 10.1 Notice and articulate specific elements, colors, shapes, & other visual aids LLO 10.2 Express observations & interpretations clearly and concisely LLO 10.3 Enhance vocabulary	10	*Describe a given picture (Any Two)	2	CO4
LLO 11.1 Express information in coherent and engaging manner LLO 11.2 Build confidence	11	*Introduce oneself and others	2	CO5
LLO 12.1 Present complex information in a clear & concise manner LLO 12.2 Develop public speaking skills and presentation skills	12	*Prepare a Power point presentation on a given topic	2	CO5
LLO 13.1 Improve language skills &expand vocabulary	13	*Translate paragraph --English to Marathi/Hindi (vice -Versa) (Any4)	2	CO4
LLO 14.1 Reflect on thoughts, feelings, and experiences	14	*Write your experience in 50 words on (Four) given situations (Diary Entry)	2	CO4
LLO 15.1 Develop language acquisition	15	*Respond to the questions based on the given passages	2	CO3
LLO 16.1 Build confidence in public speaking LLO 16.2 Enhance the skills in planning and prioritization	16	Deliver oral presentations using correct grammar and appropriate body language	2	CO5

Note : Out of above suggestive LLOs -

- '*' Marked Practicals (LLOs) Are mandatory.
- Minimum 80% of above list of lab experiment are to be performed.
- Judicial mix of LLOs are to be performed to achieve desired outcomes.

VII. SUGGESTED MICRO PROJECT / ASSIGNMENT/ ACTIVITIES FOR SPECIFIC LEARNING / SKILLS DEVELOPMENT (SELF LEARNING)

Micro project

- Report different types of episodes/anecdotes
- Seminar preparation and presentations
- Make a Podcast episode based on Indian Freedom Fighters
- Summarize the editorial columns of English newspapers
- Summarize the content of an Eminent person’s biography / autobiography
- Write a review on the following: Short stories ,Novels ,Films.
- Prepare a booklet on the contribution of eminent Indian scientists

- Prepare a podcast referring ancient literature.
- Prepare blogs, podcast, vlogs
- Prepare a questionnaire & conduct the interview of Industry Personnel, social worker, entrepreneur
- Prepare and participate in debates and extempore speeches

Note :

- Above is just a suggestive list of microprojects and assignments; faculty must prepare their own bank of microprojects, assignments, and activities in a similar way.
- The faculty must allocate judicial mix of tasks, considering the weaknesses and / strengths of the student in acquiring the desired skills.
- If a microproject is assigned, it is expected to be completed as a group activity.
- SLA marks shall be awarded as per the continuous assessment record.
- For courses with no SLA component the list of suggestive microprojects / assignments/ activities are optional, faculty may encourage students to perform these tasks for enhanced learning experiences.
- If the course does not have associated SLA component, above suggestive listings is applicable to Tutorials and maybe considered for FA-PR evaluations.

VIII. LABORATORY EQUIPMENT / INSTRUMENTS / TOOLS / SOFTWARE REQUIRED

Sr.No	Equipment Name with Broad Specifications	Relevant LLO Number
1	Language Lab with relevant software and Computer system with all necessary components like; motherboard, random access memory (RAM), read-only memory (ROM), Graphics cards, sound cards, internal hard disk drives, DVD drive, network interface card	All
2	LCD Projector with document reader	All
3	Smart Board with networking	All

IX. SUGGESTED WEIGHTAGE TO LEARNING EFFORTS & ASSESSMENT PURPOSE (Specification Table)

Sr.No	Unit	Unit Title	Aligned COs	Learning Hours	R-Level	U-Level	A-Level	Total Marks
1	I	Vocabulary	CO1	10	2	4	6	12
2	II	Paragraph and Dialogue Writing	CO2	6	2	4	6	12
3	III	Comprehension (Seen and Unseen Passages)	CO3	16	5	6	13	24
4	IV	Communicative Language	CO4	7	2	4	8	14
5	V	Presentation Skills	CO5	6	2	2	4	8
Grand Total				**45**	**13**	**20**	**37**	**70**

X. ASSESSMENT METHODOLOGIES/TOOLS

Formative assessment (Assessment for Learning)

- -

Summative Assessment (Assessment of Learning)

- -

XI. SUGGESTED COS - POS MATRIX FORM

COMMUNICATION SKILLS (ENGLISH) **Course Code : 311303**

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)		
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO-1	PSO-2	PSO-3
CO1	1	1				2	1			
CO2	1	1				2	1			
CO3	1	1				2	1			
CO4	1	1				2	1			
CO5	1	1				2	1			

Legends :- High:03, Medium:02,Low:01, No Mapping: -
*PSOs are to be formulated at institute level

XII. SUGGESTED LEARNING MATERIALS / BOOKS

Sr.No	Author	Title	Publisher with ISBN Number
1	MSBTE	Spectrum, G Scheme and I- Scheme	MSBTE
2	Kumar, E. Suresh, Sreehari, P Savitri	Effective English with CD	Pearson Education
3	Gnanamurli	English Grammar at a Glance	S. Chand
4	CBSE	English Communicative (class X)	Golden
5	Dr. Anjana Tiwari	Communication Skills in English	Khanna Publishers, New Delhi

XIII . LEARNING WEBSITES & PORTALS

Sr.No	Link / Portal	Description
1	https://www.britishcouncil.in/english/learn-online	Website link is given to refer Unit 1
2	Vocabulary.com	Refer this website for interactive vocabulary quizzes, word lists
3	International Phonetic Association (IPA) Website	It offers audio examples and charts to help understand and transcribe sounds
4	grammarly.com/blog	For constructing effective paragraphs and improving clarity
5	www.newagegolden.com	Refer this website for speech writing, diary entry and paragraph writing

Note :

- Teachers are requested to check the creative common license status/financial implications of the suggested online educational resources before use by the students

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FUNDAMENTALS OF ARCHITECTURE **Course Code : 321317**

Programme Name/s	**: Architecture Assistantship/ Architecture/ Interior Design & Decoration/ Interior Design/**
Programme Code	**: AA/ AT/ IX/ IZ**
Semester	**: First**
Course Title	**: FUNDAMENTALS OF ARCHITECTURE**
Course Code	**: 321317**

I. RATIONALE

To introduce to the students the fundamentals of design and development of design vocabulary, to nurture design thinking and to enable them to apply the same thought process in developing compositions of various forms and spaces.

II. INDUSTRY / EMPLOYER EXPECTED OUTCOME

To inculcate design sensitivity and ability, as well as knowledge in the field of architecture profession and impart skills so as to equip the student to undertake work of an architects / interior designers firm.

III. COURSE LEVEL LEARNING OUTCOMES (COS)

Students will be able to achieve & demonstrate the following COs on completion of course based learning

- CO1 - Explain the Architectural profession and its characteristics.
- CO2 - Apply Aesthetic components in Architectural Design
- CO3 - Describe the fundamentals of architecture design and aesthetics..
- CO4 - Enlist different types of materials used for low cost building construction.
- CO5 - Describe organization of spaces, fenestration, and character of façade, enclosure, internal spaces of low cost and sustainable building structure.

IV. TEACHING-LEARNING & ASSESSMENT SCHEME

Course Code	Course Title	Abbr	Course Category/s	Learning Scheme					Credits	Assessment Scheme											
				Actual Contact Hrs./Week			SLH	NLH		Paper Duration	Theory				Based on LL & TL				Based on SL		Total Marks
															Practical						
				CL	TL	LL					FA-TH	SA-TH	Total		FA-PR		SA-PR		SLA		
											Max	Max	Max	Min	Max	Min	Max	Min	Max	Min	
321317	FUNDAMENTALS OF ARCHITECTURE	FAR	DSC	4	-	4	2	10	5	3	30	70	100	40	50	20	50@	20	50	20	250

Total IKS Hrs for Sem. : Hrs

Abbreviations: CL- ClassRoom Learning , TL- Tutorial Learning, LL-Laboratory Learning, SLH-Self Learning Hours, NLH-Notional Learning Hours, FA - Formative Assessment, SA -Summative assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment

Legends: @ Internal Assessment, # External Assessment, *# On Line Examination , @$ Internal Online Examination

Note :

1. FA-TH represents average of two class tests of 30 marks each conducted during the semester.
2. If candidate is not securing minimum passing marks in FA-PR of any course then the candidate shall be declared as "Detained" in that semester.
3. If candidate is not securing minimum passing marks in SLA of any course then the candidate shall be declared as fail and will have to repeat and resubmit SLA work.
4. Notional Learning hours for the semester are (CL+LL+TL+SL)hrs.* 15 Weeks
5. 1 credit is equivalent to 30 Notional hrs.
6. * Self learning hours shall not be reflected in the Time Table.
7. * Self learning includes micro project / assignment / other activities.

FUNDAMENTALS OF ARCHITECTURE **Course Code : 321317**

V. THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.
1	TLO 1.1 Discuss scope of architecture as profession. TLO 1.2 Explain fundamentals of architecture.	**Unit - I Introduction to Profession of Architecture** 1.1 Define scope of Architecture in society as profession. 1.2 Introduction and overview of fundamentals of architecture. 1.3 Study and compare the architectural characteristics with respect to other professions.	Collaborative learning Lecture Using Chalk-Board Presentations Demonstration
2	TLO 2.1 Explain & prepare a report on space composition such as Massing, Space, Proportion & Symmetry, etc with examples. TLO 2.2 Explain & prepare a report on space composition such as Balance, Contrast, Pattern & Decoration with examples. TLO 2.3 Define physical factors for various types of building by understanding its form, orientation & climate.	**Unit - II Aesthetic Component** 2.1 Mass, Space, Proportion & Symmetry. 2.2 Balance, Contrast, Pattern & Decoration. 2.3 Importance of physical factors in Architectural design in terms of Form, Orientation & Climate.	Presentations Collaborative learning Case Study Lecture Using Chalk-Board
3	TLO 3.1 Describe the primary functions of architecture & their significance in design. TLO 3.2 Analyze how functional requirements influence architectural form and space. TLO 3.3 Explain the role of cultural context in the development of architectural styles & practices. TLO 3.4 Define sustainable architecture and three R's (Reduce, Reuse & Recycle) & its principles. TLO 3.5 Describe building features and components in development of architectural form based on functional requirements, cultural context, and environmental sustainability.	**Unit - III Fundamentals of architecture** 3.1 Function, culture and environment 3.2 Integration into the architectural form.	Presentations Case Study Collaborative learning Lecture Using Chalk-Board
4	TLO 4.1 Enlist different types of materials used for low cost building construction with due to sustainability & aesthetics. TLO 4.2 Explain a site plan of a nearby vicinity building addressing various factors affecting built form. (Site, context, function, circulation, orientation, climatic aspects)	**Unit - IV Factors affecting architectural design** 4.1 Site, context, function, circulation 4.2 Materials, sustainability and aesthetics. 4.3 Importance of physical factors in Architectural design - orientation, ventilation, climatic aspects	Lecture Using Chalk-Board Presentations Site/Industry Visit Collaborative learning

FUNDAMENTALS OF ARCHITECTURE **Course Code : 321317**

Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.
5	TLO 5.1 Describe various types of shelter/typology. TLO 5.2 Explain on Low cost materials such as Mud, bamboo, reinforced bamboo concrete in designing & constructing building. TLO 5.3 Enlist and describe on organization of spaces, fenestration, and character of façade, enclosure and internal spaces / indoor outdoor space relationship. TLO 5.4 Explain features of vernacular architecture.	**Unit - V Concept of Shelter & design concerns.** 5.1 Introduction to various building typologies 5.2 Low cost materials design concerns 5.3 Organization of spaces, fenestration, and character of facade, enclosure and internal spaces. 5.4 Documentation of vernacular architecture of selected building typologies.	Lecture Using Chalk-Board Presentations Case Study Collaborative learning

VI. LABORATORY LEARNING OUTCOME AND ALIGNED PRACTICAL / TUTORIAL EXPERIENCES.

Practical / Tutorial / Laboratory Learning Outcome (LLO)	Sr No	Laboratory Experiment / Practical Titles / Tutorial Titles	Number of hrs.	Relevant COs
LLO 1.1 Prepare a report on Architectural profession. LLO 1.2 Prepare a report on scope of architecture and its characteristics with respect to other professions.	1	Architectural profession.	4	CO1
LLO 2.1 *Prepare a PPT with 2D/3D models of space composition demonstrating Massing, Space type, Proportion & Symmetry. LLO 2.2 *Prepare 2D/3D on A3 sheet models on Balance, Contrast, Pattern & Decoration. LLO 2.3 Prepare a plan, elevation & section of own house with analysis to orientation and climatic conditions.	2	Importance of Aesthetical Components.	6	CO2
LLO 3.1 Prepare live case study report of primary functions of architecture & its significance in design with respect to a given site conditions. LLO 3.2 *Prepare live case study report on functional requirements influencing architectural form and space for a given building. LLO 3.3 For a given site plan condition prepare a drawings for mapping activities such as Transportation, Landmark, Node & Built form etc., with due cultural context in the development of architectural style LLO 3.4 *Prepare a report on reduce, reuse and recycle / sustainable materials used in builidings. LLO 3.5 *Prepare mapping / layering of a given site plan and prepare mapping, layering, sketching, depicting environmental sustainability (Renewable energy, limiting waste, conserving water, energy efficient,	3	Fundamentals of architecture.	20	CO3
LLO 4.1 *Prepare a report / PPT on types of materials for energy efficient building & aesthetics with examples. LLO 4.2 *Prepare a report / PPT on various factors affecting built form. (Site, context, function, circulation, orientation, climatic aspects)	4	Site Components & Importance of physical factors.	10	CO4

FUNDAMENTALS OF ARCHITECTURE **Course Code : 321317**

Practical / Tutorial / Laboratory Learning Outcome (LLO)	Sr No	Laboratory Experiment / Practical Titles / Tutorial Titles	Number of hrs.	Relevant COs
LLO 5.1 Draw sketches of various types of shelter/typology illustrating building construction system & building sciences. LLO 5.2 *Draw sketches / report / PPT on Low cost materials such as Mud, bamboo, Eco bricks, reclamed wood, reinforced bamboo concrete etc. LLO 5.3 Draw sketches on organization of spaces, fenestration and character of façade, enclosure and internal spaces. LLO 5.4 *Prepare a measure drawing based on study of vernacular architecture practices and sustainable materials for a given building & its site context / conditions...	5	Materials for Shelter.	20	CO5

Note : Out of above suggestive LLOs -

- '*' Marked Practicals (LLOs) Are mandatory.
- Minimum 80% of above list of lab experiment are to be performed.
- Judicial mix of LLOs are to be performed to achieve desired outcomes.

VII. SUGGESTED MICRO PROJECT / ASSIGNMENT/ ACTIVITIES FOR SPECIFIC LEARNING / SKILLS DEVELOPMENT (SELF LEARNING)

Micro project

- Prepare a measure drawing of a building having vernacular architecture characteristics in a group of 5 students.
- Prepare a report on climatic responsive architecture in a group of 5 students.

Audio & Video Documentation

- Documentation of prescient in video clip (minimum 5 minutes) with voice over analyzing & explaining physical factors in Architectural design in terms of Form, Orientation, Climate, culture with reference to urban context, rural context, etc.

Assignment

- Visit to a Architect's office and prepare a drawing/sketches of office layout

Note :

- Above is just a suggestive list of microprojects and assignments; faculty must prepare their own bank of microprojects, assignments, and activities in a similar way.
- The faculty must allocate judicial mix of tasks, considering the weaknesses and / strengths of the student in acquiring the desired skills.
- If a microproject is assigned, it is expected to be completed as a group activity.
- SLA marks shall be awarded as per the continuous assessment record.
- For courses with no SLA component the list of suggestive microprojects / assignments/ activities are optional, faculty may encourage students to perform these tasks for enhanced learning experiences.
- If the course does not have associated SLA component, above suggestive listings is applicable to Tutorials and maybe considered for FA-PR evaluations.

FUNDAMENTALS OF ARCHITECTURE **Course Code : 321317**

VIII. LABORATORY EQUIPMENT / INSTRUMENTS / TOOLS / SOFTWARE REQUIRED

Sr.No	Equipment Name with Broad Specifications	Relevant LLO Number
1	sketch book, computer desktop, Microsoft office, sketching & drafting tools, mobile (videography)) LCD projector, drafting board.	All

IX. SUGGESTED WEIGHTAGE TO LEARNING EFFORTS & ASSESSMENT PURPOSE (Specification Table)

Sr.No	Unit	Unit Title	Aligned COs	Learning Hours	R-Level	U-Level	A-Level	Total Marks
1	I	Introduction to Profession of Architecture	CO1	4	2	4	2	8
2	II	Aesthetic Component	CO2	6	2	4	6	12
3	III	Fundamentals of architecture	CO3	20	4	4	10	18
4	IV	Factors affecting architectural design	CO4	10	2	4	8	14
5	V	Concept of Shelter & design concerns.	CO5	20	4	4	10	18
Grand Total				**60**	**14**	**20**	**36**	**70**

X. ASSESSMENT METHODOLOGIES/TOOLS

Formative assessment (Assessment for Learning)

- Team work, assignment, Micro Project (60% weightage to process & 40% weightage to product).

Summative Assessment (Assessment of Learning)

- Pen and Paper test (written test), Practical exam, oral exam.

XI. SUGGESTED COS - POS MATRIX FORM

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)		
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO-1	PSO-2	PSO-3
CO1	3	-	-	-	1	2	1			
CO2	2	2	3	1	1	-	1			
CO3	2	2	3	1	1	-	1			
CO4	2	1	-	-	3	-	2			
CO5	2	1	1	-	1	1	2			

Legends :- High:03, Medium:02,Low:01, No Mapping: -
*PSOs are to be formulated at institute level

XII. SUGGESTED LEARNING MATERIALS / BOOKS

Sr.No	Author	Title	Publisher with ISBN Number

FUNDAMENTALS OF ARCHITECTURE **Course Code : 321317**

Sr.No	Author	Title	Publisher with ISBN Number
1	Pramar	Design Fundamentals in Architecture	Somaiya Publication P Ltd ISBN-13: 978-8170391708 ISBN-10: 8170391709
2	Francis D. K.Ching	Architecture : Form, Space and order	ISBN-10. 9781118745083, ISBN-13. 978-1118745083, Publisher: John Wiley & Sons Inc
3	Heller Robert and Salvadori Mario	Structure in Architecture	Publisher, Pearson. ISBN: 0132803208

XIII . LEARNING WEBSITES & PORTALS

Sr.No	Link / Portal	Description
1	Ching, F. D. K. (2012). Architecture: Form, Space and Order, 3rd Ed. Hoboken : John Wiley & Sons.	Architecture: Form, Space and Order
2	Roth, L. M. (2013). Understanding Architecture: Its Experience History and Meaning, 3rd Ed. Philadelphia : West-view press.	Understanding Architecture: Its Experience History and Meaning
3	Rudolf, A. (1977). The dynamics of architectural form. Berkeley and Los Angeles: University of California Press.	The dynamics of architectural form
4	Pandya, Y. (2007). Elements of Space making. Ahmedabad : Mapin	Elements of Space making. Ahmedabad
5	Unwin, S. (2003). Analyzing Architecture. London : Rouledge.	Analyzing Architecture. London
6	Paul, A. J. (1994). The Theory of Architecture–Concepts & themes. New York : Van Nostrand Reinhold. New York.	The Theory of Architecture–Concepts & themes. New York.

Note :

- Teachers are requested to check the creative common license status/financial implications of the suggested online educational resources before use by the students

MSBTE Approval Dt. 01/10/2024 **Semester - 1, K Scheme**

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FUNDAMENTALS OF ICT **Course Code : 311001**

Programme Name/s	**: Architecture Assistantship/ Automobile Engineering./ Artificial Intelligence/ Agricultural Engineering/ Artificial Intelligence and Machine Learning/ Automation and Robotics/ Architecture/ Cloud Computing and Big Data/ Civil Engineering/ Chemical Engineering/ Computer Technology/ Computer Engineering/ Civil & Rural Engineering/ Construction Technology/ Computer Science & Engineering/ Fashion & Clothing Technology/ Digital Electronics/ Data Sciences/ Electrical Engineering/ Electronics & Tele-communication Engg./ Electrical and Electronics Engineering/ Electrical Power System/ Electronics & Communication Engg./ Electronics Engineering/ Food Technology/ Computer Hardware & Maintenance/ Hotel Management & Catering Technology/ Instrumentation & Control/ Industrial Electronics/ Information Technology/ Computer Science & Information Technology/ Instrumentation/ Interior Design & Decoration/ Interior Design/ Civil & Environmental Engineering/ Mechanical Engineering/ Mechatronics/ Medical Laboratory Technology/ Medical Electronics/ Production Engineering/ Printing Technology/ Polymer Technology/ Surface Coating Technology/ Computer Science/ Textile Technology/ Electronics & Computer Engg./ Travel and Tourism/ Textile Manufactures/**
Programme Code	**: AA/ AE/ AI/ AL/ AN/ AO/ AT/ BD/ CE/ CH/ CM/ CO/ CR/ CS/ CW/ DC/ DE/ DS/ EE/ EJ/ EK/ EP/ ET/ EX/ FC/ HA/ HM/ IC/ IE/ IF/ IH/ IS/ IX/ IZ/ LE/ ME/ MK/ ML/ MU/ PG/ PN/ PO/ SC/ SE/ TC/ TE/ TR/ TX**
Semester	**: First**
Course Title	**: FUNDAMENTALS OF ICT**
Course Code	**: 311001**

I. RATIONALE

In any typical business setup in order to carry out routine tasks related to create business documents, perform data analysis and its graphical representations and making electronic slide show presentations, the student need to learn various software as office automation tools like word processing applications, spreadsheets and presentation tools. They also need to use these tools for making their project reports and presentations. The objective of this course is to develop the basic competency in students for using these office automation tools to accomplish the job. This course also presents an overview of emerging technologies so that students of different discipline can appraise the applications of these technologies in their respective domain.

II. INDUSTRY / EMPLOYER EXPECTED OUTCOME

The aim of this course is to help the student to attain the following industry identified outcome through various teaching learning experiences: 1) Use computers for Internet services, Electronics Documentation, Data Analysis and Slide Presentation. 2) Appraise Application of ICT based Emerging Technologies.in different domain.

III. COURSE LEVEL LEARNING OUTCOMES (COS)

Students will be able to achieve & demonstrate the following COs on completion of course based learning

- CO1 - Use computer system and its peripherals for given purpose
- CO2 - Prepare Business document using Word Processing Tool
- CO3 - Analyze Data and represent it graphically using Spreadsheet
- CO4 - Prepare professional Slide Show presentations
- CO5 - Use different types of Web Browsers and Apps
- CO6 - Explain concept and applications of Emerging Technologies

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FUNDAMENTALS OF ICT **Course Code : 311001**

IV. TEACHING-LEARNING & ASSESSMENT SCHEME

Course Code	Course Title	Abbr	Course Category/s	Learning Scheme					Credits	Assessment Scheme											
				Actual Contact Hrs./Week			SLH	NLH		Paper Duration	Theory				Based on LL & TL				Based on SL		Total Marks
															Practical						
				CL	TL	LL					FA-TH	SA-TH	Total		FA-PR		SA-PR		SLA		
											Max	Max	Max	Min	Max	Min	Max	Min	Max	Min	
311001	FUNDAMENTALS OF ICT	ICT	SEC	1	-	2	1	4	2	-	-	-	-	-	25	10	25@	10	25	10	75

Total IKS Hrs for Sem. : 0 Hrs

Abbreviations: CL- ClassRoom Learning , TL- Tutorial Learning, LL-Laboratory Learning, SLH-Self Learning Hours, NLH-Notional Learning Hours, FA - Formative Assessment, SA -Summative assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment

Legends: @ Internal Assessment, # External Assessment, *# On Line Examination , @$ Internal Online Examination

Note :

1. FA-TH represents average of two class tests of 30 marks each conducted during the semester.
2. If candidate is not securing minimum passing marks in FA-PR of any course then the candidate shall be declared as "Detained" in that semester.
3. If candidate is not securing minimum passing marks in SLA of any course then the candidate shall be declared as fail and will have to repeat and resubmit SLA work.
4. Notional Learning hours for the semester are (CL+LL+TL+SL)hrs.* 15 Weeks
5. 1 credit is equivalent to 30 Notional hrs.
6. * Self learning hours shall not be reflected in the Time Table.
7. * Self learning includes micro project / assignment / other activities.

V. THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.

FUNDAMENTALS OF ICT **Course Code : 311001**

Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.
1	TLO 1.1 Explain the functions of components in the block diagram of computer system. TLO 1.2 Classify the given type of software TLO 1.3 Explain characteristics of the given type of network TLO 1.4 Describe application of the given type of network connecting device TLO 1.5 Describe procedure to manage a file /folder in the given way.	**Unit - I Introduction to Computer System** 1.1 Basics of Computer System: Overview of Hardware and Software: block diagram of Computer System, Input/Output unit CPU, Control Unit, Arithmetic logic Unit (ALU), Memory Unit 1.2 Internal components: processor, motherboards, random access memory (RAM), read-only memory (ROM), video cards, sound cards and internal hard disk drives) 1.3 External Devices: Types of input/output devices, types of monitors, keyboards, mouse, printers: Dot matrix, Inkjet and LaserJet, plotter and scanner, external storage devices CD/DVD, Hard disk and pen drive 1.4 Application Software: word processing, spreadsheet, database management systems, control software, measuring software, photo-editing software, video-editing software, graphics manipulation software System Software compilers, linkers, device drivers, oper 1.5 Network environments: network interface cards, hubs, switches, routers and modems, concept of LAN, MAN, WAN, WLAN, Wi-Fi and Bluetooth 1.6 Working with Operating Systems: Create and manage file and folders, Copy a file, renaming and deleting of files and folders, Searching files and folders, application installation, creating shortcut of application on the desktop.	Hands-on Demonstration Presentations
2	TLO 2.1 Write steps to create the given text document. TLO 2.2 Explain the given feature for document editing. TLO 2.3 Explain the given page setup features of a document. TLO 2.4 Write the given table formatting feature. TLO 2.5 Write the steps to set the given type of document layout	**Unit - II Word Processing** 2.1 Word Processing: Overview of Word processor Basics of Font type, size, colour, Effects like Bold, italic, underline, Subscript and superscript, Case changing options, Previewing a document, Saving a document, Closing a document and exiting application. 2.2 Editing a Document: Navigate through a document, Scroll through text, Insert and delete text, Select text, Undo and redo commands, Use drag and drop to move text, Copy, cut and paste, Use the clipboard, Clear formatting, Format and align text, Formatting 2.3 Changing the Layout of a Document: Adjust page margins, Change page orientation, Create headers and footers, Set and change indentations, Insert and clear tabs 2.4 Inserting Elements to Word Documents: Insert and delete a page break, Insert page numbers, Insert the date and time, Insert special characters (symbols), Insert a picture from a file, Resize and reposition a picture 2.5 Working with Tables: Insert a table, Convert a table to text, Navigate and select text in a table, Resize table cells, Align text in a table, Format a table, Insert and delete columns and rows, Borders and shading, Repeat table headings on subsequent page 2.6 Working with Columned Layouts and Section Breaks: a Columns, Section breaks, Creating columns, Newsletter style columns, Changing part of a document layout or formatting, Remove section break, Add columns to remainder of a document, Column widths, Adjust	Hands-on Demonstration Presentations

FUNDAMENTALS OF ICT **Course Code : 311001**

Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.
3	TLO 3.1 Write steps to create the given spreadsheet. TLO 3.2 Explain the given formatting feature of a worksheet. TLO 3.3 Write steps to insert formula and functions in the given worksheet. TLO 3.4 Write steps to create charts for the given data set. TLO 3.5 Explain steps to perform data filter, sort and validation operations on the given data set. TLO 3.6 Write steps to setup and print a spreadsheet.	**Unit - III Spreadsheets** 3.1 Working with Spreadsheets: Overview of workbook and worksheet, Create Worksheet Entering sample data, Save, Copy Worksheet, Delete Worksheet, Close and open Workbook. 3.2 Editing Worksheet: Insert and select data, adjust row height and column width, delete, move data, insert rows and columns, Copy and Paste, Find and Replace, Spell Check, Zoom In-Out, Special Symbols, Insert Comments, Add Text Box, Undo Changes, - Freeze 3.3 Formatting Cells and sheet: Setting Cell Type, Setting Fonts, Text options, Rotate Cells, Setting Colors, Text Alignments, Merge and Wrap, apply Borders and Shades, Sheet Options, Adjust Margins, Page Orientation, Header and Footer, Insert Page Breaks, S 3.4 Working with Formula: Creating Formulas, Copying Formulas, Common spreadsheet Functions such as sum, average, min, max, date, In, And, or, mathematical functions such as sqrt, power, applying conditions using IF. 3.5 Working with Charts: Introduction to charts, overview of different types of charts, Bar, Pie, Line charts, creating and editing charts. Using chart options: chart title, axis title, legend, data labels, Axes, grid lines, moving chart in a separate sheet. 3.6 Advanced Operations: Conditional Formatting, Data Filtering, Data Sorting, Using Ranges, Data Validation, Adding Graphics, Printing Worksheets, print area, margins, header, footer and other page setup options.	Hands-on Demonstration Presentations
4	TLO 4.1 Write the steps to create the given slide presentation. TLO 4.2 Write the steps to insert multiple media in the given presentation. TLO 4.3 Explain the method of including animation, transition effects in slide show. TLO 4.4 Write steps to apply table features in the given presentation TLO 4.5 Write steps to manage charts in the given presentation	**Unit - IV Presentation Tool** 4.1 Creating a Presentation: Outline of an effective presentation, Identify the elements of the User Interface, Starting a New Presentation Files, Creating a Basic Presentation, Working with textboxes, Apply Character Formats, Format Paragraphs, View a Prese 4.2 Inserting Media elements: Adding and Modifying Graphical Objects to a Presentation - Insert Images into a Presentation, insert audio clips, video/animation, Add Shapes, Add Visual Styles to Text in a Presentation, Edit Graphical Objects on a Slide, Format 4.3 Working with Tables: Insert a Table in a Slide, Format Tables, and Import Tables from Other Office Applications. 4.4 Working with Charts: Insert Charts in a Slide, Modify a Chart, Import Charts from Other Office Applications.	Hands-on Demonstration Presentations

FUNDAMENTALS OF ICT **Course Code : 311001**

Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.
5	TLO 5.1 Explain use of the given setting option in browsers. TLO 5.2 Explain the given option used for effective searching in search engine TLO 5.3 Explain features of the given web service. TLO 5.4 Explain concepts and applications of emerging technologies TLO 5.5 Use various elementary cloud-based tools.	**Unit - V Basics of Internet and Emerging Technologies** 5.1 World Wide Web: Introduction, Internet, Intranet, Cloud, Web Sites, web pages, URL, web servers, basic settings of web browsers- history, extension, default page, default search engine, creating and retrieving bookmarks, use search engines effectively for 5.2 Web Services: e-Mail, Chat, Video Conferencing, e-learning, e-shopping, e-Reservation, e-Groups, Social Networking 5.3 Emerging Technologies: IOT, AI and ML, Drone Technologies,3D Printing. 5.4 Tools: Docs, Drive, forms, quiz, Translate and other Apps	Hands-on Demonstration Presentations

VI. LABORATORY LEARNING OUTCOME AND ALIGNED PRACTICAL / TUTORIAL EXPERIENCES.

Practical / Tutorial / Laboratory Learning Outcome (LLO)	Sr No	Laboratory Experiment / Practical Titles / Tutorial Titles	Number of hrs.	Relevant COs
LLO 1.1 Identify various Input/output devices, connections and peripherals of computer system LLO 1.2 Work with Computer System, Input/output devices, and peripherals for manages files and folders for data storage.	1	* a) Work with Computer System, Input/output devices, and peripherals. b) Work with files and folders	2	CO1
LLO 2.1 Create and manage word document. LLO 2.2 Apply formatting features on text at line, paragraph and page level.	2	*Work with document files: a) Create, edit and save document in Word Processing. b) Text, lines and paragraph level formatting	2	CO2
LLO 3.1 Insert and edit images, shapes in a document file	3	Work with Images and Shapes in Word Processing.	2	CO2
LLO 4.1 Insert table and apply various table formatting features on it.	4	*Work with tables in Word Processing.	2	CO2
LLO 5.1 Apply page layout features in word processing. LLO 5.2 Print a document by applying various print options LLO 5.3 Use mail merge in word processing	5	*Working with layout and printing a) Document page layout, Themes, and printing. b) Use of mail merge with options.	2	CO2
LLO 6.1 Enter and format data in a worksheet. LLO 6.2 Insert and delete cells, rows and columns LLO 6.3 Apply alignment feature on cell	6	*Create, open and edit Worksheet.	2	CO3
LLO 7.1 Create formula and “If” condition on cell data LLO 7.2 Apply various functions and named ranges in worksheet.	7	*Formulas and functions in Worksheet.	2	CO3
LLO 8.1 Implement data Sorting, Filtering and Data validation features in a worksheet.	8	*Sort, Filter and validate data in Spreadsheet.	2	CO3
LLO 9.1 Create charts using various chart options in spreadsheet.	9	*Charts for Visual Presentation in Spreadsheet.	2	CO3
LLO 10.1 Print the worksheet by applying various print options for worksheet	10	Worksheet Printing.	2	CO3

FUNDAMENTALS OF ICT **Course Code : 311001**

Practical / Tutorial / Laboratory Learning Outcome (LLO)	Sr No	Laboratory Experiment / Practical Titles / Tutorial Titles	Number of hrs.	Relevant COs
LLO 11.1 Apply design themes to the given presentation LLO 11.2 Insert pictures text/images/shapes in slide LLO 11.3 Use pictures text/images/shapes editing options.	11	*Make Slide Show Presentation.	2	CO4
LLO 12.1 Add tables and charts in the slides. LLO 12.2 Run slide presentation in different modes LLO 12.3 Print slide presentation as handouts/notes	12	*Use Tables and Charts in Slide	2	CO4
LLO 13.1 Apply animation effects to the text and slides LLO 13.2 Add/set audio and video files in the presentation.	13	*a) Insert Animation effects to Text and Slides. b) Insert Audio and Video files in presentation	2	CO4
LLO 14.1 Configure internet connection on a computer system LLO 14.2 Use different web services on internet	14	a) Internet connection configuration b) Use Internet and Web Services.	1	CO5
LLO 15.1 Configure different browser settings LLO 15.2 Use browsers for the given purpose	15	Working with Browsers.	1	CO5
LLO 16.1 Create web forms for survey using different options.	16	*Prepare Web Forms for Survey.	1	CO5
LLO 17.1 Create web forms for Quiz using different options	17	*Prepare Web Forms for Quiz	1	CO5

Note : Out of above suggestive LLOs -

- '*' Marked Practicals (LLOs) Are mandatory.
- Minimum 80% of above list of lab experiment are to be performed.
- Judicial mix of LLOs are to be performed to achieve desired outcomes.

VII. SUGGESTED MICRO PROJECT / ASSIGNMENT/ ACTIVITIES FOR SPECIFIC LEARNING / SKILLS DEVELOPMENT (SELF LEARNING)

Self Learning

- Following are some suggestive self-learning topics: 1) Use ChatGPT/any other AI tool to explore information. 2) Use Calendar to Schedule and edit activities. 3) Use Translate app to translate the given content from one language to another. 4) Use cloud based storage drive to store and share your files.

Micro project

- The microproject has to be industry application based, internet-based, workshop-based, laboratory-based or field-based as suggested by Teacher. 1) Perform a survey on various input and output devices available in market and make its report. 2) Prepare Time Table, Prepare Notes on Technical Topics, Reports, Biodata with covering letter (Subject teacher shall assign a document to be prepared by each students) 3) Prepare slides with all Presentation features such as: classroom presentation, presentation about department, presentation of Technical Topics. (Subject teacher shall assign a presentation to be prepared by each student). 4) Student Marksheet, Prepare Pay bills, tax statement, student's assessment record using spreadsheet. (Teacher shall assign a spreadsheet to be prepared by each student). 5) Carry-out Survey on different web browsers. 6) Generate resume for different job profile, survey report of any industry using ChatGPT/any other AI tool.

FUNDAMENTALS OF ICT **Course Code : 311001**

Note :

- Above is just a suggestive list of microprojects and assignments; faculty must prepare their own bank of microprojects, assignments, and activities in a similar way.
- The faculty must allocate judicial mix of tasks, considering the weaknesses and / strengths of the student in acquiring the desired skills.
- If a microproject is assigned, it is expected to be completed as a group activity.
- SLA marks shall be awarded as per the continuous assessment record.
- For courses with no SLA component the list of suggestive microprojects / assignments/ activities are optional, faculty may encourage students to perform these tasks for enhanced learning experiences.
- If the course does not have associated SLA component, above suggestive listings is applicable to Tutorials and maybe considered for FA-PR evaluations.

VIII. LABORATORY EQUIPMENT / INSTRUMENTS / TOOLS / SOFTWARE REQUIRED

Sr.No	Equipment Name with Broad Specifications	Relevant LLO Number
1	a) Computer System with all necessary Peripherals and Internet connectivity. b) Any Office Software c) Any Browser (Any General Purpose Computer available in the Institute)	All

IX. SUGGESTED WEIGHTAGE TO LEARNING EFFORTS & ASSESSMENT PURPOSE (Specification Table)

Sr.No	Unit	Unit Title	Aligned COs	Learning Hours	R-Level	U-Level	A-Level	Total Marks
1	I	Introduction to Computer System	CO1	2	0	0	0	0
2	II	Word Processing	CO2	3	0	0	0	0
3	III	Spreadsheets	CO3	3	0	0	0	0
4	IV	Presentation Tool	CO4	4	0	0	0	0
5	V	Basics of Internet and Emerging Technologies	CO5,CO6	3	0	0	0	0
Grand Total				**15**	**0**	**0**	**0**	**0**

X. ASSESSMENT METHODOLOGIES/TOOLS

Formative assessment (Assessment for Learning)

- Lab performance, Assignment, Self-learning and Seminar/Presentation

Summative Assessment (Assessment of Learning)

- Lab. Performance, viva voce

XI. SUGGESTED COS - POS MATRIX FORM

FUNDAMENTALS OF ICT **Course Code : 311001**

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)		
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO-1	PSO-2	PSO-3
CO1	1	-	-	-	-	-	1			
CO2	-	-	-	3	-	-	1			
CO3	-	2	1	3	-	-	1			
CO4	-	-	-	3	-	-	1			
CO5	1	-	-	3	-	-	3			
CO6	1	-	-	3	-	-	3			

Legends :- High:03, Medium:02,Low:01, No Mapping: -
*PSOs are to be formulated at institute level

XII. SUGGESTED LEARNING MATERIALS / BOOKS

Sr.No	Author	Title	Publisher with ISBN Number
1	Goel, Anita	Computer Fundamentals	Pearson Education, New Delhi, 2014, ISBN-13: 978-8131733097
2	Miller, Michael	Computer Basics Absolute Beginner's Guide, Windows 10	QUE Publishing; 8th edition August 2015, ISBN: 978-0789754516
3	Alvaro, Felix	Linux: Easy Linux for Beginners	CreatevSpace Independent Publishing Platform- 2016, ISBN-13: 978-1533683731
4	Johnson, Steve	Microsoft Office 2010: On Demand	Pearson Education, New Delhi India, 2010. ISBN :9788131770641
5	Schwartz, Steve	Microsoft Office 2010 for Windows: Visual Quick Start	Pearson Education, New Delhi India, 2012, ISBN : 9788131766613
6	Leete, Gurdy, Finkelstein Ellen, Mary Leete	OpenOffice.org for Dummies	Wiley Publishing, New Delhi, 2003 ISBN : 978-0764542220

XIII . LEARNING WEBSITES & PORTALS

Sr.No	Link / Portal	Description
1	https://www.microsoft.com/en-in/learning/office-training.aspx	Office
2	http://www.tutorialsforopenoffice.org/	Open Office
3	https://s3-ap-southeast-1.amazonaws.com/r4ltue295xy0d/Special_Edition_Using_StarOffice_6_0.pdf	Open Office
4	https://ashishmodi.weebly.com/uploads/1/8/9/7/18970467/computer_fundamental.pdf	Computer Fundamental
5	http://www.tutorialsforopenoffice.org/	Open Office
6	https://www.tutorialspoint.com/computer_fundamentals/index.htm	Computer Fundamental
7	https://www.tutorialspoint.com/word/	Word Processing
8	https://www.javatpoint.com/ms-word-tutorial	Word Processing
9	https://support.microsoft.com/en-au/office/word-for-windows-training-7bcd85e6-2c3d-4c3c-a2a5-5ed8847	Word Processing
10	https://www.javatpoint.com/excel-tutorial	Spreadsheet

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FUNDAMENTALS OF ICT **Course Code : 311001**

Sr.No	Link / Portal	Description
11	https://support.microsoft.com/en-au/office/excel-video-training-9bc05390-e94c-46af-a5b3-d7c22f6990bb	Spreadsheet
12	https://www.javatpoint.com/powerpoint-tutorial	Powerpoint Presentation
13	https://support.microsoft.com/en-au/office/powerpoint-for-windows-training-40e8c930-cb0b-40d8-82c4-b	Powerpoint Presentation
14	https://www.geeksforgeeks.org/ms-dos-operating-system/	Operating System
15	https://www.javatpoint.com/windows	Windows Operating System
16	https://www.javatpoint.com/what-is-linux	Linux Operating System
17	https://www.techtarget.com/iotagenda/definition/Internet-of-Things-IoT	IoT
18	https://www.geeksforgeeks.org/introduction-to-internet-of-things-iot-set-1/	IoT
19	https://www.javatpoint.com/machine-learning	AI & Machine Learning
20	https://www.skillrary.com/blogs/read/introduction-to-drone-technology	Drone Technology
21	https://www.cnet.com/tech/computing/what-is-3d-printing/	3D Printing
22	https://support.google.com/a/users/answer/9389764?hl=en	Apps

Note :

- Teachers are requested to check the creative common license status/financial implications of the suggested online educational resources before use by the students

MSBTE Approval Dt. 01/10/2024 **Semester - 1, K Scheme**

Programme Name/s	**: Architecture Assistantship/ Automobile Engineering./ Artificial Intelligence/ Agricultural Engineering/ Artificial Intelligence and Machine Learning/ Automation and Robotics/ Architecture/ Cloud Computing and Big Data/ Civil Engineering/ Chemical Engineering/ Computer Technology/ Computer Engineering/ Civil & Rural Engineering/ Construction Technology/ Computer Science & Engineering/ Fashion & Clothing Technology/ Dress Designing & Garment Manufacturing/ Digital Electronics/ Data Sciences/ Electrical Engineering/ Electronics & Tele-communication Engg./ Electrical and Electronics Engineering/ Electrical Power System/ Electronics & Communication Engg./ Electronics Engineering/ Food Technology/ Computer Hardware & Maintenance/ Hotel Management & Catering Technology/ Instrumentation & Control/ Industrial Electronics/ Information Technology/ Computer Science & Information Technology/ Instrumentation/ Interior Design & Decoration/ Interior Design/ Civil & Environmental Engineering/ Mechanical Engineering/ Mechatronics/ Medical Laboratory Technology/ Medical Electronics/ Production Engineering/ Printing Technology/ Polymer Technology/ Surface Coating Technology/ Computer Science/ Textile Technology/ Electronics & Computer Engg./ Travel and Tourism/ Textile Manufactures**
Programme Code	**: AA/ AE/ AI/ AL/ AN/ AO/ AT/ BD/ CE/ CH/ CM/ CO/ CR/ CS/ CW/ DC/ DD/ DE/ DS/ EE/ EJ/ EK/ EP/ ET/ EX/ FC/ HA/ HM/ IC/ IE/ IF/ IH/ IS/ IX/ IZ/ LE/ ME/ MK/ ML/ MU/ PG/ PN/ PO/ SC/ SE/ TC/ TE/ TR/ TX**
Semester	**: First**
Course Title	**: YOGA AND MEDITATION**
Course Code	**: 311003**

I. RATIONALE

Diploma Graduate needs a sound body and mind to face the challenging situations in career as employee or as an entrepreneur. Yoga and Meditation brings about the holistic development of an individual and equips with necessary balance to handle the challenges. The age of polytechnic student is appropriate to get introduced to yoga practice as this will help them in studies as well as his professional life. Moreover, Yoga inculcates discipline in all walks of the life of student. Pranayama practice regulates breathing practices of the student to improve stamina, resilience. Meditation empowers a student to focus and keep calm to get peace of mind. World Health Organization (WHO) has also emphasized the role of yoga and meditation as stress prevention measure. National Education Policy -2020 highlights importance of yoga and meditation amongst students of all ages. Therefore, this course for Diploma students is designed for the overall wellbeing of the student and aims to empower students to adopt and practice "Yoga" in daily life .

II. INDUSTRY / EMPLOYER EXPECTED OUTCOME

Practice basic Yoga and Pranayama in daily life

III. COURSE LEVEL LEARNING OUTCOMES (COS)

Students will be able to achieve & demonstrate the following COs on completion of course based learning

- CO1 - Practice basic Yoga and Pranayama in daily life to maintain physical and mental fitness.
- CO2 - Practice meditation regularly for improving concentration and better handling of stress and anxiety.
- CO3 - Follow healthy diet and hygienic practices for maintaining good health.

IV. TEACHING-LEARNING & ASSESSMENT SCHEME

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YOGA AND MEDITATION **Course Code : 311003**

Course Code	Course Title	Abbr	Course Category/s	Learning Scheme					Credits	Assessment Scheme												
				Actual Contact Hrs./Week			SLH	NLH		Paper Duration	Theory				Based on LL & TL				Based on SL		Total Marks
															Practical						
				CL	TL	LL					FA-TH	SA-TH	Total		FA-PR		SA-PR		SLA		
											Max	Max	Max	Min	Max	Min	Max	Min	Max	Min	
311003	YOGA AND MEDITATION	YAM	VEC	-	-	1	1	2	1	-	-	-	-	-	25	10	-	-	25	10	50

Total IKS Hrs for Sem. : 1 Hrs

Abbreviations: CL- ClassRoom Learning , TL- Tutorial Learning, LL-Laboratory Learning, SLH-Self Learning Hours, NLH-Notional Learning Hours, FA - Formative Assessment, SA -Summative assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment

Legends: @ Internal Assessment, # External Assessment, *# On Line Examination , @$ Internal Online Examination

Note :

1. FA-TH represents average of two class tests of 30 marks each conducted during the semester.
2. If candidate is not securing minimum passing marks in FA-PR of any course then the candidate shall be declared as "Detained" in that semester.
3. If candidate is not securing minimum passing marks in SLA of any course then the candidate shall be declared as fail and will have to repeat and resubmit SLA work.
4. Notional Learning hours for the semester are (CL+LL+TL+SL)hrs.* 15 Weeks
5. 1 credit is equivalent to 30 Notional hrs.
6. * Self learning hours shall not be reflected in the Time Table.
7. * Self learning includes micro project / assignment / other activities.

V. THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.

VI. LABORATORY LEARNING OUTCOME AND ALIGNED PRACTICAL / TUTORIAL EXPERIENCES.

Practical / Tutorial / Laboratory Learning Outcome (LLO)	Sr No	Laboratory Experiment / Practical Titles / Tutorial Titles	Number of hrs.	Relevant COs
LLO 1.1 Practice warming up for Yoga.	1	Introduction :- Presentations on Introduction to Yoga and its History. Lab Exp: 1. Perform warming up exercises to prepare the body from head to toe for Yoga.	5	CO1
LLO 2.1 Practice Surya Namaskar	2	Lab Exp: 2. Perform all the postures of Surya Namaskar one by one in a very slow pace, after warm up. Lab Exp 3. Perform multiple Surya Namaskar (Starting with three and gradually increasing it to twelve) in one go. Experiment 2 to 4 must be followed by shavasana for self relaxation.	7	CO1 CO2
LLO 3.1 Practice basic Asanas	3	Lab Exp: 4 Perform Sarvangasna,Halasana,Kandharasana (setubandhasana) Lab Exp: 5 Perform Bhujangasana,Naukasana,Mandukasana Lab Exp: 6 Perform Paschimottasana,Baddhakonasana,Bharadwajasana. Lab Exp: 7 Perform Veera Bhadrasana,Vrukshasana,Trikonasana. Follow up experiment 5 to 7 with shavasana for self relaxation	8	CO2

YOGA AND MEDITATION **Course Code : 311003**

Practical / Tutorial / Laboratory Learning Outcome (LLO)	Sr No	Laboratory Experiment / Practical Titles / Tutorial Titles	Number of hrs.	Relevant COs
LLO 4.1 Practice basic pranayama	4	Lab Exp: 8 Perform Bhastrika, Anulom Vilom Pranayam Kriya Lab Exp: 9 Practice Kapalbhati Pranayam Kriya Lab Exp:10 Practice Bhramary Pranayam.	5	CO3
LLO 5.1 Practice meditation	5	Lab Exp: 11 Perform sitting in Dhyan Mudra and meditating.Start with five minute and slowly increasing to higher durations. (Trainer will explain the benefits of Meditation before practice)	5	CO3

Note : Out of above suggestive LLOs -

- '*' Marked Practicals (LLOs) Are mandatory.
- Minimum 80% of above list of lab experiment are to be performed.
- Judicial mix of LLOs are to be performed to achieve desired outcomes.

VII. SUGGESTED MICRO PROJECT / ASSIGNMENT/ ACTIVITIES FOR SPECIFIC LEARNING / SKILLS DEVELOPMENT (SELF LEARNING)

Micro project

- Maintain a diary indicating date wise practice done by the student with a photograph of self in yogic posture.

Assignment

- Prepare Diet and nutrition chart for self

Self Learning

- • Practice at least thrice a week.

• Read books on different methods to maintain health, wellness and to enhance mood
• Watch videos on Yoga Practices.

