

**WBSCTVE&SD Curriculum for full time Diploma in Architecture**

**FIRST YEAR CURRICULUM STRUCTURE  
(ARCHITECTURE)**

**SEMESTER -II**

**Curriculum for full time Diploma in Architecture**

**(With effect from 2020)**

<b>SEMESTER -II</b>									
Sl. No	Category of course	Code No	Course Title				Total Contact hrs/week	Credits	Marks
				L	T	P			
1	Basic Science	BS102	Mathematics-II	3	1	0	4	4	100
2	Engineering Science	ES102	Architectural Drawing-II(Lab)	0	0	3	3	2	100
3	Engineering Science	ES104	Architectural Measured Drawing(Lab)	0	0	3	3	2	100
4	Engineering Science	ES106	Engineering Mechanics	2	1	0	3	2	100
5	Engineering Science	ES108	Introduction to IT System (Lab)	0	0	2	2	1	100
6	Engineering Science	ES110	Architectural Basic Design(Lab)	0	0	3	3	2	100
7	Engineering Science	ES112	Architectural Delineation(Lab)	0	0	5	5	3	100
8	Engineering Science	ES114	Architectural Drawing-II (THEORY)	2	0	0	2	1	100
9	Engineering Science	ES116	Architectural Basic Design (THEORY)	2	0	0	2	1	100
10	Audit Course	AU302	Indian Constitution	2	0	0	2	0	100
Total							29	18	1000

## Syllabus of Mathematics-II

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Course Title:	Engineering Mathematics-II
Course Code:	BS102/M-II
Number of Credits:	4(L: 3+T: 1) P: 0
Pre-Requisites:	Knowledge of the basic Co-ordinate Geometry, Statistics & Differential calculus
Total Contact Hours:	60 hrs.

**Aim:** Mathematics is the backbone of engineering students. The curriculum of mathematics has undergone changes from time to time in accordance with the need of engineering branches. The syllabus has been designed in keeping view the emerging needs of all categories of students. Great emphasis has been given on the application of various contents. This course will develop analytical abilities to make exact calculations and provide a continuing educational base for the students.

**Course Objectives:** After the completion of the course, the students will be able to

- i) apply the knowledge of Cramer's rule and matrix inversion for finding the solutions of Linear Simultaneous Equations.
- ii) apply the equations of a straight line, circle, conic section in solving the practical problems.
- iii) apply the various techniques of evaluating integration and various methods of finding complete primitive of ordinary differential equations of 1<sup>st</sup> order and second order for solving engineering problems.
- iv) use the concept of partial differentiation in solving physical problems.
- v) analyze the Statistics and Probability in a real situation.

### Unit-1

#### Determinants & Matrices

**10 Hours**

##### 1.1 Determinant:

**4**

- 1.1.1 Definition and expansion of determinants of order 2 & 3. Minors and cofactors
- 1.1.2 Elementary properties of Determinants (statements only) & simple problems
- 1.1.3 Chios Method for 4<sup>th</sup> order determinant
- 1.1.4 Solution of linear simultaneous equations (up to 3 unknowns) by Cramer's Rule.

##### 1.2 Matrix:

**6**

- 1.2.1 Definition of Matrix and its order.
- 1.2.2 Different types of Matrices.(rectangular, square, row, column, upper triangular, lower triangular, diagonal, scalar, identity, null)
- 1.2.3 Equality of two matrices
- 1.2.4 Addition, subtraction, multiplication of a matrix by a scalar and multiplication of two matrices
- 1.2.5 Transpose of a matrix, symmetric & skew symmetric matrices, simple problems
- 1.2.6 Singular & non-singular matrices, adjoint and inverse of a matrix of order 3

# Syllabus of Mathematics-II

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## Unit-2

**Co-ordinate Geometry (only 2-dimension) 13 Hours**

**2.1 Coordinate System 3**

- 2.1.1 Cartesian & Polar Coordinate system & their relations.
- 2.1.2 Distance between two points, internal & external division of a line segment & simple problems.
- 2.1.3 Area of a triangle and condition of collinearity.

**2.2 Straight Line 4**

- 2.2.1 Gradient (slope) of a straight line
- 2.2.2 Equations of straight line in various standard forms (no proof) (slope-intercept form, slope-point form, intercept form, two point form) & simple problems
- 2.2.3 Angle between two straight lines- conditions of parallelism and perpendicularity & simple problems
- 2.2.4 Perpendicular distance from a given point to a line, perpendicular distance between two parallel lines

**2.3 Circle: 2**

- 2.3.1 Equation of a circle - centre-radius form, diameter form, simple problems
- 2.3.2 General equation of a circle and its centre and radius. Simple problems

**2.4 Conic Section: 4**

- 2.4.1 Definition of conic section, vertex, axis, eccentricity, focus, directrix, latus rectum & problem
- 2.4.2 Standard equations of parabola and ellipse, simple problems

## Unit-3

**Integral Calculus 15 Hours**

**3.1 Indefinite integral 8**

- 3.1.1 Definition of Integration as inverse process of differentiation.
- 3.1.2 Rules for integrations (sum, difference, scalar multiple)
- 3.1.3 Integration of standard functions
- 3.1.4 Integration by substitution
- 3.1.5 Integration by parts
- 3.1.6 Integration by partial fraction

**3.2 Definite Integral 7**

- 3.2.1 Definition of definite integral & simple problems
- 3.2.2 Properties of definite integral with simple problems.
- 3.2. Application of definite integral -i) area of bounded region ii) Volume and surface area of solid generated by revolving an area about x and y-axis

# Syllabus of Mathematics-II

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## Unit-4

### Ordinary Differential Equation 10 Hours

- 4.1 Definition of ordinary differential equation, order & degree. 1
- 4.2 Solution of Differential equation of First order and first degree 5**
- 4.2.1 Separation of Variables
- 4.2.2 Homogeneous type
- 4.2.3 Exact type
- 4.2.4 Linear type
- 4.3 Solution of Linear Second order Differential equations with constant coefficients 4**
- 4.3.1 Complementary Functions (C.F)
- 4.3.2 Particular Integral for polynomial function,  $e^{ax}$ ,  $\sin ax$  and  $\cos ax$ , [ $F(-a^2) \neq 0$ ],  $e^{ax}V$  where V is a polynomial function. Simple problem.

