Detailed Syllabus
Lecture-wise Breakup

Course Code	15B11CI111	**Semester ODD (specify Odd/Even)**	**Semester I**. **Session** 2019 -2020 **Month from July 2019** to **Dec 2019**
Course Name	Software Development Fundamentals-I		
Credits	4	**Contact Hours**	**3 (L) + 1(T)**

Faculty (Names)	**Coordinator(s)**	Arpita Jadhav Bhatt & Amarjeet Kaur (J62) + Raju Pal (J128)
	Teacher(s) (Alphabetically)	Akanksha Bhardwaj, Amanpreet Kaur, Amarjeet Kaur, Arpita Jadhav Bhatt, Himanshu Mittal, K Vimal Kumar, Mukesh Saraswat, Mradula Sharma, Neetu Sardana, Niyati Aggrawal, Raju Pal, Sakshi Agarwal, Shailesh Srivastava, Shardha Porwal, Shulabh Tyagi

COURSE OUTCOMES		**COGNITIVE LEVELS**
C109.1	Solve puzzles , formulate flowcharts, algorithms and develop HTML code for building web pages using lists, tables, hyperlinks, and frames	Apply Level (Level 3)
C109.2	Show execution of SQL queries using MySQL for database tables and retrieve the data from a single table.	Understanding Level (Level 2)
C109.3	Develop python code using the constructs such as lists, tuples, dictionaries, conditions, loops etc. and manipulate the data stored in MySQL database using python script.	Apply Level (Level 3)
C109.4	Develop C Code for simple computational problems using the control structures, arrays, and structure.	Apply Level (Level 3)
C109.5	Analyze a simple computational problem into functions and develop a complete program.	Analyze Level (Level 4)
C109.6	Interpret different data representation , understand precision, accuracy and error	Understanding Level (Level 2)

Module No.	**Title of the Module**	**Topics in the Module**	**No. of Lectures for the module**
1.	Introduction to Scripting Language & Algorithmic Thinking	Introduction to HTML, Tagging v/s Programming, Algorithmic Thinking and Problem Solving, Introductory algorithms and flowcharts	5
2.	Developing simple software applications with scripting and visual languages	Developing simple applications using python; data types (number, string, list), operators, simple input output, operations, control flow (if -else, while)	4
3.	Elementary Database	Introduction to data base system, Single Table applications, basic operations : ADD,DELETE,UPDATE,SELECT, ALTER ,Introduction to primary key	4
4.	C Programming	Syntax and semantics, data types and variables, expressions and assignments, array and struct, simple I/O, conditional and iterative control structures	15

		Programs on unit conversion, approximating the square root of a number, finding the greatest common divisor, average, sum, min, max of a list of numbers, common operations on vector, matrix, polynomial, strings, programs for pattern generation	
5.	Functions in C Programming	Functions and parameter passing (numbers, ,characters, array, structure) , recursion , e.g. factorial, Fibonacci, Scope of variable	8
6.	Data base connectivity using MySQL	Creating Web pages with Database connectivity using MySQL	2
7.	Aspects of numerical computing	Data representation , Understanding precision, accuracy, error, Introduction to Scientific Computation	4
		Total number of Lectures	**42**

Evaluation Criteria

Components	**Maximum Marks**
T1	20
T2	20
End Semester Examination	35
TA	25
Total	**100**

Recommended Reading material: Author(s), Title, Edition, Publisher, Year of Publication etc. (Text books, Reference Books, Journals, Reports, Websites etc. in the IEEE format)