Note :

- Above is just a suggestive list of microprojects and assignments; faculty must prepare their own bank of microprojects, assignments, and activities in a similar way.
- The faculty must allocate judicial mix of tasks, considering the weaknesses and / strengths of the student in acquiring the desired skills.
- If a microproject is assigned, it is expected to be completed as a group activity.
- SLA marks shall be awarded as per the continuous assessment record.
- For courses with no SLA component the list of suggestive microprojects / assignments/ activities are optional, faculty may encourage students to perform these tasks for enhanced learning experiences.
- If the course does not have associated SLA component, above suggestive listings is applicable to Tutorials and maybe considered for FA-PR evaluations.

VIII. LABORATORY EQUIPMENT / INSTRUMENTS / TOOLS / SOFTWARE REQUIRED

Sr.No	Equipment Name with Broad Specifications	Relevant LLO Number
1	Yoga and Meditation kits : Yoga Mats, Yoga Rollers, Yoga Blocks, Aero Yoga Clothing Blankets, Cloth Straps, Bolsters, Wheels	All

IX. SUGGESTED WEIGHTAGE TO LEARNING EFFORTS & ASSESSMENT PURPOSE (Specification Table) : NOT APPLICABLE

YOGA AND MEDITATION **Course Code : 311003**

X. ASSESSMENT METHODOLOGIES/TOOLS

Formative assessment (Assessment for Learning)

- Lab performance, Self-learning and Terms work

Summative Assessment (Assessment of Learning)

- Actual Practical Performance

XI. SUGGESTED COS - POS MATRIX FORM

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)		
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO-1	PSO-2	PSO-3
CO1	-	-	-	-	3	-	-			
CO2	-	-	-	-	3	-	-			
CO3	-	-	-	-	3	-	-			

Legends :- High:03, Medium:02,Low:01, No Mapping: -
*PSOs are to be formulated at institute level

XII. SUGGESTED LEARNING MATERIALS / BOOKS

Sr.No	Author	Title	Publisher with ISBN Number
1	Swami Vivekananda	Patanjalis Yoga Sutras	Fingerprint Publishing (2023) Prakash Books India Pvt Ltd, New Delhi ISBN-13?: ? 978-9354407017
2	Luisa Ray, Angus Sutherland	Yoga for Every Body: A beginner's guide to the practice of yoga postures, breathing exercises and me	Vital Life Books (2022) ISBN-13?: ? 978-1739737009
3	Swami Saradananda	Mudras for Modern Living: 49 inspiring cards to boost your health, enhance your yoga and deepen your	Watkins Publishing (2019) ISBN-13?: ? 978-1786782786
4	Martha Davis, Elizabeth Robbins, Matthew McKay, Eshelman MSW	The Relaxation and Stress Reduction Workbook	A New Harbinger Self-Help Workbook (2019)
5	Ann Swanson	Science of Yoga: Understand the Anatomy and Physiology to Perfect Your Practice	ISBN-13?: ? 978-1465479358

XIII . LEARNING WEBSITES & PORTALS

Sr.No	Link / Portal	Description
1	https://onlinecourses.swayam2.ac.in/aic19_ed28/preview-introduction to Yoga and Applications of Yog	Yoga and Applications of Yoga
2	https://onlinecourses.swayam2.ac.in/aic23_ge09/preview	Yoga for Creativity
3	https://onlinecourses.swayam2.ac.in/aic23_ge05/preview	Yoga for concentration

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YOGA AND MEDITATION **Course Code : 311003**

Sr.No	Link / Portal	Description
4	https://onlinecourses.swayam2.ac.in/aic23_ge06/preview	yoga for memory development
5	https://onlinecourses.nptel.ac.in/noc21_hs29/preview	Psychology of Stress, Health and Well-being
6	https://onlinecourses.swayam2.ac.in/nce19_sc04/preview	Food Nutrition for Healthy Living - Course – Swayam
7	https://www.classcentral.com/course/swayam-fitness-management-	Fitness Management from Swayam

Note :

- Teachers are requested to check the creative common license status/financial implications of the suggested online educational resources before use by the students

MSBTE Approval Dt. 01/10/2024 **Semester - 1, K Scheme**

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ARCHITECTURAL GRAPHICS & DRAWING **Course Code : 321006**

Programme Name/s	**: Architecture Assistantship/ Architecture/ Interior Design & Decoration/ Interior Design/**
Programme Code	**: AA/ AT/ IX/ IZ**
Semester	**: First**
Course Title	**: ARCHITECTURAL GRAPHICS & DRAWING**
Course Code	**: 321006**

I. RATIONALE

This course will help the students to develop drafting and sketching skills and will provide the knowledge and application of drawing instruments to build proficiency in drawing and reading various architectural curves, projections, and dimensioning styles.

II. INDUSTRY / EMPLOYER EXPECTED OUTCOME

Prepare architectural drawing manually using prevailing drawing instruments.

III. COURSE LEVEL LEARNING OUTCOMES (COS)

Students will be able to achieve & demonstrate the following COs on completion of course based learning

- CO1 - Draw geometrical figures, drafting techniques and symbols.
- CO2 - Mastering Architectural Lettering and Architectural Scales.
- CO3 - Introduction to orthographic projections and its applications.
- CO4 - Apply the fundamentals of Isometric projections in Architectural graphics and drawing.

IV. TEACHING-LEARNING & ASSESSMENT SCHEME

Course Code	Course Title	Abbr	Course Category/s	Learning Scheme					Credits	Assessment Scheme											
				Actual Contact Hrs./Week			SLH	NLH		Paper Duration	Theory				Based on LL & TL				Based on SL		Total Marks
															Practical						
				CL	TL	LL					FA-TH	SA-TH	Total		FA-PR		SA-PR		SLA		
											Max	Max	Max	Min	Max	Min	Max	Min	Max	Min	
321006	ARCHITECTURAL GRAPHICS & DRAWING	AGD	DSC	2	-	4	-	6	3	-	-	-	-	-	50	20	50@	20	-	-	100

Total IKS Hrs for Sem. : Hrs

Abbreviations: CL- ClassRoom Learning , TL- Tutorial Learning, LL-Laboratory Learning, SLH-Self Learning Hours, NLH-Notional Learning Hours, FA - Formative Assessment, SA -Summative assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment

Legends: @ Internal Assessment, # External Assessment, *# On Line Examination , @$ Internal Online Examination

Note :

1. FA-TH represents average of two class tests of 30 marks each conducted during the semester.
2. If candidate is not securing minimum passing marks in FA-PR of any course then the candidate shall be declared as "Detained" in that semester.
3. If candidate is not securing minimum passing marks in SLA of any course then the candidate shall be declared as fail and will have to repeat and resubmit SLA work.
4. Notional Learning hours for the semester are (CL+LL+TL+SL)hrs.* 15 Weeks
5. 1 credit is equivalent to 30 Notional hrs.
6. * Self learning hours shall not be reflected in the Time Table.
7. * Self learning includes micro project / assignment / other activities.

V. THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

ARCHITECTURAL GRAPHICS & DRAWING **Course Code : 321006**

Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.
1	TLO 1.1 Prepare drawing using drawing instruments. TLO 1.2 Draw using different types of lines. TLO 1.3 Draw regular geometrical figures. TLO 1.4 Draw Architectural Symbols and Conventions.	**Unit - I Basics of Architectural drafting techniques,geometrical figures and symbols.** 1.1 Overview of traditional drafting tools (e.g., T-squares, compasses, drafting pencils)., Standard sizes of drawing sheets. 1.2 Drawing and understanding basic shapes: lines, circles, squares, triangles, and polygons, Convention of lines and their applications. 1.3 Overview of standard symbols used in architectural drawings. 1.4 Applications of geometric figures in architectural elements (e.g., arches, vaults).	Lecture using chalk-board Presentations Hands-on
2	TLO 2.1 Architectural Lettering Styles. TLO 2.2 Understanding Architectural scales Scale.	**Unit - II Mastering Architectural Lettering and Scales** 2.1 Introduction to Different types of lettering styles. 2.2 Master Lettering Techniques. 2.3 Apply Lettering Standards.	Lecture Using Chalk-Board Presentations Hands-on
3	TLO 3.1 Understanding Orthographic Projections. TLO 3.2 Application of Projection Principles. TLO 3.3 Drawing Techniques. TLO 3.4 Problem Solving and Accuracy.	**Unit - III Introduction to Orthpographics Projections & its Applications** 3.1 Introduction to orthographic projection and understand its purpose in technical drawing and architectural design. 3.2 Introduction to orthographic projection, First angle and Third angle method, their symbols. Conversion of pictorial view into Orthographic Views – object containing plain surfaces, slanting surfaces, slots, ribs, cylindrical surfaces. 3.3 Students will demonstrate the ability to draft precise orthographic views using appropriate drawing tools and techniques. 3.4 Students will implement strategies to verify the accuracy of their orthographic projections against the given pictorial views.	Lecture Using Chalk-Board Model Demonstration Video Demonstrations Hands-on
4	TLO 4.1 Fundamentals of Isometric Projections in Architecture. TLO 4.2 Creating Architectural Isometric Drawings in 2D Projections. TLO 4.3 Applications and Advanced Techniques of Isometric projections used in Architectureal Drawings. TLO 4.4 Drawing Isometric views from given orthographic views.	**Unit - IV Introduction to Isometric Projections** 4.1 Explaining what isometric projections are and their role in architectural visualization. 4.2 Illustrative problems related to simple objects having plain, slanting, cylindrical surfaces and slots on slanting surfaces. 4.3 Learn advanced techniques for enhancing isometric drawings, including the use of color, shading, and texture to create more realistic and detailed representations. 4.4 Conversion of orthographic views into isometric View/projection showing Architectural Objects.	Lecture Using Chalk-Board Video Demonstrations Presentations Model Demonstration

VI. LABORATORY LEARNING OUTCOME AND ALIGNED PRACTICAL / TUTORIAL EXPERIENCES.

Practical / Tutorial / Laboratory Learning Outcome (LLO)	Sr No	Laboratory Experiment / Practical Titles / Tutorial Titles	Number of hrs.	Relevant COs

ARCHITECTURAL GRAPHICS & DRAWING **Course Code : 321006**

Practical / Tutorial / Laboratory Learning Outcome (LLO)	Sr No	Laboratory Experiment / Practical Titles / Tutorial Titles	Number of hrs.	Relevant COs
LLO 1.1 *Draw horizontal, vertical, 30 degree, 45 degree, 60 & 75 degrees lines freehand as well using T-Square, Set square and different architectural drafting tools.	1	Introduction to different types of Architectural Instruments.	4	CO1
LLO 2.1 *Demonstrate the different types of lines used in architectural drawings and explain their applications.	2	Introduction to Line Conventions.	4	CO1
LLO 3.1 Draw freehand sketches of different types of geometrical shapes like - triangle, circle rectangle and polygon etc.	3	Draft basic shapes.	4	CO1
LLO 4.1 Draw various geometrical figures showing different dimension styles with measurements.	4	Introduction to dimensioning techniques & its applications.	4	CO2
LLO 5.1 *Draft different architectural lettering styles and create a reference sheet.	5	Drafting Lettering Styles.	4	CO2
LLO 6.1 *Write a detailed paragraph about a famous architectural structure using various lettering techniques.	6	Writing using lettering techniques.	4	CO2
LLO 7.1 Integrate architectural lettering into a simple floor plan, ensuring consistency and legibility.	7	Lettering in Architectural Drawings.	6	CO2
LLO 8.1 Draft converting measurements to different scales and create scale drawings of simple objects.	8	Drafting objects on different Scales.	6	CO2
LLO 9.1 *Draw simple objects using orthographic projection and explain the purpose of each view.	9	Draw basics of orthographic projections.	6	CO3
LLO 10.1 Convert pictorial views of objects with plain surfaces into orthographic views.	10	Draw conversion of pictorial views.	6	CO3
LLO 11.1 *Draft orthographic views of objects containing slanting and cylindrical surfaces and slits.	11	Draft slanting and cylindrical surfaces in orthographic projections.	4	CO3
LLO 12.1 *Drafting isometric projections of basic volumetric shapes.	12	Drafting basics of isometric projections.	4	CO4
LLO 13.1 *Draft by converting orthographic views of an architectural object into isometric views.	13	Draft conversion to isometric views.	6	CO4
LLO 14.1 Draft a detailed isometric drawing of a building component, incorporating advanced techniques.	14	Draft detailed isometric of building component.	4	CO4
LLO 15.1 Draft a complete set of drawings for a simple structure, including orthographic and isometric views, with proper lettering and scale.	15	Draft an architectural project.	6	CO1 CO2 CO3 CO4

Note : Out of above suggestive LLOs -

- '*' Marked Practicals (LLOs) Are mandatory.
- Minimum 80% of above list of lab experiment are to be performed.
- Judicial mix of LLOs are to be performed to achieve desired outcomes.

VII. SUGGESTED MICRO PROJECT / ASSIGNMENT/ ACTIVITIES FOR SPECIFIC LEARNING / SKILLS DEVELOPMENT (SELF LEARNING)

Micro project

- Not applicable

Assignment

- Draw freehand sketches of various architectural components of buildings in your nearby vicinity.

ARCHITECTURAL GRAPHICS & DRAWING **Course Code : 321006**

Note :

- Above is just a suggestive list of microprojects and assignments; faculty must prepare their own bank of microprojects, assignments, and activities in a similar way.
- The faculty must allocate judicial mix of tasks, considering the weaknesses and / strengths of the student in acquiring the desired skills.
- If a microproject is assigned, it is expected to be completed as a group activity.
- SLA marks shall be awarded as per the continuous assessment record.
- For courses with no SLA component the list of suggestive microprojects / assignments/ activities are optional, faculty may encourage students to perform these tasks for enhanced learning experiences.
- If the course does not have associated SLA component, above suggestive listings is applicable to Tutorials and maybe considered for FA-PR evaluations.

VIII. LABORATORY EQUIPMENT / INSTRUMENTS / TOOLS / SOFTWARE REQUIRED

Sr.No	Equipment Name with Broad Specifications	Relevant LLO Number
1	Models of objects for orthographic/isometric projection	3
2	Drawing table and Drawing board of full imperial/A1 size	All
3	Set of various Architectural drawings being used by Architects.	All
4	Drawing equipment and instruments for class room teaching-large size: a. T-square or drafter (Drafting Machine). b. Set squires (450 and 300-600) c. Protector. d. Drawing instrument box (containing set of compasses and dividers). Drawing sheets, Drawing pencils, Eraser, Drawing pins / clips	All
5	Sketchbook of A4 Size.	All

IX. SUGGESTED WEIGHTAGE TO LEARNING EFFORTS & ASSESSMENT PURPOSE (Specification Table)

Sr.No	Unit	Unit Title	Aligned COs	Learning Hours	R-Level	U-Level	A-Level	Total Marks
1	I	Basics of Architectural drafting techniques,geometrical figures and symbols.	CO1	8	0	0	12	12
2	II	Mastering Architectural Lettering and Scales	CO2	6	0	0	12	12
3	III	Introduction to Orthpographics Projections & its Applications	CO3	8	0	0	14	14
4	IV	Introduction to Isometric Projections	CO4	8	0	0	12	12
Grand Total				**30**	**0**	**0**	**50**	**50**

X. ASSESSMENT METHODOLOGIES/TOOLS

Formative assessment (Assessment for Learning)

- Term work

Summative Assessment (Assessment of Learning)

- Practicals

XI. SUGGESTED COS - POS MATRIX FORM

ARCHITECTURAL GRAPHICS & DRAWING **Course Code : 321006**

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)		
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO-1	PSO-2	PSO-3
CO1	3	-	-	2	-	-	1			
CO2	3	-	-	2	-	-	1			
CO3	3	-	-	2	-	-	1			
CO4	3	-	-	2	-	1	1			

Legends :- High:03, Medium:02,Low:01, No Mapping: -
*PSOs are to be formulated at institute level

XII. SUGGESTED LEARNING MATERIALS / BOOKS

Sr.No	Author	Title	Publisher with ISBN Number
1	Francis D.K. Ching	Architectural Graphics	Wiley 978-1119035664
2	Francis D.K. Ching, Steven P. Juroszek	Design Drawing	Wiley 978-0470533697
3	Julia McMorrough	Drawing for Architects: How to Explore Concepts, Define Elements, and Create Effective Built Design Through Illustration	Rockport Publishers 978-1592538973
4	Paul Lewis, Marc Tsurumaki, David J. Lewis	Manual of Section	Princeton Architectural Press 978-1616892555
5	The American Institute of Architects, Keith E. Hedges	Architectural Graphics Standards	Wiley 978-1118880524

XIII . LEARNING WEBSITES & PORTALS

Sr.No	Link / Portal	Description
1	https://nptel.ac.in/	Offers a variety of courses related to architecture and design, including architectural graphics.
2	https://www.coursera.org/	Offers courses from top universities that you can audit for free. Look for courses on architectural graphics, design, and drawing.
3	https://www.edx.org/	Provides free access to course materials from universities like Harvard and MIT. Courses on architecture and design can be found here.
4	https://www.youtube.com/c/TheModmin	These channel offer tutorials and tips on architectural graphics, drawing, and 3D modeling.
5	https://www.youtube.com/c/SketchUpSchool	These channel offer tutorials and tips on architectural graphics, drawing, and 3D modeling.
6	https://swayam.gov.in/	A Government of India initiative offering free online courses, including some on architecture and design.

Note :

- Teachers are requested to check the creative common license status/financial implications of the suggested online educational resources before use by the students

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ARCHITECTURAL GRAPHICS & DRAWING **Course Code : 321006**

MSBTE Approval Dt. 01/10/2024 **Semester - 1, K Scheme**

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ARCHITECTURAL WORKSHOP **Course Code : 321007**

Programme Name/s	**: Architecture Assistantship/ Architecture/ Interior Design & Decoration/ Interior Design/**
Programme Code	**: AA/ AT/ IX/ IZ**
Semester	**: First**
Course Title	**: ARCHITECTURAL WORKSHOP**
Course Code	**: 321007**

I. RATIONALE

The course of architectural workshop will provide students hands-on experience in constructing accurate and detailed architectural models essential for visualizing and communicating design concepts with surface development techniques, joinery methods, material applications, and scale model construction,

II. INDUSTRY / EMPLOYER EXPECTED OUTCOME

Apply model making techniques to create different architectural building models.

III. COURSE LEVEL LEARNING OUTCOMES (COS)

Students will be able to achieve & demonstrate the following COs on completion of course based learning

- CO1 - Create different surface developments of different geometric forms by using relevant tools.
- CO2 - Create model using various materials and applying various techniques.
- CO3 - Develop different joinery techniques in model making.
- CO4 - Prepare scaled model of a small Structure / building or Interior Design / furniture.

IV. TEACHING-LEARNING & ASSESSMENT SCHEME

Course Code	Course Title	Abbr	Course Category/s	Learning Scheme					Credits	Assessment Scheme											
				Actual Contact Hrs./Week			SLH	NLH		Paper Duration	Theory				Based on LL & TL				Based on SL		Total Marks
															Practical						
				CL	TL	LL					FA-TH	SA-TH	Total		FA-PR		SA-PR		SLA		
											Max	Max	Max	Min	Max	Min	Max	Min	Max	Min	
321007	ARCHITECTURAL WORKSHOP	ARW	SEC	-	-	4	-	4	2	-	-	-	-	-	50	20	50@	20	-	-	100

Total IKS Hrs for Sem. : Hrs

Abbreviations: CL- ClassRoom Learning , TL- Tutorial Learning, LL-Laboratory Learning, SLH-Self Learning Hours, NLH-Notional Learning Hours, FA - Formative Assessment, SA -Summative assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment

Legends: @ Internal Assessment, # External Assessment, *# On Line Examination , @$ Internal Online Examination

Note :

1. FA-TH represents average of two class tests of 30 marks each conducted during the semester.
2. If candidate is not securing minimum passing marks in FA-PR of any course then the candidate shall be declared as "Detained" in that semester.
3. If candidate is not securing minimum passing marks in SLA of any course then the candidate shall be declared as fail and will have to repeat and resubmit SLA work.
4. Notional Learning hours for the semester are (CL+LL+TL+SL)hrs.* 15 Weeks
5. 1 credit is equivalent to 30 Notional hrs.
6. * Self learning hours shall not be reflected in the Time Table.
7. * Self learning includes micro project / assignment / other activities.

V. THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

ARCHITECTURAL WORKSHOP **Course Code : 321007**

Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.
1	TLO 1.1 Explain the surface development TLO 1.2 Discuss techniques used for surface development. TLO 1.3 Identify tools used for surface development. TLO 1.4 Create surfaces for different geometric blocks.	**Unit - I Introduction to surface development techniques and tools** 1.1 Introduction to Surface Development : Importance of surface development in architectural models. 1.2 Techniques used for model making: Parallel Line, Radial Line, Triangulation method for surface development. 1.3 Tools for Surface Development: Overview of essential tools (cutting tools, scoring tools, measuring instruments). 1.4 Practical Application : Developing surfaces of basic geometric shapes.	Video Demonstrations Presentations Hands-on Lecture Using Chalk-Board
2	TLO 2.1 Discuss different model making materials. TLO 2.2 Explain different materials and techniques. TLO 2.3 Identify appropriate material for model making. TLO 2.4 Discuss application of material for Model making.	**Unit - II Model making materials and their applications** 2.1 Introduction to Model Making Materials: Overview of common materials used in model making (e.g., paper, mount board, cardboard) and Properties and applications of basic materials. 2.2 Specialized Materials and Techniques: Use of clay and Plaster of Paris (POP) in model making and Use of glass fiber, metals, and other specialized materials 2.3 Material Selection and Experimentation: Criteria for selecting materials based on project requirements 2.4 Practical Application: Creating a model using multiple materials	Lecture using chalk-board Presentations Hands-on Video Demonstrations
3	TLO 3.1 Explain importance of joinery techniques. TLO 3.2 Discuss and carry different joinery techniques. TLO 3.3 Explain difference between simple and advance joinery techniques. TLO 3.4 Explain wood joinery techniques.	**Unit - III Joinery techniques** 3.1 Introduction to Joinery: Overview of joinery in model making and its significance and basic joinery tools and materials 3.2 Simple Joinery Techniques: Exercises with simple joinery techniques using paper and cardboard. 3.3 Advanced Joinery Techniques: explain metal joinery techniques (e.g., welding, nut and bolt joints). 3.4 Wood Joinery Techniques: Introduction to wood joinery tools and materials and exercises with simple wood joinery (e.g., butt joints, lap joints).	Lecture using chalk-board Hands-on Presentations Video Demonstrations
4	TLO 4.1 Explain the Role of Scale Models. TLO 4.2 Explain techniques for maintaining proportion. TLO 4.3 Explain the technique used for making scale model . TLO 4.4 Construct Accurate and Detailed Scale Models.	**Unit - IV Techniques and Principles for Scale Model Construction** 4.1 Introduction to Scale Model Making: the importance of scale models in architectural/interior design and presentation. 4.2 Principles of Scale and proportion in architectural/Interior design and techniques for ensuring accuracy in proportional relationships within models. 4.3 Techniques for achieving precision, maintaining detail and accuracy in scale models. 4.4 Model Construction Techniques: step-by-step methods for constructing scale models, including cutting, assembling, and detailing.	Video Demonstrations Model Demonstration Presentations Hands-on

VI. LABORATORY LEARNING OUTCOME AND ALIGNED PRACTICAL / TUTORIAL EXPERIENCES.

ARCHITECTURAL WORKSHOP **Course Code : 321007**

Practical / Tutorial / Laboratory Learning Outcome (LLO)	Sr No	Laboratory Experiment / Practical Titles / Tutorial Titles	Number of hrs.	Relevant COs
LLO 1.1 Develop a surface for different geometrical forms - Cube, Cuboid, prism, pyramid etc. using the parallel line method by focusing on accuracy in cutting and assembling.	1	Surface development using Parallel Line Method.	4	CO1
LLO 2.1 Create a surface for a cylindrical shape using the radial line method ensuring precision in measurement and cutting.	2	Surface development using radial line method.	4	CO1
LLO 3.1 Develop surfaces for a pyramid by using triangulation method.	3	*Triangulation method for surface development.	4	CO1
LLO 4.1 Develop surfaces for basic geometric shapes (cube, cylinder) and assemble them into a simple model.	4	*Surface developement of basic geometric shapes.	4	CO1
LLO 5.1 Create a model by using clay or Plaster of Paris (POP),	5	*Exploring Clay and POP for modeling	4	CO2
LLO 6.1 Create a project brief by selecting appropriate materials and justify the choices based on their properties and project requirements.	6	Material selection report.	4	CO2
LLO 7.1 Build a model incorporating multiple materials (paper, clay, wood).	7	Multi-Material Model Construction.	6	CO2
LLO 8.1 Experiment with unconventional materials and document their applications and effectiveness in model making.	8	*Documenting unconventional material in model making.	6	CO2
LLO 9.1 Perform joinery exercises using paper and cardboard by applying tabs, slots, and simple joints.	9	Basic Joinery Techniques.	6	CO3
LLO 10.1 Construct a small wooden model using basic wood joinery techniques (butt joints, lap joints).	10	*Wood Joinery Basics.	6	CO3
LLO 11.1 Create a model using paper joinery techniques (folding, gluing).	11	Simple Paper Joinery Model.	4	CO3
LLO 12.1 Document and sketch different joinery techniques in detail used for model making	12	*Documenting joinery techniques	6	CO3
LLO 13.1 Prepare detailed scale drawings for a small architectural design. Include measurements, annotations, and scale conversion.	13	*Scale Drawing Preparation.	6	CO4
LLO 14.1 Construct a small-scale architectural/ interior space model using appropriate materials and tools focusing on precision and accuracy.	14	Model Construction Techniques.	4	CO4
LLO 15.1 Create a scale model that demonstrates proper use of scale and proportion.	15	*Creating proportional model making.	6	CO4

Note : Out of above suggestive LLOs -

- '*' Marked Practicals (LLOs) Are mandatory.
- Minimum 80% of above list of lab experiment are to be performed.
- Judicial mix of LLOs are to be performed to achieve desired outcomes.

