

D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

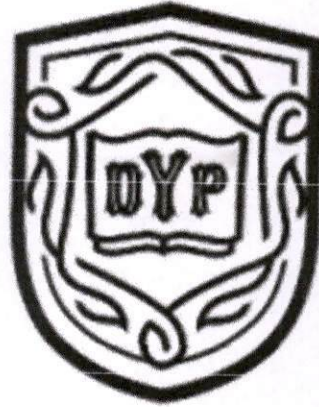
Kasaba Bawada, Kolhapur

(Approved by AICTE, New Delhi, Govt. of Maharashtra and Affiliated to Shivaji University Kolhapur)

(An Autonomous Institute)

Accredited by NAAC with 'A' Grade

Accredited by NBA



Structure and Curriculum

(As Per National Education Policy 2020)

For

First Year B.Tech.

in

Department of Computer Science and Engineering

w. e. f. A.Y.: 2024-25

PRINCIPAL

**D. Y. PATIL College of Engineering
And Technology
Kasaba Bawada, Kolhapur.
(An Autonomous Institute)**

HEAD

**Dept. of First Year Engg.
D. Y. Patil College of Engg. & Tech.
Kasaba Bawada, Kolhapur**



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Structure

Scheme of Teaching and Evaluation w. e. f. A. Y. 2024-2025

(As Per National Education Policy 2020)

Semester-I (Physics Cycle)

Sr. No	Course Code	Course Type	Name of the Course	Teaching Scheme Per Week			Credits	Total Marks	Evaluation Scheme			
				L	T	P			Type	Max. Marks	Minimum Marks For Passing	
Students Induction Program As Per AICTE Guidelines												
1	241CSEBSCL101	BSC	Mathematics-I for Computer Science and Engineering	03	--	--	03	100	ISE	20	20	40
									MSE	30		
									ESE	50		
2	241CSEBSCL102	BSC	Applied Physics	03	--	--	03	100	ISE	20	20	40
									MSE	30		
									ESE	50		
3	241CSEESCL101	ESC	Computer Programming and Problem Solving	03	--	--	03	100	ISE	20	20	40
									MSE	30		
									ESE	50		
4	241CSEESCL102	ESC	Operating System	03	--	--	03	100	ISE	20	20	40
									MSE	30		
									ESE	50		
5	241CSEVSECL101	VSEC	Design Thinking Through Innovation	01	--	--	01	25	ISE	25	10	10
6	241CSEIKSL101	IKS	Historical Places in and Around Kolhapur District	02	--	--	02	50	ISE	20	20	20
									MSE	30		
7	241CSEBSCT103	BSC	Mathematics-I for Computer Science and Engineering Tutorial	--	01	--	01	25	ISE	25	10	10
8	241CSEBSCP104	BSC	Applied Physics Laboratory	--	--	02	01	25	ISE	25	10	10
9	241CSEESCP103	ESC	Computer Programming and Problem Solving Laboratory	--	--	02	01	25	ISE	25	10	10
10	241CSEESCP104	ESC	Operating System Laboratory	--	--	02	01	25	ISE	25	10	10
11	241CSEVSECP102	VSEC	Design Thinking Through Innovation Laboratory	--	--	02	01	25	ISE	25	10	10
12	241CSECCAP101	CCA	Liberal Learning	--	--	04	02	50	ISE	50	20	20
Total				15	01	12	22	650	--	--	--	--
Non-Credits Mandatory Courses												
1	241CSEMCL101	MC	Finishing School Training I	03	--	--	--	50	ISE	50	20	Grade
2	241CSEMCP102	MC	Social/ Rural Internship	--	--	--	--	50	ISE	50	20	Grade



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F. Y. B. Tech. Structure

Scheme of Teaching and Evaluation w. e. f. A. Y. 2024-2025

(As Per National Education Policy 2020)

Semester-II (Physics Cycle)

Sr. No	Course Code	Course Type	Name of the Course	Teaching Scheme Per Week			Credits	Total Marks	Evaluation Scheme			
				L	T	P			Type	Max. Marks	Minimum Marks For Passing	
1	241CSEBSCL105	BSC	Mathematics-II for Computer Science and Engineering	03	--	--	03	100	ISE	20	20	40
								MSE	30			
								ESE	50			
2	241CSEBSCL106	BSC	Applied Chemistry for Computer Science and Engineering	03	--	--	03	100	ISE	20	20	40
								MSE	30			
								ESE	50			
3	241CSEESCL105	ESC	Generative AI	03	--	--	03	100	ISE	20	20	40
								MSE	30			
								ESE	50			
4	241CSEAECL 101	AEC	Professional Communication	01	--	--	01	25	ISE	25	10	10
5	241CSEVSECL103	VSEC	Computer Workshop	01	--	--	01	25	ISE	25	10	10
6	241CSEPCCL101	PCC	Software Engineering	02	--	--	02	50	ISE	20	20	20
								MSE	30			
7	241CSEBSCT107	BSC	Mathematics-II for Computer Science and Engineering Tutorial	--	01	--	01	25	ISE	25	10	10
8	241CSEBSCP108	BSC	Applied Chemistry for Computer Science and Engineering Laboratory	--	--	02	01	25	ISE	25	10	10
9	241CSEESCP106	ESC	Generative AI Laboratory	--	--	02	01	25	ISE	25	10	10
10	241CSEAECP 102	AEC	Professional Communication Laboratory	--	--	02	01	25	ISE	25	10	10
11	241CSEVSECP104	VSEC	Computer Workshop Laboratory	--	--	02	01	25	ISE	25	10	10
12	241CSECCAP102	CCA	Liberal Learning	--	--	04	02	50	ISE	50	20	20
Total				13	01	12	20	575	--	--	--	--
Non Credits Mandatory Courses												
1	241CSEMCL103	MC	Finishing School Training II	03	--	--	--	50	ISE	50	20	Grade
2	241CSEMCP104	MC	Capstone Project	--	--	--	--	50	ISE	50	20	Grade



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F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Course Title: Mathematics-I for Computer Science and Engineering	
Course Code: 241CSEBSCL101	Semester: I
Teaching Scheme: L-T-P: 03-00-00	Credits: 03
Evaluation Scheme ISE-I/MSE/ISE-II: 10/30/10	ESE Marks: 50

Prior Knowledge of:	Matrices, Derivatives
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Course Objectives:

1.	To teach mathematical methodology
2.	To develop mathematical skills and enhance logical thinking power of students
3.	To provide students with skills in Linear Algebra and Calculus
4.	To imbibe graduates with mathematical knowledge, computational skills and the ability to deploy these skills effectively in solution of engineering problems

Curriculum Details

Course Contents	Duration
Unit 1: Unit-I Linear Algebra –I <ul style="list-style-type: none">• Introduction to matrices, types of matrices• Rank of matrix by normal form and echelon form• Solution of simultaneous linear non-homogenous equations• Solution of simultaneous linear homogenous equations	07 Hrs
Unit 2: Numerical Solutions of Linear Algebra <ul style="list-style-type: none">• Introduction• Gauss–Elimination method• Gauss –Jordan method• Gauss –Seidel method• Jacobi’s iterative method• Power method	07 Hrs
Unit 3: Linear Algebra –II <ul style="list-style-type: none">• Definition of linear combination of vectors• Dependence and independence of vectors• Eigen values and its properties	07 Hrs



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Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

| w.e.f. A.Y. 2024-2025

Course Contents	Duration
<ul style="list-style-type: none">• Eigen vectors and its properties• Cayley-Hamilton theorem	
Unit 4: Differential Calculus <ul style="list-style-type: none">• Introduction.• Partial derivatives• Total derivatives• Euler's theorem on homogeneous functions• Jacobian and its properties	07 Hrs
Unit 5: Numerical Solutions of Algebraic & Transcendental equations <ul style="list-style-type: none">• Introduction of algebraic and transcendental equations• Bisection method• Newton-Raphson method• Regula-Falsi method• Secant method	07 Hrs
Unit 6: Vector Spaces <ul style="list-style-type: none">• The Euclidean space and vector space, subspace• Linear combination, linear span, linear dependence and independence• Basis, dimensions of finite dimensional vector space• Subspace- Row and column spaces• Rank and nullity Theorem	07 Hrs

Course Outcomes (CO): After successful completion of the course, students will be able to

CO	Statements
101.1	Reduce matrices to echelon form and apply the concept of rank of matrices to solve system of linear equations
101.2	Solve linear equations by numerical methods
101.3	Identify Eigen values & make use of it for finding Eigen vectors
101.4	Apply the knowledge of partial differentiation
101.5	Apply the numerical techniques to solve algebraic & transcendental equations
101.6	Recognize and use basic properties of subspace and vector space