1.	H. Cooper and H. Mullish, Jaico Publishing House. "Spirit of C", 4th Edition, Jaico Publishing House, 2006
2.	Herbert Schildt. "The Complete Reference C ", 4th Edition, TMH, 2000
3.	Brian W. Kernighan and Dennis M. Ritchie ,"The C Programming Language", 2nd Edition, Prentice-Hall India, New Delhi, 2002
4.	Peter Norton, "Introduction to Computers", 5th edition, Tata McGraw-Hill, Delhi., 2005.
5	Balaguruswamy, Programming in ANCI C", 2nd Edition, TMH, 2001.
6.	Ashok N. Kamthane , "Programming with ANSI and Turbo C", Pearson Education, Delhi, 2003
7.	Rajaraman V., "Fundamentals of Computer", 3rd Edition, Prentice-Hall India, New Delhi, 2005.
8.	B. A. Forouzan, R. F. Gilberg "Computer Science: A Structured Programming Approach Using C", 2nd Edition, Thomson Press, New Delhi, 2006
9.	Avi Silberschatz, Henry F. Korth, and S. Sudarshan, "Database System Concepts", 6th edition, McGraw-Hill, 2010.
10.	User manuals supplied by department for SQL and Python

B. A. Forouzan, R. F. Gilberg "Computer Science: A Structured Programming Approach Using C",

Detailed Syllabus
Lecture-wise Breakup

Course Code	15B11HS112	**Semester**: Odd	**Semester**: I **Session** 2019 -2020 **Month** from July 19 to Dec 19
Course Name	English		
Credits	3	**Contact Hours**	2-1-0

Faculty (Names)	**Coordinator(s)**	Dr Ekta Srivastava, Ms Puneet Pannu
	Teacher(s) (Alphabetically)	Dr Anshu Banwari, , Dr Ekta Srivastava, Dr Monali Bhattacharya, Dr Nilu Chaudhary, Dr Parineeta Singh, Ms Puneet Pannu , Dr Santosh Dev, Dr. Santoshi Sengupta

COURSE OUTCOMES		**COGNITIVE LEVELS**
C114.1	Develop an understanding and appreciate the basic aspects of English as a communication tool.	Understand (C2)
C114.2	Apply the acquired skills in delivering effective presentations	Apply (C3)
C114.3	Demonstrate an understanding of different forms of literature and rhetorical devices	Understand (C2)
C114.4	Examine literature as reflection of individual and society	Analyse (C4)
C114.5	Compose different forms of professional writing	Create (C6)
C114.6	Apply Phonetics through theory and practice for better pronunciation	Apply (C3)

Module No.	**Title of the Module**	**Topics in the Module**	**No. of Lectures for the module**
1.	English as a Communication Tool	Basic aspects of English ·LSRW: Listening, Speaking, Reading, Writing Non Verbal Communication: Body Language, Voice Modulation, Posture Gambits Phonetics: Pronunciation, Stress, Rhythm, Intonation	10
2.	Language through	**Short Stories**	10

	Literature	·Too Bad by Isaac Asimov ·The Castaway by Rabindranath Tagore **Poems** ·The Highwayman by Alfred Noyes ·Where the mind is without fear by Rabindranath Tagore ·"If" by Rudyard Kipling ·Ode to Clothes by Pablo Nerruda **One act Play** ·Refund by Fritz Karinthy **Famous Speech** ·Swami Vivekanand's Chicago Speech	
3.	Professional Application/Writing	Textual Organization ·Letter Writing ·Circulars ·Notices ·Agenda ·Minutes ·Report Writing	8
		Total number of Lectures	**28**

Evaluation Criteria

Components	**Maximum Marks**
T1	20
T2	20
End Semester Examination	35
TA	25 (Creative Project, Lab Test, Oral Questions)
Total	**100**

Recommended Reading material: Author(s), Title, Edition, Publisher, Year of Publication etc. (Text books, Reference Books, Journals, Reports, Websites etc. in the IEEE format)

1.	**C.L.Bovee, J.V.Thill, M.Chaturvedi**, *Business Communication Today*,9th Ed, Pearson Education, copyright@ Dorling Kinderslay (India) Pvt Ltd,2009
2.	**Kelly M. Quintanilla and S.T.Wahl**, *Business and Professional Communication*, Sage Publications Pvt India Ltd,2011
3.	**S. Kumar and Pushp Lata,** *Communication Skills*, Oxford University Press,1st, Ed. 2011
4.	**R.K Bansal, and J.B Harrison**, *Spoken English for India*, Orient Longman, 2018
5	**Alfred Noyes,** *"The Highwayman",* Oxford University Press, USA, Sep 1999
6	**Rabindranath Tagore,** *"Where the Mind is without Fear"***,** BK Classics
7	**Rudyard Kipling***, "If",* If Handbook, Creative Editions, 2014