VII. SUGGESTED MICRO PROJECT / ASSIGNMENT/ ACTIVITIES FOR SPECIFIC LEARNING / SKILLS DEVELOPMENT (SELF LEARNING)

Micro project

- Document advanced techniques (e.g., laser cutting, 3D printing) to construct a detailed scale model.
- Prepare small model justifying the technique to use material
- Explore metal joinery techniques such as welding, nut, and bolt joints.
- Prepare a sectional model of superstructure demonstrating components of building.

ARCHITECTURAL WORKSHOP **Course Code : 321007**

Note :

- Above is just a suggestive list of microprojects and assignments; faculty must prepare their own bank of microprojects, assignments, and activities in a similar way.
- The faculty must allocate judicial mix of tasks, considering the weaknesses and / strengths of the student in acquiring the desired skills.
- If a microproject is assigned, it is expected to be completed as a group activity.
- SLA marks shall be awarded as per the continuous assessment record.
- For courses with no SLA component the list of suggestive microprojects / assignments/ activities are optional, faculty may encourage students to perform these tasks for enhanced learning experiences.
- If the course does not have associated SLA component, above suggestive listings is applicable to Tutorials and maybe considered for FA-PR evaluations.

VIII. LABORATORY EQUIPMENT / INSTRUMENTS / TOOLS / SOFTWARE REQUIRED

Sr.No	Equipment Name with Broad Specifications	Relevant LLO Number
1	Clay, Plaster of Paris (POP), sculpting tools, mixing containers, drying racks, precision knives.	5,6,8,7
2	Wood pieces, saw, sandpaper, wood glue, clamps, ruler, measuring tools.	9,10,11,12
3	Metal sheets, welding equipment, soldering iron, clamps, protective gear (gloves, goggles).	9,10,11,12
4	Projector : Type of display Poly-silicon TFT active matrix Resolution Bright link 480i: 1024 ×768 pixels (XGA) Bright link 475Wi / 485Wi:1280 × 800 pixels (WXGA) Lens F= 1.80, Focal length: 3.71 mm Color reproduction: Full color, 16.77 million colors, Focus adjustment-Manual, Zoom adjustment-Digital, Zoom ratio-1:1.35 OR Latest specification at time of procurement	All
5	Projector Screen: 116" Diagonal viewing screen, Manual pull down Screen for both ceiling and wall usage OR Latest specification at time of procurement.	All
6	B/W Printer: Print speed black (normal, A4) Up to 14 ppm print speed. Duty cycle (monthly,A4) Up to 5000 pages recommended, monthly page volume 250 to 2000 OR Latest specification at time of procurement.	All
7	Computer : Multi core 64-bit processor, 4 GB Boot Drive, 4 GB RAM minimum 200 GB Hard Disk. OR Latest specification at time of procurement.	All
8	Safety Glasses, Cut-resistant Gloves, First Aid Kit.	All
9	Drafting Tables, Work Benches, Work Benches, Tool Cabinets, Safety Equipment.	All
10	Various cutting tools (e.g., X-Acto knives, utility knives), scoring tools, measuring instruments (e.g., calipers, rulers), cutting mat, scrap materials.	All
11	Triangular scale, cutting mat, precision knife, ruler, graph paper, pencil.	All

IX. SUGGESTED WEIGHTAGE TO LEARNING EFFORTS & ASSESSMENT PURPOSE (Specification Table) : NOT APPLICABLE

X. ASSESSMENT METHODOLOGIES/TOOLS

Formative assessment (Assessment for Learning)

- Studio Performance and Assignments

Summative Assessment (Assessment of Learning)

- Practicals

XI. SUGGESTED COS - POS MATRIX FORM

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ARCHITECTURAL WORKSHOP **Course Code : 321007**

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)		
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO-1	PSO-2	PSO-3
CO1	3	1	1	2	-	-	1			
CO2	3	1	1	2	-	-	1			
CO3	3	1	3	2	-	-	1			
CO4	2	1	3	2	-	-	1			

Legends :- High:03, Medium:02,Low:01, No Mapping: -
*PSOs are to be formulated at institute level

XII. SUGGESTED LEARNING MATERIALS / BOOKS

Sr.No	Author	Title	Publisher with ISBN Number
1	Frank DeLuca	Architectural Models: Construction and Design Manual	Rizzoli 978-0847827405
2	David Neat	The Art of Model Making	Laurence King Publishing 978-1780670874
3	Mike Stone	Architectural Woodwork: A Practical Guide for Designers and Builders	Taunton Press 978-1561584216
4	Albert Jackson, David Day, Simon Jennings	The Complete Manual of Woodworking	Knopf 978-0679776005
5	P. L. S. Smith	Architectural Modelmaking	Architectural Press 978-0750643163
6	Alan M. Beckett	Scale Modeling of Buildings	David & Charles 978-0715308924
7	Lisa Iwamoto	Digital Fabrications: Architectural and Material Techniques	Wiley 978-0470171735

XIII . LEARNING WEBSITES & PORTALS

Sr.No	Link / Portal	Description
1	https://www.craftsvilla.com/	CraftsVilla offers a range of art and craft supplies, including materials used in model making. The site includes information on materials, tools, and techniques suitable for architectural modeling.
2	https://www.designcafe.com/	Design Cafe focuses on interior design and architectural innovations in India. It often includes information on architectural models and their application in design projects.
3	https://modelmakinghub.com/	Resource for model-making techniques, tools, and materials.
4	https://www.instructables.com/	Instructables provides a range of tutorials and DIY guides for various model making techniques. Users can find step-by-step instructions on using different materials and tools in model making.
5	https://www.materialconnexion.com/brands	Offers comprehensive databases of materials and their properties for architectural use.

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ARCHITECTURAL WORKSHOP **Course Code : 321007**

Sr.No	Link / Portal	Description

Note :

- Teachers are requested to check the creative common license status/financial implications of the suggested online educational resources before use by the students

MSBTE Approval Dt. 01/10/2024 **Semester - 1, K Scheme**

07-01-2025 11:00:20 AM

APPLIED MATHEMATICS **Course Code : 312301**

Programme Name/s	**: Architecture Assistantship/ Automobile Engineering./ Artificial Intelligence/ Agricultural Engineering/ Artificial Intelligence and Machine Learning/ Automation and Robotics/ Architecture/ Cloud Computing and Big Data/ Civil Engineering/ Chemical Engineering/ Computer Technology/ Computer Engineering/ Civil & Rural Engineering/ Construction Technology/ Computer Science & Engineering/ Digital Electronics/ Data Sciences/ Electrical Engineering/ Electronics & Tele-communication Engg./ Electrical and Electronics Engineering/ Electrical Power System/ Electronics & Communication Engg./ Electronics Engineering/ Computer Hardware & Maintenance/ Instrumentation & Control/ Industrial Electronics/ Information Technology/ Computer Science & Information Technology/ Instrumentation/ Interior Design & Decoration/ Interior Design/ Civil & Environmental Engineering/ Mechanical Engineering/ Mechatronics/ Medical Electronics/ Production Engineering/ Computer Science/ Electronics & Computer Engg.**
Programme Code	**: AA/ AE/ AI/ AL/ AN/ AO/ AT/ BD/ CE/ CH/ CM/ CO/ CR/ CS/ CW/ DE/ DS/ EE/ EJ/ EK/ EP/ ET/ EX/ HA/ IC/ IE/ IF/ IH/ IS/ IX/ IZ/ LE/ ME/ MK/ MU/ PG/ SE/ TE**
Semester	**: Second**
Course Title	**: APPLIED MATHEMATICS**
Course Code	**: 312301**

I. RATIONALE

An Applied Mathematics course, covering integration, definite integration, differential equations, numerical methods, and probability distribution, equips engineering students with essential problem-solving tools. It enables them to model and analyze complex systems, make informed decisions and address real-world engineering challenges effectively.

II. INDUSTRY / EMPLOYER EXPECTED OUTCOME

Engineers applying Mathematics should proficiently solve complex real-world problems, enhancing decision-making, design and innovation with precision and efficiency.

III. COURSE LEVEL LEARNING OUTCOMES (COS)

Students will be able to achieve & demonstrate the following COs on completion of course based learning

- CO1 - Solve the broad-based engineering problems of integration using suitable methods.
- CO2 - Use definite integration to solve given engineering related problems.
- CO3 - Apply the concept of differential equation to find the solutions of given engineering problems.
- CO4 - Employ numerical methods to solve programme specific problems.
- CO5 - Use probability distributions to solve elementary engineering problems.

IV. TEACHING-LEARNING & ASSESSMENT SCHEME

Course Code	Course Title	Abbr	Course Category/s	Learning Scheme					Credits	Assessment Scheme											
				Actual Contact Hrs./Week			SLH	NLH		Paper Duration	Theory				Based on LL & TL				Based on SL		Total Marks
															Practical						
				CL	TL	LL					FA-TH	SA-TH	Total		FA-PR		SA-PR		SLA		
											Max	Max	Max	Min	Max	Min	Max	Min	Max	Min	
312301	APPLIED MATHEMATICS	AMS	AEC	3	1	-	-	4	2	3	30	70	100	40	-	-	-	-	-	-	100

APPLIED MATHEMATICS **Course Code : 312301**

Total IKS Hrs for Sem. : 2 Hrs
Abbreviations: CL- ClassRoom Learning , TL- Tutorial Learning, LL-Laboratory Learning, SLH-Self Learning Hours, NLH-Notional Learning Hours, FA - Formative Assessment, SA -Summative assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment
Legends: @ Internal Assessment, # External Assessment, *# On Line Examination , @$ Internal Online Examination
Note :

1. FA-TH represents average of two class tests of 30 marks each conducted during the semester.
2. If candidate is not securing minimum passing marks in FA-PR of any course then the candidate shall be declared as "Detained" in that semester.
3. If candidate is not securing minimum passing marks in SLA of any course then the candidate shall be declared as fail and will have to repeat and resubmit SLA work.
4. Notional Learning hours for the semester are (CL+LL+TL+SL)hrs.* 15 Weeks
5. 1 credit is equivalent to 30 Notional hrs.
6. * Self learning hours shall not be reflected in the Time Table.
7. * Self learning includes micro project / assignment / other activities.

V. THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.
1	TLO 1.1 Solve the given simple problem(s) based on rules of integration. TLO 1.2 Evaluate the given simple integral(s) using substitution method. TLO 1.3 Integrate given simple functions using the integration by parts. TLO 1.4 Solve the given simple integral by partial fractions.	**Unit - I Indefinite Integration** 1.1 Simple Integration: Rules of integration and integration of standard functions 1.2 Integration by substitution. 1.3 Integration by parts. 1.4 Integration by partial fractions (only linear non repeated factors at denominator of proper fraction).	Improved Lecture Demonstration Chalk-Board Presentations Video Demonstrations
2	TLO 2.1 Solve given examples based on Definite Integration. TLO 2.2 Use properties of definite integration to solve given problems.	**Unit - II Definite Integration** 2.1 Definite Integration: Definition, rules of definite integration with simple examples. 2.2 Properties of definite integral (without proof) and simple examples.	Video Simulation Chalk-Board Improved Lecture Presentations
3	TLO 3.1 Find the order and degree of given differential equations. TLO 3.2 Form simple differential equation for given elementary engineering problems. TLO 3.3 Solve given differential equations using the methods of Variable separable and Exact Differential Equation(Introduce the concept of partial differential equation). TLO 3.4 Solve given Linear Differential Equation.	**Unit - III Differential Equation** 3.1 Concept of Differential Equation. 3.2 Order, degree and formation of Differential equations 3.3 Methods of solving differential equations: Variable separable form, Exact Differential Equation, Linear Differential Equation.	Video Demonstrations Presentations Chalk-Board Improved Lecture Flipped Classroom

APPLIED MATHEMATICS **Course Code : 312301**

Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.
4	TLO 4.1 Find roots of algebraic equations by using appropriate methods. TLO 4.2 Solve the system of equations in three unknowns by iterative methods. TLO 4.3 Solve problems using Bakhshali iterative method for finding approximate square root. (IKS)	**Unit - IV Numerical Methods** 4.1 Solution of algebraic equations: Bisection method, Regula falsi method and Newton –Raphson method. 4.2 Solution of simultaneous equations containing three Unknowns by iterative methods: Gauss Seidal and Jacobi's method. 4.3 Bakhshali iterative method for finding approximate square root. (IKS)	Video SCILAB Spreadsheet Chalk-Board Flipped Classroom Presentations
5	TLO 5.1 Solve given problems based on repeated trials using Binomial distribution. TLO 5.2 Solve given problems when number of trials are large and probability is very small. TLO 5.3 Utilize the concept of normal distribution to solve related engineering problems.	**Unit - V Probability Distribution** 5.1 Binomial distribution. 5.2 Poisson's distribution. 5.3 Normal distribution.	Video ORANGE Chalk-Board Improved Lecture Presentations

VI. LABORATORY LEARNING OUTCOME AND ALIGNED PRACTICAL / TUTORIAL EXPERIENCES.

Practical / Tutorial / Laboratory Learning Outcome (LLO)	Sr No	Laboratory Experiment / Practical Titles / Tutorial Titles	Number of hrs.	Relevant COs
LLO 1.1 Solve simple problems of Integration by substitution	1	*Integration by substitution	1	CO1
LLO 2.1 Solve integration using by parts	2	*Integration by parts	1	CO1
LLO 3.1 Solve integration by partial fractions(only linear non repeated factors at denominator of proper fraction).	3	Integration by partial fractions.	1	CO1
LLO 4.1 Solve examples on Definite Integral based on given methods.	4	Definite Integral based on given methods.	1	CO2
LLO 5.1 Solve problems on properties of definite integral.	5	*Properties of definite integral	1	CO2
LLO 6.1 Solve given problems for finding the area under the curve and volume of revolution.	6	* #Area under the curve and volume of revolution.(Only for Civil and Mechanical Engineering Group)	1	CO2
LLO 7.1 Solve examples on mean value and root mean square value.	7	* #Mean value and root mean square value. (Only for Computer, Electrical and Electronics Engineering Group)	1	CO2
LLO 8.1 Solve examples on order, degree and formation of differential equation.	8	Order, degree and formation of differential equation.	1	CO3
LLO 9.1 Solve first order first degree differential equation using variable separable method.	9	Variable separable method.	1	CO3
LLO 10.1 Solve first order first degree differential equation using exact differential equation and linear differential equation.	10	*Exact differential equation and linear differential equation.	1	CO3

APPLIED MATHEMATICS **Course Code : 312301**

Practical / Tutorial / Laboratory Learning Outcome (LLO)	Sr No	Laboratory Experiment / Practical Titles / Tutorial Titles	Number of hrs.	Relevant COs
LLO 11.1 Solve engineering application problems using differential equation.	11	*Applications of differential equations.(Take programme specific problems)	1	CO3
LLO 12.1 Solve problems on Bisection method and Regula falsi method.	12	*Bisection method and Regula falsi method.	1	CO4
LLO 13.1 Solve problems on Newton-Raphson method.	13	Newton- Raphson method.	1	CO4
LLO 14.1 Solve problems on Jacobi's method and Gauss Seidal Method.	14	Jacobi's method and Gauss Seidal Method.	1	CO4
LLO 15.1 Use Bakhshali iterative methods for finding approximate value of square root. (IKS)	15	*Bakhshali iterative methods for finding approximate value of square root. (IKS)	1	CO4
LLO 16.1 Solve engineering problems using Binomial distribution.	16	*Binomial Distribution	1	CO5
LLO 17.1 Solve engineering problems using Poisson distribution.	17	*Poisson Distribution	1	CO5
LLO 18.1 Solve engineering problems using Normal distribution.	18	Normal Distribution	1	CO5
LLO 19.1 Solve problems on Laplace transform and properties of Laplace transform.	19	* # Laplace transform and properties of Laplace transform.(Only for Electrical and Electronics Engineering Group)	1	CO2
LLO 20.1 Solve problems on Inverse Laplace transform and properties of Inverse Laplace transform.	20	* # Inverse Laplace transform and properties of Inverse Laplace transform.(Only for Electrical and Electronics Engineering Group)	1	CO2

Note : Out of above suggestive LLOs -

- '*' Marked Practicals (LLOs) Are mandatory.
- Minimum 80% of above list of lab experiment are to be performed.
- Judicial mix of LLOs are to be performed to achieve desired outcomes.

VII. SUGGESTED MICRO PROJECT / ASSIGNMENT/ ACTIVITIES FOR SPECIFIC LEARNING / SKILLS DEVELOPMENT (SELF LEARNING)

Micro project

- NA

Assignment

- NA

APPLIED MATHEMATICS **Course Code : 312301**

Note :

- Above is just a suggestive list of microprojects and assignments; faculty must prepare their own bank of microprojects, assignments, and activities in a similar way.
- The faculty must allocate judicial mix of tasks, considering the weaknesses and / strengths of the student in acquiring the desired skills.
- If a microproject is assigned, it is expected to be completed as a group activity.
- SLA marks shall be awarded as per the continuous assessment record.
- For courses with no SLA component the list of suggestive microprojects / assignments/ activities are optional, faculty may encourage students to perform these tasks for enhanced learning experiences.
- If the course does not have associated SLA component, above suggestive listings is applicable to Tutorials and maybe considered for FA-PR evaluations.

VIII. LABORATORY EQUIPMENT / INSTRUMENTS / TOOLS / SOFTWARE REQUIRED

Sr.No	Equipment Name with Broad Specifications	Relevant LLO Number
1	Open-source software like wolfram alpha, SageMaths, MATHS3D, GeoGebra, Graph, DPLOT, and Graphing Calculator (Graph Eq2.13), ORANGE can be used for Algebra, Calculus, Trigonometry and Statistics respectively.	All

IX. SUGGESTED WEIGHTAGE TO LEARNING EFFORTS & ASSESSMENT PURPOSE (Specification Table)

Sr.No	Unit	Unit Title	Aligned COs	Learning Hours	R-Level	U-Level	A-Level	Total Marks
1	I	Indefinite Integration	CO1	15	2	6	12	20
2	II	Definite Integration	CO2	8	2	4	6	12
3	III	Differential Equation	CO3	8	2	4	6	12
4	IV	Numerical Methods	CO4	6	2	4	8	14
5	V	Probability Distribution	CO5	8	2	4	6	12
Grand Total				**45**	**10**	**22**	**38**	**70**

X. ASSESSMENT METHODOLOGIES/TOOLS

Formative assessment (Assessment for Learning)

- Tests

Summative Assessment (Assessment of Learning)

- End Term Exam

XI. SUGGESTED COS - POS MATRIX FORM

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)		
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO-1	PSO-2	PSO-3
CO1	3	1	-	-	1	-	1			

APPLIED MATHEMATICS **Course Code : 312301**

CO2	3	1	-	-	1	-	1			
CO3	3	2	1	1	1	1	1			
CO4	2	3	2	2	1	1	1			
CO5	2	2	1	1	2	1	2			

Legends :- High:03, Medium:02,Low:01, No Mapping: -
*PSOs are to be formulated at institute level

XII. SUGGESTED LEARNING MATERIALS / BOOKS

Sr.No	Author	Title	Publisher with ISBN Number
1	Grewal B. S.	Higher Engineering Mathematics	Khanna publication New Delhi, 2013 ISBN: 8174091955
2	Dutta. D	A text book of Engineering Mathematics	New age publication New Delhi, 2006 ISBN: 978- 81-224-1689-3
3	Kreysizg, Ervin	Advance Engineering Mathematics	Wiley publication New Delhi 2016 ISBN: 978-81- 265-5423-2
4	Das H.K.	Advance Engineering Mathematics	S Chand publication New Delhi 2008 ISBN: 9788121903455
5	S. S. Sastry	Introductory Methods of Numerical Analysis	PHI Learning Private Limited, New Delhi. ISBN-978-81-203-4592-8
6	C. S. Seshadri	Studies in the History of Indian Mathematics	Hindustan Book Agency (lndia) P 19 Green Park Extension New Delhi. ISBN 978-93-80250-06-9
7	Marvin L. Bittinger David J.Ellenbogen Scott A. Surgent	Calculus and Its Applications	Addison-Wesley 10th Edition ISBN-13: 978-0-321-69433-1
8	Gareth James, Daniela Witten,Trevor Hastie Robert andTibshirani	An Introduction to StatisticalLearning with Applications in R	Springer New York Heidelberg Dordrecht LondonISBN 978-1-4614-7137-0 ISBN 978-1-4614-7138-7 (eBook)

XIII . LEARNING WEBSITES & PORTALS

Sr.No	Link / Portal	Description
1	http://nptel.ac.in/courses/106102064/1	Online Learning Initiatives by IITs and IISc
2	https://www.khanacademy.org/math?gclid=CNqHuabCys4CFdOJaddHoPig	Concept of Mathematics through video lectures and notes
3	https://www.wolframalpha.com/	Solving mathematical problems, performing calculations, and visualizing mathematical concepts.
4	http://www.sosmath.com/	Free resources and tutorials
5	http://mathworld.wolfram.com/	Extensive math encyclopedia with detailed explanations of mathematical concepts
6	https://www.mathsisfun.com/	Explanations and interactive lessons covering various math topics, from basic arithmetic to advanced
7	http://tutorial.math.lamar.edu/	Comprehensive set of notes and tutorials covering a wide range of mathematics topics.
8	https://www.purplemath.com/	Purplemath is a great resource for students seeking help with algebra and other foundational mathematics to improve learning.
9	https://www.brilliant.org/	Interactive learning in Mathematics
10	https://www.edx.org/	Offers a variety of courses
11	https://www.coursera.org/	Coursera offers online courses in applied mathematics from universities and institutions around the globe.

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APPLIED MATHEMATICS **Course Code : 312301**

Sr.No	Link / Portal	Description
12	https://ocw.mit.edu/index.htm	The Massachusetts Institute of Technology (MIT) offers free access to course materials for a wide range of mathematical courses.

Note :

- Teachers are requested to check the creative common license status/financial implications of the suggested online educational resources before use by the students

MSBTE Approval Dt. 01/10/2024 **Semester - 2, K Scheme**

07-01-2025 11:01:49 AM

CONSTRUCTION MATERIALS **Course Code : 322328**

Programme Name/s	**: Architecture Assistantship/ Architecture/ Interior Design & Decoration/ Interior Design/**
Programme Code	**: AA/ AT/ IX/ IZ**
Semester	**: Second**
Course Title	**: CONSTRUCTION MATERIALS**
Course Code	**: 322328**

I. RATIONALE

The course is designed to expose students to traditional and contemporary materials and processes of elementary construction experienced in routine construction technique. The course shall broadly emphasize on the concepts of sustainability in terms of eco-friendly materials and sustainable construction practices. The course shall discuss the properties of material and its effective concepts used in the construction systems.

II. INDUSTRY / EMPLOYER EXPECTED OUTCOME

Select the relevant type of construction material for the given building structure.

III. COURSE LEVEL LEARNING OUTCOMES (COS)

Students will be able to achieve & demonstrate the following COs on completion of course based learning

- CO1 - Use the construction materials on given construction projects/site.
- CO2 - Understand the variety of Material and their prices
- CO3 - Undertake the relevant masonry construction in the given building /project
- CO4 - Apply appropriate opening for given construction project.
- CO5 - Apply proper hardware and fittings in building as per latest trends.

IV. TEACHING-LEARNING & ASSESSMENT SCHEME

Course Code	Course Title	Abbr	Course Category/s	Learning Scheme					Credits	Assessment Scheme											
				Actual Contact Hrs./Week			SLH	NLH		Paper Duration	Theory			Based on LL & TL				Based on SL		Total Marks
														Practical						
				CL	TL	LL					FA-TH	SA-TH	Total	FA-PR		SA-PR		SLA		
											Max	Max	Max	Min	Max	Min	Max	Min	Max	Min	
322328	CONSTRUCTION MATERIALS	CMT	DSC	4	-	5	1	10	5	3	30	70	100	40	25	10	-	-	25	10	150

Total IKS Hrs for Sem. : 2 Hrs

Abbreviations: CL- ClassRoom Learning , TL- Tutorial Learning, LL-Laboratory Learning, SLH-Self Learning Hours, NLH-Notional Learning Hours, FA - Formative Assessment, SA -Summative assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment

Legends: @ Internal Assessment, # External Assessment, *# On Line Examination , @$ Internal Online Examination

Note :

1. FA-TH represents average of two class tests of 30 marks each conducted during the semester.
2. If candidate is not securing minimum passing marks in FA-PR of any course then the candidate shall be declared as "Detained" in that semester.
3. If candidate is not securing minimum passing marks in SLA of any course then the candidate shall be declared as fail and will have to repeat and resubmit SLA work.
4. Notional Learning hours for the semester are (CL+LL+TL+SL)hrs.* 15 Weeks
5. 1 credit is equivalent to 30 Notional hrs.
6. * Self learning hours shall not be reflected in the Time Table.
7. * Self learning includes micro project / assignment / other activities.

V. THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

CONSTRUCTION MATERIALS **Course Code : 322328**

Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.
1	TLO 1.1 Describe the construction material applications in the field of Building Industry TLO 1.2 Classify the given construction material according to sources with examples. TLO 1.3 Describe the criteria to select the construction materials for the given situation. TLO 1.4 Suggest the construction material in the given situation.	**Unit - I Overview of Construction Materials** 1.1 Application of the construction materials in building industry 1.2 Identification of given construction material and its sources. 1.3 Check the feasibility of the construction material for given situation. 1.4 Justify material selection for given situation.	Demonstration Model Demonstration Chalk-Board Collaborative learning Presentations
2	TLO 2.1 Describe the properties and structure of the given natural construction material. TLO 2.2 Explain the given type of defect(s) in natural construction material TLO 2.3 Explain the procedure of preservation of timber in the given situation. TLO 2.4 Select the natural construction material for the given situation. TLO 2.5 Choose the relevant type of integrated material for the given type of construction work.	**Unit - II Natural Construction and Sustainable Constructional Materials** 2.1 Explain the properties and structure of the given natural construction material. 2.2 Criteria to Identify defect(s) in natural construction material 2.3 Procedure of preservation of timber 2.4 Justification of natural construction material for the given situation. 2.5 Justify relevant type of integrated material for the given type of construction work.	Demonstration Case Study Presentations Hands-on Collaborative learning Site/Industry Visit
3	TLO 3.1 Explain significance of masonry in construction industry. TLO 3.2 Explain the difference between brick and stone masonry TLO 3.3 Introduce special types of bricks. TLO 3.4 Apply different sizes and bonds for brick masonry. TLO 3.5 Analyze the material and application for given situation.	**Unit - III Construction techniques of building components Masonry & Installations** 3.1 Masonry in different material like brick, stone, mud block, etc. 3.2 Brick & Stone masonry-Types of masonry; random rubble, polygonal, & dry rubble works. 3.3 Special type bricks like King closer, Queen Closer, Bull Nose, Etc. 3.4 Types of Bricks; bonds in½ brick &1brick; header, stretcher English &Flemish bonds. 3.5 Justification of material used for given situation.	Model Demonstration Demonstration Site/Industry Visit Presentations Cooperative Learning Hands-on
4	TLO 4.1 Explain openings and its types and the difference between various types of openings. TLO 4.2 Limitations and scope with respect to size of opening. TLO 4.3 Explain arches with different styles and applications TLO 4.4 Explains projections like weather sheds & awnings; lofts in rooms.	**Unit - IV Openings. Lintels, Projections and Arches** 4.1 Openings-Doors, windows, ventilators, and other openings focusing on different modes of operation and their effects on the jambs. 4.2 Doors, Windows, Lintels, Arches, Etc. 4.3 Arches-Types of arches, classification according to center, shape.(No theory questions for the topic Arches) 4.4 Projections-Different types of weather sheds & awnings; lofts in rooms;	Model Demonstration Demonstration Case Study Collaborative learning Hands-on

CONSTRUCTION MATERIALS **Course Code : 322328**

Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.
5	TLO 5.1 Explain significance of joinery in doors, windows. TLO 5.2 Explain the different types of joinery. TLO 5.3 Introduce special types fixing, material and hardware. TLO 5.4 Apply different shutters such as framed, paneled, flush, glazed, and composite TLO 5.5 Explain wood derivatives and adhesives, hardware, sealants used for various furniture's in residential building.	**Unit - V Doors, Windows &Ventilators with Jambs, Frames, Casings and Joinery** 5.1 Types of Doors and Windows with various joinery detailing and fixing. 5.2 Joinery used in furniture making and in modular furniture used in residential building. 5.3 Basis of modes of operation, positioning, placing of hardware; detailed study of modes of operation (Horizontal, vertical &inclined movement) 5.4 study of types of shutters such as framed, panelled, flush, glazed, and composite focusing on different materials wood, metal, glass, & plastics 5.5 Residential furniture/modular furniture, wood derivatives and adhesives, hardware, sealants used for various furniture's in residential building.	Model Demonstration Demonstration Hands-on Collaborative learning Chalk-Board

VI. LABORATORY LEARNING OUTCOME AND ALIGNED PRACTICAL / TUTORIAL EXPERIENCES.

Practical / Tutorial / Laboratory Learning Outcome (LLO)	Sr No	Laboratory Experiment / Practical Titles / Tutorial Titles	Number of hrs.	Relevant COs
LLO 1.1 Students will be able to understand the basic properties of construction materials and their applications in the construction industry.	1	*Introduction to basic properties of construction materials.	2	CO1
LLO 2.1 Students will be able to differentiate between types of materials used in construction.	2	*Study of different types of materials used in construction.	2	CO1
LLO 3.1 Students will be able to apply different techniques used to install and use various materials.	3	*Ongoing residential building site visit for material used, techniques and execution.	2	CO1
LLO 4.1 Students will be able to understand natural properties of construction materials..	4	*Conduct a site visit at the green building for natural and sustainable materials.	2	CO2
LLO 5.1 Students will be able to select the natural and sustainable materials.	5	*Introduction to various natural and sustainable materials.	2	CO2
LLO 6.1 Students will be able to evaluate the natural and sustainable materials.	6	*Conduct a market survey for natural and sustainable materials.	2	CO2
LLO 7.1 Student will bale to understand the concept of Different types of Bonds in Brick Masonry.	7	*Conduct a site visit at brick masonry work.	2	CO3
LLO 8.1 Student will bale to understand the concept of stone Masonry.	8	*Conduct a site visit at stone masonry work.	2	CO3
LLO 9.1 Student will bale to understand the concept of Special type of Bricks in various combination.	9	*Study the Special type of Bricks in various combinations.	2	CO3
LLO 10.1 Students will be able to understand the types of Doors, Windows and ventilators.	10	*Study the different types of doors, windows and ventilators.	2	CO4
LLO 11.1 Students will be able to finalize the positions of doors, windows, ventilators.	11	*Conduct a site visit at ongoing execution work of doors, windows and ventilators.	2	CO4

CONSTRUCTION MATERIALS **Course Code : 322328**

Practical / Tutorial / Laboratory Learning Outcome (LLO)	Sr No	Laboratory Experiment / Practical Titles / Tutorial Titles	Number of hrs.	Relevant COs
LLO 12.1 Students will be able to understand the concept of Arches, Lintels, Projections.	12	*Conduct a site visit at the ongoing execution work of Arches, Lintels, and Projections.	2	CO4
LLO 13.1 Students will be able to understand the properties of hardware and fitting material.	13	Study of Hardware and fitting materials.	2	CO5
LLO 14.1 Students will be able to evaluate the hardware and fitting material.	14	Conduct a market survey for hardware and fitting material.	2	CO5
LLO 15.1 Students will be able to understand the concept of fittings and hardware materials.	15	Conduct a site visit at the execution of hardware and fitting material.	2	CO5

Note : Out of above suggestive LLOs -

- '*' Marked Practicals (LLOs) Are mandatory.
- Minimum 80% of above list of lab experiment are to be performed.
- Judicial mix of LLOs are to be performed to achieve desired outcomes.

VII. SUGGESTED MICRO PROJECT / ASSIGNMENT/ ACTIVITIES FOR SPECIFIC LEARNING / SKILLS DEVELOPMENT (SELF LEARNING)

Assignment

- Construction Techniques of Building Components, Masonry and Installation
- Opening - Lintels,Projections and Arches
- Joinery
- Openings : Jambs, Frames & Castings

Note :

- Above is just a suggestive list of microprojects and assignments; faculty must prepare their own bank of microprojects, assignments, and activities in a similar way.
- The faculty must allocate judicial mix of tasks, considering the weaknesses and / strengths of the student in acquiring the desired skills.
- If a microproject is assigned, it is expected to be completed as a group activity.
- SLA marks shall be awarded as per the continuous assessment record.
- For courses with no SLA component the list of suggestive microprojects / assignments/ activities are optional, faculty may encourage students to perform these tasks for enhanced learning experiences.
- If the course does not have associated SLA component, above suggestive listings is applicable to Tutorials and maybe considered for FA-PR evaluations.

VIII. LABORATORY EQUIPMENT / INSTRUMENTS / TOOLS / SOFTWARE REQUIRED

Sr.No	Equipment Name with Broad Specifications	Relevant LLO Number
1	Drawing Board,drafting table and stool and drafting materials like metric scale box ,T square, pair of Setsquare	All
2	stationary : A1 Size Drawing Papers, various grades of pencils and allied stationary	All
3	Scientific Calculator, Measuring Tape	All

IX. SUGGESTED WEIGHTAGE TO LEARNING EFFORTS & ASSESSMENT PURPOSE (Specification Table)

Sr.No	Unit	Unit Title	Aligned COs	Learning Hours	R-Level	U-Level	A-Level	Total Marks
1	I	Overview of Construction Materials	CO1	12	4	4	5	13

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CONSTRUCTION MATERIALS **Course Code : 322328**

Sr.No	Unit	Unit Title	Aligned COs	Learning Hours	R-Level	U-Level	A-Level	Total Marks
2	II	Natural Construction and Sustainable Constructional Materials	CO2	10	4	4	5	13
3	III	Construction techniques of building components Masonry & Installations	CO3	10	4	5	5	14
4	IV	Openings. Lintels, Projections and Arches	CO4	14	5	5	5	15
5	V	Doors, Windows &Ventilators with Jambs, Frames, Casings and Joinery	CO5	14	4	5	6	15
Grand Total				**60**	**21**	**23**	**26**	**70**

X. ASSESSMENT METHODOLOGIES/TOOLS

Formative assessment (Assessment for Learning)

- Term Work, Self learning (Assignments)

Summative Assessment (Assessment of Learning)

- Term Work, Self learning (Assignments)

XI. SUGGESTED COS - POS MATRIX FORM

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)		
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO-1	PSO-2	PSO-3
CO1	3	1	2	2	2	2	3			
CO2	3	2	1	2	2	3	3			
CO3	2	2	1	1	2	3	3			
CO4	3	3	3	3	3	2	3			
CO5	3	2	2	2	1	3	3			

Legends :- High:03, Medium:02,Low:01, No Mapping: -
*PSOs are to be formulated at institute level

XII. SUGGESTED LEARNING MATERIALS / BOOKS

Sr.No	Author	Title	Publisher with ISBN Number
1	F D K CHING	Building Construction Illustred	Van Nortrand
2	V.N. Chanapattan	Materials of Civil and Interior Construction	SAIRAJ GRAPIC
3	W. B. Mc Kay	Building Construction vol-1	W. B. Mc Kay Collection buildingtechnologyheritagelibrary;
4	Rangwala	Engineering materials	Charoter Publication
5	R.Berry	Barry Construction of Buildings Volume - 1	Blackwell Science
6	Mario dal Fabro	How to Build Modern Furniture	McGraw Hill Book Company ,New York

CONSTRUCTION MATERIALS **Course Code : 322328**

Sr.No	Author	Title	Publisher with ISBN Number
7	Christopher Natale	Furniture Design and Construction for Interior Designer	Bloomsbury

XIII . LEARNING WEBSITES & PORTALS

Sr.No	Link / Portal	Description
1	www.basicconstructionco.com	Basic Construction
2	www.understand construction.com	Understand construction techniques
3	www.basiccarpentrytechniques.com	basic carpentry techniques
4	understandconstruction.com	Concrete Frame Structures

Note :

- Teachers are requested to check the creative common license status/financial implications of the suggested online educational resources before use by the students

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HISTORY OF ARCHITECTURE & CULTURE **Course Code : 322329**

Programme Name/s	**: Architecture Assistantship/ Architecture/ Interior Design & Decoration/ Interior Design/**
Programme Code	**: AA/ AT/ IX/ IZ**
Semester	**: Second**
Course Title	**: HISTORY OF ARCHITECTURE & CULTURE**
Course Code	**: 322329**

I. RATIONALE

The objective is to understand how architecture has been influenced by society and its culture through ages. The study of history will help to understand the way buildings were constructed in context to climate, geography and traditions with its own unique style. The study will help the students to understand how political, physical, social, economical and technological affect the architecture materials and construction techniques.

II. INDUSTRY / EMPLOYER EXPECTED OUTCOME

Students shall undertake critical study of architecture through ages and across the world. The subject study will help to understand the built form, material and technology. The course will develop awareness, knowledge and techniques of various methods of conservation and documenting heritage sites.

III. COURSE LEVEL LEARNING OUTCOMES (COS)

Students will be able to achieve & demonstrate the following COs on completion of course based learning

- CO1 - Students will be able to prepare drawing of given Heritage Structure with proper documentation .
- CO2 - students will be able to co-relate impact of relevant Civilizations. and work on conservation site with all relevant course base learning.
- CO3 - students will be able to Conservation to given structure with professional Ethics. and Understand the construction technics, methodology, specification of building materials as conservation technics and practice
- CO4 - students will be able to Use relevant tools for mapping, measuring, documenting and restoring of heritage sites.
- CO5 - students will be able to design / Retrofit/ Conserve furniture for given Heritage site

IV. TEACHING-LEARNING & ASSESSMENT SCHEME

Course Code	Course Title	Abbr	Course Category/s	Learning Scheme					Credits	Assessment Scheme											
				Actual Contact Hrs./Week			SLH	NLH		Paper Duration	Theory				Based on LL & TL				Based on SL		Total Marks
															Practical						
				CL	TL	LL					FA-TH	SA-TH	Total		FA-PR		SA-PR		SLA		
											Max	Max	Max	Min	Max	Min	Max	Min	Max	Min	
322329	HISTORY OF ARCHITECTURE & CULTURE	HOA	DSC	4	-	2	-	6	3	3	30	70	100	40	25	10	25@	10	-	-	150

HISTORY OF ARCHITECTURE & CULTURE **Course Code : 322329**

Total IKS Hrs for Sem. : 2 Hrs
Abbreviations: CL- ClassRoom Learning , TL- Tutorial Learning, LL-Laboratory Learning, SLH-Self Learning Hours, NLH-Notional Learning Hours, FA - Formative Assessment, SA -Summative assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment
Legends: @ Internal Assessment, # External Assessment, *# On Line Examination , @$ Internal Online Examination
Note :

1. FA-TH represents average of two class tests of 30 marks each conducted during the semester.
2. If candidate is not securing minimum passing marks in FA-PR of any course then the candidate shall be declared as "Detained" in that semester.
3. If candidate is not securing minimum passing marks in SLA of any course then the candidate shall be declared as fail and will have to repeat and resubmit SLA work.
4. Notional Learning hours for the semester are (CL+LL+TL+SL)hrs.* 15 Weeks
5. 1 credit is equivalent to 30 Notional hrs.
6. * Self learning hours shall not be reflected in the Time Table.
7. * Self learning includes micro project / assignment / other activities.

V. THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.
1	TLO 1.1 Explain the importance history of Architecture TLO 1.2 Explain the examples of stone age and early shelters with case study and site visit the same TLO 1.3 Explain the geo physical societal early caves and shelters. TLO 1.4 Explain the role and importance of archeological survey of India ,Explain history of Indian and world architecture early stages	**Unit - I Pre-Historical Architecture and Introduction to History of Architecture** 1.1 Importance of history to understand the Architecture. 1.2 Examples of Early shelters, Stone Age, Tumuli, etc. 1.3 Determinants of built form – geo physical, societal, technological etc. (Early caves, timber huts, stone houses etc). 1.4 Understanding people of India and Culture	Video Demonstrations Case Study Site/Industry Visit Collaborative learning

HISTORY OF ARCHITECTURE & CULTURE **Course Code : 322329**

Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.
2	TLO 2.1 Explain the civilization of Egyptian, Indus valley ,Mesopotamian , Greek, roman etc. TLO 2.2 explain the Materials, construction systems, system of proportioning used in heritage buildings TLO 2.3 sketch building plans and explain the characteristic's of architectural buildings TLO 2.4 Explain Greek civilization ,Greek towns, location and characteristics of typical civic spaces TLO 2.5 Explain Significant characteristics of Greek Architecture such as Materials, construction systems TLO 2.6 Explain Significant characteristics of Roman Architecture.	**Unit - II River Valley Civilizations** 2.1 Egyptian Civilization Concept of the Royal Necropolis, locational context and architectural characteristics of public buildings. 2.2 Mesopotamian Civilization the urban context and architecture of public buildings (Ziggurats and palaces) - one example of each. 2.3 Indus Valley Civilization: Grid Iron System 2.4 Greek civilization ,Greek towns, location and characteristics of typical civic spaces such as Agora, Acropolis, Theatres etc 2.5 Significant characteristics of Greek Architecture such as Materials, construction systems, system of proportioning, Greek orders, architecture of Greek temples – Parthenon at Athens. 2.6 Significant characteristics of Roman Architecture. Concept of monumentality, materials and construction systems, Roman orders and the Roman Basilica, Pantheon Rome	Case Study Collaborative learning Demonstration Presentations
3	TLO 3.1 Explain the theory and design principles of Indian temple architecture TLO 3.2 Explain the methodology of construction technics and material used for temple architecture. TLO 3.3 Study of documentation of local heritage site TLO 3.4 research methods of temple architecture and document as per the requirements	**Unit - III Temple Architecture in India** 3.1 Evolution of temple and its various parts 3.2 Dravidian style (Southern) General characteristics, planning (e.g. shore temple at Mahabalipuram, Madurai Temple. Indo Aryan Temple 3.3 Lingaraja Temple at Bhubhaneshwar, Kandariya Mahadeo at Khajuraho, Sun Temple at Modhera . 3.4 Mughal architecture Indian context.	Model Demonstration Case Study Collaborative learning
4	TLO 4.1 Explain the Early Christian Architecture TLO 4.2 Explain and prepare sketches of Byzantine Architecture TLO 4.3 Explain and prepare sketches of Gothic architecture. TLO 4.4 Explain the Renaissance Architecture through sketches. TLO 4.5 Explain the Byzantine Architecture through the Model/ Sketches	**Unit - IV Western Architecture** 4.1 Early Christian Architecture - Development of church plan (Basilica) 4.2 Byzantine Architecture -Centralized plans and construction methods for dome of St. Sophia Church) 4.3 Gothic Architecture -Main visual and construction vocabulary of Gothic Arch at Notre Dame Paris, and Reims Cathedral 4.4 Renaissance Architecture -Early Renaissance Architecture. General architectural characteristics (Florence cathedral) 4.5 Late Renaissance architecture. General characteristics and Role of Michael Anglo & Palladio (eg. St. Peter’s Rome. The capital Rome & Villa Capra)	Case Study Presentations Video Demonstrations Collaborative learning

HISTORY OF ARCHITECTURE & CULTURE **Course Code : 322329**

Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.
5	TLO 5.1 Explain the furniture of heritage building through edges TLO 5.2 explain the materials used in furniture design TLO 5.3 Explain and analyze the types of furniture used in the heritage building as case study TLO 5.4 Explain methods of joinery techniques such as parquetry, marquetry gilding, turning, pierced TLO 5.5 Explain occidental furniture style - Classical, Medieval, 19th Century AD ,Modern	**Unit - V History of Furniture- timeline and Evolution** 5.1 Introduction to furniture history. Evolution of furniture over a period based on climate, social factors, life style, technical and stylistic development availability of materials and various movements in design. 5.2 Introduction to furniture terminology based on methods of joinery techniques such as parquetry, marquetry gilding, turning, pierced and chip carving, ormolu mounts 5.3 Study of occidental furniture style - Classical, Medieval, 19th Century AD ,Modern, Post Modern , Contemporary. 5.4 Study of architectural elements in interiors in India from Mughal period onwards such as doors, windows, pillars, columns, staircases, fireplaces, paneling, dado, frieze, architectural decoration, study sketches and creative designs. 5.5 Oriental Furniture and Style -Chinese and Japanese interior and furniture.	Video Demonstrations Case Study Site/Industry Visit Collaborative learning

VI. LABORATORY LEARNING OUTCOME AND ALIGNED PRACTICAL / TUTORIAL EXPERIENCES.

Practical / Tutorial / Laboratory Learning Outcome (LLO)	Sr No	Laboratory Experiment / Practical Titles / Tutorial Titles	Number of hrs.	Relevant COs
LLO 1.1 '*'Prepare Free hand sketches and computer generated drawings in computer lab of historical buildings, Models of historical buildings in model making lab.	1	1) '*' a) computer generated drawings of historical buildings in computer lab .b) Free hand scketches .	2	CO1
LLO 2.1 '*' Prepare PPT in computer lab only on the topics: the civilization of Egyptian, Indus valley, Mesopotamian , Greek, roman etc.	2	'*' The civilization of Egyptian, Indus valley. Prsentation by PPT	2	CO2
LLO 3.1 '*' Report and measurement drawings on drawing sheets or tracing paper to the suitable scale based on study and documentation of local heritage site	3	'*' Select local heritage site - a) Documention of Site b) Report c) Measurment Drawing .	2	CO3
LLO 4.1 PPT on The Early Christian Architecture /Byzantine Architecture	4	The Early Christian Architecture /Byzantine Architecture-Presentation By PPT.	2	CO4
LLO 5.1 '*' model of nay one in model lab history of furniture to explain various styles and periods	5	'*' History of Furniture to explain various styles.presentation by PPT / Architectural presentation free hand .	2	CO5
LLO 6.1 sketches (in the sketch book) of the (Gothic Architecture and Renaissance Architecture etc.) various furniture pieces explaining the use of materials, construction systems, study of scale and proport	6	2 (Gothic Architecture and Renaissance Architecture etc.) various furniture pieces explaining the use of materials, construction systems, study of scale and proportion - Skecthes with presentation	2	CO4
LLO 7.1 '*' Prepare PPT in computer lab on the topics: Gothic Architecture and Renaissance Architecture	7	'*' Gothic Architecture and Renaissance Architecture- presentation by PPT	2	CO4

HISTORY OF ARCHITECTURE & CULTURE **Course Code : 322329**

Practical / Tutorial / Laboratory Learning Outcome (LLO)	Sr No	Laboratory Experiment / Practical Titles / Tutorial Titles	Number of hrs.	Relevant COs
LLO 8.1 sketches (in the sketch book) in plan/section/elevation/views of the important buildings of the Gothic Architecture and Renaissance Architecture etc.)	8	Draw proportionate sketches (in the sketch book) in plan/section/elevation/views of the important buildings of the civilisations (Gothic Architecture and Renaissance Architecture etc.) explaining the use of materials, construction systems, study of cale and proportion.	2	CO4
LLO 9.1 Gothic Architecture and Renaissance Architecture	9	Prepare PPT on the topics: Gothic Architecture and Renaissance Architecture	2	CO4
LLO 10.1 '* in studio lab draw plan/section/elevation/views of the important buildings of the civilisations (Greek, roman etc.) explaining the use of materials, construction systems, study of scale and prop	10	'*' a) Draw the plan/section/elevation/views of the important buildings of the civilisations (Greek, roman etc.). b) Understand the scale and prortion , materials etc. make a report .	2	CO3
LLO 11.1 '*' Prepare/draw mind mapping diagram/chart in chronological order of history of architecture and its evolution	11	'*' history of architecture and its evolution - Prepare/draw mind mapping diagram/chart in chronological order of	2	CO1
LLO 12.1 '*' In the studio lab draw sketches in plan/section/elevation/views based on study: Stonehenge to cave architecture	12	'*' : Stonehenge to cave architecture - a) draw the sketches and prpare model	2	CO2
LLO 13.1 Prepare notes/PPT based on study to explain the development of architecture in early stages history of Indian and western architecture	13	Development of architecture in early stages history of Indian and western architecture- Presentation by PPT	2	CO4
LLO 14.1 '*' PPT in computer lab based on study to explain the development of architecture in early stages INDIAN history furniture	14	'*' history of Indian furniture Architecture. presentation by PPT	2	CO3
LLO 15.1 '*' prepare a report and measurement drawings based on study and documentation of historical furniture	15	'*' Prepare a report and measurement drawings based on study and documentation of local heritage site	2	CO3

Note : Out of above suggestive LLOs -

- '*' Marked Practicals (LLOs) Are mandatory.
- Minimum 80% of above list of lab experiment are to be performed.
- Judicial mix of LLOs are to be performed to achieve desired outcomes.