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Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Course Articulation Matrix: Mapping of Course Outcomes (CO) with Program Outcomes (PO)

CO \ PO	BTL	1	2	3	4	5	6	7	8	9	10	11	12
101.1	2, 3	3	2	--	--	1	--	--	--	--	--	--	1
101.2	3	3	2	--	--	1	--	--	--	--	--	--	1
101.3	2, 3	3	2	--	--	1	--	--	--	--	--	--	1
101.4	3	2	2	--	--	--	--	--	--	--	--	--	1
101.5	3	2	2	--	--	--	--	--	--	--	--	--	1
101.6	3	2	2	--	--	1	--	--	--	--	--	--	1

Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Advanced Engineering Mathematics	7 th	Peter V. O'Neil	Cengage Learning	2012
2	Advanced Engineering Mathematics	1 st	H. K. Dass	S. Chand Publications, New Delhi	2011
3	A Text Book of Applied Mathematics	7 th	P.N.Wartikar, J.N.Wartikar	Vidarthi Griha Prakashan, Pune.	2006
4	Higher Engineering Mathematics	36 th	B.S. Grewal	Khanna Publishers	2001
5	Linear Algebra	2 nd	Jin Ho Kwak and Sungpyo Hong	Springer	2004
6	Numerical Methods in Engineering and Science	11 th	B.S. Grewal	Khanna Publishers	2023

HEAD

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Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Advanced Engineering Mathematics	5 th	Erwin Kreyszig	India Pvt, Ltd.	2014
2	Higher Engineering Mathematics	6 th	B.V.Ramana	Tata M/c Graw-Hill Publication	2010
3	Numerical Methods for Scientific and Engineering Computation	5 th	M.K.Jain	New Age International Pvt. Ltd New Delhi	2007
4	A Textbook of Engineering Mathematics	6 th	N.P.Bali, Iyengar	Laxmi Publication	2004
5	Elementary Linear Algebra	5 th	Stephen Andrilli and David Hecker	Academic Press	2016

Useful Link /Web Resources:

1. DELNET- <http://www.delnet.in>
2. NDL-<http://ndl.iitkgp.ac.in>
3. N-LIST- <http://www.nlist.inflib.ac.in>
4. https://www.youtube.com/results?search_query=Dr+Navneet+Sangle



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Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Course Title: Mathematics-I for Computer Science and Engineering Tutorial	
Course Code: 241CSEBSCT103	Semester: I
Teaching Scheme: L-T-P: 00-01-00	Credits: 01
Evaluation Scheme ISE: 25	ESE Marks: 00

Prior Knowledge of:	Matrices, Derivatives
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Course Objectives:

1.	To teach mathematical methodology
2.	To develop mathematical skills and enhance logical thinking power of students
3.	To provide students with skills in Linear Algebra and Calculus
4.	To imbibe graduates with mathematical knowledge, computational skills and the ability to deploy these skills effectively in solution of engineering problems

List of Tutorials

Tut. No.	Title of Tutorials	Duration
01	Linear Algebra–I: Rank of Matrix, Solutions of Non-homogenous simultaneous linear equations	01 Hr
02	Linear Algebra–I: Solutions of simultaneous linear homogeneous equations	01 Hr
03	Numerical Solutions of Linear Equations: Gauss–Elimination method, Gauss–Jordan method.	01 Hr
04	Numerical Solutions of Linear Equations: Gauss–Seidel method, Jacobi’s iterative method.	01 Hr
05	Linear Algebra: Linear Algebra using SCILAB /MATLAB	01 Hr
06	Linear Algebra –II: Dependence and Independence of vectors	01 Hr
07	Linear Algebra –II: Eigen values and Eigen vectors of Matrix, Cayley-Hamilton Theorem	01 Hr
08	Differential Calculus: Euler's theorem on homogeneous functions.	01 Hr
09	Differential Calculus: Partial derivatives, Jacobian and its properties.	01 Hr



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F. Y. B. Tech. Curriculum

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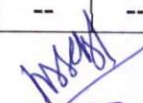
Tut. No.	Title of Tutorials	Duration
10	Numerical Solutions of Bisection Method and Newton Rapson Method	01 Hr
11	Vector Spaces: Vector space, Span, Basis, dimensions, subspace- Row and column spaces, Rank and nullity Theorem	01 Hr
12	Vector Spaces: Vector Spaces using SCILAB /MATLAB	01 Hr

Course Outcomes (CO): After successful completion of the course, students will be able to:

CO	Statements
103.1	Reduce matrices to echelon form and apply the concept of rank of matrices to solve system of linear equations
103.2	Solve linear equations by numerical methods
103.3	Identify Eigen values & make use of it for finding Eigen vectors
103.4	Apply the knowledge of partial differentiation
103.5	Apply the numerical techniques to solve algebraic & transcendental equations
103.6	Recognize and use basic properties of subspace and vector space

Course Articulation Matrix: Mapping of Course Outcomes (CO) with Program Outcomes (PO)

CO \ PO	BTL	1	2	3	4	5	6	7	8	9	10	11	12
103.1	2, 3	3	2	--	--	1	---	--	--	--	--	--	1
103.2	3	3	2	--	--	1	--	--	--	--	--	--	1
103.3	2, 3	3	2	--	--	1	--	--	--	--	--	--	1
103.4	3	2	2	--	--	--	--	--	--	--	--	--	1
103.5	3	2	2	--	--	--	--	--	--	--	--	--	1
103.6	3	2	2	--	--	1	--	--	--	--	--	--	1


HEAD
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F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

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Sr. No	Title	Edition	Author(s)	Publisher	Year
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5	Elementary Linear Algebra	5 th	Stephen Andrilli and David Hecker	Academic Press	2016

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2. NDL-<http://ndl.iitkgp.ac.in>
3. N-LIST- <http://www.nlist.inflib.ac.in>
4. https://www.youtube.com/results?search_query=Dr+Navneet+Sangle



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F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Course Title: Applied Physics	
Course Code: 241CSEBSCL102	Semester: I
Teaching Scheme: L-T-P: 03-00-00	Credits: 03
Evaluation Scheme ISE-I/MSE/ISE-II: 10/30/10	ESE Marks: 50

Prior Knowledge of:	Fundamentals of optics, semiconductors and diodes, resonance, nature of radiation.
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Course Objectives:

1.	To provide basic concept of modern optics & Quantum Physics
2.	To expose electronic properties of materials for semiconductors & V-I Characteristics
3.	To make the students grasp the working principles of LASER and its applications

Curriculum Details

Course Contents	Duration
Unit 1: Physics for Optics <ul style="list-style-type: none">• Introduction: interference, diffraction, review of geometric path, optical path• Theory of plane diffraction grating and grating equation• Resolving power of plane diffraction grating• Newton's ring: experimental arrangement• Diameter of bright and• Diameter of dark ring• Determination of wavelength of monochromatic light using Newtons ring	07 Hrs
Unit 2: Ultrasonics and Oscillation <ul style="list-style-type: none">• Simple Harmonic Motion• Differential equation for Simple Harmonic Motion (No derivation),• Sprig mass and its applications• Theory of damped oscillations (Derivation)• Types of damping (Graphical Approach)• Engineering applications of damped oscillations• Theory of forced oscillations (Qualitative)	07 Hrs
Unit 3: Solid State Physics	07 Hrs



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Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Course Contents	Duration
<ul style="list-style-type: none">• Fermi Dirac distribution• Fermi energy and Fermi level in intrinsic• Fermi energy in extrinsic semiconductors (n, p type)• Hall effect: equation for hall voltage and hall coefficient and relation between them• Optical Fibres: Propagation mechanism, numerical aperture• Optical fibres sensors• Numerical	
Unit 4: Quantum Physics <ul style="list-style-type: none">• Introduction to quantum Physics• De Broglie wavelength of matter waves and its different forms• Physical significance wave function• Schrodinger's time independent wave equation,• Schrodinger's time dependent wave equation (1-D)• Energy of particle in 1-D potential well• Numerical	07 Hrs
Unit 5: LASER and Optical Fibre <ul style="list-style-type: none">• Lasers: Einstein's coefficients, absorption, spontaneous emission• Stimulated emission, population inversion• Types of LASERS: He-Ne LASER• Applications of LASER: Bar code scanner, laser printer, laser cooling (Qualitative)• Optical fibers: Total Internal Reflection for signal propagation,• Numerical aperture (Definition) of Optical fibre for signal propagation• Optical fiber as fire sensor	07 Hrs
Unit 6: Physics for Electronic Devices <ul style="list-style-type: none">• Diodes: Direct and Indirect band gap,• P-N junction diode-forward and reverse bias, diode equation• V-I characteristic, avalanche breakdown• Zener breakdown regulator• Transistors: Bi-junction polar transistor• V-I characteristics in Common Emitter• V-I characteristics Common Base and Common Collector configuration	07 Hrs



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Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Self-Learning Topic: Fire Temperature sensor (TIR based)

Course Outcomes (CO): After successful completion of the course, students will be able to

CO	Statements
102.1	Apply the principle of interference and relate concepts in various engineering applications
102.2	Determine the frequency of ultrasonic & explain the solution of damped wave equation in applied physics
102.3	Illustrate the electronic properties of semiconductors
102.4	Solve 1-D potential well problems using principles of quantum mechanical phenomenon
102.5	Describe the working mechanism and applications of LASER and Optical Fibre
102.6	Explain the working mechanism of electronic devices.

