Detailed Syllabus

Lecture-wise Breakup

Course Code	15B11CI111	**Semester:** Odd	**Semester:** I **Session:**2020-21 **Month from:** Aug 2020 to Dec 2020
Course Name	Software Development Fundamentals – I		
Credits	4	**Contact Hours**	3-1-0

Faculty (Names)	**Coordinator(s)**	Dr. Manish Kumar Thakur, Ms. Mradula Sharma (J62) / Dr. Avinash Pandey (J128)
	Teacher(s) (Alphabetically)	Dr Avinash Pandey, Akanksha Bhardwaj, Bindu Verma, Nitin Shukla, Payal Khurana Batra, Rashmi Kushwah, Shailesh Kumar, Swati Gupta

COURSE OUTCOMES		**COGNITIVE LEVELS**
C109.1	Explain various phases of software development life cycle and	Understand Level (Level 2)
C109.2	Explain various data types, memory allocation schemes. precedence of arithmetical and logical operations, and need of array, and structures	Understand Level (Level 2)
C109.3	Design the flow chart and write the high level code for different problems	Understand Level (Level 2)
C109.4	Apply and implement functions with or without pointers for different Problems	Apply Level (Level 3)
C109.5	Demonstrate and implement various operations like traverse, insertion, deletion, etc. on files	Apply Level (Level 3)

Module No.	**Subtitle of the Module**	**Topics in the Module**	**No. of Lectures for the module**
1.	Introduction	Introduction to Software Development Life Cycle, Step by step solution to simple problems, developing logic/flow-chart/pseudo code to solve problems like 2D screen saver, simple/logical games, puzzles	9
2.	Data types, operators, and Control Flow	Data, variables and constants, data types, operators – binary, uniary, ternary, operator precedence, operations using different operators, if, if-else, while, do-while, for, switch-case in C Programming	9
3.	Array	Fundamentals of Array, Implementation of 1D/2D Array and related operations like insertion, traversal, updation, etc. in C programming using different problems	6
4.	Functions	Introduction to Functions and its implementation in C programming language, Functions using Pass by value, recursive functions	4
5.	Structures and Union	Introduction and implementation of Structures and Union in C programming, Array of Structures and related operations like insertion, traversal, updation, etc. in C programming using different problems, Structures using function	4
6.	Pointers	Pointers in C, Dynamic memory allocation for 1D/2D array and structures, Arithmetical operations on pointers, functions using pass by reference	6

7.	File Handling	Introduction to File, creation of files in C programming language, Modes of File Handling like read, write, update; different types of files like binary file and text file and respective operations like, opening, closing, reading, writing, end of file, traversing the file, for structured and unstructured data	4
		Total number of Lectures	**42**

Evaluation Criteria

Components	**Maximum Marks**
T1	20
T2	20
End Semester Examination	35
TA	25 (Attendance = 10, Class Test, Quizzes, etc = 05, Internal assessment = 05, Assignments in PBL mode = 05)
Totals	**100**

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

Text Books

1	Ashok N. Kamthane , “Programming with ANSI and Turbo C”, Pearson Education, Delhi, 2003
2	Griffiths, David, and Dawn Griffiths, “Head First C: A Brain-Friendly Guide”, O'Reilly Media, Inc., 2012.
3	H. Cooper and H. Mullish, Jaico Publishing House. “Spirit of C”, 4th Edition, Jaico Publishing House, 2006
4	Greg Perry, Dean Miller, “C Programming Absolute Beginner's Guide Paperback”, QUE; 3 edition, 2013

Reference Books

1	Herbert Schildt. “The Complete Reference C ”, 4th Edition, TMH, 200
2	Brian W. Kernighan and Dennis M. Ritchie ,“The C Programming Language”, 2nd Edition, Prentice-Hall India, New Delhi, 2002
3	B. A. Forouzan, R. F. Gilberg “Computer Science: A Structured Programming Approach Using C”, 2nd Edition, Thomson Press, New Delhi, 2006

Detailed Syllabus
Lecture-wise Breakup

Course Code	15B11HS112	**Semester**: Odd	**Semester**: I **Session:** 2020 -2021 **Month from** Aug 2020 to Dec 2020
Course Name	English		
Credits	3	**Contact Hours**	2-1-0