VII. SUGGESTED MICRO PROJECT / ASSIGNMENT/ ACTIVITIES FOR SPECIFIC LEARNING / SKILLS DEVELOPMENT (SELF LEARNING)

HISTORY OF ARCHITECTURE & CULTURE **Course Code : 322329**

Assignment

- 1) Undertake a Survey of local historical buildings and do analysis of the structure ,design, construction, materials , furniture used etc. 2) Draw free hand sketches and prepare documentation of historical building near the institute. 3) photography survey of historical building

Note :

- Above is just a suggestive list of microprojects and assignments; faculty must prepare their own bank of microprojects, assignments, and activities in a similar way.
- The faculty must allocate judicial mix of tasks, considering the weaknesses and / strengths of the student in acquiring the desired skills.
- If a microproject is assigned, it is expected to be completed as a group activity.
- SLA marks shall be awarded as per the continuous assessment record.
- For courses with no SLA component the list of suggestive microprojects / assignments/ activities are optional, faculty may encourage students to perform these tasks for enhanced learning experiences.
- If the course does not have associated SLA component, above suggestive listings is applicable to Tutorials and maybe considered for FA-PR evaluations.

VIII. LABORATORY EQUIPMENT / INSTRUMENTS / TOOLS / SOFTWARE REQUIRED

Sr.No	Equipment Name with Broad Specifications	Relevant LLO Number
1	1) drawing boards	1
2	measuring tape of 30.M	1
3	A 1 Size Drawing Sheets	1
4	tracing /gateway papers	1
5	stationery material /sketch book, pencil's, eraser etc.	1
6	Camera for photograph	1
7	Suitable Stationery for preparation of model	1
8	surveying and leveling materials as required.	1
9	Material Required for Documentation	1

IX. SUGGESTED WEIGHTAGE TO LEARNING EFFORTS & ASSESSMENT PURPOSE (Specification Table)

Sr.No	Unit	Unit Title	Aligned COs	Learning Hours	R-Level	U-Level	A-Level	Total Marks
1	I	Pre-Historical Architecture and Introduction to History of Architecture	CO1	15	6	6	8	20
2	II	River Valley Civilizations	CO2	10	2	4	4	10
3	III	Temple Architecture in India	CO3	15	6	6	8	20
4	IV	Western Architecture	CO4	10	2	4	4	10
5	V	History of Furniture- timeline and Evolution	CO5	10	2	4	4	10
Grand Total				**60**	**18**	**24**	**28**	**70**

X. ASSESSMENT METHODOLOGIES/TOOLS

Formative assessment (Assessment for Learning)

- Teamwork / Individual

Summative Assessment (Assessment of Learning)

- Teamwork
- Practical

HISTORY OF ARCHITECTURE & CULTURE **Course Code : 322329**

XI. SUGGESTED COS - POS MATRIX FORM

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)		
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO-1	PSO-2	PSO-3
CO1	2	1	1	1	1	1	3			
CO2	3	2	2	2	1	1	3			
CO3	3	2	2	2	2	1	3			
CO4	3	2	2	2	1	1	3			
CO5	3	1	1	2	1	1	3			

Legends :- High:03, Medium:02,Low:01, No Mapping: -
*PSOs are to be formulated at institute level

XII. SUGGESTED LEARNING MATERIALS / BOOKS

Sr.No	Author	Title	Publisher with ISBN Number
1	John Pile	Interior Design	Harry N, Adry Publishers
2	Ahmed Kasu	Interior Design	TWAIN Pub.Bombay
3	by Sir Banister Fletcher	History of Architecture	?Architectural Press; 20th edition (21 September 1996)
4	Percy Brown	Indian Architecture (Hindu Period)	Tobey Press
5	Joseph Gwilt	Encyclopedia of Architecture.	Longmans Green
6	Michael Raeburn	An outline of World Architecture:-	Littlehampton Book Services Ltd
7	Federick Litchfield	History of furniture's	Federick Litchfield

XIII . LEARNING WEBSITES & PORTALS

Sr.No	Link / Portal	Description
1	https://archive.org/details/illustratedhisto00litcrich	Illustrated history of furniture : Litchfield, Frederick, b. 1850
2	Wikipedia https://en.wikipedia.org › wiki › History_of_architecture	History of Architecture
3	Library of Congress (.gov) https://www.loc.gov › print › resource › find_arch	Documentation of history of architecture
4	Architectural Documentation - Mesa Verde ... National Park Service (.gov) https://www.nps.gov ›	Architectural Documentation - Mesa Verde ...
5	Domus Web https://www.domusweb.	DOMUS: the Magazine for Architecture, Design and Art Lovers
6	MIT Press https://mitpress.mit.edu	Revisiting the classics in open access for World ...

Note :

- Teachers are requested to check the creative common license status/financial implications of the suggested online educational resources before use by the students

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HISTORY OF ARCHITECTURE & CULTURE **Course Code : 322329**

MSBTE Approval Dt. 01/10/2024 **Semester - 2, K Scheme**

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THEORY OF DESIGN **Course Code : 322330**

Programme Name/s	**: Architecture Assistantship/ Architecture/ Interior Design & Decoration/ Interior Design/**
Programme Code	**: AA/ AT/ IX/ IZ**
Semester	**: Second**
Course Title	**: THEORY OF DESIGN**
Course Code	**: 322330**

I. RATIONALE

The theory of design in architecture serves as a foundational framework that informs the creation, evaluation, and understanding of architectural works. It encompasses the principles and methodologies that guide the students in shaping spaces that are functional, aesthetically pleasing, and contextually appropriate.

II. INDUSTRY / EMPLOYER EXPECTED OUTCOME

Apply the different principles of Design to solve broad-based relevant architectural problems.

III. COURSE LEVEL LEARNING OUTCOMES (COS)

Students will be able to achieve & demonstrate the following COs on completion of course based learning

- CO1 - Evolve the History of Architecture and Design theory
- CO2 - Explain Architectural theories as socially useful discipline
- CO3 - Explore the different elements of architecture.
- CO4 - Evaluate the works of different Architects and their philosophies.
- CO5 - Explain different architectural styles and movements.

IV. TEACHING-LEARNING & ASSESSMENT SCHEME

Course Code	Course Title	Abbr	Course Category/s	Learning Scheme					Credits	Assessment Scheme											Total Marks
				Actual Contact Hrs./Week			SLH	NLH		Paper Duration	Theory				Based on LL & TL				Based on SL		
															Practical						
				CL	TL	LL					FA-TH	SA-TH	Total		FA-PR		SA-PR		SLA		
											Max	Max	Max	Min	Max	Min	Max	Min	Max	Min	
322330	THEORY OF DESIGN	TOD	AEC	3	-	2	1	6	3	3	30	70	100	40	25	10	-	-	25	10	150

Total IKS Hrs for Sem. : Hrs

Abbreviations: CL- ClassRoom Learning , TL- Tutorial Learning, LL-Laboratory Learning, SLH-Self Learning Hours, NLH-Notional Learning Hours, FA - Formative Assessment, SA -Summative assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment

Legends: @ Internal Assessment, # External Assessment, *# On Line Examination , @$ Internal Online Examination

Note :

1. FA-TH represents average of two class tests of 30 marks each conducted during the semester.
2. If candidate is not securing minimum passing marks in FA-PR of any course then the candidate shall be declared as "Detained" in that semester.
3. If candidate is not securing minimum passing marks in SLA of any course then the candidate shall be declared as fail and will have to repeat and resubmit SLA work.
4. Notional Learning hours for the semester are (CL+LL+TL+SL)hrs.* 15 Weeks
5. 1 credit is equivalent to 30 Notional hrs.
6. * Self learning hours shall not be reflected in the Time Table.
7. * Self learning includes micro project / assignment / other activities.

V. THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

THEORY OF DESIGN **Course Code : 322330**

Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.
1	TLO 1.1 Explain scope of History of Architecture and Contemporary Design, TLO 1.2 Analyse types of organised architectural spaces. TLO 1.3 Explain Principles of Functionality and Aesthetics. TLO 1.4 Apply Design Principles in Projects.	**Unit - I History of Architecture and Design theory** 1.1 Define the historical evolution of design theories and their relevance to contemporary architectural practice. 1.2 Define architectural space types : space and organizational pattern, space relationship, hierarchy of space, experienced through movement in space - time, 1.3 Define design intentions based on principles of functionality to ensure that architectural designs effectively meet user needs and operational requirements, such a site, context, climatology, sensory and cultural characteristics of place. 1.4 Apply design principles through hands-on exercises and projects to develop and refine design ideas.	Lecture Using Chalk-Board Presentations Case Study
2	TLO 2.1 Discuss Essence and composition in Architecture TLO 2.2 Discuss theories in Architecture TLO 2.3 Explain different types of Elements & principles of Design	**Unit - II Architectural theories as socially useful discipline.** 2.1 Introduction to the core principles and fundamental ideas that define different architectural styles and movements. 2.2 Define theories in architecture in classical era to contemporary such as golden section, golden rectangle, golden lines, classical orders, renaissance theories, ken, etc. 2.3 Introduction to innovative and creative approaches to architectural expression by applying design elements and principles .	Presentations Case Study Site/Industry Visit Lecture Using Chalk-Board
3	TLO 3.1 Explore social relevance in Architecture. TLO 3.2 Explore different types of theories of design. TLO 3.3 Explore visual properties of design. TLO 3.4 Apply the visual principles in design.	**Unit - III Elements and principles of architectural design.** 3.1 Identify and describe the properties of fundamental geometric shapes such as circles, squares, triangles, and polygons, including their symmetry, angles, and relationships. 3.2 Identify and interpret non-geometric forms, such as organic shapes and abstract patterns, and discuss their visual characteristics and how they differ from geometric shapes. 3.3 Examine key visual attributes such as line, color, value, texture, and space to understand how elements contribute to the overall visual impact of 2D forms. 3.4 Apply principles of design such as proportion, scale, and rhythm to both geometric and non-geometric forms to evaluate the visual effectiveness of a design.	Lecture Using Chalk-Board Presentations Case Study
4	TLO 4.1 Explore Architectural Biography and Impact. TLO 4.2 Study Philosophical Frameworks. TLO 4.3 Compare & analyze the work of different Architects.	**Unit - IV Architects and their Philosophies.** 4.1 Identify key architects from various historical periods and contemporary contexts & their major works, influences, and contributions to architecture. 4.2 Understand and articulate the core philosophies and design principles of different architects. 4.3 Compare the philosophies and design approaches of different architects to identify similarities, differences, and the evolution of architectural thought.	Lecture Using Chalk-Board Collaborative learning Presentations Case Study Video Demonstrations

THEORY OF DESIGN **Course Code : 322330**

Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.
5	TLO 5.1 Describe Prehistoric Architectural building structures . TLO 5.2 Describe classical Architectural building structures . TLO 5.3 Describe Renaissance Architectural building structures .	**Unit - V Architectural Styles and movements** 5.1 Identify and describe the characteristics of pre-historic architectural building structures. 5.2 Identify and describe the characteristics of building structures having the classical style of architecture. 5.3 Identify and describe the characteristics of building structures during the renaissance architecture period.	Lecture Using Chalk-Board Presentations Video Demonstrations

VI. LABORATORY LEARNING OUTCOME AND ALIGNED PRACTICAL / TUTORIAL EXPERIENCES.

Practical / Tutorial / Laboratory Learning Outcome (LLO)	Sr No	Laboratory Experiment / Practical Titles / Tutorial Titles	Number of hrs.	Relevant COs
LLO 1.1 *Prepare a report on history and evolution of theory of architecture design.	1	Collection of data of history and evolution of theory of architecture design,	2	CO1 CO2
LLO 2.1 Prepare a report and draw sketches of composition of architectural spaces.	2	Learning through theory of architecture design.	2	CO1 CO2
LLO 3.1 *Design an architecture design brief, program and design intention of a given project based on principles of functionality, user needs, site, context, climatology, sensory and cultural characteristic	3	Developement of mind mapping diagram and a report for the design intention for a given project.	2	CO1
LLO 4.1 Design and draw schematic sketches by applying design principles for a given project,	4	Application of design principles through hands-on exercises and projects to develop and refine design ideas.	2	CO1
LLO 5.1 *Prepare report with sketches illustrating design principles and ideas of different architectural styles,	5	Preparation of report with sketches on principles and ideas that define different architectural styles and movements.	2	CO1
LLO 6.1 Prepare report with sketches illustrating theories in architecture design.	6	Preparation of report with sketches theories in architecture.	2	CO2
LLO 7.1 Explain by applying design theories for a given image, picture.	7	Application of golden section on a given image to demonstrate the golden proportion.	2	CO2
LLO 8.1 Describe through sketches of different types of architectural expressions for a given architectural style.	8	Draw and explain through sketches a given architectural style to illustrate architectural expression,	2	CO2
LLO 9.1 *Draw sketches and prepare a report based on physical case study of a given building to understand building components such as court yard, openings, roof etc. With its specific characterist	9	Explain through sketches and a report on importance of components of building and its social relevance.	2	CO3
LLO 10.1 Draw sketches of 2d compositions of space to analyse and interpret visual characteristics differentiating organic and geometric shapes.	10	Exploring Different types of theories to identify and interpret form and space.	2	CO3

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THEORY OF DESIGN **Course Code : 322330**

Practical / Tutorial / Laboratory Learning Outcome (LLO)	Sr No	Laboratory Experiment / Practical Titles / Tutorial Titles	Number of hrs.	Relevant COs
LLO 11.1 *Draw sketches and prepare a report based on physical case study of a given building to understand building components such as court yard, openings, roof etc. With its specific characterist	11	Various types of visual properties of different types of materials used in design a building.	2	CO3
LLO 12.1 Draw sketches of 2d compositions of space to analyse and interpret visual characteristics differentiating organic and geometric shapes.	12	Exploring Different types of theories to identify and interpret form and space.	2	CO3
LLO 13.1 Draw sketches and prepare a report based on book/online case study of a given building to understand application of building material to explore architectural form based on visual attributes such as l	13	Explain various types of visual properties of different types of materials used in design a building.	2	CO3
LLO 14.1 Draw a sketch of a elevation of a given street with sets of buildings with its components and analyse design elements such as proportion, scale, and rhythm.	14	Explain various types of visual and principles of different types of materials used in design a building.	2	CO3
LLO 15.1 *Prepare a PPT differentiating works of various architects works based on their philosophies.	15	Preparation of PPT presentation differentiating works of various architects works based on their philosophies.	2	CO4
LLO 16.1 Draft plans, sections and elevations on A2 size tracing paper of a house designed by a famous architect illustrating his design philosophy in his work.	16	Explain through drafting the drawings of a house designed by a famous architect.	2	CO4
LLO 17.1 Prepare a PPT to identify and describe the characteristics of pre-historic architectural building structures.	17	Preparation of report on Prehistoric Architectural structures.	2	CO5
LLO 18.1 *Prepare a PPT to identify and describe the characteristics of building structures having the classical style of architecture.	18	preparation of report on classical Architectural structures.	2	CO5
LLO 19.1 *Prepare a PPT to Identify and describe the characteristics of building structures during the renaissance architecture period.	19	Preparation of report on Renaissance Architectural structures.	2	CO5

Note : Out of above suggestive LLOs -

- '*' Marked Practicals (LLOs) Are mandatory.
- Minimum 80% of above list of lab experiment are to be performed.
- Judicial mix of LLOs are to be performed to achieve desired outcomes.

VII. SUGGESTED MICRO PROJECT / ASSIGNMENT/ ACTIVITIES FOR SPECIFIC LEARNING / SKILLS DEVELOPMENT (SELF LEARNING)

Micro project

- Select a historical building or object, study its design elements, and present an analysis of its form, function, and cultural context.
- Prepare a video explaining the design philosophy of any one contemporary Architect in your local vicinity.

THEORY OF DESIGN **Course Code : 322330**

Note :

- Above is just a suggestive list of microprojects and assignments; faculty must prepare their own bank of microprojects, assignments, and activities in a similar way.
- The faculty must allocate judicial mix of tasks, considering the weaknesses and / strengths of the student in acquiring the desired skills.
- If a microproject is assigned, it is expected to be completed as a group activity.
- SLA marks shall be awarded as per the continuous assessment record.
- For courses with no SLA component the list of suggestive microprojects / assignments/ activities are optional, faculty may encourage students to perform these tasks for enhanced learning experiences.
- If the course does not have associated SLA component, above suggestive listings is applicable to Tutorials and maybe considered for FA-PR evaluations.

VIII. LABORATORY EQUIPMENT / INSTRUMENTS / TOOLS / SOFTWARE REQUIRED

Sr.No	Equipment Name with Broad Specifications	Relevant LLO Number
1	Projector and Screen - 4K resolution, 3500 lumens brightness, HDMI and VGA inputs.	All
2	Computer Workstations - Intel Core i7, 16GB RAM, 1TB SSD, NVIDIA GeForce RTX 3060, 27-inch 4K monitors.	All
3	Scanner - 2400 x 4800 dpi resolution, color depth 48-bit.	All
4	Display Boards - Cork or magnetic boards, 48 x 36 inches.	All
5	Drawing Table - Imperial size/A1 size	All
6	Smart Boards - 75-inch interactive display, 4K resolution, multi-touch capability.	All

IX. SUGGESTED WEIGHTAGE TO LEARNING EFFORTS & ASSESSMENT PURPOSE (Specification Table)

Sr.No	Unit	Unit Title	Aligned COs	Learning Hours	R-Level	U-Level	A-Level	Total Marks
1	I	History of Architecture and Design theory	CO1	10	2	4	4	10
2	II	Architectural theories as socially useful discipline.	CO2	14	4	4	4	12
3	III	Elements and principles of architectural design.	CO3	22	4	6	6	16
4	IV	Architects and their Philosophies.	CO4	22	4	6	6	16
5	V	Architectural Styles and movements	CO5	22	4	6	6	16
Grand Total				**90**	**18**	**26**	**26**	**70**

X. ASSESSMENT METHODOLOGIES/TOOLS

Formative assessment (Assessment for Learning)

- Two unit tests of 30 marks and average of two unit tests.
- For laboratory learning 25 marks.

Summative Assessment (Assessment of Learning)

- End semester assessment of 70 marks through examination.

XI. SUGGESTED COS - POS MATRIX FORM

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THEORY OF DESIGN **Course Code : 322330**

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)		
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO-1	PSO-2	PSO-3
CO1	2	1	-	-	-	-	1			
CO2	2	1	-	1	-	-	1			
CO3	2	2	2	1	-	-	2			
CO4	2	2	2	1	-	-	2			
CO5	2	3	-	1	-	-	1			

Legends :- High:03, Medium:02,Low:01, No Mapping: -
*PSOs are to be formulated at institute level

XII. SUGGESTED LEARNING MATERIALS / BOOKS

Sr.No	Author	Title	Publisher with ISBN Number
1	Steen Eiler Rasmussen	Experiencing Architecture	MIT Press ISBN: 9780262680028
2	Vitruvius (Author) Rowland, Ingrid D. (Southwestern Univers (Author) Howe, Thomas Noble (Author)	Vitruvius: Ten Books on Architecture	Cambridge University Press ISBN:9780521002929
3	Marc-Antoine Laugier	An Essay on Architecture	Hennessey & Ingalls, Inc ISBN:978-0912158921
4	Don Norman	The Design of Everyday Things	Basic Books 978-0465050659
5	DK	Design: The Definitive Visual History	DK 978-1465444568
6	Nikos A Salingaros	Theory of Architecture Paperback – Import, 30 May 2007	Umbau Verlag ISBN : 978-3937954073

XIII . LEARNING WEBSITES & PORTALS

Sr.No	Link / Portal	Description
1	https://www.designhistorysociety.org/	Offers resources, publications, and events related to the history of design.
2	https://www.aiga.org/	Professional association for design with resources on design principles, case studies, and articles.
3	http://www.visual-arts-cork.com/	A resource for understanding visual arts, including the properties of 2D forms.
4	https://www.khanacademy.org/humanities/art-history	Offers lessons on various art movements and principles that relate to 2D visual forms.

Note :

- Teachers are requested to check the creative common license status/financial implications of the suggested online educational resources before use by the students

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PROFESSIONAL COMMUNICATION **Course Code : 312002**

Programme Name/s	**: Architecture Assistantship/ Automobile Engineering./ Artificial Intelligence/ Agricultural Engineering/ Artificial Intelligence and Machine Learning/ Automation and Robotics/ Architecture/ Cloud Computing and Big Data/ Civil Engineering/ Chemical Engineering/ Computer Technology/ Computer Engineering/ Civil & Rural Engineering/ Construction Technology/ Computer Science & Engineering/ Fashion & Clothing Technology/ Dress Designing & Garment Manufacturing/ Digital Electronics/ Data Sciences/ Electrical Engineering/ Electronics & Tele-communication Engg./ Electrical and Electronics Engineering/ Electrical Power System/ Electronics & Communication Engg./ Electronics Engineering/ Food Technology/ Computer Hardware & Maintenance/ Instrumentation & Control/ Industrial Electronics/ Information Technology/ Computer Science & Information Technology/ Instrumentation/ Interior Design & Decoration/ Interior Design/ Civil & Environmental Engineering/ Mechanical Engineering/ Mechatronics/ Medical Laboratory Technology/ Medical Electronics/ Production Engineering/ Printing Technology/ Polymer Technology/ Surface Coating Technology/ Computer Science/ Textile Technology/ Electronics & Computer Engg./ Travel and Tourism/ Textile Manufactures/**
Programme Code	**: AA/ AE/ AI/ AL/ AN/ AO/ AT/ BD/ CE/ CH/ CM/ CO/ CR/ CS/ CW/ DC/ DD/ DE/ DS/ EE/ EJ/ EK/ EP/ ET/ EX/ FC/ HA/ IC/ IE/ IF/ IH/ IS/ IX/ IZ/ LE/ ME/ MK/ ML/ MU/ PG/ PN/ PO/ SC/ SE/ TC/ TE/ TR/ TX**
Semester	**: Second**
Course Title	**: PROFESSIONAL COMMUNICATION**
Course Code	**: 312002**

I. RATIONALE

Communication is key to smooth and efficient functioning of any industry or business . Professional communication is the need of every organization to maintain ethics, quality and standards. The efficacy of business communication skills are essential for engineering professionals to instruct, guide and motivate peers/ subordinates to achieve desired goals at work place. Strong Communication skills are highly valued in the professional world and contribute to career growth and opportunities. Thus, this course has been designed to enhance the professional communication skills for effective presentation both in written and oral forms at workplace.

II. INDUSTRY / EMPLOYER EXPECTED OUTCOME

1. Communicate effectively at workplace. 2. Issues can be identified and resolved by brainstorming solutions 3. Effective communication ensures strong decision making

III. COURSE LEVEL LEARNING OUTCOMES (COS)

Students will be able to achieve & demonstrate the following COs on completion of course based learning

- CO1 - Communicate effectively (oral / spoken and Written) in various formal and informal situations minimizing the barriers.
- CO2 - Develop listening skills through active listening and note taking.
- CO3 - Write circulars, notices and minutes of the meeting.
- CO4 - Draft inquiry letter, complaint letter , Job application with resume / CV, Compose effective E - mails .
- CO5 - Write Industrial reports.

IV. TEACHING-LEARNING & ASSESSMENT SCHEME

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PROFESSIONAL COMMUNICATION **Course Code : 312002**

Course Code	Course Title	Abbr	Course Category/s	Learning Scheme					Credits	Assessment Scheme											Total Marks
				Actual Contact Hrs./Week			SLH	NLH		Paper Duration	Theory				Based on LL & TL				Based on SL		
															Practical						
				CL	TL	LL					FA-TH	SA-TH	Total		FA-PR		SA-PR		SLA		
											Max	Max	Max	Min	Max	Min	Max	Min	Max	Min	
312002	PROFESSIONAL COMMUNICATION	PCO	SEC	-	-	2	-	2	1	-	-	-	-	-	25	10	25@	10	-	-	50

Total IKS Hrs for Sem. : 0 Hrs

Abbreviations: CL- ClassRoom Learning , TL- Tutorial Learning, LL-Laboratory Learning, SLH-Self Learning Hours, NLH-Notional Learning Hours, FA - Formative Assessment, SA -Summative assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment

Legends: @ Internal Assessment, # External Assessment, *# On Line Examination , @$ Internal Online Examination

Note :

1. FA-TH represents average of two class tests of 30 marks each conducted during the semester.
2. If candidate is not securing minimum passing marks in FA-PR of any course then the candidate shall be declared as "Detained" in that semester.
3. If candidate is not securing minimum passing marks in SLA of any course then the candidate shall be declared as fail and will have to repeat and resubmit SLA work.
4. Notional Learning hours for the semester are (CL+LL+TL+SL)hrs.* 15 Weeks
5. 1 credit is equivalent to 30 Notional hrs.
6. * Self learning hours shall not be reflected in the Time Table.
7. * Self learning includes micro project / assignment / other activities.

V. THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.
1	TLO 1.1 Describe the importance of professional communication in given situations TLO 1.2 Identify the types of communication barriers in given situations and suggestive remedies TLO 1.3 Use different types of verbal and non–verbal communication for the given situation	**Unit - I Professional Communication : An Overview** 1.1 Definition of professional communication- Importance, relevance, Elements and process of communication 1.2 7 C's of Professional Communication (Clarity, Conciseness, correctness, Coherent, concrete, courteous and Complete) 1.3 Types –Verbal (Oral-Written),Formal, Informal (Grapevine), Vertical 1.4 Barriers to communication,Types of barriers (Linguistic, Psychological, Technological)	Language lab Role plays Chalk board Reference books Case studies
2	TLO 2.1 Identify the difference between listening and hearing TLO 2.2 Differentiate the types of listening in various situations TLO 2.3 Take notes during lectures, seminars . Make use of types of note taking and note making for different subjects / topics	**Unit - II Listening & Note Taking** 2.1 Difference between listening & Hearing 2.2 Types of listening a)Active listening b)Passive listening c)Selective listening 2.3 Techniques of Note taking , Types of note taking (Outline notes, Mind Mapping, Flowcharts)	Language Lab Classroom learning NPTEL Role Play
3	TLO 3.1 Prepare notices / agenda for the given type of meeting / information TLO 3.2 Prepare minutes of meeting/s TLO 3.3 Draft a circular for a particular information/ event	**Unit - III Office Drafting** 3.1 Format of Notice and Circular 3.2 Drafting Agenda 3.3 Preparing Minutes of meeting	white board Language Lab Reference books Classroom learning

PROFESSIONAL COMMUNICATION **Course Code : 312002**

Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.
4	TLO 4.1 Compose cover letter and CV / Resume for jobs TLO 4.2 Apply E- mail Etiquette for professional purposes TLO 4.3 Compose E- mails for different official purposes	**Unit - IV Writing Skills for Professional Communication** 4.1 Job Application with Resume / CV 4.2 E-Mail Etiquettes 4.3 Writing official E- Mails to communicate intended purposes 4.4 Drafting Enquiry letter and Complaint letter	Language lab Classroom learning NPTEL Reference books
5	TLO 5.1 Compose technical reports TLO 5.2 Draft accident / Investigation/ Daily reports	**Unit - V Report Writing** 5.1 Introduction to report writing 5.2 Accident Report 5.3 Investigation Report 5.4 Daily Report	Chalk and talk Language Lab Collaborative learning Classroom learning

VI. LABORATORY LEARNING OUTCOME AND ALIGNED PRACTICAL / TUTORIAL EXPERIENCES.

Practical / Tutorial / Laboratory Learning Outcome (LLO)	Sr No	Laboratory Experiment / Practical Titles / Tutorial Titles	Number of hrs.	Relevant COs
LLO 1.1 Draw communication cycle using real life examples and explain process of communication.	1	*Communication Process and Cycle	2	CO1
LLO 2.1 Undertake the Role play / Group discussion to illustrate types / barriers to communication	2	Role plays and Group Discussion	2	CO1
LLO 3.1 Listen to audios in the language lab and make notes of it.	3	*Active Listening	2	CO2
LLO 4.1 Give a presentation / Seminar using 7 C's of Communication.	4	*Presentations / Seminars	2	CO1
LLO 5.1 Explain the types of note taking with examples and make notes on any one topic related to your curriculum.	5	*Note taking and Note Making	2	CO2
LLO 6.1 Prepare agenda for meeting and draft minutes of the meeting.	6	*Agenda and Minutes of the meeting	2	CO3
LLO 7.1 Draft circulars for the given situation .	7	*Office Drafting	2	CO3
LLO 8.1 Respond to job advertisements referring newspapers, LinkedIn. Write cover letter with resume /CV.	8	*Type Job Application with Resume / CV	2	CO4
LLO 9.1 Type Four (formal) E-mails using ethics and etiquette.	9	* E- Mail writing	2	CO4
LLO 10.1 Write a detailed report on Accident/ Investigation .	10	*Technical Report writing	2	CO5
LLO 11.1 Prepare a case study related to linguistic barriers : language ,pronunciation, punctuation, technical jargon and suggest remedies for the same.	11	*Barriers to Communication	2	CO1
LLO 12.1 Draft complaint / enquiry letter for various situations	12	Complaint and Enquiry letter	2	CO4
LLO 13.1 List psychological barriers to communication LLO 13.2 Prepare case studies on any two psychological barriers and suggest remedies to overcome the barriers	13	Psychological barriers to Communication	2	CO1

PROFESSIONAL COMMUNICATION **Course Code : 312002**

Practical / Tutorial / Laboratory Learning Outcome (LLO)	Sr No	Laboratory Experiment / Practical Titles / Tutorial Titles	Number of hrs.	Relevant COs
LLO 14.1 Draw flow chart and mind mapping for any topic related to the curriculum.	14	*Listening Skills	2	CO2
LLO 15.1 Face mock interview arranged by your teacher.	15	* Typed Job Application , Resume / CV/ formal dressing and Interview	2	CO4

Note : Out of above suggestive LLOs -

- '*' Marked Practicals (LLOs) Are mandatory.
- Minimum 80% of above list of lab experiment are to be performed.
- Judicial mix of LLOs are to be performed to achieve desired outcomes.

VII. SUGGESTED MICRO PROJECT / ASSIGNMENT/ ACTIVITIES FOR SPECIFIC LEARNING / SKILLS DEVELOPMENT (SELF LEARNING)

Micro project

- Conduct an interview of any person and follow the procedure (interview questions, photo with the interviewee etc.)
- Listening and Speaking are life long learnings . Explain with appropriate examples and real life case studies.
- Collect (four to five) emails with technical jargons, barriers, make required corrections and keep a record of both the mails (original and Corrected one)
- Complete any one certification course of (Two Weeks duration) from (MOOC/ NPTEL/ Coursera/ any other source)related to Communication Skills / Personality Development.
- Prepare a report on aspects of body language
- Prepare a case study on Technological /Psychological barriers to communication

Reading for vocabulary and sentence structure

- Read any motivational book and present a review of the book

Note :

- Above is just a suggestive list of microprojects and assignments; faculty must prepare their own bank of microprojects, assignments, and activities in a similar way.
- The faculty must allocate judicial mix of tasks, considering the weaknesses and / strengths of the student in acquiring the desired skills.
- If a microproject is assigned, it is expected to be completed as a group activity.
- SLA marks shall be awarded as per the continuous assessment record.
- For courses with no SLA component the list of suggestive microprojects / assignments/ activities are optional, faculty may encourage students to perform these tasks for enhanced learning experiences.
- If the course does not have associated SLA component, above suggestive listings is applicable to Tutorials and maybe considered for FA-PR evaluations.

VIII. LABORATORY EQUIPMENT / INSTRUMENTS / TOOLS / SOFTWARE REQUIRED

Sr.No	Equipment Name with Broad Specifications	Relevant LLO Number
1	Smart Board with networking	All
2	Language Lab with software and internet facility	All
3	LCD Projector	All
4	Printer	All

IX. SUGGESTED WEIGHTAGE TO LEARNING EFFORTS & ASSESSMENT PURPOSE (Specification Table) : NOT APPLICABLE

X. ASSESSMENT METHODOLOGIES/TOOLS

PROFESSIONAL COMMUNICATION **Course Code : 312002**

Formative assessment (Assessment for Learning)

- Term Work, Micro Project

Summative Assessment (Assessment of Learning)

- Practical Exam of 25 marks using language lab

XI. SUGGESTED COS - POS MATRIX FORM

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)		
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO-1	PSO-2	PSO-3
CO1	1	1	1		1	3	1			
CO2	1	1				3	1			
CO3	1					3	1			
CO4		1				3	1			
CO5		1	1			3	1			

Legends :- High:03, Medium:02,Low:01, No Mapping: -
*PSOs are to be formulated at institute level

XII. SUGGESTED LEARNING MATERIALS / BOOKS

Sr.No	Author	Title	Publisher with ISBN Number
1	M Ashraf Rizvi	Effective Communication Skills	Tata McGraw-Hill Publication-ISBN 0070599521, 9780070599529
2	Sanjay Kumar and Pushp Lata	Communication Skills	Oxford University Press ISBN 9780199457069
3	MSBTE Textbook	Communication Skills	MSBTE
4	Robert King	Effective communication Skills	Audio Book -ISBN 978181667009742
5	N P Sudharshana , C Savitha	English for Technical Communication	Cambridge-ISBN 978-13-16640-08-1
6	C. Murlikrishna , Sunita Mishra	Communication Skills for Engineers	Pearson - ISBN 978-81-317-3384-4
7	Meenakshi Raman, Sangeeta Sharma	Technical Communication, Principles and Practice	Oxford University Press -ISBN 978-13-16640-08-1
8	K. K. Sinha	Business Communication	Galgotiya Publishing company, New Delhi - ISBN 9789356227064
9	Rajendra Pal, J.S. Korlahalli	Essentials of Business Communication	Sultan Chand & Sons, New Delhi ISBN 9788180547294

XIII . LEARNING WEBSITES & PORTALS

Sr.No	Link / Portal	Description
1	https://www.britishcouncil.in	conversations
2	https://www.coursera.org	certification courses
3	https://www.udemy.com	Communication skills training courses
4	http://www.makeuseof.com	Dale Carnegie's free resources

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PROFESSIONAL COMMUNICATION **Course Code : 312002**

Sr.No	Link / Portal	Description

Note :

- Teachers are requested to check the creative common license status/financial implications of the suggested online educational resources before use by the students

MSBTE Approval Dt. 01/10/2024 **Semester - 2, K Scheme**

Programme Name/s	**: Architecture Assistantship/ Automobile Engineering./ Artificial Intelligence/ Agricultural Engineering/ Artificial Intelligence and Machine Learning/ Automation and Robotics/ Architecture/ Cloud Computing and Big Data/ Civil Engineering/ Chemical Engineering/ Computer Technology/ Computer Engineering/ Civil & Rural Engineering/ Construction Technology/ Computer Science & Engineering/ Fashion & Clothing Technology/ Dress Designing & Garment Manufacturing/ Digital Electronics/ Data Sciences/ Electrical Engineering/ Electronics & Tele-communication Engg./ Electrical and Electronics Engineering/ Electrical Power System/ Electronics & Communication Engg./ Electronics Engineering/ Food Technology/ Computer Hardware & Maintenance/ Hotel Management & Catering Technology/ Instrumentation & Control/ Industrial Electronics/ Information Technology/ Computer Science & Information Technology/ Instrumentation/ Interior Design & Decoration/ Interior Design/ Civil & Environmental Engineering/ Mechanical Engineering/ Mechatronics/ Medical Laboratory Technology/ Medical Electronics/ Production Engineering/ Printing Technology/ Polymer Technology/ Surface Coating Technology/ Computer Science/ Textile Technology/ Electronics & Computer Engg./ Travel and Tourism/ Textile Manufactures**
Programme Code	**: AA/ AE/ AI/ AL/ AN/ AO/ AT/ BD/ CE/ CH/ CM/ CO/ CR/ CS/ CW/ DC/ DD/ DE/ DS/ EE/ EJ/ EK/ EP/ ET/ EX/ FC/ HA/ HM/ IC/ IE/ IF/ IH/ IS/ IX/ IZ/ LE/ ME/ MK/ ML/ MU/ PG/ PN/ PO/ SC/ SE/ TC/ TE/ TR/ TX**
Semester	**: Second**
Course Title	**: SOCIAL AND LIFE SKILLS**
Course Code	**: 312003**

I. RATIONALE

Rationale : Life skills can be defined as abilities that enable humans to deal effectively with the demands and challenges of life. Social skills are a subset of life skills that are needed for successful, healthy relationships to easily adapt when moving from one social situation to the next. They help regulate our emotions effectively and develop enduring, supportive relationships, we're happier and healthier. This is why developing life skills and eventually social skills is key not only to being successful in life, it's key for our health and well-being. Thus, Teaching of Social and life skills provide students with essentials of knowing , understanding attitudes, values, morals ,social skills and better equip them to handle stress and build their self efficacy, self esteem and self confidence.

Note : The course offers five different alternatives(modules) for achieving above outcomes . Students must complete any one module from the following given options.

a. MODULE-I : Unnat Maharashtra Abhiyan (UMA)
b. MODULE-II : National Service Scheme (NSS)
c. MODULE-III : Unniversal Human Values
d. MODULE-IV: Value Education (Unnati Foundation)
e. MODULE-V : Financial Literacy (NABARD)

The institute can choose to offer any one MODULE to the groups of the students by taking into consideration the resources required and resources available in the institute . Different group of students maybe offered different MODULE based on their choices .

II. INDUSTRY / EMPLOYER EXPECTED OUTCOME

SOCIAL AND LIFE SKILLS **Course Code : 312003**

Demonstrate critical social and life skills ethics, resilience, positive attitude , integrity and self-confidence at workplace and society at large.

III. COURSE LEVEL LEARNING OUTCOMES (COS)

Students will be able to achieve & demonstrate the following COs on completion of course based learning

- CO1 - Enhance the ability to be fully self-aware and take challenges by overcoming all fears and insecurities and grow fully.
- CO2 - Increase self-knowledge and awareness of emotional skills and emotional intelligence at the place of study/work.
- CO3 - Provide the opportunity to realizing self-potential through practical experience while working individually or in group.
- CO4 - Develop interpersonal skills and adopt good leadership behaviour for self-empowerment and empowerment of others.
- CO5 - Set appropriate life goals with managing stress and time effectively.

IV. TEACHING-LEARNING & ASSESSMENT SCHEME

Course Code	Course Title	Abbr	Course Category/s	Learning Scheme					Credits	Assessment Scheme											
				Actual Contact Hrs./Week			SLH	NLH		Paper Duration	Theory				Based on LL & TL				Based on SL		Total Marks
															Practical						
				CL	TL	LL					FA-TH	SA-TH	Total		FA-PR		SA-PR		SLA		
											Max	Max	Max	Min	Max	Min	Max	Min	Max	Min	
312003	SOCIAL AND LIFE SKILLS	SFS	VEC	-	-	-	2	2	1	-	-	-	-	-	-	-	-	-	50	20	50

Total IKS Hrs for Sem. : Hrs

Abbreviations: CL- ClassRoom Learning , TL- Tutorial Learning, LL-Laboratory Learning, SLH-Self Learning Hours, NLH-Notional Learning Hours, FA - Formative Assessment, SA -Summative assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment

Legends: @ Internal Assessment, # External Assessment, *# On Line Examination , @$ Internal Online Examination

Note :

1. FA-TH represents average of two class tests of 30 marks each conducted during the semester.
2. If candidate is not securing minimum passing marks in FA-PR of any course then the candidate shall be declared as "Detained" in that semester.
3. If candidate is not securing minimum passing marks in SLA of any course then the candidate shall be declared as fail and will have to repeat and resubmit SLA work.
4. Notional Learning hours for the semester are (CL+LL+TL+SL)hrs.* 15 Weeks
5. 1 credit is equivalent to 30 Notional hrs.
6. * Self learning hours shall not be reflected in the Time Table.
7. * Self learning includes micro project / assignment / other activities.

V. THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.

SOCIAL AND LIFE SKILLS **Course Code : 312003**

Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.
1	TLO 1.1 Explain developmental needs and connection of various stakeholders TLO 1.2 Enlist the local problems TLO 1.3 Design a methodology for fieldwork TLO 1.4 Select the attributes of engineering and social system for measurement, quantification, and documentation TLO 1.5 Measure & quantify the quantities / systems parameters TLO 1.6 Write a report using information collected tStudy the data collected from fieldwork and conclude the observations	**MODULE I : Activities Under Unnat Maharashtra Abhiyan (UMA)** 1.1 Introduction to Societal Needs and respective stakeholders : Regional societal issues that need engineering intervention 1.2 Multidisciplinary approach-linkages of academia, society and technology 1.3 Stakeholders' involvement 1.4 Introduction to Important secondary data sets available such as census, district economic surveys, cropping pattern, rainfall data, road network data etc 1.5 Problem Outline and stakeholders : Importance of activity and connection with Mapping of system components and stakeholders (engineering / societal) 1.6 Key attributes of measurement 1.7 Various instruments used for data collection - survey templates, simple measuring equipments 1.8 Format for measurement of identified attributes/ survey form and piloting of the same 1.9 Fieldwork : Measurement and quantifications of local systems such as agriculture produce, rainfall, Road network, production in local industries, Produce /service which moves from A to B 1.10 Analysis and Report writing Report writing containing- 1. Introduction of the topic 2. Data collected in various formats such as table, pie chart, bar graph etc 3. Observations of field visits and data collected.	i) Group discussion ii) Role play iii) Case study iv) Seminar and presentation **<u>Implementation guidelines suggested</u>** The course will be implemented in eight sessions and fieldwork: a) Session I - Introduction to development paradigm, fieldwork and case study as pedagogy b) Session II - VII - Society, stakeholders and value creation, measurements, rudimentary analysis and reporting c) Session VIII - Final closure session feedback and assessment d) Field work - 1. Pilot Visit - Pilot of survey instrument 2. Survey Visit 1 - Data gathering / Information Collection 3. Survey Visit 2 - Data gathering 4. Summary Visit - Closure after analysis **Methodology:** Considering the nature of the course designed, following points shall be considered while implementing the course. i) Regroup in the batches of 5-6 students for conducting the fieldwork from the bigger group. ii) Assign a few batches of the students for this course to all the faculty members. iii) A group of course teachers will visit local governance bodies such as Municipal Corporations, Village Panchayats, Zilla Parishads, Panchayat Samitis to assess the small technological / engineering needs in their area of work.

SOCIAL AND LIFE SKILLS **Course Code : 312003**

Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.
			iv) The group of course teachers will carry out initial field visits to evaluate the various possibilities of field visits / various scenarios where in students can conduct field work to measure / quantify the parameters / attributes.
2	TLO 2.1 Adopt a Village or Slum for providing needed services to the community TLO 2.2 Carry out Survey to identify the problems of village community TLO 2.3 Unsertake Special camping about developmental programs TLO 2.4 Establish the liaisons between government and other developmental agencies for the implementations of various development schemes of Government	**MODULE II : National Service Scheme (NSS)** 2.1 Contacting Village/Area Leaders 2.2 Primary socio economic survey of few villages in the vicinity of the institute. 2.3 Selection of the village for adoption - conduct of activities 2.4 Comprehensive Socio Economic Survey of the Village/Area 2.5 Identification of Problem(s) 2.6 Dissemination of information about the latest developments in agriculture, watershed management, wastelands development, non-conventional energy, low cost housing, sanitation, nutrition and personal hygiene, schemes for skill development, income generation, government schemes, legal aid, consumer protection and allied fields. 2.7 A liaison between government and other development agencies for the implementation of various development schemes in the selected village / slum.	(i) The teachers should visit the village / slum before adopting it for NSS activities. (ii) The selected area should be compact. (iii) The community people should be receptive to the ideas of improving their living standard. They should also be ready to coordinate and involve in the projects undertaken by the NSS for their upliftment. (iv) The areas where political conflicts are likely to arise should be avoided by the NSS units. (v) The area should be easily accessible to the NSS volunteers to undertake frequent visits to slums.
3	TLO 3.1 Demonstrate Love and Compassion (Prem and Karuna) in the society TLO 3.2 Follow the path of Truth (Satya) TLO 3.3 Practice Non-Violence (Ahimsa) TLO 3.4 Follow the Righteousness (Dharma) TLO 3.5 Attain Peace (Shanti) in Life TLO 3.6 Provide Service (Seva) to the needy person/community. TLO 3.7 Demonstrate Renunciation (Sacrifice) Tyaga TLO 3.8 Practice Gender Equality and Sensitivity	**MODULE-III : Universal Human Values** 3.1 Love and Compassion (Prem and Karuna): Introduction, Practicing Love and Compassion (Prem and Karuna) 3.2 Truth (Satya) : Introduction, Practicing Truth (Satya) 3.3 Non-Violence (Ahimsa) : Introduction, Practicing Non-Violence (Ahimsa) 3.4 Righteousness (Dharma) : Introduction, Practicing Righteousness (Dharma) 3.5 Peace (Shanti) : Introduction, Practicing Peace (Shanti) 3.6 Service (Seva) : Introduction, Practicing Service (Seva) 3.7 Renunciation (Sacrifice) Tyaga : Introduction, Practicing Renunciation (Sacrifice) Tyaga 3.8 Gender Equality and Sensitivity: Introduction, Practicing Gender Equality and Sensitivity	i) Lectures ii) Demonstration iii) Case Study iv) Role Play v) Observations vi) Portfolio Writing vii) Simulation viii) Motivational talks by Practitioners ix) Site/Industry Visit

SOCIAL AND LIFE SKILLS **Course Code : 312003**

Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.
4	TLO 4.1 Demonstrate Puntuality appropriately TLO 4.2 Practice Cleanliness, Hygiene and Orderliness for self and others TLO 4.3 Take Responsibility and Calculated Risks TLO 4.4 Demonstrate Gratitude and Appreciations TLO 4.5 Show Determination & Persistence about work TLO 4.6 Give Respect as per the social norms and practice TLO 4.7 Respect Team Spirit to the acceptable level TLO 4.8 Practice Caring & Sharing among fellow citizens/community TLO 4.9 Demonstrate Honesty TLO 4.10 Practice for Forgive and Forget	**MODULE-IV: Value Education (Unnati Foundation)** 4.1 Punctuality, Icebreaker and Simple Greeting, Understanding & Managing Emotions, Introducing Self, The power of a Positive Attitude, Talking about one's Family, Talking about one's Family, Making a Positive Impression, Give word list for a Word based 4.2 Cleanliness , Hygiene and Orderliness , Likes and Dislikes, Developing Confidence in Self and Others, Strengths and Weaknesses, Listening Skills , Greeting gestures, Gender Equality and Sensitivity 4.3 Responsibility, OCSEM- Visual Comprehension and Word Based Learning, Goal Setting – Make it happen, Follow, Like & Share Unnati Social Media - Facebook / Instagram/ Twitter Introducing Others, Time Management, Talking about the daily routine, Money Management 4.4 Gratitude and Appreciation , Asking Simple Questions & Asking for the price , Stress Management, Student Referral process ,Comprehending & Paraphrasing Information, A Plate of Rice and Dignity of Labour, Topics for Public Speaking, Placement Process , OCSEM-E-Newspaper, Critical Thinking to overcome challenges 4.5 Determination and Persistence, Guiding and Giving Directions, Language Etiquette & Mannerism, . Unnati Philosophy , b. Unnati Branding - Follow, Like & Share Unnati Social Media - Facebook / Instagram/ Twitter, Simple instructions to follow procedures, Assertiveness, Give topics for Debate, Describing a person/Objects, Refusal Skills, Word List for Word based Learning 4.6 Respect, Comparing , OCSEM - Public Speaking, Student referral process, Attending a phone call, Being a Good Team Player , Placement Process, At a Restaurant, Workplace ethics 4.7 Team Spirit, Inviting someone, OCSEM - Picture Reading & Word, a. Unnati Philosophy & b. Unnati Branding - Follow, Like & Share Unnati Social Media - Facebook / Instagram/ Twitter, Apologizing, Apologizing, Dealing effectively with Criticism, Introduce Importance of Self Learning and upskilling	i) Video Demonstrations ii) Flipped Classroom iii) Case Study iv) Role Play v) Collaborative learning vi) Cooperative Learning vii) Chalk-Board

SOCIAL AND LIFE SKILLS **Course Code : 312003**

Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.
		4.8 Caring and Sharing , Handling Customer queries, Flexibility & Adaptibility, Student referral process, Writing a Resume, OCSEM-Public Speaking, Placement Process, Meditation/ Affirmation & OCSEM-Debate, Introduce Certif-ID, how to create Certif-ID Project , 4.9 Honesty, Email etiquette & Official Email communication, Alcohol & Substance use & abuse, Describing a known place , Leadership Skills, Describing an event, OSCEM-Picture Reading & Visual Comprehension 4.10 Forgive and Forget, Facing and Interview, OSCEM-Public Speaking , Attending a telephonic/Video interview & Mock Interview , Affirmation , Pat-a-Back & Closure (Valediction , Unnati Branding, Student Testimonials), Meditation/ Affirmation & Sponsor connect (Speak to UNXT HO)	
5	TLO 5.1 Develop Literacy About Savings and Investments in the community TLO 5.2 Attain Literacy About Financial Planning TLO 5.3 Demonstrate skills about Financial Transactions TLO 5.4 Use Literacy skills About Income, expenditure and budgeting TLO 5.5 Use measures about Inflation in the market. TLO 5.6 Use Literacy/Knowledge About Loans TLO 5.7 Explain the Importance of Insurance TLO 5.8 Follow Dos and Donts about finances	**MODULE-V : Financial Literacy** 5.1 Introduction - Life Goals and financial goals 5.2 Savings and Investments - Three pillars of investments, Popular asset classes, Government schemes, Mutual Funds, Securities markets (Shares and bonds), Gold, Real Estate, Do's and Don'ts of investments 5.3 Retirement planning 5.4 Cashless transactions 5.5 Income, expenditure and budgeting – Concepts and Importance 5.6 Inflation- Concept, effect on financial planning of an individual 5.7 Loans – Types, Management of loans, Tax benefits 5.8 Insurance – Types, Advantages, selection 5.9 Dos and Donts in Financial planning and Transactions	i) Online/Offline Mode of Instructions ii) Video Demonstrations iii) Presentations iv) Case Study v) Chalk-Board vi) Collaborative learning

VI. LABORATORY LEARNING OUTCOME AND ALIGNED PRACTICAL / TUTORIAL EXPERIENCES : NOT APPLICABLE.

VII. SUGGESTED MICRO PROJECT / ASSIGNMENT/ ACTIVITIES FOR SPECIFIC LEARNING / SKILLS DEVELOPMENT (SELF LEARNING)

Suggestive list of activities during Regular as well as Special Camping (NSS Activities)

- Following list is only an illustrative list of the type of activities that can be undertaken. Under the programme it would be open to each NSS Unit to undertake one of these programmes or any other activity which may seem desirable to them according to local needs. The NSS Unit should aim at the integrated development of the area selected for its operation which could be a village or a slum. It has also to be ensured that at least a part of the

programme does involve manual work.