## Unit-5

### Partial Differentiation 3 Hours

- 5.1 Definition & meaning of partial derivative.
- 5.2 Evaluation of partial derivatives.
- 5.3 Definition & examples of homogeneous functions.
- 5.3 Euler's theorem (1st order) on Homogeneous functions for 2 variables (without proof). Problems.

## Unit-6

### Statistics & Probability 9 Hours

- 6.1 Statistics 5**
- 6.1.1 Definition & examples of frequency distribution.
- 6.1.2 Measure of Central Tendency (mean, median, mode) for ungrouped and grouped frequency distribution.
- 6.1.3 Measures of dispersion-Standard deviation, Simple problems
- 6.2 Probability 4**
- 6.2.1 Definition of random experiment, sample space, event, occurrence of events & types of events (eg. Impossible, Mutually exclusive, Exhaustive, Equally likely)
- 6.2.2 Classical definition of probability, simple problems

## Syllabus of Mathematics-II

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### Examination Scheme:

#### A. Semester Examination pattern of 60 marks:

1. Objective questions- 20 marks (1 mark for each question), (At least 5 questions from each **Group**)
2. Subjective questions- 40 marks (At least one question of 10 marks from each **Group**)
  - **Group- A** contains Unit-1 & Unit-2 (At least 20 marks); **Group-B** contains Unit-3 (At least 20 marks); **Group-C** contains Unit-4 (At least 20 marks) , **Group-D** contains Unit-5 & Unit-6 (At least 20 marks)

**N.B.-** Student will answer objective type questions of 20 marks and for subjective questions of 40 marks, taking one question from each **group** of the above four **groups**.

#### B. For the internal Assessment 40 marks:

1. Class Test Examination/Internal Examination: 20 marks; choose best two out of three Class Test Examinations/ Internal Examinations
2. Class Attendance: 10 marks
3. Viva/ Quiz/Presentation/Assignment/Project/Report etc.: 10 marks

## Syllabus of Mathematics-II

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### Text Books & Reference –

1. Higher Engineering Mathematics, B. S. Grewal, Khanna Publishers, New Delhi
2. Engineering Mathematics, Konch & Dey, Bhagabati Publication
3. Numerical Analysis, N. Islam, Academic Press
5. Introduction to Integral Calculus, rohde, Jain, Poddar, Ghosh, Wiley
6. Higher Algebra: Abstract And Linear, SK Mapa, Sarat Book House
7. Analytic Geometry Two & Three Dimensional and Vector Analysis, R. M. Khan, New Central Book Agency
8. Probability & Statistics for Engineers, Richard A. Jonson, Prentice Hall of India
9. An Introduction to Differential Equations, Ghosh, Maity, New Central Books Agency
10. Higher Engineering Mathematics, B. S. Grewal, Khanna Publishers, New Delhi
11. Engineering Mathematics, A. Sarkar, Naba Publication
12. Engineering Mathematics, Konch & Dey, Bhagabati Publication
13. Engineering Mathematics, Babu Ram, Pearson
14. Diploma Engineering Mathematics, B. K. Paul, U.N.Dhar & Sons
15. Engineering Mathematics, V. Sundaram, R. Balasubramanian, K.A. Lakshminarayanan, Vikas Publishing House.
16. Web portal: <https://www.ndl.gov.in/homestudy/science>  
<https://ncertbooks.ncert.gov.in/login>  
<https://epathshala.nic.in/>  
<https://webscte.co.in/>  
<https://en.wikipedia.org/wiki/>  
<https://openlibrary.org/>  
<https://www.youtube.com/>  
<http://content.inflibnet.ac.in/>  
<https://doabooks.org/>  
<https://www.oapen.org/home>  
<http://www.gutenberg.org/>
17. Apps in Google Play Store: National Digital Library  
e-Granthalaya  
NSDC eBook Reader: Kaushal ePustakalaya  
ePathshala  
IGNOU e-content

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Course Code	:	ES102
Course Title	:	Architectural Drawing-II(Lab)
Number of Classes	:	3 (L:0,T:0,P:3)
Number of Credit	:	2
Prerequisites	:	NIL
Course offered in	:	Second Semester
Course duration	:	17 weeks
Course Category	:	ES
Full Marks	:	100
Marks Distribution	<p>Continuous internal assessment of 60 marks is to be carried out by the teacher throughout the semester.</p> <p><b>Distribution of marks:-Drawing Sheets &amp; Class performance-40, Viva-voce-10, Attendance-10.</b></p> <p>External assessment of 40 marks shall be held at the end of the second semester. <b>Distribution of marks:- Assignments on the day of exam(by External)-10,Drawing sheet-20, viva-voce-10</b></p>	
<b>CONTACT PERIODS:45                      INTERNAL ASSESSMENT:6                      TOTAL PERIODS:51</b>		

**Course Objectives:** On successful completion of the course, students will achieve basic drawing skills for development of solid geometry along with section and true shapes of solids, conversion of orthographic views and getting started with computer aided drafting.

<b>PRACTICAL COURSE CONTENT</b>				
Unit No	Topic	Contents	Contact Hours	Sheet size & No of Sheets
<b>Unit 1</b>	Section of Solids	Three problems on different solids, one problem, and section plane inclined to H.P. and perpendicular to V.P. one problem, section plane inclined to V.P. and perpendicular to H.P. one problem, section plane perpendicular to one reference plane and parallel to another plane and true shape of the section.	P:12	A2-one
<b>Unit 2</b>	Development of surfaces	Three problems on development of surfaces of different objects.	P:12	A2-one
<b>Unit 3</b>	Conversion of pictorial views into orthographic views.	Two objects by First Angle projection method with section.	P:9	A2-one
<b>Unit 4</b>	Introduction to Auto CAD	Draw floor plans (any two rooms- e.g. bed room, kitchen, living room etc.) of a residential building with the help of Draw and Modify commands.	P:12	A2-one

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### First Year Curriculum Structure (2<sup>nd</sup> semester Architecture, w.e.f.2020)

**Course Outcome:**

- Students will develop basic graphic skills so as to enable them to use these skills in the preparation, interpretation and understanding of architectural design drawings.