Faculty (Names)	**Coordinator(s)**	Dr Monali Bhattacharya (Sect 62) Dr Nilu Chaudhary (Sect128)
	Teacher(s) (Alphabetically)	Dr Anshu Banwari, Dr Ekta Srivastava, Dr Monali Bhattacharya, Dr Nilu Chaudhary, Ms Puneet Pannu , Ms Rashmi Jacob, Dr Santosh Dev

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 Literature	**Short Stories** ·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	10
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 (Project, Assignment)
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

Detailed Syllabus

Lecture-wise Breakup

Course Code	15B11MA111	**Semester** Odd	**Semester:** I **Session:** 2020-21 **Month from** Aug 2020 to Dec 2020
Course Name	Mathematics-1		
Credits	4	**Contact Hours**	3-1-0
Faculty (Names)	**Coordinator(s)**	Dr. Yogesh Gupta, Dr. Pinkey Chauhan	
	Teacher(s) (Alphabetically)	Dr. Yogesh Gupta, Dr. Pinkey Chauhan, Dr. Anuj Bhardwaj, Dr. Amita Bhagat, Prof. Lokendra Kumar, Dr. Trapti Neer, Dr. Sarfaraz	

COURSE OUTCOMES		**COGNITIVE LEVELS**
C105.1	Explain the concepts of limits, continuity and differentiability of functions of several variables.	Understand 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.	Apply Level (C3)
C105.3	Make use of double and triple integrals to find area and volume of curves and surfaces.	Apply Level (C3)
C105.4	Explain the concepts of vector calculus and apply Green's, Stoke's and Gauss divergence theorems in engineering problems.	Apply Level (C3)
C105.5	Solve the ordinary differential equations and explain the concepts of Laplace transform for solving engineering problems.	Apply Level (C3)
C105.6	Utilize matrix algebra for solving a system of linear equations and explain eigenvalues, eigenvectors, diagonalization and quadratic form.	Apply 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, PBL)
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, 4th Ed., Alpha Science International, 2013.
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.

Detailed Syllabus
Lecture-wise Breakup

Course Code	15B11PH111	**Semester:** Odd	**Semester:** I **Session:** 2020 -2021 **Month from** Aug 2020 to Dec 2020
Course Name	PHYSICS-1		
Credits	4	**Contact Hours**	3-1-0

Faculty (Names)	**Coordinator(s)**	Suneet Kumar Awasthi & Dinesh Tripathi
	Teacher(s) (Alphabetically)	Alok Pratap Singh Chauhan, Anuj Kumar, Anuraj Panwar, Anshu D. Varshney, Ashish Bhatnagar, Bhubesh Chander Joshi, D. K. Rai, Himanshu Pandey, Manoj Kumar, Manoj Tripathi, S. C. Katyal, Sandeep Chhoker, Vikas Malik

COURSE OUTCOMES		**COGNITIVE LEVELS**
C101.1	Recall the basic principles of physics related to optics, relativity, quantum mechanics, atomic physics and thermodynamics.	Remember Level (C1)
C101.2	Illustrate the various physical phenomena with interpretation based on the mathematical expressions involved.	Understand Level (C2)
C101.3	Apply the concepts/principles to solve the problems related to wave nature of light, relativity, quantum mechanics and atomic physics.	Apply Level (C3)
C101.4	Analyze and examine the solution of the problems using physical and mathematical concepts involved.	Analyze Level (C4)

Module No.	**Title of the Module**	**Topics in the Module**	**No. of Lectures for the module**
1.	Physical Optics	Analytical treatment of interference, Intensity distribution of fringe system, Fresnel's Biprism, Newton's rings, Michelson interferometer, Diffraction (limited to Fraunhoffer class) from Single slit, double slit and Diffraction grating, Polarization, Phenomenological understanding of Birefringence, Principles of use of uni-axial crystals in practical polarizers, compensators and wave plates, Production and analysis of completely polarized light. Optical activity, Polarimeter	15
2.	Relativity	Michelson-Morley experiment, Lorentz transformations, Addition of velocities, Mass variation with velocity, Mass-energy relation.	5
3.	Radiation	Black body radiation, Wein's law, Rayleigh Jeans law, Planck's law of radiation.	3
4.	Quantum Mechanics	Wave-particle duality, Compton scattering, Matter waves, Heisenberg's uncertainty principle, Schrödinger wave equation and its applications to the free particle in a box, potential barrier and Harmonic oscillator.	9
5.	Atomic Structure	Origin of spectral lines, spin and orbital angular momentum, Quantum numbers, Atoms in magnetic field, Zeeman effect.	4