(a) Environment Enrichment and Conservation:
The activities under this sub-theme would inter-alia, include:
(i) plantation of trees, their preservation and upkeep
(ii) Construction & maintenance of village streets, drains
(iii) Cleaning of village ponds and wells;
(iv) Popularization and construction of Gobar Gas Plants, use of non-conventional energy;
(v) Disposal of garbage & composting;
(vi) Prevention of soil erosion and work for soil conservation,
(vii) Watershed management and wasteland development
(viii) Preservation and upkeep of monuments, and creation of consciousness about the preservation of cultural heritage among the community.

(b) Health, Family Welfare and Nutrition Programme:

(i) Programme of mass immunization;
(ii) Working with people in nutrition programmes with the help of Home Science and medical college students;
(iii) Provision of safe and clean drinking water;
(iv) Integrated child development programmes;
(v) Health education, AIDS Awareness and preliminary health care.
(vi) Population education and family welfare programme;
(vii) Lifestyle education centres and counselling centres.
© Programmes aimed at creating an awareness for improvement of the status of women: (i) programmes of educating people and making them aware of women's rights both constitutional and legal;
(ii) creating consciousness among women that they too contributed to economic and social well-being of the community;
(iii) creating awareness among women that there is no occupation or vocation which is not open to them provided they acquire the requisite skills; and
(iv) imparting training to women in sewing, embroidery, knitting and other skills wherever possible.

(d) Social Service Programmes:

(i) work in hospitals, for example, serving as ward visitors to cheer the patients, help the patients, arranging occupational or hobby activities for long term patients; guidance service for out-door-patients including guiding visitors about hospital's procedures, letter writing and reading for the patients admitted in the hospital; follow up of patients discharged from the hospital by making home visits and places of work, assistance in running dispensaries etc.
(ii) work with the organisations of child welfare;
(iii) work in institutions meant for physically and mentally handicapped;
(iv) organising blood donation, eye pledge programmes;
(v) work in Cheshire homes, orphanages, homes for the aged etc.;
(vi) work in welfare organisations of women;
(vii) prevention of slums through social education and community action;

(e) Production Oriented Programmes:

(i) working with people and explaining and teaching improved agricultural practices;
(ii) rodent control land pest control practices;
(iii) weed control;
(iv) soil-testing, soil health care and soil conservation;
(v) assistance in repair of agriculture machinery;
(vi) work for the promotion and strengthening of cooperative societies in villages;
(vii) assistance and guidance in poultry farming, animal husbandry, care of animal health etc.;
(viii) popularisation of small savings and assistance in procuring bank loans

(f) Relief & Rehabilitation work during Natural Calamities:

(i) assisting the authorities in distribution of rations, medicine, clothes etc.;
(ii) assisting the health authorities in inoculation and immunisation, supply of medicine etc.;
(iii) working with the local people in reconstruction of their huts, cleaning of wells, building roads etc.;
(iv) assisting and working with local authorities in relief and rescue operation;
(v) collection of clothes and other materials, and sending the same to the affected areas;

(g) Education and Recreations: Activities in this field could include:

(i) adult education (short-duration programmes);
(ii) pre-school education programmes;
(iii) programmes of continuing education of school drop outs, remedial coaching of students from weaker sections;
(iv) work in crèches;
(v) participatory cultural and recreation programmes for the community including the use of mass media for instruction and recreation, programmes of community singing, dancing etc.;
(vi) organisation of youth clubs, rural land indigenous sports in collaboration with Nehru Yuva Kendras;
(vii) programmes including discussions on eradications of social evils like communalism, castism, regionalism, untouchability, drug abuse etc.;
(viii) non- formal education for rural youth and
(ix) legal literacy, consumer awareness.

Note :

- Above is just a suggestive list of microprojects and assignments; faculty must prepare their own bank of microprojects, assignments, and activities in a similar way.
- The faculty must allocate judicial mix of tasks, considering the weaknesses and / strengths of the student in acquiring the desired skills.
- If a microproject is assigned, it is expected to be completed as a group activity.
- SLA marks shall be awarded as per the continuous assessment record.
- For courses with no SLA component the list of suggestive microprojects / assignments/ activities are optional, faculty may encourage students to perform these tasks for enhanced learning experiences.
- If the course does not have associated SLA component, above suggestive listings is applicable to Tutorials and maybe considered for FA-PR evaluations.

VIII. LABORATORY EQUIPMENT / INSTRUMENTS / TOOLS / SOFTWARE REQUIRED

Sr.No	Equipment Name with Broad Specifications	Relevant LLO Number
1	Simple engineering measurement devices GPS data collection tools GIS open source softwares- Google Earth and QGIS MS office suite	All

IX. SUGGESTED WEIGHTAGE TO LEARNING EFFORTS & ASSESSMENT PURPOSE (Specification Table) : NOT APPLICABLE

X. ASSESSMENT METHODOLOGIES/TOOLS

Formative assessment (Assessment for Learning)

- Formative assessment (Assessment for Learning) Report and presentation of fieldwork activities, Self-Learning (Assignment)

Summative Assessment (Assessment of Learning)

XI. SUGGESTED COS - POS MATRIX FORM

SOCIAL AND LIFE SKILLS **Course Code : 312003**

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)		
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO-1	PSO-2	PSO-3
CO1					03	03	03			
CO2					02	02	03			
CO3	01	01	01		03	03	03			
CO4		01	01	01	03	03	03			
CO5		02		01	03	03	03			

Legends :- High:03, Medium:02,Low:01, No Mapping: -
*PSOs are to be formulated at institute level

XII. SUGGESTED LEARNING MATERIALS / BOOKS

Sr.No	Author	Title	Publisher with ISBN Number
1	IRAP, Hyderabad, CTARA, IIT Bombay and UNICEF, Mumbai	Compendium of Training Materials for the Capacity Building of the Faculty and Students of Engineering Colleges on 'IMPROVING THE PERFORMANCE OF RURAL WATER SUPPLY AND SANITATION SECTOR IN MAHARASHTRA' Districts Economic survey reports	UNICEF
2	Central Public Health and Environmental Engineering Organisation	Manual on Water Supply and Treatment	Ministry of Urban Development, New Delhi
3	Specifications And Standards Committee	Indian Standards (IS) Codes and Indian Roads Congress (IRC) Codes	Bureau of Indian Standards and The Indian Road Congress
4	Prepared by each district administration	Districts Economic survey reports	Govt. of Maharashtra
5	Local college students, UMA staffs	Sample Case Studies on UMA website	IITB-UMA team
6	RBI	https://www.rbi.org.in/FinancialEducation/content/GUIDE310113_F.pdf	RBI
7	RBI	https://www.rbi.org.in/FinancialEducation/content/Financing%20needs%20of%20Micro%20and%20small%20Enterprises%20-%20A%20guide.pdf	RBI
8	RBI	https://www.rbi.org.in/FinancialEducation/content/I%20Can%20Do_RBI.pdf	RBI

XIII . LEARNING WEBSITES & PORTALS

Sr.No	Link / Portal	Description

SOCIAL AND LIFE SKILLS **Course Code : 312003**

Sr.No	Link / Portal	Description
1	https://gr.maharashtra.gov.in/Site/Upload/Government%20Resolutions/English/201601131501523808.pdf	Government Resolution of Government of Maharashtra regarding Unnat Maharashtra Abhiyan
2	https://gr.maharashtra.gov.in/Site/Upload/Government%20Resolutions/English/201606151454073708.pdf	Government Resolution of Government of Maharashtra regarding Unnat Maharashtra Abhiyan Guidelines
3	https://censusindia.gov.in/census.website/	A Website of Census of India
4	https://gsda.maharashtra.gov.in/english/	A Website of Groundwater Survey and Development Agency, GoM
5	https://mrsac.gov.in/MRSAC/map/map	A Website where district-wise maps showcasing different attributes developed by Maharashtra Remote Sensing Applications Centre.
6	https://ejalshakti.gov.in/jjmreport/JJMIndia.aspx	A Website of Jal Jivan Mission, Government of India
7	https://cpcb.nic.in/	A Website of Central Pollution Control Board, Government of India
8	http://www.mahapwd.com/#	A Website of Public Works Department, GoM
9	http://tutorial.communitygis.net/	A Website for GIS data sets developed by Unnat Maharashtra Abhiyan
10	https://youtu.be/G71maumVZ1A?si=TzDTxKUpLYaRos7U	A video record of lecture by Prof. Milind Sohoni, IIT Bombay, on Engineering, Development and Society
11	https://youtu.be/TUcPNwtdKyE?si=wnSWrhGc9dJTC-ac	A keynote talk by Prof. Milind Sohoni, IIT Bombay, on Interdisciplinary Engineering: The Road Ahead
12	https://youtu.be/mKJj6j_1gWg?si=ajE8s4lfB2OM63Ng	A TED talk by Prof. Milind Sohoni, IIT Bombay, on Vernacular Science: The Science of Delivery
13	https://www.ugc.gov.in/pdfnews/4371304_LifeSKill_JeevanKaushal_2023.pdf	UHV: UGC Course on life skils. Unit 4 i.e. Course 4 is to be referred
14	https://nss.gov.in/	NSS : Know about the NSS Scheme and details
15	https://www.rbi.org.in/FinancialEducation/FinancialEnterpreneure.aspx	Reference for Module V
16	https://www.rbi.org.in/FinancialEducation/content/I%20Can%20Do_RBI.pdf	Reference for Module V
17	https://www.rbi.org.in/FinancialEducation/content/Financing%20needs%20of%20Micro%20and%20small%20Enterprises%20-%20A%20guide.pdf	Reference for Module V
18	https://www.rbi.org.in/FinancialEducation/content/GUIDE310113_F.pdf	Reference for Module V

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SOCIAL AND LIFE SKILLS **Course Code : 312003**

Sr.No	Link / Portal	Description

Note :

- Teachers are requested to check the creative common license status/financial implications of the suggested online educational resources before use by the students

MSBTE Approval Dt. 01/10/2024 **Semester - 2, K Scheme**

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BASIC DESIGN **Course Code : 322010**

Programme Name/s	**: Architecture Assistantship/ Architecture/ Interior Design & Decoration/ Interior Design/**
Programme Code	**: AA/ AT/ IX/ IZ**
Semester	**: Second**
Course Title	**: BASIC DESIGN**
Course Code	**: 322010**

I. RATIONALE

The subject is the primary core of the total course and forms the spine of the Architectural /interior design profession that intends to equip the students with thorough knowledge about basic concepts of Architectural/interior design. The students shall also learn planning processes and develop intellectual and creative skills required for Architectural/Interior Design.

II. INDUSTRY / EMPLOYER EXPECTED OUTCOME

Students will be able to understand the basics of Design (Elements, Principles, Ergonometrics & Colour Theory) and apply this knowledge in Architectural / interior design to achieve different usable spaces.

III. COURSE LEVEL LEARNING OUTCOMES (COS)

Students will be able to achieve & demonstrate the following COs on completion of course based learning

- CO1 - Use of the principles of Elements of Architecture /interior design as a basic design vocabulary.
- CO2 - Use of the Principles of Architecture /interior design as a basic design vocabulary.
- CO3 - Use of the principles of the Colour Theory and its components to achieve various compositions.
- CO4 - Apply the principles of Ergonometrics to achieve design efficiency in Architecture / Interior Design.
- CO5 - Apply all of the above learnings, to achieve simple individual activity-based rooms for Architecture / Interior Design.

IV. TEACHING-LEARNING & ASSESSMENT SCHEME

Course Code	Course Title	Abbr	Course Category/s	Learning Scheme					Credits	Assessment Scheme											
				Actual Contact Hrs./Week			SLH	NLH		Paper Duration	Theory				Based on LL & TL				Based on SL		Total Marks
															Practical						
				CL	TL	LL					FA-TH	SA-TH	Total		FA-PR		SA-PR		SLA		
											Max	Max	Max	Min	Max	Min	Max	Min	Max	Min	
322010	BASIC DESIGN	BAD	DSC	2	-	6	2	10	5	-	-	-	-	-	50	20	50@	20	50	20	150

Total IKS Hrs for Sem. : 6 Hrs

Abbreviations: CL- ClassRoom Learning , TL- Tutorial Learning, LL-Laboratory Learning, SLH-Self Learning Hours, NLH-Notional Learning Hours, FA - Formative Assessment, SA -Summative assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment

Legends: @ Internal Assessment, # External Assessment, *# On Line Examination , @$ Internal Online Examination

Note :

1. FA-TH represents average of two class tests of 30 marks each conducted during the semester.
2. If candidate is not securing minimum passing marks in FA-PR of any course then the candidate shall be declared as "Detained" in that semester.
3. If candidate is not securing minimum passing marks in SLA of any course then the candidate shall be declared as fail and will have to repeat and resubmit SLA work.
4. Notional Learning hours for the semester are (CL+LL+TL+SL)hrs.* 15 Weeks
5. 1 credit is equivalent to 30 Notional hrs.
6. * Self learning hours shall not be reflected in the Time Table.
7. * Self learning includes micro project / assignment / other activities.

MSBTE Approval Dt. 01/10/2024 **Semester - 2, K Scheme**

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V. THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.
1	TLO 1.1 Explain - Elements of Architectural/Interior Design. TLO 1.2 Explain - Point, Line, Plane, volume. TLO 1.3 Explain- Texture, Colour, Value and Space. TLO 1.4 Application and Interpretation of Elements Of Architectural/ Interior design. TLO 1.5 Explain - Elements of Architectural Design with the context of IKS & its importance.	**Unit - I Elements of Architectural/Interior design** 1.1 Explain the term - Elements of design. 1.2 Study of different Elements of design. 1.3 Application of Elements of Design. 1.4 Study of Elements of Design in the Indian context (IKS).	Chalk-Board Presentations IKS examples
2	TLO 2.1 Explain - Principles of Architectural/Interior Design. TLO 2.2 Explain - Balance, Contrast, Emphasis, Movement. TLO 2.3 Explain - Rhythm, Hierarchy, White Space, Unity. TLO 2.4 Application and Interpretation of Principles Of Architectural/ Interior design. TLO 2.5 Study the Principles of Architectural / Interior Design in context to IKS.	**Unit - II Principles Of Architectural / Interior Design** 2.1 Explain the term - Principles of design. 2.2 Study of different Principles of design. 2.3 Application of Principles of Design. 2.4 Study of Principles of Design - IKS context.	Chalk-Board Presentations IKS examples
3	TLO 3.1 Explain Colour theory. TLO 3.2 Explain Colour Wheel. TLO 3.3 Explain Warm & Cool colours. TLO 3.4 Explain Colour scheme.	**Unit - III Colour Theory** 3.1 Study different components of colour theory. 3.2 Understand the colour wheel with Primary , Secondary and Tertiary Colour Schemes. 3.3 Apply different colour schemes in the field of Architectural / Interior Design.	Demonstration Presentations Hands-on
4	TLO 4.1 Explain Ergonometric and its need in Architectural / Interior Design. TLO 4.2 Understand different human activities to related spaces. TLO 4.3 Study & Apply Ergonometric for living room spaces. TLO 4.4 Study & Apply Ergonometric for Bed room space. TLO 4.5 Study & Apply Ergonometric for Kitchen spaces. TLO 4.6 Study & Apply Ergonometric for Toilets. TLO 4.7 Apply Ergonometric in Interior Design. TLO 4.8 Apply Ergonometric in different Public Spaces. TLO 4.9 Study & Application of Ergonometric in the Indian context and usage type (IKS context).	**Unit - IV Ergonometrics** 4.1 Study human body and its movements. 4.2 Importance, Need and application of Ergonometric in the field of Architecture / Interior Design. 4.3 Study different activities and application of Ergonometric for various residential spaces. 4.4 Study Ergonometric applicable for different commercial and Institutional spaces. 4.5 Study of IKS examples of Ergonometric (IKS system).	Demonstration Presentations Case Studies (with & without IKS content)

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Sr.No	Theory Learning Outcomes (TLO's)aligned to CO's.	Learning content mapped with Theory Learning Outcomes (TLO's) and CO's.	Suggested Learning Pedagogies.
5	TLO 5.1 Explain design of space. TLO 5.2 Design living room space. TLO 5.3 Design kitchen/dining space. TLO 5.4 Design Bed Room space TLO 5.5 Design Toilet. TLO 5.6 Design Special space.	**Unit - V Design of Single Use Space** 5.1 Explain the Design Process for different spaces. 5.2 Living room design basics with furniture. 5.3 Kitchen/Dining room design basics with furniture. 5.4 Bed room design basics with furniture. 5.5 Toilet design basics with Interior.	Case Study Presentations Site/Industry Visit

VI. LABORATORY LEARNING OUTCOME AND ALIGNED PRACTICAL / TUTORIAL EXPERIENCES.

Practical / Tutorial / Laboratory Learning Outcome (LLO)	Sr No	Laboratory Experiment / Practical Titles / Tutorial Titles	Number of hrs.	Relevant COs
LLO 1.1 Draw different types of patterns	1	*Draw different types of patterns of point and line using various techniques (free hand, compositions etc).	2	CO1
LLO 2.1 Prepare sketches	2	*Prepare sketches encorporating volumetric and planar elements - minimum 2 each.	2	CO1
LLO 3.1 Prepare different compositions	3	*Prepare different compositions of texture & colour with the use of different media.	2	CO1
LLO 4.1 Prepare sketches	4	Prepare sketches encorporating & defining the value (as meant in colour) & space by use of different media.	2	CO1
LLO 5.1 Create a single composition	5	*Create a single composition by encorporating all the elements of design using any media.	2	CO1
LLO 6.1 Prepare sketches & models	6	*Prepare Sketches / models to demonstrate the balance & contrast using different media (Balance 1 No & Contrast 1 No minimum).	2	CO2
LLO 7.1 Prepare sketches & models	7	Prepare Sketches / models to demonstrate the Emphasis & Movement using different media (Emphasis1 No & Movement 1 No minimum).	2	CO2
LLO 8.1 Prepare sketches & models	8	Prepare Sketches / models to demonstrate the Rhythm & Hierarchy using different media (Rhythm 1 No & Heirarchy 1 No minimum).	2	CO2
LLO 9.1 Prepare sketches & models	9	Prepare Sketches / models to demonstrate the White Space & Unity using different media (White Space 1 No & Unity 1 No minimum).	2	CO2
LLO 10.1 Prepare a composition	10	*Prepare a composition defining the Principles of Design using combination of any 4 principles of choice (Composition in form of sheet or model - 1 No minimum).	2	CO2
LLO 11.1 Prepare a colour wheel sheet	11	*Prepare a Colour Wheel to understand the theory of colours using different media.	5	CO3
LLO 12.1 Create compositions	12	Create a composition using colour scheme encorpoarting the concept of elements & principles of design (Sheet work Min 2).	5	CO3

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Practical / Tutorial / Laboratory Learning Outcome (LLO)	Sr No	Laboratory Experiment / Practical Titles / Tutorial Titles	Number of hrs.	Relevant COs
LLO 13.1 Draw the Vitruvian man	13	Draw the Anthropometric figure of Human body (Vitruvius man), male, female, child and related body movements	6	CO4
LLO 14.1 draw the anthropometric sketches	14	*Draw the anthropometric sketches / drawings explaining the different human activities in living room.	6	CO4
LLO 15.1 draw the anthropometric sketches	15	Draw the anthropometric sketches / drawings explianing the different human activities in kitchen / dining	6	CO4
LLO 16.1 Draw the anthropometric sketches	16	*Draw the anthropometric sketches / drawings explianing the different human activities in bedroom / toilet.	6	CO4
LLO 17.1 Measurement & Drawing plan	17	*Measure and draw plan, section, elevation of a single use structure (small scale space like watchman cabin, milk booth, store room etc).	6	CO5
LLO 18.1 Measurement & Drawing plan	18	*Measure and draw plan, section, elevation of existing living room with furniture.	12	CO5
LLO 19.1 Measurement & Drawing plan	19	Measure and draw plan, section, elevation of existing kitchen / dining with furniture.	12	CO5
LLO 20.1 Measurement & Drawing plan	20	*Measure and draw plan, section, elevation of existing bedroom and toilet.	12	CO5

Note : Out of above suggestive LLOs -

- '*' Marked Practicals (LLOs) Are mandatory.
- Minimum 80% of above list of lab experiment are to be performed.
- Judicial mix of LLOs are to be performed to achieve desired outcomes.

VII. SUGGESTED MICRO PROJECT / ASSIGNMENT/ ACTIVITIES FOR SPECIFIC LEARNING / SKILLS DEVELOPMENT (SELF LEARNING)

Assignment

- Collect & Study different architectural plans of residential units (plans) & prepare a report
- Study & Prepare power point presentation on elements of Design
- Study & Prepare power point presentation on Principles of Design

Note :

- Above is just a suggestive list of microprojects and assignments; faculty must prepare their own bank of microprojects, assignments, and activities in a similar way.
- The faculty must allocate judicial mix of tasks, considering the weaknesses and / strengths of the student in acquiring the desired skills.
- If a microproject is assigned, it is expected to be completed as a group activity.
- SLA marks shall be awarded as per the continuous assessment record.
- For courses with no SLA component the list of suggestive microprojects / assignments/ activities are optional, faculty may encourage students to perform these tasks for enhanced learning experiences.
- If the course does not have associated SLA component, above suggestive listings is applicable to Tutorials and maybe considered for FA-PR evaluations.

VIII. LABORATORY EQUIPMENT / INSTRUMENTS / TOOLS / SOFTWARE REQUIRED

Sr.No	Equipment Name with Broad Specifications	Relevant LLO Number

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Sr.No	Equipment Name with Broad Specifications	Relevant LLO Number
1	Furniture - Drafting tables and stools, LCD Projector and Screen. Drafting tools & Computers. Paper, Pencil, T square, Setsquare and Scale. Colours, Brush, Cutters, Scissors, Glue.	All

IX. SUGGESTED WEIGHTAGE TO LEARNING EFFORTS & ASSESSMENT PURPOSE (Specification Table) : NOT APPLICABLE

X. ASSESSMENT METHODOLOGIES/TOOLS

Formative assessment (Assessment for Learning)

- Rubrics for COs, Assignments & Presentations, Self learning

Summative Assessment (Assessment of Learning)

- End term Viva Voce, Lab performance

XI. SUGGESTED COS - POS MATRIX FORM

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes* (PSOs)		
	PO-1 Basic and Discipline Specific Knowledge	PO-2 Problem Analysis	PO-3 Design/ Development of Solutions	PO-4 Engineering Tools	PO-5 Engineering Practices for Society, Sustainability and Environment	PO-6 Project Management	PO-7 Life Long Learning	PSO-1	PSO-2	PSO-3
CO1	3	1	1	1	1	1	3			
CO2	3	1	1	1	1	1	3			
CO3	3	2	2	1	1	1	3			
CO4	3	2	3	1	2	1	3			
CO5	2	3	3	1	2	1	3			

Legends :- High:03, Medium:02,Low:01, No Mapping: -
*PSOs are to be formulated at institute level

XII. SUGGESTED LEARNING MATERIALS / BOOKS

Sr.No	Author	Title	Publisher with ISBN Number
1	Anthony Antoniadis	Poetics in Architecture : Theory of Design	Wiley
2	Donald Watson, Michael J Crosbie, John HancockCallendar	Time Saver Standards for Architectural Design Data	McGraw Hill
3	Joseph De Chaira, Julius Panero, Martin Zainik	Time saver Standards for Interior Design and Space Planning	McGraw Hill
4	Francis D K Ching	Architecture : Form Space and Order	Wiley
5	Francis D K Ching	Interior Spcaes	Wiley
6	Yatin Pandya	Elements of Space Making	Vastu Shilpa Foundation
7	Pradnya Chauhan	Learning Basic Design	Abhivikas Niketan 978-81-955393-0-7

XIII . LEARNING WEBSITES & PORTALS

Sr.No	Link / Portal	Description
1	https://www.youtube.com/watch?v=B4Zv500TEPA	principles and elements of design
2	https://www.youtube.com/watch?v=51rnmBLtKvs	principles and elements of Interior design
3	https://www.youtube.com/watch?v=dU_zyDYZiew	Anthropometry and ergonometric
4	https://www.youtube.com/watch?v=YeI6Wqn4I78	Colour Theory Basics

Note :

- Teachers are requested to check the creative common license status/financial implications of the suggested online educational resources before use by the students