- Students will develop an unambiguous and clear visualization with sound pictorial intelligence to interpret architectural drawings.
- Students will develop the basic skill to draw building drawing in computer by using Auto CAD

<b>Name of Text Books</b>			
Sl. No	Name of Author	Name of Book	Name of Publisher
1	N.D. Bhatt	Engineering Drawing	Charotkar Publishing House
2	K. Venugopal V.Prabhu Raja	Engineering Drawing & AutoCAD	New Age Publication
3	F.D.K Ching	Architectural Graphics	Wiley Publishers
4	F.D.K Ching	Design Drawing	Wiley Publishers
5	R.K. Dhawan	Engineering Drawing	S.Chand & Co
6	B. Agarwal C.M.Agarwal	Engineering Drawing	Tata McGraw Hill Education Pvt. Ltd
7	Pal & Bhattacharya	Computer aided Engineering Drawing	Viva Books
8	Dr S.N. Lal	Engineering Drawing with an introduction to Auto CAD	CENGAGE Learning India pvt. Ltd.

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Course Code	:	ES 104
Course Title	:	Architectural Measured Drawing. (Lab)
Number of classes	:	3 (L:0,T:0,P:3)
Number of Credit	:	2
Prerequisites	:	NIL
Course offered in	:	Second Semester
Course duration	:	17 weeks
Course Category	:	ES
Full Marks	:	100
Marks Distribution	<p>Continuous internal assessment of 60 marks is to be carried out by the teacher throughout the semester.</p> <p><b>Distribution of marks:-Drawing Sheets&amp; Class performance-40, Viva- voce-10, Attendance-10.</b></p> <p>External assessment of 40 marks shall be held at the end of the second semester. <b>Distribution of marks:- Assignments on the day of exam(by External)-10,Drawing sheet-20, viva-voce-10</b></p>	

**Course Objectives:** On successful completion of the course students will develop their skill in measure drawing of buildings by using different kinds of measuring and drawing equipment.

#### **Course Content:-**

#### **Unit 1: Measuring equipment**

Video representation of uses of different kinds of measuring equipment like measuring Tape, Laser Measure Tool, Adjustable Set Square, Camera, Survey equipment, Sketch book.

#### **Unit 2: Field Notes**

Video representation of different process to take field notes like experience the building by walking, photography, sketching, special features, digital notes and rough outline layout (scaled sketches with human figures)

#### **Unit 3: Measuring Structure**

Video representation of different techniques to measure a structure like running measurements and spot measurements.

#### **Unit 4: Equipment for hand drawing production**

Introduction to different types of scales like imperial scale, metric scale, Use of T- Square, Triangles, Triangular scale, compass in technical drawing production.

#### **Unit 5: Drawing Sheet Production**

Drawing sheet presentation process for building measure drawing using proper sheet size & orientation, drawing scale, sheet layout, text & fonts, labelling, dimensions, specifications, north line & notes, drawing title.

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## Unit 6: Measure Drawing-

Measure drawing of any of the space of the institution like Architectural drawing Studio/lecture class room/ smart class room/ office/ library/ lab./any other similar type of habitable space is to be done. **The measure drawing is to be done in group of 4 to 5 students in each group.**

**Measure drawing of staircase is compulsory for each group.** For each space horizontal and vertical field measurements have to be collected. Proper drawing sheets of the spaces should be produced consisting plan, elevation and skin section.

### Course Outcomes:

At the end of the course student will be able

1. To understand different types of measuring equipment and how these are applied.
2. To understand how field notes are documented while doing a measure drawing.
3. To understand different measurement types.
4. To understand what kind of equipments are used and how they are applied to produce a hand drawing.
5. To develop their ability of producing drawing sheets appropriately.
6. To develop their skill in measure drawing with practical experience.

### References/ suggested Learning Resources:

#### (a) Books:-

- Building Construction Volume I,II,III & IV (Metric Ed.)/J.K. MCKay & W.B.
- The Construction of Buildings Volume 1, 2, 3, 4 & 5 / R. Barry / English Language Book Society
- A Text Book of Materials & Construction/ TTTI 4
- A Text Book of Materials & Construction/ S.P. Aurora & S.P. Bindra
- Building Construction / Sushil Kumar/ Standard Publishers Distributers, Delhi
- Working Drawings Handbook by Styles Keith
- Architectural Details and Measured Drawings of Houses of Twenties ( Dover Architecture) by William A. Redford

#### (b) Website address:-

- <https://www.firstinarchitecture.co.uk>
- <https://www.smartdraw.com>
- <https://drawingacademy.com>
- <https://www.archisoup.com/architectural-scale>
- <http://www.lifeofanarchitect.com/as-built-drawing-adventure/>

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**Course Title: Engineering Mechanics**  
**Number of Credits: 3 (L: 2, T: 1, P: 0)**  
**Course Category: ES**

**Course Objectives:**

Followings are the objectives of this course:

1. To obtain resultant of various forces
2. To understand basic laws of motion and their applications
3. To understand role of friction in equilibrium problems
4. To know fundamental laws of machines and their applications to various engineering problems
5. To know fundamental laws of motions and their applications to various engineering problems

**Course Contents:**

**Group A**

**Unit – I Basics of Mechanics and Force System**

**[4L+2T]**

Concept of Engineering Mechanics – Statics & Dynamics; Space, time, mass, particle, flexible body and rigid body. Scalar Quality and Vector Quality; Addition & Subtraction of Vectors – Basic units – Derived Units – SI units.