8	**Pablo Neruda,** *"Ode To Clothes"* Late & Posthumous Poems, 1968-74
9	**Isaac Asimov,** *"Too Bad"***,** Robot Visions, ROC Books, New York, NY, USA, 1991
10	**RabindraNath Tagore, "***The Castaway***",** Selected Short Stories, Introduction & translated by William Radice", Penguin Classics, 2005
11	**Fritz Karinthy,** "*The Refund*", A Play in One Act adapted by Percival Wilde, French's Acting Edition, London, 1958
12	**Swami Vivekananda & Sankar Srinivasan, "** Sisters & Brothers of America: Speech at World Parliament of Religions, Chicago, 1893", Creative Space Independent Publishing Platform, 2015

Lecture-wise Breakup

Course Code	15B11MA111	**Odd Semester**	**Semester** I **Session** 2019 -2020 **Month from:** July 2019- December 2019
Course Name	Mathematics I		
Credits	4	**Contact Hours**	**3-1-0**

Faculty (Names)	**Coordinator(s)**	Dr. Pankaj Kumar Srivastava and Dr. Yogesh Gupta
	Teacher(s) (Alphabetically)	Dr. Anuj Bhardwaj, Dr. Dinesh Bisht, Dr. Himanshu Agarwal, Dr. Lokendra Kumar, Dr. Neha Ahalawat, Dr. Pankaj Kumar Srivastava, Dr. Pato Kumari, Dr. Pinkey Chauhan, Prof. R. C. Mittal, Dr. Sheetal Deshwal, Dr. Trapti Neer and Dr. Yogesh Gupta

COURSE OUTCOMES		**COGNITIVE LEVELS**
After pursuing the above mentioned course, the students will be able to:		
C105.1	Explain the concepts of limits, continuity and differentiability of functions of several variables.	Understanding Level (C2)
C105.2	Explain the Taylor's series expansion of functions of several variables and apply it in finding maxima and minima of functions.	Applying Level (C3)
C105.3	Make use of double and triple integrals to find area and volume of curves and surfaces.	Applying Level (C3)
C105.4	Explain the concepts of vector calculus and apply Green's, Stoke's and Gauss divergence theorems in engineering problems.	Applying Level (C3)
C105.5	Solve the ordinary differential equations and explain the concepts of Laplace transform for solving engineering problems.	Applying Level (C3)
C105.6	Utilize matrix algebra for solving a system of linear equations and explain eigenvalues, eigenvectors, diagonalization and quadratic form.	Applying Level (C3)

Module No.	**Title of the Module**	**Topics in the Module**	**No. of Lectures for the module**
1.	Partial differentiation	Chain rule, change of variables, Taylor's series for function of two or more variables, maxima and minima of function of two variables, Jacobians.	7
2.	Double integrals	Change of order and change of variables, Gamma and Beta functions, Applications to areas and volumes, Equations to curves and surfaces, Plots of some well known curves and surfaces.	7
3.	Vector Differentiation	Gradient, divergence and curl, Normal and tangent to a plane surface.	3

4.	Vector Integration	Line integrals, Green's Theorem in a plane, surface integrals, Gauss and Stokes theorems.	7
5.	Differential Equations	Differential Equations with constant coefficients, Cauchy-Euler equations, Equations of the form y''=f(y), simple applications.	6
6.	Laplace Transform	Laplace Transform, inverse Laplace transform, Dirac delta and unit step function, Solution of IVPs.	6
7.	Matrices	Linear dependence and independence of rows, row echelon form, Rank, Gauss elimination method, Eigen values and vectors, symmetric matrices, Reduction to diagonal form Quadratic forms.	6
		Total number of Lectures	**42**