Course Articulation Matrix: Mapping of Course Outcomes (CO) with Program Outcomes (PO)

CO \ PO	BTL	1	2	3	4	5	6	7	8	9	10	11	12
102.1	3	3	2	--	--	--	--	--	--	--	--	--	1
102.2	3	3	2	--	--	--	--	--	--	--	--	--	1
102.3	3	3	2	--	--	--	--	--	--	--	--	--	1
102.4	3	3	2	--	--	--	--	--	--	--	--	--	1
102.5	3	3	2	--	--	--	--	--	--	1	--	--	1
102.6	3	3	2	--	--	--	--	--	--	1	--	--	1

Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Engineering Physics	1 st	H. K. Malik	Tata McGraw Hill Education	2019
2	A Text Book of Engineering Physics	Revised	M. N. Avadhanulu, P. G. Kshirasagar	S. Chand Publications	2018
3	Engineering Physics	Revised	L.N. Singh	Synergy Knowledge Ware	2016
4	Engineering Physics	Revised	V. Rajendran	Tata McGraw Hill Education	2010
5	Engineering Physics	1 st	R.K. Gaur, S.L. Gupta	Dhanpat Rai Publications	1993



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Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

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Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Fundamentals of Physics	Revised	J. Walker, D. Halliday, R. Resnick	Wiley Publications	2018
2	Engineering Physics	1 st	B.K. Pandey and Chaturvedi	Cengage learning Publications	2017
3	Nanotechnology- Principles & Practices	3 rd	Sulabha K. Kulkarni	Capital Publication Co. New Delhi	2014
4	Introduction to Solid State Physics	8 th	Charles Kittel	John Willey and Sons Inc.	2009
5	Solid State Physics	6 th	S.O.Pillai	New edge Internationals	2009

Useful Link /Web Resources:

1. <http://hyperphysics.phy-astr.gsu.edu/hbase/index.html>
2. https://en.wikipedia.org/wiki/Wave_interference
3. https://en.wikipedia.org/wiki/Introduction_to_quantum_mechanics



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F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Course Title: Applied Physics Laboratory	
Course Code: 241CSEBSCP104	Semester: I
Teaching Scheme: L-T-P: 00-00-02	Credit: 01
Evaluation Scheme: ISE: 25	ESE Marks: 00

Prior Knowledge of:	Optics, magnetic materials, semiconductor basics, graph plotting, slope calculation
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Course Objectives:

1	To make the students understand the concept of physics for the effective application in the field of engineering and technology
2	To use the knowledge of electron transport in semiconductors
3	To summarize the factors affecting the speed of ultrasound through liquids

List of Experiments

Exp. No	Title of Experiments	Duration
01	To determine Resolving power of diffraction grating	02 Hrs
02	To calculate radius of curvature of Plano convex lens using Newton's ring	02 Hrs
03	To compute diameter of cylindrical obstacle using mono chromatic Source	02 Hrs
04	To determine wavelength of LASER using diffraction grating	02 Hrs
05	To calculate the Resolving power of telescope	02 Hrs
06	To determine the velocity of the ultrasonic wave in water using ultrasonic Interferometer	02 Hrs
07	To decide band gap energy of P-N junction diode	02 Hrs
08	To determine divergence of LASER beam	02 Hrs
09	To recognize carrier concentration of semiconductor using Hall effect	02 Hrs
10	To study physical Significance of wave function in Quantum Mechanics	02 Hrs
11	Four probe experiment to calculate Band gap energy	02 Hrs
12	Photo Diode for light response to current	02 Hrs
13	Exp. Eyes experiment: Wavelength of LED and I-V characteristics of Zener diode	02 Hrs

Minimum 12 Experiments shall be conducted from above list



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w.e.f. A.Y. 2024-2025

Course Outcomes (CO): After successful completion of the course, students will be able to

CO	Statements
104.1	Interpret knowledge related to optics to use for suitable purposes in applied physics
104.2	Identify theory of semiconductor in terms of band gap energy and carrier concentration
104.3	Explain ultrasonic interferometer to study velocity of ultrasound in given Liquid
104.4	Interpret knowledge related to LASER for suitable purposes in applied physics

Course Articulation Matrix: Mapping of Course Outcomes (CO) with Program Outcomes (PO)

CO \ PO	BTL	1	2	3	4	5	6	7	8	9	10	11	12
104.1	2	3	--	--	--	1	--	--	--	--	--	--	1
104.2	2	3	--	--	--	1	--	--	--	--	--	--	1
104.3	2	3	--	--	--	1	--	--	--	--	--	--	1
104.4	2	3	--	--	--	1	--	--	--	--	--	--	1

Suggested Learning Resources:

Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Engineering Physics	1 st	H.K. Malik	Tata McGraw Hill Education	2019
2	A Text Book of Engineering Physics	Revised	M. N. Avadhanulu, P. G. Kshirasagar	S. Chand Publications	2018
3	Engineering Physics	Revised	L. N. Singh	Synergy Knowledge Ware	2016
4	Engineering Physics	Revised	V. Rajendran	Tata McGraw Hill Education	2010
5	Engineering Physics	1 st	R.K. Gaur, S.L. Gupta	Dhanpat Rai Publications	1993



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Fundamentals of Physics	Revised	J.Walker, D.Halliday, R.Resnick	Wiley Publication	2018
2	Engineering Physics	1 st	B.K. Pandey and Chaturvedi	Cengage Learning Publications	2017
3	Nanotechnology- Principles & Practices	3 rd	Sulabha K. Kulkarni	Capital Publication Co. New Delhi	2014
4	Introduction to Solid State Physics	8 th	C.Kittel	John Willey and Sons Inc.	2009
5	Solid State Physics	6 th	S.O.Pillai	New edge Internationals	2009

Useful Link /Web Resources:

1. <https://vlab.amrita.edu/?sub=1>
2. <http://vlabs.iitb.ac.in/vlab/labsps.html>



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Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Course Title: Computer Programming and Problem Solving	
Course Code: 241CSEESCL101	Semester: I
Teaching Scheme: L-T-P : 03-00-00	Credits: 03
Evaluation Scheme ISE-I, MSE, ISE-II: 10/30/10	ESE Marks: 50

Prior Knowledge of:	Basic knowledge of computers.
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Course Objectives:

1.	Acquire basic principles of problem-solving using computers.
2.	Learn and use syntax of C programming language to solve basic science and engineering problems.
3.	Select appropriate programming constructs, data structures and functions to build solutions to variety of problems.

