Course Description

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Course Code	15B11CI211	**Semester** Even	**Semester** 2nd **Session** 2019 -2020 **Month from** January to June
Course Name	Software Development Fundamentals - II		
Credits	4	**Contact Hours**	3 (L)+ 1 (T)

Faculty (Names)	**Coordinator(s)**	Sec-62: Niyati Aggarwal, Suma Dawn Sec-128: Arti Jain
	Teacher(s) (Alphabetically)	Sec-62: Alka Singhal, Aditi Sharma, Amarjeet Kaur, Mradula Sharma, Neha Bansal, Niyati Aggarwal, Parul Arora, Pawan Singh Mehra, Sakshi Agarwal, Suma Dawn, Taj Alam Sec-128:

COURSE OUTCOMES		**COGNITIVE LEVELS**
C110.1	Develop C programs using structures, pointers, functions, and files.	Apply Level (C3)
C110.2	Solve problems related to data storage, retrieval, searching, and sorting by utilizing stack/queue.	Apply Level (C3)
C110.3	Make use of linked list to solve various problems.	Apply Level (C3)
C110.4	Apply binary tree data structure to perform operations like searching, insertion, deletion, and traversing.	Apply Level (C3)
C110.5	Explain basic features of object-oriented design such as objects, classes, encapsulation, polymorphism, inheritance, and abstraction.	Understand Level (C2)
C110.6	Develop C++ programs using OOPs concepts like encapsulation, Inheritance, Polymorphism, and Standard Template Library.	Apply Level (C3)

Module No.	**Title of the Module**	**Topics in the Module**	**No. of Lectures for the module**
1.	Advanced C programming	Derived data types – **Enumerated,** structure and Union; Revision of Functions, Pointers, Pointer arithmetic, Pointer-to-Pointers, Pointers and Arrays & Strings (1D, 2D, **MD, array of pointers**), Pointers-to-Functions, Pointer-to-Strucures, Pointers within Structures, Structures and Functions, Unions; **Function Prototypes**, Arguments Passing; Recursion; FILE handling (binary and text) – reading and writing; Searching – Linear, and binary search; Sorting – bubble, insertion, and selection; **Bitwise Operations**;	16

2.	Implementations and applications of elementary data structures	Stacks – implementation (array-based) and applications; Queues: linear, and queue applications, circular, deque – implementation and applications; Linked list - application, storage; sparse matrix; Binary trees- implementation using arrays and pointers.	15
3.	Object Oriented Programming	Introduction to Object-Oriented Programming using C++, objects, classes, methods, implementing functions in the class, use of scope resolution operator, Access Modifiers, static functions and static data members, constructor and destructors, Inheritance: single, multiple, multi-level and hybrid, Polymorphism: function and operator overloading, virtual member functions, abstract base classes and pure virtual functions, Introduction to SDLC.	14
		Total number of Lectures	**45**

Evaluation Criteria

Components	**Maximum Marks**
T1	20
T2	20
End Semester	35
TA	25 (Attendance = 07; Class Test, Quizzes, etc = 07; Internal assessment = 05 Assignments in PBL mode = 06.)
Total	**100**

Text Reading material:

1.	E. Balagurusamy, “Programming In Ansi C”, McGraw Hill Education India Pvt Ltd, 8th Edition, 2019.
2.	B. S. Gottfried, “Programming with C”, Schaum’s Outlines, Mc Graw Hill, 4th Edition.
3.	G. Perry, and D. Miller, “C Programming Absolute Beginner's Guide, QUE Publication, 3rd Edition, 2013
4.	David Griffiths, and Dawn Griffiths “Head First C 1/e Edition”, O’Reilly Publication, 2012.
5	B. Stroustrup, “The C++ Programming Language”, 4th Edition, Addison-Wesley, 2013.
6.	T. Gaddis, “Starting Out with C++ from Control Structures to Objects”, 9th edition, Pearson Publication, 2017.
7.	B. E. Moo, J. Lajoie, S. B. Lippman, “C++ Primer”, 5th Edition, Addison-Wesley Professional, 2013
8.	Y. P. Kanetkar, “Exploring C”, BPB Publication, 2nd Edition, 2014.
9.	D. S. Malik, “C++ Programming: From Problem Analysis to Program Design, 6th Edition, Course Technology, Cengage Learning, 2012
10.	R. Thareja, “Computer Fundamentals and Programming in C”, Oxford University Press, 2012.
11.	Study Material provided by faculty