Evaluation Criteria

Components	**Maximum Marks**
T1	20
T2	20
End Semester Examination	35
TA	25 (Quiz , Assignments, Tutorials)
Total	**100**

Recommended Reading material: Author(s), Title, Edition, Publisher, Year of Publication etc. (Text books, Reference Books, Journals, Reports, Websites etc. in the IEEE format)

1. **Jain, R. K. & Iyenger, S. R. K.,** Advanced Engineering Mathematics, 3rd Ed., Narosa Publishing House, New Delhi, 2008.
2. **Prasad, C.,** (a) Mathematics for Engineers (b) Advanced Mathematics for Engineers, Prasad Mudranalaya, 1982.
3. **Lipschutz, S., Lipsom, M.,** Linear Algebra, 3rd Ed, Schaum Outline Series, 2001.
4. **Thomas, G. B and Finney, R. L**., Calculus and Analytical Geometry, 9th Ed., Pearson Education Asia (Adisson Wesley), New Delhi, 2000.

Department Name

AY: 2019-20 (Odd Semester)

Course Opening Report

Programme Name: B. Tech.

Semester: I

Course Name & Code: **Physics-1 (15B11PH111)**

Course Outcomes:

At the completion of the course, students will be able to,

S.N.	DESCRIPTION	COGNITIVE LEVEL
C101.1	Recall the basic principles of physics related to optics, relativity, quantum mechanics, atomic physics and thermodynamics.	C1
C101.2	Illustrate the various physical phenomena with interpretation based on the mathematical expressions involved.	C2
C101.3	Apply the concepts/principles to solve the problems related to wave nature of light, relativity, quantum mechanics and atomic physics.	C3
C101.4	Analyze and examine the solution of the problems using physical and mathematical concepts involved.	C4

CO-PO and CO-PSO Mapping:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C101.1	3	1	3	1								3
C101.2	3	2	2	1								3
C101.3	3	3	1	1								2
C101.4	3	3	1	1								2
C101	3	2	2	1								3

	CSE		IT		ECE	
COs	PSO1	PSO2	PSO1	PSO2	PSO1	PSO2
C101.1						
C101.2						
C101.3						
C101.4						
C101						

Identified Curriculum Gaps (If Any):

Topics to be introduced	Strengthens CO	Strengthens PO, PSO	Method of Identification
Nil	Nil	Nil	Nil

Modifications in Curriculum (If Any):

Details of Modification	Justification
Nil	Nil

Actions for Improving CO Attainments: ECE

COs	Attainments in 2018-19	Identified Gap	Action to be taken in 2019-20 to improve CO attainment
C101.1	1	**Poor fundamental concepts.**	**More emphasis will be given to develop the basic understanding of the subject.**
C101.2	0.6	**Irregularity and non seriousness of the students about the subject.**	**Extra assignment sheets containing numerical problems based on mathematical expressions will be given just after every lecture to make the students serious.**
C101.3	0.8	**Lack of practice and efforts by students.**	**Emphasis will be given to clear the concepts of wave nature of light, relativity, quantum mechanics and atomic physics so that students may easily apply to solve the related problems.**
C101.4	0.6	**Students are facing problem in quantum mechanics and atomic physics.**	**More tutorials dedicated to these topics with increasing order of difficulty will be provided to students.**

Actions for Improving CO Attainments: CSE

COs	Attainments in 2018-19	Identified Gap	Action to be taken in 2019-20 to improve CO attainment
C101.1	1.4	**Poor fundamental concepts.**	**More emphasis will be given to develop the basic understanding of the subject.**
C101.2	1.8	**Nil**	
C101.3	1.6	**Lack of practice and efforts by students.**	**Emphasis will be given to clear the concepts of wave nature of light, relativity, quantum mechanics and atomic physics so that students may easily apply to solve the related problems.**
C101.4	0.6	**Students are facing problem in quantum mechanics and atomic physics.**	**More tutorials dedicated to these topics with increasing order of difficulty will be provided to students.**