**Force:** Definition, unit, representation as a vector and by Bow's notation, characteristics and effects of a force, Principle of transmissibility of force. Force systems and its classification with special emphasis of Co-planar Force System.

**Co-planar Con-current Force System:** Composition of Forces: Parallelogram Law, Triangle Law and Polygon Law of Forces. Determination of resultant by Analytical and Graphical method. Vector diagram. Resolution of Forces: Orthogonal components of a force. Simple problems on composition and resolution of forces

**Unit – II Moments and Couples**

**[4L+2T]**

**Moment:** Definition of moment of a force about a point – Physical significance of moment – Resultant of a system of parallel and inclined forces – Varignon's Theorem. Simple Problems

**Couples:** Definition of moment of a couple – Physical significance of Couples Equivalent couples – Resultant of any number of coplanar couples – Replacement of a force about a point by an equal like parallel force together with a couple. Simple Problems

**Unit – III Condition of Equilibrium**

**[5L+3T]**

**Equilibrium of Co-planar Con-current Force System:** Lami's Theorem. Triangle Law & Polygon Law of equilibrium Concept of Free Body diagram. Simple problems

**Equilibrium of Co-planar system of non-concurrent forces:** Conditions of equilibrium of co-planar system of non-concurrent parallel forces (Like and Unlike) Simple problems excluding statically in-determinant

Types of beams, supports (simple, hinged, roller and fixed) and loads. Beam reaction for simply supported beam with or without overhang subjected to combination of Point Load and Uniformly Distributed load. Simple Problems

#### **Unit - IV Friction**

**[4L+3T]**

Friction and its relevance in engineering, Types and Laws of friction, Limiting Friction, Coefficient of friction, Angle of friction, Cone of Friction, Angle of Repose, Relation between coefficient of friction and angle of friction.

Equilibrium of bodies on horizontal surface subjected to force parallel and inclined to plane.

Equilibrium of bodies on inclined plane subjected to force parallel and inclined to plane. Simple Problems

#### **Group B**

#### **Unit- V Centroid and Centre of Gravity**

**[4L+2T]**

Concept & definition.

Determination of Centroid of Plane Figures like (i) Uniform triangular lamina, (ii) Uniform rectangular lamina, (iii) Uniform circular lamina, (iv) Uniform semi-circular lamina, and, (v) Uniform lamina of quadrant of a circle.

Determination of Centroid of Composite sections composed of not more than three plane figures like (i) T-section, (ii) equal and unequal angle-sections, (iii) equal and unequal I-sections, (iv) Channel-sections, (v) Z-sections, (vi) different cut-out sections, and, (vii) Built-up sections (Data of individual sections given). Simple Problems

Concept of Centre of Gravity of Simple Solids. Determination of Centre of Gravity of Simple Solids like (i) Cube (ii) Cuboid (iii) Cylinder (iv) Sphere. Determination of Centre of Gravity of composite solids composed of not more than two simple solids. No Problem

#### **Unit- VI Simple Lifting Machines**

**[5L+2T]**

Definition of Lifting Machine, Applications and Advantages.

Load, Effort, Mechanical Advantage, Velocity Ratio, Efficiency of Machines and their relationships. Law of machine.

Ideal Machine, Friction in Machine, Maximum Mechanical Advantage and Efficiency, Reversible and non-reversible machines, conditions for reversibility. Simple Problems

Velocity ratios of (i) Simple and Differential Axle and Wheel (ii) Worm and worm wheel (iii) Single purchase and Double Purchase Crab Winch (v) Simple Screw Jack (vi) Simple Pulley Block. Simple numerical problems

## **Group C**

### **Unit- VI Motion in a Plane**

**[4L+2T]**

#### **Rectilinear Motion**

Displacement- Time and Velocity-Time diagrams, Motion equations (with deduction). Newton's Second Law of linear motion  $P = ma$  and momentum of a body. Conservation of momentum of a body. Simple numerical problems

#### **Curvilinear Motion**

Concept and definition of Angular displacement, Angular velocity, relation between Linear & Angular velocity. Definition of Angular acceleration, Relation between linear & angular acceleration Concept, definition and deduction of expression for Centripetal and centrifugal force (numerical problems)

#### **Work, Power, Energy**

Concept, definition and mathematical expression of Work, Power and Energy. Discussion on their units in SI System.

#### **Suggested Learning Resources:**

1. S.S. Bhavikatti, Engineering Mechanics, New Age International (P) Ltd., Publishers
2. D.S. Bedi, Engineering Mechanics, Khanna Publications, New Delhi (2008)
3. Bansal R K, A Text Book of Engineering Mechanics, Laxmi Publications
4. Ramamrutham, Engineering Mechanics, S. Chand & Co. New Delhi.
5. A.R.Basu, A Text Book of Engineering Mechanics
6. Khurmi, R.S., Applied Mechanics, S. Chand & Co. New Delhi
7. D.P. Sharma, Engineering Mechanics, Pearson Publications
8. S. Timosenko and D.H. Young, Engineering Mechanics, McGRAW-HILL Book Company
9. Meriam, J. L., Kraige, L.G., Engineering Mechanics, Wiley Publication, New Delhi

**.Course outcomes:**

After completing this course, student will be able to:

1. Identify the force systems for given conditions by applying the basics of mechanics.
2. Determine unknown force(s) of different engineering systems.
3. Apply the principles of friction in various conditions for useful purposes.
4. Find the centroid and centre of gravity of various components in engineering systems.
5. Select the relevant simple lifting machine(s) for given purposes
6. Apply the basic laws of motion in engineering practices