Recommended Reading material:	
1	B W. Kernighan and Dennis M. Ritchie, “The C Programming Language”, 2nd Edition, Prentice-Hall India, New Delhi, 2002.
2	H. Schildt, **“**C: The Complete Reference”, Tata McGraw-Hill Education, 4th Edition, TMH 2000.
3	E. Horowitz, S. Sahni, “Fundamentals of Data Structures in C”, 2008, Silicon press
4	E Balaguruswamy, “Object Oriented Programming with C++”, 4th Edition, TMH, 2008
5	P. van der Linden, “Expert C Programming: Deep C Secrets”, Prentice Hall, ISBN: 0131774298.
6	M. Vine, “C Programming for the Absolute Beginner”, Second Edition, 2008 Thomson Course Technology.
7	T. A. Budd, “An Introduction to Ob ject-Oriented Programming”, 3rd Edition, Addison-Wesley, 2001
8	Y. Kanethkar, “Let Us C”, BPB Publication, 16th Edition, 2018.
9	R. Lafore, “Object-Oriented Programming in C++”, Fourth Edition, Sams Publishing, 2002.

Detailed Syllabus
Lecture-wise Breakup

Course Code	15B11EC111	**Semester** Even **(specify Odd/Even)**	**Semester** 2nd **Session** 2019 -2020 **Month from** Jan-June
Course Name	**Electrical Science -1**		
Credits	4	**Contact Hours**	3+1

Faculty (Names)	**Coordinator(s)**	Ashish Gupta, Madhu Jain
	Teacher(s) (Alphabetically)	Atul Srivastava, Jyoti Vyas, Kaushal Nigam, Mandeep Narula, Neetu Joshi, Nisha, Rachna Singh, Sajaivir Singh, Shraddha Saxena,

COURSE OUTCOMES		**COGNITIVE LEVELS**
C113.1	Recall the concepts of voltage, current, power and energy for different circuit elements. Apply the Kirchhoff laws and different analyzing techniques to identify the different circuit parameters.	Apply Level (C3)
C113.2	Define and apply the networks theorems in the complex AC and DC circuits, networks. Demonstrate the physical model for given Sinusoidal AC signal and construct the phasor diagrams.	Applying Level (C3)
C113.3	Demonstrate the conept of resonance and operate different instrumental and measurement equipments.	Understanding Level (C2)
C113.4	Demonstrate the construction and working of single phase transformer.	Understanding Level (C2)

Module No.	**Title of the Module**	**Topics in the Module**	**No. of Lectures for the module**
1.	Basic Concepts	Voltage, Current, Power and Energy analysis for Circuit elements (R, L, C), Independent and Dependent Sources, Kirchhoff's Laws, Voltage Divider rule, Current Divider rule	6
2.	DC Circuit Analysis	Star-Delta Transformation, Source transformation, Mesh and Supermesh Analysis, Nodal and super nodal Analysis	6
3.	Network Theorems	Superposition Theorem, Thevenin's Theorem, Norton's Theorem, Maximum Power Transfer Theorem	6
4.	Sinusoidal Steady State Analysis	Physical Model for a Sinusoid, Average Value, Effective Value, Phasor presentation, Addition of Phasor using Complex Numbers, Concepts of impedance and admittance.	4
5.	AC Network Analysis and Theorems	Mesh and Nodal analysis, Superposition Theorem, Thevenin's Theorem, Norton's Theorem, Maximum Power Transfer Theorem	6
6.	Resonant Circuits	Series and Parallel resonance, frequency response of Series and Parallel resonance, Q-Factor, Bandwidth	4
7.	Electrical Instruments	Essentials of an Instrument, Permanent Magnet Moving Coil (PMMC) Instruments, voltmeter, ammeter, Ohmmeter, Meter Sensitivity (Ohms-Per-Volt Rating); Loading Effect; Multimeter; Cathode Ray Oscilloscope: Construction,	6

		Working and Applications. Function Generators	
8.	Single Phase Transformer	Principle of operation, construction, e.m.f. equation, equivalent circuit, power losses, efficiency (simple numerical problems), introduction to auto transformer.	4
		Total number of Lectures	**42**