Actions for Improving CO Attainments: IT

COs	Attainments in 2018-19	Identified Gap	Action to be taken in 2019-20 to improve CO attainment
C101.1	1.8	**Nil**	
C101.2	1.2	**Irregularity and non seriousness of the students about the subject.**	**Extra assignment sheets containing numerical problems based on mathematical expressions will be given just after every lecture to make the students serious.**
C101.3	2.0	**Nil**	
C101.4	0.8	**Students are facing problem in quantum mechanics and atomic physics.**	**More tutorials dedicated to these topics with increasing order of difficulty will be provided to students.**

Innovative Teaching and Learning Method to be used (if any): The Physics-1 course consists of difficult topics like quantum mechanics, relativity and atomic physics. One needs to start with simple problems on the subject and increase the complexity.

Innovative Evaluation Strategy to be used (If any): None

Signature: **Signature:**

Module Coordinator: Dr. Navneet Sharma **Course Coordinators: Dr. Suneet Kumar Awasthi**

Dr. Dinesh Tripathi

Detailed Syllabus
Lab-wise Breakup

Course Code	15B17CI171	**Semester : ODD** (specify Odd/Even)	**Semester** 1st **Session** 2019 -2020 **Month from** July to December
Course Name	Software Development Fundamentals 1 Lab		
Credits	2	**Contact Hours**	**4**

Faculty (Names)	**Coordinator(s)**	Aditi Sharma & Sonal
	Teacher(s) (Alphabetically)	Amarjeet Kaur, Amarjeet Prajapati, Ankit Vidyarthi, Ankita Wadhwa, Ashish Mishra, Bharat Gupta, Dhanlakhsmi, Dharmveer Singh Rajpoot, Kirti Aggrawal, Mradula Sharma, Neetu Sardana, Niyati Aggrawal, Parul Agarwal, Prashant Kaushik, Purtee Kohli, Sakshi Agarwal, Sandeep Singh, Sarishty Gupta, Shardha Porwal , Sherry Garg, Suma Dawn

COURSE OUTCOMES		**COGNITIVE LEVELS**
C172.1	Design HTML code for building web pages using lists, tables, hyperlinks, and frames.	Apply (level 3)
C172.2	Develop python programs for constructs such as lists, tuples, dictionaries, conditions and loops using Python 3.6.	Apply(level 3)
C172.3	Design simple SQL queries using MySQL to create database tables and retrieve the data from a single table.	Apply (level 3)
C172.4	Develop C programs for datatypes, expressions, conditional structure, and iterative control structure and pattern generation using Code Blocks and Virtual Lab.	Apply (level 3)
C172.5	Design C programs for array, structure, and functions using Code Blocks and Virtual Lab.	Apply (level 3)

Module No.	**Title of the Module**	**List of Experiments**	**CO**
1.	Introduction to HTML	Experiments to create web pages using tags, lists, tables, frames, forms.	C172.1
2.	Python	Experiments to develop python programs using data types (number, string, list), operators, simple input output operations, control flow (if -else, while)	C172.2
3.	MySQL	Experiments to create MySQL queries using operations like ADD, DELETE,UPDATE, SELECT	C172.3

4.	C Programming (Part-1)	Experiments to develop C programs using datatypes, expressions, conditional structure (if-else), and iterative control structure (do-while, while, for).	C172.4
5.	C Programming (Part-2)	Experiments to develop C programs using for array, structure, and functions.	C172.5

Evaluation Criteria

Components	**Maximum Marks**
Evaluation 1	15
Lab Test 1	20
Evaluation 2	20
Evaluation 3	15
Lab Test 2	20
TA	10
Total	**100**

Recommended Reading material: Author(s), Title, Edition, Publisher, Year of Publication etc. (Text books, Reference Books, Journals, Reports, Websites etc. in the IEEE format)