Curriculum Details

Course Contents	Duration
Unit 1: Introduction to C programming: <ul style="list-style-type: none">Fundamentals of algorithms, flowcharts.Getting started with C- Basic structure of C program, features of C language, Character set, C tokens, Keywords and Identifiers, Data types and Format Specifier.Managing Input and Output operations.Variables-Local and Global variables, rules for defining a variable name, variable Initialization-Run time and compile time, variable declaration.Constants-Defining Constant by using preprocessor directive and keyword const.Operators- Arithmetic operators, Relational operators, Logical Operators, Assignment operators, Increment and Decrement operators, Conditional operators, Bit-wise operators, Special operators. Operator precedence and Associativity.	07 Hrs
Unit 2: Programming Constructs: <ul style="list-style-type: none">Need of Decision-making statements- Simple 'if' statement, the 'if...else' statement, nesting of 'if...else' statements, the 'else if' ladder, the 'switch'	07 Hrs

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D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY
Kasaba Bawada, Kolhapur
(An Autonomous Institute)
Department of Computer Science and Engineering
F. Y. B. Tech. Curriculum
w.e.f. A. Y. 2024-2025

<p>statement, break statement, the 'go to' statement</p> <ul style="list-style-type: none">• Need of looping statements: The 'for', 'while', 'do-while' loop with examples	
<p>Unit 3: Arrays & Strings:</p> <ul style="list-style-type: none">• Arrays-Types of arrays, declaration arrays, initializing arrays (One Dimensional and Two-Dimensional Array)-Run time Initialization and Compile time Initialization with examples.• Character Arrays and Strings- Declaration and Initialization- Run time Initialization and Compile time Initialization with examples, reading string from terminal and writing strings to screen, String handling Functions- strcpy(), strcmp(), strlen(), strcat().	07 Hrs
<p>Unit 4: Structures and Unions:</p> <ul style="list-style-type: none">• Structures-Elements of Structure: Structure definition, declaring structure variables, Structure initialization. Accessing structure members by using '.' Operator, Arrays of structure, Arrays within structures.• Unions- Elements of Union: Union definition, declaring union variables, Union initialization, Comparison of Structure and Unions.	07 Hrs
<p>Unit 5: Functions:</p> <ul style="list-style-type: none">• Need for Functions, Types of functions (User Defined and Built -In).• User defined Function-Elements of UDF-Function Definition, Function declaration, Function call. Actual Parameters, Formal Parameters.• Categories of functions-With Argument and with return value, No Argument and with return value, With Argument and No return value, No Argument and No return value. Storage classes (Automatic, Static, Extern, and Register). Passing arrays to a function, Structures and Functions. Recursion.	07 Hrs
<p>Unit 6: Pointers:</p> <ul style="list-style-type: none">• Introduction to Pointers, accessing a value of variable by using Pointers-Declaration of Pointer variable, Initialization of pointer variables, Dereference operator.• Pointers as function arguments-Call by value and call by reference.• Pointers Expression,• Pointers and Arrays, Pointers and Strings, Pointers to Functions, Pointers and structures.	07 Hrs

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Dept. of First Year Engg.
D. Y. Patil College of Engg. & Tech.
Kasaba Bawada, Kolhapur



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Self-learning topics: Recent trends in IT.

Course Outcomes (CO): After successful completion of the course, students will be able to

CO	Statements
101.1	Describe the basic structure of C program and use of different data type.
101.2	Develop conditional and Loop statements to write C programs.
101.3	Explain the concept of arrays and strings to store homogeneous data.
101.4	Use functions to break programs into small module.
101.5	Explain concept of structures and union.
101.6	Use pointers to access memory location.

Course Articulation Matrix: Mapping of Course Outcomes (CO) with Program Outcomes (PO)

PO CO	BTL	1	2	3	4	5	6	7	8	9	10	11	12
101.1	2	3	3	2	--	--	--	--	--	--	--	--	1
101.2	2	3	3	2	--	--	--	--	--	--	--	--	1
101.3	2	3	3	2	--	--	--	--	--	--	--	--	1
101.4	2	3	3	2	--	--	--	--	--	--	--	--	1
101.5	2	3	3	2	--	--	--	--	--	--	--	--	1
101.6	2	2	2	2	--	--	--	--	--	--	--	--	1

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Kasaba Bawada, Kolhapur



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Text Books:

Sr.No	Title	Edition	Author(s)	Publisher	Year
1	Programming in ANSI C	8th	E. Balagurusamy	McGraw Hill Education	2019
2	Let Us C	16th	Yashwant Kanetkar	BPB Publication	2017

Reference Books:

Sr.No	Title	Edition	Author(s)	Publisher	Year
1	Programming with ANSIAnd Turbo C	-	Ashok Kamthane	Pearson Education	2002
2	Programming in C	2nd	J.B Dixit	Firewal Media	2011
3	The Complete ReferenceEdition	4th	Herbert Schildt	McGraw-Hill Education	2017

Useful Link /Web Resources:

1. <https://nptel.ac.in/courses/1061041282>
2. <https://www.udemy.com/courses>
3. <https://www.coursera.org>


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Dept. of First Year Engg.
D. Y. Patil College of Engg. & Tech.
Kasaba Bawada, Kolhapur



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Course Title: Computer Programming and Problem Solving Laboratory	
Course Code : 241CSEESCP103	Semester: I
Teaching Scheme: L-T-P: 00-00-02	Credit: 01
Evaluation Scheme: ISE: 25	ESE Marks: 00

Prior Knowledge of:	Basic knowledge of computers.
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Course Objectives:

1.	To Develop the ability to analyze a problem, develop an algorithm to solve it
2.	To Understand the concept of a program in a high-level language how it is being translated by a compiler into machine language and then executed
3.	To impart concept like looping, array, functions, structure and unions

List of Experiments:

Exp. No	Title of Experiments	Duration
01	Study different IDE's used for C programming	02 Hrs
02	Write C Program/s to explore data types.	02 Hrs
03	Write C Program/s to explore constants and variables.	02 Hrs
04	Write C Program to perform arithmetic, logical and relational operators.	02 Hrs
05	Write C Program using simple control statements: If-else, Do-while.	02 Hrs
06	Write C Program using loops statement.	02 Hrs
07	Write C Program using switch statement.	02 Hrs
08	Write C Program using arrays: Declare and initialization of arrays.	02 Hrs
09	Write C Program to demonstrate User defined Functions.	02 Hrs
10	Write C Program to demonstrate structures.	02 Hrs
11	Write C Program to demonstrate unions.	02 Hrs
12	Write C Program to demonstrate use of Pointers.	02 Hrs

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Dept. of First Year Engg.
D. Y. Patil College of Engg. & Tech.
Kasaba Bawada, Kolhapur



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY
Kasaba Bawada, Kolhapur
(An Autonomous Institute)
Department of Computer Science and Engineering
F. Y. B. Tech. Curriculum
w.e.f. A.Y. 2024-2025

Course Outcomes (CO): After successful completion of the course, students will be able to

CO	Statements
103.1	Understand the logic for given problem and provide the solution.
103.2	Explain syntax and construction of C programming.
103.3	Describe the methods of iteration or looping and branching.
103.4	Make use of different data structures like Arrays, Structures, and Unions.

Course Articulation Matrix: Mapping of Course Outcomes (CO) with Program Outcomes (PO)

PO CO	BTL	1	2	3	4	5	6	7	8	9	10	11	12
103.1	2	1	1	1	--	--	--	--	--	--	--	--	1
103.2	2	1	1	1	--	--	--	--	--	--	--	--	1
103.3	2	1	1	1	--	--	--	--	--	--	--	--	1
103.4	2	1	1	1	--	--	--	--	--	--	--	--	1

Suggested Learning Resources

Text Books:

Sr. No	Title	Edition	Authors	Publisher	Year
1	Programming in ANSI C	Eight Edition	E. Balagurusamy	McGraw Hill Education	2019
2	Let Us C	16th	Yashwant Kanetkar	BPB Publication	2017

Reference Books:

Sr. No	Title	Edition	Authors	Publisher	Year
1	Programming with ANSI And Turbo C	--	Ashok Kamthane	Pearson Education	2002
2	Programming in C	2nd	J.B Dixit	Firewal Media	2011
3	The Complete Reference Edition	4th	Herbert Schildt	McGraw-Hill Education	2017

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Kasaba Bawada, Kolhapur



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Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Course Title: Operating System	
Course Code: 241CSEESCL102	Semester: I
Teaching Scheme: L-T-P: 03-00-00	Credits: 03
Evaluation Scheme: ISE-I/MSE/ISE-II: 10/30/10	ESE-Marks: 50

Prerequisite:	Fundamental knowledge of computer, C programming
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Course Objectives:

1	To learn the basic concepts of operating system, services and operations in the operating system.
2	To expose the students to various functions of the operating system and their usage.
3	To make the students understand process management, memory management and I/O device management.
4	To provide knowledge to the students about the fundamental architecture of Linux.