Evaluation Criteria

Components	**Maximum Marks**
T1	20
T2	20
End Semester Examination	35
TA	25 (Assignment = 10, Quiz = 5, Attendance = 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.	R.C. Dorf and James A. Svoboda, "Introduction to Electric Circuits"**,** 9th ed, John Wiley & Sons, 2013.
2.	Charles K. Alexander (Author), Matthew N.O Sadiku, " Fundamentals of Electric Circuits", 6th ed, Tata Mc Graw Hill, 2019.
3.	Robert L. Boylestad, Louis Nashelsky, " Electronic Devices and Circuit Theory ", 11th ed, Prentice Hall of India, 2014.
4.	D.C. Kulshreshtha, Basic Electrical Engineering,Revised 1st ed, Tata Mc Graw Hill, 2017 .

Detailed Syllabus

Lecture-wise Breakup

Course Code	15B11MA211	**Semester** Even	**Semester** II **Session** 2019 -2020 **Month from** Jan 2020- June 2020
Course Name	Mathematics 2		
Credits	4	**Contact Hours**	3-1-0
Faculty (Names)	**Coordinator(s)**	Dr. Anuj Bhardwaj & Dr. NehaAhlawat	
	Teacher(s) (Alphabetically)	Dr. Anuj Bhardwaj, Prof. B.P. Chamola, Dr. D. C. S. Bisht, Dr. NehaAhlawat, Dr. NehaSinghal, Dr. PuneetRana, Prof. R.C. Mittal, Prof. Sanjeev Sharma,	

COURSE OUTCOMES		**COGNITIVE LEVELS**
After pursuing the above mentioned course, the students will be able to:		
C106.1	apply different methods for solving ordinary differential equations of second order.	Applying Level (C3)
C106.2	explain different tests/methods of convergence for infinite series.	Understanding Level (C2)
C106.3	find the series solution of differential equations and use it to construct Legendre's polynomials and Bessel's functions.	Applying Level (C3)
C106.4	classify the partial differential equations and apply Fourier series to find their solution.	Applying Level (C3)
C106.5	explain Taylor's & Laurent's series expansion, singularities, residues and transformations.	Understanding Level (C2)
C106.6	apply the concept of complex variables to solve the problems of complex differentiation and integrations.	Applying Level (C3)

Module No.	**Title of the Module**	**Topics in the Module**	**No. of Lectures for the module**
1.	Second Order Linear Differential Equations	Linear Differential Equations of Second Order with constant coefficients and with variable coefficients, Change of Variable, Variation of Parameters.	5
2.	Convergence of Series and Fourier Series	Convergence of series, Tests of convergence, Alternating Series, Absolute & Conditional Convergence, Uniform Convergence. Fourier Series.	7
3.	Series Solution and Special Functions	Series Solutions, Bessel Function, Recurrence Relations and Orthogonality. Legendre functions, Recurrence relations and Orthogonality.	7
4.	Partial Differential	Classification and Solution of PDE, Equation of vibrating string, Solution of one dimensional wave	5

	Equations	& heat equations.	
5.	Complex Variables	Limit, Continuity and Differentiability of Functions of Complex Variables, Analytic Functions, Cauchy's Riemann Equations.	3
6.	Complex Integration	Cauchy Integral Theorem, Cauchy Integral Formula and Applications.	4
7.	Series Expansion	Taylor and Laurent Series Expansion, Poles and Singularities.	4
8.	Contour Integration	Residues, Cauchy's residue theorem and its applications.	5
9.	Conformal Mapping	Bilinear transformation	2
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:

1.	**Jain, R. K. &Iyenger, S. R. K.,** Advanced Engineering Mathematics, 3rd Ed., Narosa Publishing House, New Delhi, 2008.
2.	**Brown, J.W. & Churchill, R.V.,** Complex Variables and Applications, 6th Ed., McGrawHill, 1996.
3.	**Prasad, C.,** (a) Mathematics for Engineers (b) Advanced Mathematics for Engineers, Prasad Mudranalaya, 1982.
4.	**Kreysizg, E.,** Advanced Engineering Mathematics, 9th Edition, John Wieley& Sons, Inc., 2011
5.	**Simmons, G. F.,** Differential Equations with Applications and Historical Notes, 2nd Ed. McGraw Hill, 1991.
6.	**Spiegel, M.R.,** Complex Variables, Schaum's outline series, MacGraw-Hill, 2009.