1.	H. Cooper and H. Mullish, Jaico Publishing House. "Spirit of C", 4th Edition, Jaico Publishing House, 2006
2.	Herbert Schildt. "The Complete Reference C ", 4th Edition, TMH, 2000
3.	Brian W. Kernighan and Dennis M. Ritchie ,"The C Programming Language", 2nd Edition, Prentice-Hall India, New Delhi, 2002
4.	Peter Norton, "Introduction to Computers", 5th edition, Tata McGraw-Hill, Delhi., 2005.
5.	Balaguruswamy, Programming in ANCI C", 2nd Edition, TMH, 2001.
6.	Ashok N. Kamthane , "Programming with ANSI and Turbo C", Pearson Education, Delhi, 2003
7.	B. A. Forouzan, R. F. Gilberg "Computer Science: A Structured Programming Approach Using C", 2nd Edition, Thomson Press, New Delhi, 2006.
8.	https://www.w3schools.com/html/
9.	https://www.w3schools.com/sql/
10.	https://www.w3schools.com/python/
11.	User manuals supplied by department for HTML, SQL and Python

Department Name

AY: 2019-20 (Odd Semester)

Course Opening Report

Programme Name: B. Tech

Semester: I

Course Name & Code: **Physics Lab-1 (15B17PH171)**

Course Outcomes:

At the completion of the course, students will be able to,

S. No.	DESCRIPTION	COGNITIVE LEVEL
C170.1	Recall optics and modern physics principles behind the experiments.	C1
C170.2	Explain the experimental setup and the principles involved behind the experiments performed.	C2
C170.3	Plan the experiment and set the apparatus and take measurements.	C3
C170.4	Analyze the data obtained and calculate the error.	C4
C170.5	Interpret and justify the results.	C5

CO-PO and CO-PSO Mapping:

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2
C170.1	3	2	1	1	1				1			3		
C170.2	3	3	1	1	1				2			1		
C170.3	3	3	2	1	3				3			1		
C170.4	3	3	1	2	2							1		
C170.5	3	3	2	2	1							1		
Avg.	3	3	1	1	2				2			1		

	CSE		IT		ECE		BT		
COs	PSO1	PSO 2	PSO 1	PSO 2	PSO 1	PSO 2	PSO1	PSO2	PSO3
C170.1									
C170.2									
C170.3									
C170.4									
C170.5									
C170									

Identified Curriculum Gaps (If Any):

Topics to be introduced	Strengthens CO	Strengthens PO, PSO	Method of Identification
Nil	Nil	Nil	Nil

Modifications in Curriculum (If Any):

Details of Modification	Justification

Nil	Nil

Actions for Improving CO Attainments: CSE

COs	Attainments in 2018-19	Identified Gap	Action to be taken in 2019-20 to improve CO attainment
C170.1		Nil	
C170.2		Nil	
C170.3		Nil	
C170.4		Nil	
C170.5		Nil	

Actions for Improving CO Attainments: IT

COs	Attainments in 2018-19	Identified Gap	Action to be taken in 2019-20 to improve CO attainment
C170.1		Nil	
C170.2		Nil	
C170.3		Nil	
C170.4		Nil	
C170.5		Nil	

Actions for Improving CO Attainments: ECE

COs	Attainments in 2018-19	Identified Gap	Action to be taken in 2019-20 to improve CO attainment
C170.1		Nil	
C170.2		Nil	
C170.3		Nil	
C170.4		Nil	
C170.5		Nil	

Actions for Improving CO Attainments: BT

COs	Attainments in 2018-19	Identified Gap	Action to be taken in 2019-20 to improve CO attainment
C170.1		**Nil**	
C170.2		**Nil**	
C170.3		**Nil**	
C170.4		**Nil**	
C170.5		**Nil**	

Innovative Teaching and Learning Method to be used (if any): None

Innovative Evaluation Strategy to be used (If any): None

Signature:

Module Coordinator:

Dr. S K Awasthi

Signature:

Course Coordinator: Dr. Bhubesh Chander Joshi

Detailed Syllabus
Lab-wise Breakup

Course Code	18B15GE111	**Semester :** Odd **(specify Odd/Even)**	**Semester:** I **Session** 2019-2020 **Month from:** July to Dec
Course Name	Engineering Drawing and Design		
Credits	1.5	**Contact Hours**	0-0-3

Faculty (Names)	**Coordinator(s)**	Madhu Jhariya, Deepak Kumar
	Teacher(s) (Alphabetically)	Chandan Kumar, Nitesh Kumar, Vimal Saini

COURSE OUTCOMES		**COGNITIVE LEVELS**
C178.1	Recall the use of different instruments used in Engineering Drawing and Importance of BIS and ISO codes.	Remembering Level (C1)
C178.2	Illustrate various types of mathematical curves and scale.	Understanding Level (C2)
C178.3	Classify different types of projection and Construct Orthographic projection of Point, Line, Plane and Solid.	Applying Level (C3)
C178.4	Construct Isometric Projection and Conversion of Orthographic view to Isometric view and vice-versa.	Applying Level (C3)
C178.5	Construct Engineering model in Drawing software (AutoCAD) and Compare it with conventional drawing.	Analyzing Level (C4)

Module No.	**Title of the Module**	**List of Experiments**	**CO**
1.	Introduction to Engineering Drawing	• Principles of engineering graphics and their significance, usage of drawing instruments. • Technical vertical capital letters which includes English alphabets and numeric. • Constructing a pentagon and hexagon; engineering curves: Parabola, Ellipse, Hyperbola, Cycloids and Involutes.	C178.2
2.	Orthographic Projections	• **Projection of points:** Point on VP, HP, in space. • **Projection of straight lines:** Lines inclined or parallel to any one of the planes; lines inclined to both HP and VP with traces. • **Projection of planes:** Plane on VP, HP, inclined to any one of the planes; plane inclined to both HP and VP.	C178.3
3.	Projections of Regular Solids	• Projections of solids in simple position, inclined to one/both the planes.	C178.3
4.	Sections and Sectional Views of Right Angular Solids	• **Sections of solids:** Section of standard solids and true shape section of standard machine elements for the section planes perpendicular to one plane and parallel or inclined to other plane. • **Development of surfaces:** Development of standard solids and sectioned solids.	C178.3

5.	Isometric Projections	• Principles of Isometric projection – Isometric Scale, Isometric Views, Conventions; Isometric Views of Planes, Simple and compound Solids; Conversion of Isometric Views to Orthographic Views and Vice-versa.	C178.4
6.	Overview of Computer Graphics	• Demonstrating knowledge of the theory of CAD software; Dialog boxes and windows; Shortcut menus; the Command Line; the Status Bar; Isometric Views of lines, Planes, Simple and compound Solids.	C178.5
7.	Customization & CAD Drawing	• CAD Drawing along with customization tools, Annotations, layering & other functions. Orthographic Projections; Model Viewing; Co-ordinate Systems; Multi-view Projection; Surface Modeling; Solid Modeling.	C178.5
8.	Demonstration of a simple team design project	• Technical 2D/3D orthographic and Isometric projections; Demonstration of a simple team design project.	C178.5

Evaluation Criteria Components	**Maximum Marks**
Mid-Term	20
End-Term	20
(Attendance + D2D)	60 (10+50)
Total	**100**

Recommended Reading material: Author(s), Title, Edition, Publisher, Year of Publication etc. (Text books, Reference Books, Journals, Reports, Websites etc. in the IEEE format)

1.	Bhatt N.D., Panchal V.M. & Ingle P.R., Engineering Drawing, Charotar Publishing House, 2014.
2.	Shah, M.B. & Rana B.C., Engineering Drawing and Computer Graphics, Pearson Education, 2008.
3.	Agrawal B. & Agrawal C. M., Engineering Graphics, TMH Publication, 2012.
4.	Narayana, K.L. & P Kannaiah , Text book on Engineering Drawing, Scitech Publishers, 2008