Curriculum Details

Content	Hours
Unit 1: Introduction <ul style="list-style-type: none"> • Introduction to operating system • What Operating Systems Do, Computer-System Organization, • Computer-System Architecture, • Operating-System Structure, Operating-System Operations, • Process Management, Memory Management, Storage Management, • Open-Source Operating Systems 	7 Hrs
Unit 2: System Structures <ul style="list-style-type: none"> • Operating-System Services, User Operating-System Interface, System Calls, • Types of System Calls, System Programs, Operating-System Design and Implementation, • Operating-System Structure, • Virtual Machines, Operating-System Generation 	7 Hrs

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Dept. of First Year Engg.
D. Y. Patil College of Engg. & Tech.
Kasaba Bawada, Kolhapur



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Unit 3: Process Concept, Scheduling <ul style="list-style-type: none">• Introduction, Operations on Processes,• Interposes Communication, Process Scheduling Basic Concepts,• Scheduling Criteria, Scheduling Algorithms, Thread Scheduling, Multiple-• Processor Scheduling	7 Hrs
Unit 4: Synchronization & Deadlocks <ul style="list-style-type: none">• Introduction• The Critical-Section Problem, Synchronization Hardware, Semaphores,• Classic Problems of Synchronization,• Monitors, System Model, Deadlock Characterization,• Methods for Handling Deadlocks,• Deadlock Prevention, Deadlock Detection, Recovery from Deadlock	7 Hrs
Unit 5: Memory-Management <ul style="list-style-type: none">• Swapping, Contiguous Memory Allocation, Paging, Structure of the Page Table, Segmentation, Demand Paging, Page Replacement, Thrashing	7 Hrs
Unit 6: File & I/O Systems <ul style="list-style-type: none">• File Concept, Access Methods,• Directory and Disk Structure, File Sharing,• File-System Structure,• Overview of Mass-Storage Structure, Disk Structure, Optical Disk, SSD, I/O Hardware• Transforming I/O Requests to Hardware Operations	7 Hrs



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Course Outcomes (CO): Upon successful completion of this course, the students will be able to

CO	Statements
102.1	Understand the structure, functions and services of an operating system.
102.2	Describe the methods of process management, process synchronization and deadlocks.
102.3	Demonstrate the various memory management techniques in effective execution of programs.
102.4	Analyse the scheduling, file system and I/O management techniques.

Course Articulation Matrix: Mapping of Course Outcomes (CO) with Program Outcomes (PO) and Program Specific Outcomes (PSO):

CO	POs												PSOs		BTL
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	
102.1	3	2	2	--	--	--	--	--	--	--	--	--	2	--	II
102.2	2	2	2	--	--	--	--	--	--	--	--	--	--	2	II
102.3	2	2	--	--	--	--	--	--	--	--	--	--	--	--	II
102.4	2	3	2	--	--	--	--	--	--	--	--	--	--	--	II

Text Books:

1. Silberschatz, Galvin, Gagne, "Operating system concepts", Wiley India, 8th edition

Reference Books:

1. Milan Milenkovic, Operating systems concepts and design, McGraw Hill, 2nd edition.
2. Dhananjay M. Dhamdhere, Operating systems - A Concept Based approach, McGraw Hill, 3rd Edition.
3. William Stallings, Operating Systems: Internals and Design Principles, Pearson, 7th edition

Online Resources:

1. <https://nptel.ac.in/courses/106/105/106105214/#>
2. <https://nptel.ac.in/courses/106/102/106102132/>
3. <https://www.cse.iitb.ac.in/~mythili/os/>



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Course Title: Operating System Laboratory	
Course Code: 241CSEESCP104	Semester: I
Teaching Scheme: L-T-P: 00-00-02	Credits: 01
Evaluation Scheme: ISE:25	ESE-Marks: 00

Course Objectives:

1.	To learn about the basic commands of operating systems
2.	To learn various process management schemes in operating systems
3.	To practice with the important memory management mechanisms in operating system
4.	To implement the file handling techniques in operating systems

List of Experiments:

Exp. No	Title of Experiments	Duration
1	Study different types of OS.	02 Hrs
2	Study Linux OS and its commands.	02 Hrs
3	Installation of Multi - Operating System.	02 Hrs
4	Implement system calls using C/C++ language.	02 Hrs
5	Implement program to stimulate Critical Section and mutual exclusion	02 Hrs
6	Implement program to stimulate reader writer problem using semaphore.	02 Hrs
7	Implement program to stimulate producer-consumer problem using semaphore.	02 Hrs
8	Implement CPU scheduling algorithms.	02 Hrs
9	Implement program to stimulate Paging technique of memory management.	02 Hrs
10	Implement page replacement algorithm.	02 Hrs
11	Implement shell scripts for Linux/Unix operating systems.	02 Hrs
12	Implement program to demonstrate deadlock detection approaches.	02 Hrs



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur
(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Course Outcomes (CO): After successful completion of the course, students will be able to

CO	Statements
104.1	Learn the concepts to identify, create and maintain the basic command in operating systems
104.2	Express strengths and limitations of various managements schemes in operating systems
104.3	Explain the core issues of operating systems
104.4	Implement algorithms of operating systems

Course Articulation Matrix: Mapping of Course Outcomes (CO) with Program Outcomes (PO)

PO CO	BTL	1	2	3	4	5	6	7	8	9	10	11	12
104.1	2	2	2	2	--	--	--	--	--	--	--	--	1
104.2	2	2	2	2	--	--	--	--	--	--	--	--	1
104.3	2	2	2	2	--	--	--	--	--	--	--	--	1
104.4	2	2	2	2	--	--	--	--	--	--	--	--	1

Text Books:

Sr. No	Title	Edition	Authors	Publisher	Year
1	Operating system concepts	8 th	Silberschatz, Galvin, Gagne	Wiley India	2009

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Operating systems concepts and design	2 nd	Milan Milenkovic,	McGraw Hill	-
2	Operating systems - A Concept Based approach	3 rd	Dhananjay M. Dhamdhare	McGraw Hill	-
3	Operating Systems: Internals and Design Principles	7 th	William Stallings,	Pearson Publication	-

Useful Link /Web Resources:

1. <https://nptel.ac.in/courses/1061041282>
2. <https://www.udemy.com/courses>
3. <https://www.coursera.org>
4. <https://www.vlab.co.in/>

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Kasaba Bawada, Kolhapur



D.Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A. Y. 2024-2025

Course Title: Design Thinking Through Innovation	
Course Code: 241CSEVSECL101	Semester: I
Teaching Scheme: L-T-P: 01-00-00	Credits: 01
Evaluation Scheme: ISE: 25	ESE Marks: 00

Prior Knowledge of	Understanding, user-centric mindset, collaboration and teamwork, curiosity and open-mindedness, effective communication skills, learning orientation, risk tolerance
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Course Objectives:

1.	To familiarize with engineering design process and the basics of design thinking
2.	To bring awareness on idea generation to solve the problems
3.	To familiarize with the various types of prototypes and the techniques used for prototyping

Course Content:

Content	Duration
Unit I: Engineering design, design thinking, and idea generation <ul style="list-style-type: none">• Introduction, key concepts of design, a simplified process of engineering design• What is design thinking? - its importance, socio-economical relevance, principles, origin, process of design thinking, relevance of design and design thinking in engineering• Introduction to idea generation, idea generation techniques, processes, define the problem, needs v/s wants, identify philosophy, problem solving tools, case studies• Critical thinking: fundamentals, characteristics, critical v/s ordinary thinking• Critical thinking skills- linking ideas, structuring arguments, five pillars of critical thinking	07 Hrs

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Dept. of First Year Engg.
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D.Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A. Y. 2024-2025

Content	Duration
<p>Unit II: Prototyping and tools for design - Innovation</p> <ul style="list-style-type: none"> • Prototyping: introduction, need, process, types, fidelity for prototypes, minimum usable prototype [mup] – concept, challenges, etc., • Prototyping for digital & physical products: concept, what is unique in digital and physical prototypes? • Digital and physical prototypes: preparation; testing prototypes with users • Introduction to different tools used for design and innovation, such as hand saw (wood, PVC, CPVC and steel), spanners, allen key & wrench (flat, ring, adjustable), solder gun, component cutter, tweezer, multi meter, glue gun, hex saw, cutter, wire stripper 	07 Hrs

Course Outcomes (CO): At the end of the course, the students should be able to

CO	Statements
101.1	Learn structured approach of engineering design and the relevance of design and design thinking in engineering & Understand idea generation techniques to find out solutions to the problems
101.2	Understand the various types of prototypes and Inculcate the techniques used for prototyping

Course Articulation Matrix: Mapping of course outcomes (CO) with program outcomes (PO)

CO \ PO	BTL	1	2	3	4	5	6	7	8	9	10	11	12
101.1	1	2	--	--	--	--	--	--	--	--	--	--	1
101.2	2	2	1	--	--	--	--	--	1	--	--	1	1

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Dept. of First Year Engg.
D. Y. Patil College of Engg. & Tech.
Kasaba Bawada, Kolhapur



D.Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A. Y. 2024-2025

Suggested Learning Resources:

Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1.	Introduction to Design Thinking	--	S. Salivahanan, S. Suresh Kumar, D. Praveen Sam	Tata Mc Graw Hill, First Edition	2019
2.	The Design Thinking Playbook	--	Michael Lewrick	Wiley	2019
3.	Prototyping for designers: developing the best digital and physical products	--	Kathryn McElroy	O'Reilly	2017
4.	"Design thinking: Understand – improve– apply"	--	Hasso Plattner, Christoph Meine and Larry Leifer (eds)	Springer	2011

Reference Books:

Sr. No	Title	Edition	Authors	Publisher	Year
1.	Design thinking – New product essentials from PDMA	1 st	Michael G. Luchs, Scott Swan , Abbie Griffin	Wiley	2015
2.	101 Design methods: A structured approach for driving innovation in your organization	1 st	Vijay Kumar	Wiley	2012

Useful Link /Web Resources:

1. <https://www.ideo.com/pages/design-thinking>
2. <https://dschool.stanford.edu/>
3. <https://www.designthinkersacademy.com/usa/>
4. <https://www.ibm.com/design/thinking/page/toolkit>
5. <https://hbr.org/2018/09/design-thinking-is-fundamentally-conservative-and-preserves-the-status-quo>



D.Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A. Y. 2024-2025

Course Title: Design Thinking Through Innovation Laboratory	
Course Code: 241CSEVSECP102	Semester: I
Teaching Scheme: L-T-P: 00-00-01	Credit: 01
Evaluation Scheme: ISE: 25	ESE Marks: 00

Prior Knowledge of:	Understanding, user-centric mindset, collaboration and teamwork, curiosity and open-mindedness, effective communication skills, learning orientation, risk tolerance
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Course Objectives:

1	To discuss various techniques of idea generation
2	To explain the various tools used for innovation
3	To discuss the methods of implementing design thinking in the real world
4	To discuss the implementation of creativity and innovation

List of Experiments

Sr. No.	Title of Experiments/Assignment List	Duration
01	Overview of design thinking: ethical design and critiques, generation of "Idea", problem identification and exercises	02 Hrs
02	Brainstorming sessions to find out solution for identified problems	02 Hrs
03	Prototyping and modelling challenge, various tools and methodology used for the prototyping	02 Hrs
04	Hands-on demonstration of different tools used for design & innovation	02 Hrs
05	Hands-on demonstration of soldering machine, function and purpose of soldering machine	02 Hrs
06	Explanation and usage of joining & insulation tools and technics	02 Hrs
07	Identify various (20 -25) domains in CSE and atleast 3 to 5 tools used in each domain	02 Hrs
08	Micro project: group formation and idea generation	02 Hrs

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Dept. of First Year Engg.
D. Y. Patil College of Engg. & Tech.
Kasaba Bawada, Kolhapur



D.Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY
Kasaba Bawada, Kolhapur
 (An Autonomous Institute)
Department of Computer Science and Engineering
F. Y. B. Tech. Curriculum
 w.e.f. A. Y. 2024-2025

Sr. No.	Title of Experiments/Assignment List	Duration
09	Creation of prototype and innovative solution	02 Hrs
10	Test and evaluation of prototype	02 Hrs
11	Report drafting - instructions & practices	02 Hrs
12	Presentation & exhibition	02 Hrs


Course Outcomes (CO):

At the end of the course, the student should be able to

CO	Statements
102.1	Learn structured approach of engineering design and the relevance of design and design thinking in engineering & Understand idea generation techniques to find out solutions to the problems
102.2	Understand the various types of prototypes and Inculcate the techniques used for prototyping

Course Articulation Matrix: Mapping of course outcomes (CO) with program outcomes (PO)

PO \ CO	BTL	1	2	3	4	5	6	7	8	9	10	11	12
102.1	1	2	--	--	--	--	--	--	--	--	--	--	1
102.2	2	2	1	--	--	--	--	--	1	--	--	1	1


HEAD
 Dept. of First Year Engg.
 D. Y. Patil College of Engg. & Tech.
 Kasaba Bawada, Kolhapur



D.Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A. Y. 2024-2025

Suggested Learning Resources

Text Books:

Sr. No	Title	Edition	Authors	Publisher	Year
1.	Introduction to design thinking	--	S. Salivahanan, S. Suresh Kumar, D. Praveen Sam	Tata Mc Graw Hill, First Edition	2019
2.	The design thinking playbook	--	Michael Lewrick	Wiley	2019
3.	Prototyping for designers: developing the best digital and physical products	--	Kathryn McElroy	O'Reilly	2017
4.	"Design thinking: Understand – improve – apply"	--	Hasso Plattner, Christoph Meine and Larry Leifer (eds)	Springer	2011

Reference Books:

Sr. No.	Title	Edition	Authors	Year
1	Design thinking: understand-improve-apply	--	S. G. Blank	2007
2	Design thinking for innovation research and practice	--	Walter Brenner, Falk Uebernickel, Springer	2016
3	Business design thinking and doing: frameworks, strategies and techniques for sustainable innovation	--	Angele M. Beausoleil	2022

Useful Link /Web Resources:

1. <https://www.ideo.com/pages/design-thinking>
2. <https://dschool.stanford.edu/>
3. <https://www.designthinkersacademy.com/usa/>
4. <https://www.ibm.com/design/thinking/page/toolkit>
5. <https://hbr.org/2018/09/design-thinking-is-fundamentally-conservative-and-preserves-the-status-quo>

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HEAD

Dept. of First Year Engg.
D. Y. Patil College of Engg. & Tech.
Kasaba Bawada, Kolhapur



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A. Y. 2024-2025

Course Title: Historical Places in and Around Kolhapur District	
Course Code : 241CSEIKSL101	Semester: I
Teaching Scheme L-T-P : 02-00-00	Credits: 02
Evaluation Scheme ISE-I, MSE, ISE-II: 20/30/00	ESE Marks: 00

Contents	Duration
Unit 01: Chhatrapati Shahu Maharaj: A King for Society <ul style="list-style-type: none">• Introduction• Life History• Contribution of Rajarshi Shahu Maharaj in various fields as a modern Social Reformer as Women Empowerment in 19th Century• Development in Education• Social Reservation and equality• Agriculture• Industry• Initiation for Radhanagai Village and Dam	07 Hrs
Unit 02: A Study of Khidrapur- Kopeshwar <ul style="list-style-type: none">• Life History of Khidrapur Kopeshwar Temple• The Wonder of Khidrapur Kopeshwar Temple• Swarga Mandap in Kopeshwar Temple• Sabha Mandap, Antara Kaksha of Kopeshwar Temple• Beauty of Exterior Architecture of Kopeshwar Temple• Mystery of Black stone• Measures Suggested to Development of Khidrapur	07 Hrs
Unit 03 : A Study of Panhala Fort and Pawankhind <ul style="list-style-type: none">• History of Panhala Fort• Major Features: Andhar Bawadi• Major Features: Kalavanticha Mahal, Ambarkhana• Major Features: Dharma Koti, Sajja Koti	07 Hrs



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Contents	Duration
<ul style="list-style-type: none">• Teen Darwaja, Raj Darwaja• Rajdindi Bastion• Journey from Panhalgad to Pawankhind by Chhatrapati Shivaji Raje	
Unit 04: A Study of Mahalaxmi Temple <ul style="list-style-type: none">• History and construction of Temple• The Main Shrines Doorway• Darshan and Kurma Mandap• Ganapati Chowk, Garud Mandap• Boundary wall, Entrances and complex• Mahalaxmi Temple Timings• Kiranostav Celebrations	07 Hrs

References:

1. Social Movements in India: A Review of Literature – Ghanshyam Shah ISBN 0761995145 New Delhi ; Thousand Oaks : Sage Publications, 2004.
2. Rajarshi Shahu Maharaj – Jeevan Vakarya, editor – Ramesh Patnaje.
3. Shahu Chhatrapati - Royal Revolutionary – Dhananjay Keer.
4. Samajik Sanshodhan Padnativa Tante – Dr. Pradeep Aaglave.
5. Kalasekar. T. L: Khidrapur: Khojura of Maharashtra.
6. Chothe R.G: Temples of Khidrapur, A heritage of India.
7. Kulkarni A. B: Kopeswar temple of Khidrapur.
8. Gazetteer of Kolhapur District.
9. Eaton, Richard Maxwell (2005). The New Cambridge History of India.
10. "Translations of Panhala inscriptions". Government of Maharashtra. Retrieved 19 March 2009.
11. "Mahalakshmi Temple - Jewel Among Kolhapur Temples.
12. "Inside Temples". mahalaxmikolhapur.com.