Detailed Syllabus
Lecture-wise Breakup

Course Code	15B11PH211	**Semester: Even**	**Semester: II Session** 2019 -2020 **Month from: January to June**
Course Name	PHYSICS-2		
Credits	4	**Contact Hours**	4

Faculty (Names)	**Coordinator(s)**	**Dr. Vivek Sajal & Dr. Suneet Kumar Awasthi**
	Teacher(s) (Alphabetically)	Alok Pratap Singh Chauhan Amit Verma Anuj Kumar Anuraj Panwar Anshu D. Varshney Ashish Bhatnagar D. K. Rai Dinesh Tripathi Himanshu Pandey Manoj Kumar Manoj Tripathi Navendu Goswami R. K. Dwivedi S. C. Katyal Suneet Kumar Awasthi Vikas Malik Vivek Sajal

COURSE OUTCOMES		**COGNITIVE LEVELS**
CO1	Recall the basic concepts relating to electromagnetic theory, statistical physics, lasers, fiber optics and solid state physics.	Remembering (C1)
CO2	Illustrate the various physical phenomena with interpretation based on the mathematical expressions involved.	Understanding (C2)
CO3	Apply the basic principles in solving variety of problems related to lasers, electromagnet theory, fiber and solid state physics.	Applying (C3)
CO4	Analyze and examine the solution of the problems using physical and mathematical concepts involved in the course.	Analyzing (C4)

Module No.	**Title of the Module**	**Topics in the Module**	**No. of Lectures for the module**
1.	Electromagnetism and Optical Fiber	Coulomb's law, Gauss law and its applications, Treatment of electrostatic problems by solution of Laplace and Poisson's equations, Biot-Savart law, Ampere's law, Maxwell's equations in free space and dielectric media. Electromagnetic waves, Derivations of expressions for energy density and energy flux (Poynting vector) in an electromagnetic field, Radiation pressure. Propagation of EM waves through boundary-Reflection, Refraction, Absorption and Total Internal Reflection. Light propagation in fibers and Graded Index fibers, Numerical Aperture and Attenuation, Single and Multimode.	18
2.	Statistical	Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac	08

	Distributions and Lasers	distributions and their applications. Principle and working of laser, Einstein A and B coefficients, Ruby Laser.	
3.	Solid State Physics	Basic ideas of bonding in solids, Crystal structure, Bragg's law X-ray diffraction, Band theory of solids, Distinction between metals, semiconductors and insulators. Electronic conduction in metals, Intrinsic and extrinsic (n and p-type) semiconductors and their electrical conductivity. p-n junction and Hall effect in semiconductors.	14
		Total number of Lectures	**40**

Evaluation Criteria

Components	**Maximum Marks**
T1	**20**
T2	**20**
End Semester Examination	**35**
TA	**25**
	(a) Quizes /class tests (07 M), (b) Attendance (07 M) (c) Internal Assessment (05) (d) Assignments in PBL mode (06 M)
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.	D. J. Griffiths, Introduction to electrodynamics, Pearson India.
2.	G. Keiser, Optical Fiber Communications, Tata Mc Graw Hill Education.
3.	A. Beiser, Concepts of Modern Physics, Mc Graw Hill International.
4.	S. O. Pillai, Solid State physics, New Age International (P) Limited.
5.	B. G. Streetman & S. Banerjee, Solid State Electronic Devices, Prentice-Hall India.

Detailed Syllabus

Course Code	**15B17CI271**	**Semester : Even**	**Semester 2nd Session 2019 -2020 Month from Jan-May 2020**
Course Name	**Software Development Fundamental – 2 LAB**		
Credits	**1**	**Contact Hours**	**2**

Faculty (Names)	**Coordinator(s)**	**Dr. Parul Agarwal (J62)** **Dr. Himani Bansal (J128)**
	Teacher(s) J62 (Alphabetically)	Aditi Sharma, Adwitiya Sinha, Alka, Amarjeet Kaur, Ankita Verma, Anuja Arora, K.Rajalakshmi, Manju, Megha Rathi, Mradula Sharma, Neha Bansal, Niyati Aggrawal, Parul Agarwal, Sakshi Agarwal, Sarishty Gupta, Shulabh