<b>Course Title : Introduction to IT Systems Lab</b>	
<b>Course Code</b>	NIL, should be doing ES102 in parallel
<b>Number of Credits :</b>	2 (L:, T: 0, P: 3)
<b>Prerequisites</b>	NIL
<b>Course Category</b>	ES
<b>Course code : General</b>	Semester : SECOND
<b>Duration : 16 weeks</b>	Maximum Marks : 100
<b>Teaching Scheme</b>	Examination Scheme
	Continuous Internal Assessment: 40 Marks
	Attendance, Assignment & Quiz : - 20 Marks
<b>Practical : 4 hrs/week</b>	End Semester Examination: 40 Marks
<b>Aim:</b>	Develop basic concept of Computer Science
<b>1 Browser features, browsing, using various search engines, writing search queries</b>	
<b>2 Visit various e-governance/Digital India portals, understand their features, services offered</b>	
<b>3 COMPUTER FUNDAMENDALS Computer and operating system-fundamentals of computer-components of computer system-Input and Output Devices-Memory handling-Storage devices</b>	
<b>4 Read Wikipedia pages on computer hardware components, look at those components in lab, identify them, recognise various ports/interfaces and related cables, etc.</b>	
<b>5 Install Linux and Windows operating system on identified lab machines, explore various options, do it multiple times</b>	
<b>6 Connect various peripherals (printer, scanner, etc.) to computer, explore various features of peripheral and their device driver software.</b>	
<b>7 Practice HTML commands with CSS try them with various values, make your basic own Webpage</b>	
<b>8 MS Excel</b>	
<b>Apply Custom Formats and Layouts</b>	A Learner is able to apply skills in Advanced Excel, is able to – <ul style="list-style-type: none"> <li>• Format Cells,</li> <li>• Apply Custom Values and predefined Formats</li> <li>• Apply Borders,</li> <li>• Design Borders</li> <li>• Custom Formatting</li> </ul>
<b>Create advanced formulas</b>	A Learner is able to Use Simple and Advanced Formulas like – <ul style="list-style-type: none"> <li>• Nested if,</li> <li>• Reference formulas like –</li> </ul>



	<ul style="list-style-type: none"> <li>• lookup, vlookup, hlookup, • count formula with conditions</li> <li>• Index, Match, • Conditional Loops, etc</li> </ul>
<b>Use Scenarios</b>	A Learner is able to seek use Goal Seek function, alter scenarios and values in a cell to reach a goal.
<b>Create Advanced Charts</b>	A Learner can tell where to use what type of charts, and obtain graphical Charts in various scenarios 3D-Graphs, Bar Charts, Pie Chart, Histograms, Line Graph, Sparklines, trend, etc.
<b>Pivot tables &amp; charts</b>	A Learner is able to Apply • Pivot Tables, • Design Pivot Table, • Customize Values,
<b>Manage and Share Workbooks</b>	A Learner is able to Share Workbook Online, email, save on cloud, edit it Online in Google Sheets, Add Collaborators etc.
<b>9 MS PowerPoint</b>	
<p><b>Create a Power Point presentation using slide template.</b>  <b>Create a Power Point presentation using animation.</b>  <b>Create a Power Point presentation using transition</b>  <b>Create a Power Point Presentation with Adding movie and sound.</b>  <b>Create a Power Point Presentation with Adding tables and chart etc.</b>  <b>Changing slide colour scheme in presentation.</b>  <b>Viewing the presentation using slide navigator.</b>  <b>Create, Save, Run and Print the Power Point Presentation.</b></p>	
<b>10</b>	
<p><b>Create and share files/folders in Google drive</b>  <b>Create and share Google docs.</b>  <b>Create and share Google sheets.</b>  <b>Create and share Google Forms.</b>  <b>Create and share Google slides.</b></p>	
<p><b>Course outcomes:</b>  At the end of the course student will be able to comfortably work on computer, install and configure OS, assemble a PC and connect it to external devices, write documents, create worksheets, prepare presentations, web pages, protect information and computers from basic abuses/attacks.</p>	
<b>Reference Book</b>	
<ol style="list-style-type: none"> <li><b>1. My Office 2016, Pearson</b></li> <li><b>2. Head First Excel : A Brain-Friendly Guide. Publisher: Shroff/O'Reilly</b></li> <li><b>3. My Excel 2016, Pearson</b></li> </ol>	

Course Code	:	ES110
Course Title	:	Architectural Basic Design(Lab)
Number of Classes	:	3 (L:0,T:0,P:3)
Number of Credit	:	2
Prerequisites	:	1. Student should draw basic geometric shapes and Solids. 2. Visualize three dimensional objects and draw Isometric Projections.
Course offered in	:	Second Semester
Course duration	:	17 weeks
Course Category	:	ES
Full Marks	:	100
Distribution of Marks	<p>Continuous internal assessment of 60 marks is to be carried out by the teacher throughout the semester.</p> <p><b>Distribution of marks:-Drawing Sheets&amp; Class performance-40, Viva- voce-10, Attendance-10.</b></p> <p>External assessment of 40 marks shall be held at the end of the second semester. <b>Distribution of marks:- Assignments on the day of exam(by External)-10,Drawing sheet-20, viva-voce-10</b></p>	

**Course Objectives:-** On successful completion of the course,

1. Students will developed the basic design skills so that the students can understand the basic Architectural design Drawing.
2. Understand the fundamentals of design principles.
3. Read and interpret design drawings.