HEAD

Dept. of First Year Engg.
D. Y. Patil College of Engg. & Tech.
Kasaba Bawada, Kolhapur



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A. Y. 2024-2025

Course Title : Liberal Learning Course	
Course Code: 241CSECCAP101 & 241CSECCAP102	Semester: I / II
Teaching Scheme L-T-P : 00-00-04	Credits : 02
Evaluation Scheme ISE: 50	ESE Marks : 00

- Liberal Learning Through Students Clubs and particular areas is a Two-credit course run for First Year B.Tech .
- Students are required to go through the list of liberal learning courses and rank their preferences through google form/JUNO software provided by department at the beginning of semester.
- They will be allocated one area from the list. Experts from particular areas (club) conduct sessions once a week for each area on campus through activities, discussions, presentations, and lecture methods and evaluation out of 50 per area is done for each area throughout the semester.
- Evaluation pattern may differ according to the nature of each area (Club).
- Although there is no pre-defined syllabus, there is an outline which experts normally develop and follow for the sessions.
- However, students may approach the faculty to cover certain topics of their interest in that area during sessions based on students' interest and experts'.
- List of liberal learning courses will get display at the beginning of odd semester.

List of Liberal Learning Courses

Sr. No	Name of the Course
1.	Coding & Programming Club
2.	Photography Club
3.	Art, Craft and Culture Club
4.	German Language Club



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Sr. No	Name of the Course
5.	Yoga
6.	Meditation
7.	Adventure Club
8.	Interior Design
9.	Guitar
10.	Film Making
11.	Music
12.	Painting
13.	Dance
14.	Agriculture Club
15.	Corporate Culture Club
16.	Hotel Management Club
17.	Medical Club
18.	Art of Living Club
19.	Drama
20.	LinguLeads
21.	NCC/NSS
22.	Microsoft Club
23.	Robotics Club
24.	Health & Fitness Club
25.	Bookfast Club (Reading Club)
26.	Media Club
27.	Ted Club-GD, Public Speaking, Debate

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HEAD

Dept. of First Year Engg.
D. Y. Patil College of Engg. & Tech.
Kasaba Bawada, Kolhapur



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A. Y. 2024-2025

Course Title: Finishing School Training-I	
Course Code: 241CSEMCL101	Semester: I
Teaching Scheme: L-T-P :3-0-0	Credits: 00
Evaluation Scheme ISE: 50	ESE Marks: 00

Curriculum Details

Course Contents	Duration
UNIT-I: Learning Basic Aptitude Module-1: Percentage Module-2: Average & Its Applications	04 Hrs
UNIT-II: Series Completion Module-1: Number Series Module-2: Letter Series Module-3: Alphanumeric Series	04 Hrs
UNIT-III: LSRW-I Module-1. Listening Introduction & Activities Module- 2. Speaking Introduction & Activities Module-3. Reading Introduction & Activities Module-4. Writing Introduction	05 Hrs
UNIT-IV: Career Management-1 Module-1: SWOT Analysis Module-2: Goal Setting(Why & How of SMART goals) Module-3: Personality Traits & Self-Assessment Module-4: Competency Mapping	05 Hrs
UNIT-V: Interpersonal Skills Module-1: Team Management Module-2: Attitude Building Module-3: Time Management	05 Hrs
UNIT VI: Technical Training Module-1: Introduction to C Language Module-2: Identifiers & Data types, Operations Module-3: Control Instructions, Function, Recursion Module-4: Array, Strings, Pointers Module-5: Structure & Union Module-6: Memory Allocation Module-7: Enumeration, Pre-processor Module-8: Command Line Arguments	18 Hrs



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A. Y. 2024-2025

Course Title: Rural/Social Internship	
Course Code: 241CSEMCP102	Semester: I
Teaching Scheme: L-T-P :0-0-0	Credits: 00
Evaluation Scheme ISE: 50 Grade	ESE Marks: 00

Course Objectives:

1	To provide possible opportunities to learn, understand and sharpen the real time technical / managerial skills required at the job.
2	To exposure to the current technological developments relevant to the subject area of training.
3	To expose students to the engineer's responsibilities and ethics.
4	To understand the social, economic and administrative considerations that influence the working environment of industrial organizations
5	To gain experience in writing technical reports/projects.
6	To understand the social, economic and administrative considerations that influence the working environment of industrial organizations

Curriculum Details

As per the approved structure of curriculum, students will be allowed to do internship during first semester of B. Tech. program. During internship students are required to be visit village/ward/small industry/organization etc

For following activities

1. Prepare and implement plan to create local job opportunities.
2. Prepare and implement plan to improve education quality in village.
3. Preparing an actionable DPR for Doubling the village Income.
4. Developing Sustainable Water Management system.
5. Prepare and Improve a plan to improve health parameters of villagers.
6. Developing and implementing of Low Cost Sanitation facilities
7. Prepare and implement plan to promote Local Tourism through Innovative Approaches
8. Implement/Develop Technology solutions which will improve quality of life.
9. Prepare and implement solution for energy conservation.
10. Prepare and implement plan to Skill village youth and provide employment.
11. Develop localized techniques for Reduction in construction Cost.
12. Prepare and implement plan of sustainable growth of village.
13. Setting of Information imparting club for women leading to contribution in social and economic issues.
14. Developing and managing Efficient garbage disposable system.
15. Contribution to any national level initiative of Government of India. For eg. Digital India/ Skill India/ Swachh Bharat Internship etc

Every student is required to prepare a file containing documentary proofs of the activities done by him. The evaluation will be done by expert committee constituted by HoD/Departmental Internship In-charge/ faculty mentor.



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Course Title: Mathematics-II for Computer Science and Engineering	
Course Code: 241CSEBSCL105	Semester: II
Teaching Scheme: L-T-P: 03-00-00	Credits: 03
Evaluation Scheme ISE-I/MSE/ISE-II: 10/30/10	ESE Marks: 50

Prior Knowledge of:	Formulae of derivatives and integration, differential equation, statistics
----------------------------	--

Course Objectives:

1.	To teach mathematical methodology
2.	To develop mathematical skills and enhance logical thinking power of students
3.	To provide students with skills in differential equations and numerical techniques
4.	To imbibe graduates with mathematical knowledge, computational skills and the ability to deploy these skills effectively in solution of engineering problems

Curriculum Details

Course Contents	Duration
Unit 1: Ordinary Differential Equations of First Order and First Degree <ul style="list-style-type: none"> • Definition of differential equation, order and degree of differential equation • Exact differential equations • Non - exact differential equations • Linear differential equations • Bernoulli's differential equations 	07 Hrs
Unit 2: Applications of Ordinary Differential Equations <ul style="list-style-type: none"> • Introduction of variable separable form. • Orthogonal trajectories. (Cartesian form) • Applications to simple electrical circuits • Newton's law of cooling • Rate of decay and growth 	07 Hrs
Unit 3 Numerical methods to solve Ordinary Differential Equations <ul style="list-style-type: none"> • Introduction • Picard's method 	07 Hrs



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Course Contents	Duration
<ul style="list-style-type: none">• Taylor's series method• Euler's method• Runge - Kutta's method (Fourth order)	
Unit 4: Frequency distribution and measure of central Tendency <ul style="list-style-type: none">• Frequency distribution, continuous frequency distribution• Graphical representation of a frequency distribution- histogram, frequency polygon• Measure of central tendency- arithmetic mean, median and mode• Range, quartile deviation• Mean deviation, standard deviation	07 Hrs
Unit 5: Correlation and Regression <ul style="list-style-type: none">• Introduction, types of correlation, Karl Pearson's coefficient of correlation• Interpretation of the coefficients of corrections• Computation of coefficient of correlation for ungroup data• Lines of regression• Calculations of equations of the lines of regression	07 Hrs
Unit 6: Curve Fitting <ul style="list-style-type: none">• Introduction• Curve fitting by method of least squares:• Fitting of straight line• Fitting of second-degree parabolic curves• Exponential curve	07 Hrs

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HEAD

**Dept. of First Year Engg.
D. Y. Patil College of Engg. & Tech.
Kasaba Bawada, Kolhapur**



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Course Outcomes (CO): After successful completion of the course, students will be able to

CO	Statements
105.1	Solve ordinary differential equations of first order and first degree
105.2	Apply the knowledge of ordinary differential equation of first order and first degree
105.3	Use the numerical methods to solve ordinary differential equations
105.4	Apply the knowledge to study the data given with respect to dispersion and measure of central tendency
105.5	Describe the statistical data numerically by using correlation and regression
105.6	Apply the acquired knowledge of curve fitting to solve problems in engineering

Course Articulation Matrix: Mapping of Course Outcomes (CO) with Program Outcomes (PO)