COURSE OUTCOMES		**COGNITIVE LEVELS**
CO1	Make use of structures, pointers, functions, and files to build basic C programs.	Apply (level 3)
CO2	Construct stack/queue based solutions for data storage, retrieval, searching, and sorting problems.	Apply (level 3)
CO3	Apply linked list data structure to solve problems like polynomial operations and sparse matrix representation.	Apply (level 3)
CO4	Build operations like searching, insertion, deletion, traversing on binary tree data structure.	Apply (level 3)
CO5	Demonstrate fundamental concepts of object-oriented programming i.e. objects, classes, encapsulation, polymorphism, inheritance, and abstraction.	Understand (level 2)
CO6	Apply object-oriented programming features like encapsulation, Inheritance, Polymorphism, and Standard Template Library to construct C++ programs.	Apply (level 3)

Module No.	**Title of the Module**	**List of Experiments**	**CO**

1.	Structures	Write C programs to store heterogeneous data and perform basic queries over it.	CO1
2.	Pointers & Functions	Write C programs using pointers and recursive functions like palindrome, factorial, fibonacci series, number system etc. **using array of pointers**	CO1
3.	File Handling & Dynamic Memory Allocation	Write menu driven C programs to perform basic file operations (create, read, write, update).	CO1
4.	Searching & Sorting	Write C programs to perform searching (Linear and binary) and sorting (Insertion, bubble, selection) on set of n numbers, strings using runtime input or stored input from a file. **Program on bitwise operators**.	CO2
5.	Stacks	Write C programs using LIFO concept such as push an element, pop an element, display status of the stack and arithmetic expressions evaluation and representations.	CO2
6.	Queue	Write programs in C to perform operations on queues using array implementation.	CO2
7.	Linked List	Write programs in C to perform basic operations (add, delete, search etc.) via linked list representation. **Use dynamic memory allocation.**	CO3
8.	Binary Tree	Write programs in C to implement binary tree properties (traversal, leaf node identification, height etc.) using array and linked list representation.	CO4
9.	Introduction to C++ : Classes and Objects	Understand fundamental concepts of OOPs i.e. objects, classes, constructor, destructor, friend function through output based C++ programs.	CO5
10.	Object oriented programming Concepts	Write programs in C++ using OOPs concept like encapsulation, Inheritance, Polymorphism and Abstraction.	CO6

Evaluation Criteria

Components	**Maximum Marks**
Lab Test -1	**20**
Lab Test -2	**20**
TA	**60**
Total	**100**

Text Reading material:	
1.	E. Balagurusamy, “Programming In Ansi C”, McGraw Hill Education India Pvt Ltd, 8th Edition, 2019.
2.	B. S. Gottfried, “Programming with C”, Schaum’s Outlines, Mc Graw Hill, 4th Edition.
3.	G. Perry, and D. Miller, “C Programming Absolute Beginner's Guide, QUE Publication, 3rd Edition, 2013
4.	David Griffiths, and Dawn Griffiths “Head First C 1/e Edition”, O’Reilly Publication, 2012.
5	B. Stroustrup, “The C++ Programming Language”, 4th Edition, Addison-Wesley, 2013.
6.	T. Gaddis, “Starting Out with C++ from Control Structures to Objects”, 9th edition, Pearson Publication, 2017.
7.	*B. E. Moo, J. Lajoie, S. B. Lippman, “C++ Primer”, 5th Edition, Addison-Wesley Professional, 2013*
8.	Y. P. Kanetkar, “Exploring C”, BPB Publication, 2nd Edition, 2014.
9.	D. S. Malik, “C++ Programming: From Problem Analysis to Program Design, 6th Edition, Course Technology, Cengage Learning, 2012
10.	R. Thareja, “Computer Fundamentals and Programming in C”, Oxford University Press, 2012.
11.	Study Material provided by faculty
Recommended Reading material:	
1	B W. Kernighan and Dennis M. Ritchie, “The C Programming Language”, 2nd Edition, Prentice-Hall India, New Delhi, 2002.
2	H. Schildt, **“**C: The Complete Reference”, Tata McGraw-Hill Education, 4th Edition, TMH 2000.
3	E. Horowitz, S. Sahni, “Fundamentals of Data Structures in C”, 2008, Silicon press
4	E Balaguruswamy, “Object Oriented Programming with C++”, 4th Edition, TMH, 2008
5	P. van der Linden, “Expert C Programming: Deep C Secrets”, Prentice Hall, ISBN: 0131774298.
6	M. Vine, “C Programming for the Absolute Beginner”, Second Edition, 2008 Thomson Course Technology.
7	T. A. Budd, “An Introduction to Ob ject-Oriented Programming”, 3rd Edition, Addison-Wesley, 2001
8	Y. Kanethkar, “Let Us C”, BPB Publication, 16th Edition, 2018.