UNIT	TOPIC	CONTACT PERIODS		NO OF SHEETS
		Lecturer	Sessional	
1	Introduction	0	0	0
2	Design fundamentals	0	15	3
3	Visual art	0	9	2
4	Study, Analysis, Design & Drawing	0	21	3
	Total	0	45	8
<b>CONTACT PERIODS:45</b>		<b>INTERNAL ASSESSMENT:6</b>		<b>TOTAL PERIODS:51</b>

DETAIL COURSE CONTENT			
Unit No.	Topic	Contents	Number of sheets & sheet size
Unit 1	Introduction	Definition of Design. Comparison between designed and non-designed objects. Application of design criteria; Orientation of design (General) process.	_____
Unit 2	Design fundamentals	2.1) Introduction to the ELEMENTS OF DESIGN based on POINTS, LINES, PLANES, FORMS etc	ONE (A1 or A2)
		2.2) Introduction to the Principles of Design Based on SCALE, SYMMETRY, BALANCE, PROPORTION, RHYTHM etc.	_____
		2.3) TWO-DIMENSIONAL COMPOSITION of simple geometrical shapes based on Scale, Proportion, Symmetry and Balance.	ONE (A1 or A2)
		2.4) THREE-DIMENSIONAL COMPOSITION of simple geometrical forms (applying the basic structure of two-dimensional composition) based on Scale, Proportion, Symmetry, Balance and Solid & Voids.	ONE (A1 or A2)
Unit 3	Visual Art	3.1) GENERAL PRINCIPLES OF COLOUR based on its different qualities & schemes and their representation through a Colour-Wheel	ONE (A1 or A2)
		3.2) Visual properties of two-dimensional forms of both geometric and no geometric surfaces - Line, Shape, Form, Figure-ground relationship, Direction, Contrast. Visual textures and tonal variations - colour, contrast, brightness, hatch etc.	ONE (A1 or A2)
Unit 4	Study, Analysis, Design & Drawing	4.1) Elementary principles of Architectural Design on the basis of structure, function and aesthetics.	_____
		4.2) Structure- mechanics of load distribution, visual and conceptual EXAMPLE	_____
		4.3) Function-Anthropometrics, circulation, light, ventilation, , basic services and utilities. (SCALE – 1:20/25 )	ONE (A1 or A2)
		4.4) Aesthetics - composition, form, volume, mass, etc.	_____
		Design of small single storey structure (Example:- Bus Stand, Food Counter, Milk Counter, Guard Room, Street FoodStall, etc. ) and their A) Study and analysis B) Presentation of Architectural Designs (ALL PLANS,ELEVATION & SECTION)-(SCALE – 1:100/50)	TWO (A1 or A2)

## Course Outcome:

At the end of the course student will be able to

- 1 Understanding and identify the fundamentals of design in respect of Architecture.
- 2 To develop concept of visual aspect of architectural design.
- 3 Understanding the principles of Architectural Design on the basis of structure, function and aesthetics.
- 4 To develop the architectural design of a small single storey structure using design principal.

References Books		
Name of Author	Name of Book	Name of Publisher
FRANCIS D. K. CHING	ARCHITECTURE: FORM,SPACE & ORDER	WILEY
G. MUTHU SHOBA MOHAN	PRINCIPLES OF ARCHITECTURE	OXFORD
YATIN PANDYA	ELEMENTS OF SPACEMAKING	MAPIN
JULIUS PANERO & MARTIN ZELNIK	HUMAN DIMENSION & INTERIOR SPACE	WHITNEY
FRANCIS D. K. CHING	INTRODUCTION TO ARCHITECTURE	WILEY

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Course Code	:	ES 112
Course Title	:	Architectural Delineation(Lab)
Number of classes	:	5 (L:0,T:0,P:5)
Number of Credit	:	3
Prerequisites	:	NIL
Course offered in	:	Second Semester
Course duration	:	17 weeks
Course Category	:	ES
Full Marks	:	100
Marks Distribution	<b>For Group A Continuous Internal Assessment of 40 marks</b> is to be carried out by the teachers throughout Part I – Second Semester. <b>Distribution of marks: Attendance : 10, Sheet: 25,Viva : 05</b> <b>For Group B continuous Internal Assessment of 20 marks</b> is to be carried out by the teachers throughout Part I – Second Semester. <b>Distribution of marks: 3D Models &amp; viva : 20</b> <b>External Assessment of 40 marks shall</b> be held at the end of the Part I-Second Semester <b>Distribution of marks: Sheets &amp;, Viva voce – 20.</b> <b>Viva voce &amp; 3D models - 20</b>	

**Course Objective:-** On completion of this course, the students will be in a position to understand and develop

1. Basic knowledge of Free hand sketches with shades and shadows & others visuals.
2. A sense of presentations & rendering of different architectural elements.
3. Comprehension and visualization of geometrical forms.
4. Basic knowledge & sense of human scale with respect to different architectural elements.

Detail Course Content			
<b>GROUP – A TWO – DIMENSIONAL DELINEATION</b>			<b>(45 Hrs)</b>
Module	Topic	Content	Number of sheets & sheet size
Module-1	Outdoor Sketching	To practice freehand drawing of a building along with sky, trees, cars, human figures etc. with shades & shadows and using colours in various media such as pencil, crayons, water colour, poster-colour etc.	ONE (A1/A2)
Module-2	Architectural presentation & rendering of Landscaping elements.	To practice presentation and rendering of TREES, HERBS, SHRUBS, GROUND COVERS, CONTOURS,	ONE (A1/A2)
Module-3	Architectural presentation & rendering of Cars	To practice presentation and rendering of both plans & elevations, in Black & White / in colour. (3 nos cars & 1 Bus) Parking layout plan of 6 nos of cars in different parking layout including turning radius & other details.	ONE (A1/A2)
Module-4	Architectural presentation & rendering of Human figure	To practice presentation and rendering of Human figure relevant with interior furniture following Anthropometry and Ergonomics. Both plans & elevations, in Black & White / in colour.	ONE (A1/A2)
Module-5	Rendering of Interior Spaces	To practice rendering of LIVING / DRAWING ROOM, DINING ROOM, BED ROOM etc, in Black & White / in colour. The plan, elevation and perspective are to be provided by the teacher-in-charge(s). Each Student is to take at least one type of interior space.	ONE (A1/A2)

<b>GROUP – B THREE – DIMENSIONAL DELINEATION ( 40 Hrs )</b>		
Module	Topic	Content
Module-7	Introduction	Names of Tools & Appliances and characteristics of materials used for architectural model making
Module-8	Architectural scale model of simple solids	To make architectural scale models of simple solid objects using mount-board/ sun board (scale- 1:50) Video representations of sectional view of different simple solid objects like sphere, cone, cylinder, cube, pyramid, prism etc by the teacher concerned for clear conception of solids.
Module-8	Architectural scale model of simple building.	To make architectural scale model of a simple building showing adjoining site landscaping (drawings to be provided by the teacher concerned), using mount-board / sun board. (Scale 1:50/1:100)

**Course Outcome:-**Students will develop basic rendering skills so as to enable them to use skill in the presentations of any architectural design drawings. By this skill any architectural design drawings will enhance its aesthetic beauty that attracts viewers. Also student should develop a clear visualization with sound knowledge of 3D objects handling and relationship of architectural spaces with human scales.