6.	Thermodynamics	Review of the basic laws of thermodynamics, Entropy and Clausius-Cleyperon equation.	4
		Total number of Lectures	**40**

Evaluation Criteria

Components	**Maximum Marks**
T1	20
T2	20
End Semester Examination	35
TA	25 [2 Quiz (10 M), Attendance (10 M) and Cass performance (5 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.	A. K. Ghatak, *Optics*, Tata McGraw Hill.
2.	E. Hecht, *Optics*, Pearson Education.
3.	F. A. Jenkins and H. E. White, *Fundamentals of optics*, Tata McGraw Hill.
4.	R. S. Sirohi, *Wave Optics*, Orient and Longman.
5.	Reshnick, *Relativity*, New Age.
6.	A. Beiser, *Concepts of Modern Physics*, Mc Graw Hill International.
7.	Mark W. Zemansky, *Thermodynamics,*Tata McGraw Hill.

Detailed Syllabus

Lab-wise Breakup

Course Code	15B17CI171	**Semester**: Odd	**Semester**: I **Session:** 2020 -2021 **Month from** Aug 2020 to Dec 2020	
Course Name	Software Development Fundamentals Lab-1			
Credits	1		**Contact Hours**	2

Faculty (Names)	**Coordinator(s)**	Dr. Dharmveer Singh Rajpoot (J62), Ms. Ambalika Sarkar (J128)
	Teacher(s) (Alphabetically)	Akanksha Mehndiratta, Alka, Amanpreet Kaur, Amarjeet, Ambalika Sarkar, Amrit Pal Singh, Anita Sahoo, Ankita, Anubhuti Mohindra, Anuja Arora, Aparajita Nanda, Archana Purwar, Arpita Jadhav Bhatt, Arti Jain, Avinash Pandey, Bansidhar Joshi, Bharat Gupta, Bindu Verma, Charu, Chetna Dabas, Chetna Gupta, Deepti, Dhanalakshmi G, Gagandeep Kaur, Gaurav Kumar Nigam, Himani Bansal, Himanshu Agrawal, Himanshu Mittal, Indu Chawla, K Vimal Kumar, Kashav Ajmera, Kavita Pandey, Kirti Aggarwal, Manju, Mradula Sharma, Mukta Goyal, Neeraj Jain, Nitin Shukla, Niyati Aggrawal, Parmeet Kaur, Parul Agarwal , Pawan Kumar Upadhyay, Pawan Mehra, Payal Khurana Batra, Potukuchi Raghu Vamsi, Prantik Biswas, Pulkit Mehndiratta, Raju Pal, Rashmi Kushwah, Rupesh Kr. Koshariya, Sakshi Agarwal, Sangeeta Mittal, Sarishty Gupta, Shailesh Kumar, Shardha Porwal, Shariq Murtuza, Sherry Garg, Shikha Mehta, Shikha Jain, Shilpa Budhkar, Shruti Jaiswal, Shulabh, Somya Jain, Sonal, Suma Dawn, Swati Gupta, Taj Alam, Varsha Garg, Vartika Puri, Vivek K. Singh

COURSE OUTCOMES		**COGNITIVE LEVELS**
C172.1	Develop programs/logic for data types, expressions and conditional structure.	Apply (level 3)
C172.2	Perform programs for array and functions.	Apply (level 3)
C172.3	Implement programs for structure and union.	Apply (level 3)
C172.4	Perform programs of pointers and recursive functions.	Apply (level 3)
C172.5	Implement menu driven programs to perform basic file operations.	Apply (level 3)