9	R. Lafore, “Object-Oriented Programming in C++”, Fourth Edition, Sams Publishing, 2002.

Detailed Syllabus
Labwise Breakup

Course Code	15B17EC171	**Semester -:** Even (specify Odd/Even)	**Semester-:** II, **Session:** 2019 -2020 **Month- :** January – May
Course Name	Electrical Science-1 Lab		
Credits	2	**Contact Hours**	2

Faculty (Names)	**Coordinator(s)**	Kaushal Nigam & Nisha Venkatesh
	Teacher(s)	Abhay Kumar, Ashish Gupta, Atul K. Srivastava, Amit Kumar Goyal, Ankit Garg, Jyoti Vyas, Kirminder Singh, Monika, Madhu Jain, Ritesh Sharma, Raghvendra Singh, Sajai Vir Singh, Varun Goel, Vijay Khare.

COURSE OUTCOMES		**COGNITIVE LEVELS**
C176.1	Understand various active and passive components and instruments (Multimeter, Bread board, Regulated D.C. power supply).	Understanding (C2)
C176.2	Acquire the knowledge of electrical network and circuit such as branch, node, loop and mesh in networks and circuits.	Analyzing (C4)
C176.3	Study and verification of reduction technique using different network theorem.	Remembering (C1)
C176.4	Study and verification of series and parallel AC circuits as well as Open & Short Circuit Test in single phase transformer.	Applying (C3)

Module No.	**Title of the Module**	**List of Experiments**	**COs**
1.	Introduction of active and passive components	Introduction to various components (Resistor, Capacitor, inductor, and IC) and instruments Multimeter, Bread board, Regulated D.C. power supply and CRO.	C176.1
2.	Analysis and verifications of Mesh and Node	Verification of KVL and KCL using a given circuit.	C176.2
3.	Analysis and verification of Transform Network	Realization of Equivalent Resistance of Star to Delta and Delta to Star Transformation.	C176.2
4.	Analysis and verification of of Super Node	Verification of Super Node using Voltage Source.	C176.2
5.	Analysis and verification of Divider rules for Current and Voltage	To verify the voltage divider rule (VDR) and the current divider rule (CDR).	C176.2

6.	Study and Analysis of Superposition Theorem	Verification of Superposition Theorem.	C176.3
7.	Analysis and verification of Thevenin's/ Norton Theorem	Verification of Thevenin's Theorm and Norton Theorm.	C176.3
8.	Analysis and verification of Maximum Power Transfer Theorem	Verification of Maximum Power Transfer Theorem.	C176.3
9.	Study and Verification of AC Signal in term of RMS and PP Value	To study the Root-Mean-Square(RMS), Peak, and Peak-to-Peak Values, Measurements with Oscilloscope.	C176.4
10.	Study and Analysis of Resonance Circuit	To study the behavior of Series-Parallel RLC Circuit at Resonance.	C176.4
11.	Study of open Circuit Test	Open Circuit Test in Single Phase Transformer using Vlab.	C176.4
12.	Study of Short Circuit test	Short Circuit Test in Single Phase Transformer using Vlab.	C176.4

Evaluation Criteria

Components	**Maximum Marks**
Viva1	20
Viva2	20
Report file, Attendance, and D2D	60 (15+15+30)
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.	Nilsson Riedel, Electric Circuits," Pearson, 11th Edition, 2019
2.	Abhijit Chakrabarti, "Circuit Theory Analysis and Synthesis," Dhanpat Rai & Co.; 7th Edition , 2018
3.	U. S. Bkashi A.U. Bakshi S. Ilaiyaraja,, "Circuit Theory Technical Publications; 3rd Edition, 2019
4.	Roman Malaric, "Instrumention and Measurement in Electrical Engineering, "Universal Publisher, 3rd Edition, 2011.
5.	DP Kothar and I J Nagrath, " Electric Machine," TMH; 4 th Edition, 2010