<b>References Books</b>		
Name of Author	Name of Book	Name of Publisher
FRANCIS D. K. CHING	RENDERING WITH PEN & INK	WILEY
FRANCIS D. K. CHING	ARCHITECTURAL GRAPHICS	WILEY
FRANK LOHAN	PEN & INK TECHNIQUES	DOVER PUBLICATION
W.GILL	RENDERING WITH PEN & INK	THAMES & HUDSON
FRANCIS D. K. CHING	ARCHITECTURE: FORM,SPACE & ORDER	WILEY

Course Code	:	ES114
Course Title	:	Architectural Drawing-II (THEORY)
Number of Classes	:	2 (L:2,T:0,P:0)
Number of Credit	:	1
Prerequisites	:	NIL
Course offered in	:	Second Semester
Course duration	:	17 weeks
Course Category	:	ES
Full Marks	:	100
<b>CONTACT PERIODS:30                      INTERNAL ASSESSMENT:4                      TOTAL PERIODS:34</b>		

<b>Marks Distribution for theory paper: Full Marks =100</b>				
Internal assessment			End Semester Exam	
Sl No	Type	Marks	Question Type	Marks
1	Mid Semester Tests ( Two best out of three)	10x2=20	Objective type questions carrying 1 mark for 20 questions(Qs) out of 25 Qs throughout the syllabus	1x20=20
2	Quizzes, viva-voce, Assignments	10	Question carrying 2 marks for 5 Qs out of 8 Qs ( at least 1Q from each unit)	2x5=10
3	Class Attendance*	10	Qs carrying 6 marks for 5 Qs (Subjective type) out of 8 Qs ( at least 1Q from each unit)	6x5=30
<b>Total</b>		<b>40</b>		<b>60</b>

<b>Examination Scheme</b>								
UNIT	OBJECTIVE QUESTIONS				SUBJECTIVE QUESTIONS			
	TO BE SET	TO BE ANSWERED	MARKS PER QUESTION	TOTAL MARKS	TO BE SET	TO BE ANSWERED	MARKS PER QUESTION	TOTAL MARKS
1	6	Any twenty	ONE	1 x 20 = 20	2	ANY FOUR, TAKING AT LEAST ONE FROM EACH GROUP	TEN	10X 4 =40
2	7				2			
3	7				2			
4	5				2			

**Course Objectives:** On successful completion of the course, students will achieve basic drawing skills for development of solid geometry along with section and true shapes of solids, conversion of orthographic views and getting started with computer aided drafting.

<b>THEORY COURSE CONTENT</b>				
Unit No	Topic	Contents	Contact Hours	Marks
<b>Unit 1</b>	Section of Solids	cube, prism, cylinder and cone resting on their base on horizontal plane. Section plane inclined to one reference plane and perpendicular to other. True shape of section.	L:8	
<b>Unit 2</b>	Development of surfaces	Development of lateral surfaces of cube, prism, pyramids, cylinder and cone.	L:8	
<b>Unit 3</b>	Conversion of pictorial views into orthographic views.	Conversion of pictorial views into orthographic views and vice-versa.(use First Angle Projection methods only)	L:6	
<b>Unit 4</b>	Introduction to Auto CAD	Getting Started- Starting Auto CAD, screen layout and toolbars, opening new and existing files, saving a file. Basic drawing and editing commands-drawing lines, rectangles, circles, create text, dimension a drawing, insert hatch patterns, offset, trim, extend and other editing commands, plotting a drawing.	L:8	

**Course Outcome:**

- Students will develop basic graphic skills so as to enable them to use these skills in the preparation, interpretation and understanding of architectural design drawings.
- Students will develop an unambiguous and clear visualization with sound pictorial intelligence to interpret architectural drawings.
- Students will develop the basic skill to draw building drawing in computer by using Auto CAD

<b>Name of Text Books</b>			
Sl. No	Name of Author	Name of Book	Name of Publisher
1	N.D. Bhatt	Engineering Drawing	Charotkar Publishing House
2	K. Venugopal V.Prabhu Raja	Engineering Drawing & AutoCAD	New Age Publication
3	F.D.K Ching	Architectural Graphics	Wiley Publishers
4	F.D.K Ching	Design Drawing	Wiley Publishers
5	B. Agarwal C.M.Agarwal	Engineering Drawing	Tata McGraw Hill Education Pvt. Ltd
6	Pal & Bhattacharya	Computer aided Engineering Drawing	Viva Books
7	Dr S.N. Lal	Engineering Drawing with an introduction to Auto CAD	CENGAGE Learning India pvt. Ltd.