Module No.	Title of the Module	Topics in the Module	No. of Weeks for the module
1	Flow chart and Logic Building	Developing logic/flow-chart/pseudo code to solve problems, simple/logical games, puzzles	2 Weeks
2	Data Type, Statements, Expressions, Operators	Data, variables and constants, data types, operators – binary, unary, ternary, operator precedence, associativity	1 Week
3	Control Flow	Develop C programs using conditional structure (if, if-else, nested if), and iterative control structure (do-while, while, for). Implement switch case statement.	2 Weeks
4	Array and String	Array initialization, reading and writing operations with array, one dimensional, two-dimensional array, strings, and related operations like addition, multiplication, traversal, transpose etc.	2 Weeks
5	Functions	User defined functions and inbuilt functions, Functions definition, declaration, calling, Pass by value, functions with array	1 Week
6	Structures and Union	Struct keyword, Structure and Union, Structure variable, dot operator, arrow operator, Array of Structures, structure using functions.	2 Weeks
7	Pointers	Pointers in C, Dynamic memory allocation for 1D/2D array and structures, Arithmetical operations on pointers, functions using pass by reference, recursive functions like palindrome, factorial, fibonacci series, number system etc	2 Weeks
8	File Handling	File creation, Modes of File Handling like read, write, update; different types of files like binary file and text file and respective operations like, opening, closing, reading, writing, end of file, traversing the file for structured and unstructured data	2 Weeks
		Total Number of Weeks	14 Weeks

Evaluation Criteria

Components	**Maximum Marks**
Lab Test -1	20
Lab Test -2	20
Day to Day	60
Evaluation 1	15
Evaluation 2	15
Project	15
Attendance	15
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.

Detailed Syllabus
Lab-wise Breakup

Course Code	15B17PH171	**Semester:** Odd	**Semester:** I **Session:** 2020 -2021 **Month** from July 20 to Dec 20 **(Due to COVID-19 pandemic, it was run in Fast Track mode from June'21 to Jul'21)**
Course Name	Physics Lab-1		
Credits	1	**Contact Hours**	0-0-2

Faculty (Names)	**Coordinator(s)**	Anuraj Panwar and S K Awasthi
	Teacher(s) (Alphabetically)	Alok Pratap Singh Chauhan, Amit Verma, Anuj Kumar, Ashish Bhatnagar, Manoj Tripathi, N. K. Sharma, Papia Chowdhury, Prashant Chauhan, R. K. Dwivedi, S. P. Purohit, Sandeep Chhoker, Vikas Malik

COURSE OUTCOMES		**COGNITIVE LEVELS**
C170.1	Recall optics and modern physics principles behind the experiments.	Remember (C1)
C170.2	Explain the experimental setup and the principles involved behind the experiments performed.	Understand (C2)
C170.3	Plan the experiment and set the apparatus and take measurements.	Apply (C3)
C170.4	Analyze the data obtained and calculate the error.	Analyze (C4)
C170.5	Interpret and justify the results.	Evaluate (C5)

Module No.	**Title of the Module**	**List of Experiments**	**CO**
1.	Optics	**1.** To determine the wavelength of sodium light with the help of Newton's rings setup **2.** To determine the wavelength of sodium light with the help of Fresnel's Bi-prism **3.** To find the specific rotation of cane- sugar solution by a polarimeter at room temperature, using half-shade / Bi-quartz device. **4.** To determine the dispersive power of the material of a prism with the help of a spectrometer. **5.** To determine the wavelength of prominent spectral lines of mercury light by a plane transmission grating using normal incidence method	C170.1 – C170.5
2.	Modern Physics	**6.** To study the Photoelectric effect and determine the value of Planck's constant. **7.** Determination of Planck's constant by measuring radiation in a fixed spectral range.	C170.1 – C170.5
3.	Electricity and Magnetism	**8.** To verify Stefan's law by electrical method. **9.** To determine the resistance per unit length of Carey Foster's bridge wire and specific resistance of the material of the given wire using Carey Foster's bridge. **10.** To study the variation of magnetic field with distance, along the axis of Helmholtz galvanometer, and to estimate the	C170.1 – C170.5

		radius of the coil.	

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*, Kalyani Publication.
2.	Experiment hand-outs.