Detailed Syllabus
Lab-wise Breakup

Course Code	15B17PH271	**Semester** Even	**Semester** II **Session** 2019 -2020 **Month: from** Jan-June
Course Name	Physics Lab-2		
Credits	1	**Contact Hours**	2

Faculty (Names)	**Coordinator(s)**	Alok Pratap Singh Chauhan
	Teacher(s) (Alphabetically)	Alok Pratap Singh Chauhan, Amit Verma, Anuj Kumar, Anuraj Panwar, Bhubesh Chander Joshi, D. K. Rai, Dinesh Tripathi, Himanshu Pandey, Manoj Kumar, Manoj Tripathi, N. K. Sharma, Navendu Goswami, Prashant Chauhan, S. C. Katyal, Sandeep Chhoker, Swati Rawal, Vikas Malik, Vivek Sajal

COURSE OUTCOMES		**COGNITIVE LEVELS**
C171.1	Recall laser, fibre optics, semiconductor and solid state physics principles behind the experiments.	Remembering (C1)
C171.2	Explain the experimental setup and the principles involved behind the experiments performed.	Understanding (C2)
C171.3	Plan the experiment and set the apparatus and take measurements.	Applying (C3)
C171.4	Analyze the data obtained and calculate the error.	Analyzing (C4)
C171.5	Interpret and justify the results.	Evaluating (C5)

Module No.	**Title of the Module**	**List of Experiments**	**CO**
1.	Semiconductor Physics	**1(a)** To determine the band gap in a semiconductor using its p-n junction diode. **1(b)** To draw the I-V characteristic of Solar cell and find maximum power and fill factor. **2(a)** To measure resistivity of semiconductor at different temperatures by Four Probe Method. **2(b)** To determine Band Gap of the semiconductor. **3(a)** To study the Hall effect in semiconductor and to determine its allied coefficients. **3(b)** To study the magneto resistance of given semiconductor material.	1-5
2.	Solid State Physics	**4.** To study the Magnetostriction in metallic rod with the help of Michelson interferometer arrangement. **5.** To find the susceptibility of a paramagnetic substance ($FeCl_3$) in the form of liquid or a solution. **6.** Study of dielectric (constant) behavior and determination of Curie's temperature of ferroelectric ceramics.	1-5
3.	Modern Physics	**7(a)** To determine the value of specific charge (e/m) of an electron by Thomson's method. **(b)** To determine the velocity of ultrasonic wave in the medium of liquid using ultrasonic interferometer and to determine the compressibility of the given liquid. **8.** To determine the value of specific charge (e/m) of an electron by Magnetron method.	1-5

		9(a) To determine Planck‟s Constant using LEDs of known wavelength. **(b)** To study the photovoltaic cell and hence verify the inverse square law.	
4.	Optical Fiber	**10(a)** To determine the numerical aperture of a given multimode optical fiber. **(b)** To measure the power loss at a splice between two multimode fibers and to study the variation of splice loss with Longitudinal and Transverse misalignments of the given fibers.	1-5

Evaluation Criteria

Components	**Maximum Marks**
Mid Term Viva (V1)	20
End Term Viva (V2)	20
D2D	60
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.	Dey and Dutta, Practical Physics
2.	Lab Manuals

Detailed Syllabus
Lab-wise Breakup

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

Faculty (Names)	**Coordinator(s)**	Madhu Jhariya,Deepak Kumar
	Teacher(s) (Alphabetically)	Chandan Kumar, Nitesh Kumar, Rahul 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 I)
C178.2	Illustrate various types of mathematical curves and scale.	Understanding (Level II)
C178.3	Classify different types of projection and Construct Orthographic projection of Point, Line, Plane and Solid.	Applying (Level III)
C178.4	Construct Isometric Projection and Conversion of Orthographic view to Isometric view and vice-versa.	Applying (Level III)
C178.5	Construct Engineering model in Drawing software (AutoCAD) and Compare it with conventional drawing.	Analyzing (Level IV)

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.	C178.1
2.	Engineering Curves	• Constructing a pentagon and hexagon; engineering curves: Parabola, Ellipse, Hyperbola, Cycloids and Involutes.	C178.2
3.	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
4.	Projections of Regular Solids	• Projections of solids in simple position, inclined to one/both the planes.	C178.3
5.	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.	C178.3

6.	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
7.	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
8.	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
9.	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