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**First Year Curriculum Structure (2<sup>nd</sup> semester Architecture, w.e.f.2020)**

Course Code	:	ES116
Course Title	:	Architectural Basic Design (THEORY)



Number of Classes	:	2 (L:2,T:0,P:0)
Number of Credit	:	1
Prerequisites	:	3. Student should draw basic geometric shapes and Solids. 4. Visualize three dimensional objects and draw Isometric Projections.
Course offered in	:	Second Semester
Course duration	:	17 weeks
Course Category	:	ES
Full Marks	:	100

<b>Marks Distribution for theory paper: Full Marks =100</b>			
Internal assessment		End Semester Exam	
Type	Marks	Question Type	Marks
Mid Semester Tests ( Two best out of three)	10x2=20	Objective type questions carrying 1 mark for 20 questions(Qs) out of 25 Qs throughout the syllabus	1x20=20
Quizzes, viva-voce, Assignments	10	Question carrying 2 marks for 5 Qs out of 8 Qs ( at least 1Q from each unit)	2x5=10
Class Attendance*	10	Qs carrying 6 marks for 5 Qs (Subjective type) out of 8 Qs ( at least 1Q from each unit)	6x5=30
<b>Total</b>	<b>40</b>		<b>60</b>

<b>Examination Scheme</b>								
UNIT	OBJECTIVE QUESTIONS				SUBJECTIVE QUESTIONS			
	TO BE SET	TO BE ANSWERED	MARKS PER QUESTION	TOTAL MARKS	TO BE SET	TO BE ANSWERED	MARKS PER QUESTION	TOTAL MARKS
1	2	Any twenty	ONE	1 x 20 = 20	0	ANY FOUR, TAKING AT LEAST ONE FROM EACH GROUP	TEN	10X 4 =40
2	8				3			
3	8				3			
4	5				2			

**Course Objectives:-** On successful completion of the course,

- Students will developed the basic design skills so that the students can understand the basic Architectural design Drawing.
- Understand the fundamentals of design principles.
- Read and interpret design drawings.

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### First Year Curriculum Structure (2<sup>nd</sup> semester Architecture, w.e.f.2020)

UNIT	TOPIC	CONTACT PERIODS	
		Lecturer	Sessional
1	Introduction	4	0
2	Design fundamentals	8	0

3	Visual art	8	0
4	Study, Analysis, Design & Drawing	10	0
	Total	30	0
<b>CONTACT PERIODS:30 INTERNAL ASSESSMENT:4 TOTAL PERIODS:34</b>			

DETAIL COURSE CONTENT		
UnitNo.	Topic	Contents
Unit 1	Introduction	Definition of Design. Comparison between designed and non-designed objects. Application of design criteria; Orientation of design (General) process.
Unit 2	Design fundamentals	2.1) Introduction to the ELEMENTS OF DESIGN based on POINTS, LINES, PLANES, FORMS etc
		2.2) Introduction to the Principles of Design Based on SCALE, SYMMETRY, BALANCE, PROPORTION, RHYTHM etc.
		2.3) TWO-DIMENSIONAL COMPOSITION of simple geometrical shapes based on Scale, Proportion, Symmetry and Balance.
		2.4) THREE-DIMENSIONAL COMPOSITION of simple geometrical forms (applying the basic structure of two-dimensional composition) based on Scale, Proportion, Symmetry, Balance and Solid & Voids.
Unit 3	Visual Art	3.1) GENERAL PRINCIPLES OF COLOUR based on its different qualities & schemes and their representation through a Colour-Wheel
		3.2) Visual properties of two-dimensional forms of both geometric and no geometric surfaces - Line, Shape, Form, Figure-ground relationship, Direction, Contrast. Visual textures and tonal variations - colour, contrast, brightness, hatch etc.
Unit 4	Study, Analysis, Design & Drawing	4.1) Elementary principles of Architectural Design on the basis of structure, function and aesthetics.
		4.2) Structure- mechanics of load distribution, visual and conceptual EXAMPLE
		4.3) Function-Anthropometrics, circulation, light, ventilation, , basic services and utilities.
		4.4) Aesthetics - composition, form, volume, mass, etc.

**Course Outcome:**

At the end of the course student will be able to

- 5 Understanding and identify the fundamentals of design in respect of Architecture.
- 6 To develop concept of visual aspect of architectural design.
- 7 Understanding the principles of Architectural Design on the basis of structure, function and aesthetics.
- 8 To develop the architectural design of a small single storey structure using design principal.

<b>References Books</b>		
Name of Author	Name of Book	Name of Publisher
FRANCIS D. K. CHING	ARCHITECTURE: FORM,SPACE & ORDER	WILEY
G. MUTHU SHOBA MOHAN	PRINCIPLES OF ARCHITECTURE	OXFORD
YATIN PANDYA	ELEMENTS OF SPACEMAKING	MAPIN
JULIUS PANERO & MARTIN ZELNIK	HUMAN DIMENSION & INTERIOR SPACE	WHITNEY
FRANCIS D. K. CHING	INTRODUCTION TO ARCHITECTURE	WILEY

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## INDIAN CONSTITUTION

<b>Course Code</b>	AU302
<b>Course Title</b>	Indian Constitution
<b>Number of Credits and L-T-P</b>	0 [L - 2, T - 0, P - 0]
<b>Prerequisites</b>	None
<b>Course Category</b>	AU

### Course Content

#### Unit 1 – The Constitution – Introduction

- The History of the Making of the Indian Constitution
- Preamble and the Basic Structure, and its interpretation
- Fundamental Rights and Duties and their interpretation
- State Policy Principles

#### Unit 2 – Union Government

- Structure of the Indian Union
- President – Role and Power
- Prime Minister and Council of Ministers
- Lok Sabha and Rajya Sabha

#### Unit 3 – State Government

- Governor – Role and Power
- Chief Minister and Council of Ministers
- State Secretariat

#### Unit 4 – Local Administration

- District Administration
- Municipal Corporation
- Zila Panchayat

#### Unit 5 – Election Commission

- Role and Functioning
- Chief Election Commissioner
- State Election Commission

### Suggested Learning Resources:

Sl. No.	Title of Book	Author	Publication
1	Ethics and Politics of the Indian Constitution	Rajeev Bhargava	Oxford University Press, New Delhi, 2008
2	The Constitution of India	B.L. Fadia	Sahitya Bhawan; New edition (2017)
3	Introduction to the Constitution of India	DD Basu	Lexis Nexis; Twenty-Third 2018 edition

**Suggested Software/Learning Websites:**

- a. <https://www.constitution.org/cons/india/const.html>
- b. <http://www.legislative.gov.in/constitution-of-india>
- c. <https://www.sci.gov.in/constitution>
- d. <https://www.toppr.com/guides/civics/the-indian-constitution/the-constitution-of-india/>