CO \ PO	BTL	1	2	3	4	5	6	7	8	9	10	11	12
105.1	2, 3	3	2	--	--	--	--	--	--	--	--	--	1
105.2	3	3	2	--	--	--	--	--	--	--	--	--	1
105.3	2,3	3	2	--	--	1	--	--	--	--	--	--	1
105.4	3	2	2	--	--	1	--	--	--	--	--	--	1
105.5	3	2	2	--	--	1	--	--	--	--	--	--	1
105.6	3	2	2	--	--	1	--	--	--	--	--	--	1

Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Advanced Engineering Mathematics	7 th	Peter V.O'Neil	Cengage Learning	2012
2	Advanced Engineering Mathematics	1 st	H.K. Dass	S. Chand Publications, New Delhi	2011
3	A Text Book of Applied Mathematics	7 th	P.N.Wartikar, J.N.Wartikar	Vidarthi Griha Prakashan, Pune.	2006
4	Higher Engineering Mathematics	36 th	B.S. Grewal	Khanna Publishers	2001



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Advanced Engineering Mathematics	5 th	Erwin Kreyszig	India Pvt, Ltd.	2014
2	Higher Engineering Mathematics	6 th	B.V.Ramana	Tata M/c Graw- Hill Publication	2010
3	Numerical Methods for Scientific and Engineering Computation	5 th	M.K.Jain	New Age International Pvt. Ltd	2007
4	A Textbook of Engineering Mathematics	6 th	N.P.Bali, Iyengar	Laxmi Publication	2004

Useful Link /Web Resources:

1. DELNET- <http://www.delnet.in>
2. NDL-<http://ndl.iitkgp.ac.in>
3. N-LIST- <http://www.nlist.inflib.ac.in>
4. https://www.youtube.com/results?search_query=Dr+Navneet+Sangle

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HEAD

Dept. of First Year Engg.
D. Y. Patil College of Engg. & Tech.
Kasaba Bawada, Kolhapur



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Course Title: Mathematics-II for Computer Science and Engineering Tutorial	
Course Code: 241CSEBSCL107	Semester: II
Teaching Scheme: L-T-P: 00-01-00	Credits: 01
Evaluation Scheme ISE: 25	ESE Marks: 00

Prior Knowledge of:	Formulae of Derivatives and Integration, Differential Equation, Statistics.
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Course Objectives:

1.	To teach mathematical methodology
2.	To develop mathematical skills and enhance logical thinking power of students
3.	To provide students with skills in differential equations and numerical techniques
4.	To imbibe graduates with mathematical knowledge, computational skills and the ability to deploy these skills effectively in solution of engineering problems

List of Tutorials:

Tut. No.	Title of Tutorial	Duration
01	Ordinary Differential Equations: Exact and non-exact differential equations.	01 Hr
02	Ordinary Differential Equations: Linear and non-linear differential equations.	01 Hr
03	Applications of Ordinary Differential Equations: Orthogonal Trajectories. (Cartesian curves), Applications to Simple Electrical Circuits.	01 Hr
04	Applications of Ordinary Differential Equations: Newton's law of cooling, Rate of Decay, and growth	01 Hr
05	Numerical Solution of Ordinary Differential Equations First Order and First Degree: Picard's method, Taylor's series method.	01 Hr
06	Numerical Solution of Ordinary Differential Equations of First Order and First Degree: Euler's method, Runge-Kutta's method.	01 Hr
07	Numerical Solutions: Numerical Solutions using SCILAB/MATLAB	01 Hr
08	Frequency distribution and measure of central Tendency: Mean deviation, Standard deviation	01 Hr

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HEAD



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Tut. No.	Title of Tutorial	Duration
09	Measure of central Tendency: Measure of central Tendency using SCILAB/MATLAB	01 Hr
10	Correlation and Regression: Computation of Correlation, Lines of regression	01 Hr
11	Curve fitting: Fitting of straight line and exponential curve	01 Hr
12	Curve fitting: Fitting of second degree curve	01 Hr

Course Outcomes (CO): After successful completion of the course, students will be able to:

CO	Statements
107.1	Solve ordinary differential equations of first order and first degree
107.2	Apply the knowledge of ordinary differential equation of first order and first degree
107.3	Use the numerical methods to solve ordinary differential equations
107.4	Apply the knowledge to study the data given with respect to dispersion and measure of central tendency
107.5	Describe the statistical data numerically by using correlation and regression
107.6	Apply the acquired knowledge of curve fitting to solve problems in engineering

Course Articulation Matrix: Mapping of Course Outcomes (CO) with Program Outcomes (PO)

PO \ CO	BTL	1	2	3	4	5	6	7	8	9	10	11	12
107.1	2, 3	3	2	--	--	--	--	--	--	--	--	--	1
107.2	3	3	2	--	--	--	--	--	--	--	--	--	1
107.3	2,3	3	2	--	--	1	--	--	--	--	--	--	1
107.4	3	2	2	--	--	1	--	--	--	--	--	--	1
107.5	3	2	2	--	--	1	--	--	--	--	--	--	1
107.6	3	2	2	--	--	1	--	--	--	--	--	--	1

M. S. J.
HEAD

Dept. of First Year Engg.
D. Y. Patil College of Engg. & Tech.
Kasaba Bawada, Kolhapur



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Advanced Engineering Mathematics	7 th	Peter V.O'Neil	Cengage Learning	2012
2	Advanced Engineering Mathematics	1 st	H.K. Dass	S. Chand Publications, New Delhi	2011
3	A Text Book of Applied Mathematics	7 th	P.N.Wartikar, J.N.Wartikar	Vidyanartha Griha Prakashan, Pune.	2006
4	Higher Engineering Mathematics	36 th	B.S. Grewal	Khanna Publishers	2001

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Sr. No	Title	Edition	Author(s)	Publisher	Year
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2	Higher Engineering Mathematics	6 th	B.V.Ramana	Tata M/c Graw- Hill Publication	2010
3	Numerical Methods for Scientific and Engineering Computation	5 th	M.K.Jain	New Age International Pvt. Ltd New Delhi	2007
4	A Textbook of Engineering Mathematics	6 th	N.P.Bali, Iyengar	Laxmi Publication	2004

Useful Link /Web Resources:

1. DELNET- <http://www.delnet.in>
2. NDL-<http://ndl.iitkgp.ac.in>
3. N-LIST- <http://www.nlist.inflib.ac.in>
4. https://www.youtube.com/results?search_query=Dr+Navneet+Sangle

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HEAD



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Course Title: Applied Chemistry for Computer Science and Engineering	
Course Code: 241CSEBSCL106	Semester: II
Teaching Scheme: L-T-P: 03-00-00	Credits: 03
Evaluation Scheme ISE-I/MSE/ISE-II: 10/30/10	ESE Marks: 50

Prior Knowledge of:	Periodic properties of elements, basics of organic, inorganic, physical and analytical chemistry
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Course Objectives:

1.	To Apply the theoretical aspect for understanding the water chemistry
2.	To understand the basic principle and applications of sensor and memory device
3.	Evaluate the electrochemical energy storage systems such as lithium batteries and design for usage in electrical and electronic applications
4.	Illustrate general synthesis and mechanisms of some advanced polymeric Materials and e-waste management

Curriculum Details

Course Contents	Duration
Unit 1: Water Chemistry <ul style="list-style-type: none">• Introduction, Types of impurities in natural water• Water quality parameters total solids, acidity, alkalinity, chlorides, COD and BOD (definition, causes, significance)• Hardness of water, types of hardness, units of hardness, numerical on hardness• Ill effects of hard water in steam generation in boilers (scale & sludge formation, caustic embrittlement and boiler corrosion)• Treatment of hard water (Ion exchange and reverse osmosis process)	07 Hrs
Unit 2: Sensors <ul style="list-style-type: none">• Introduction, working, principle and applications of conductometric sensors, electrochemical sensors, thermometric sensors (Flame photometry) and optical sensors (colorimetry)• Hydrated gel sensor (p^H meter)• Sensors for the measurement of dissolved oxygen (DO)	07 Hrs



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur
(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Course Contents	Duration
<ul style="list-style-type: none">• Electrochemical gas sensors for SO_x and NO_x• Disposable sensors (DS): Introduction, principle, characteristics of disposable sensors, Advantages of DS over classical sensors	
Unit 3: Materials for Memory and Display Systems Memory Devices <ul style="list-style-type: none">• Introduction, basic concepts of electronic memory, Classification of electronic memory devices (organic, polymeric and hybrid material)• Manufacturing of semiconducting chips• Green computing: Bio-composite based memory devices Display Systems: <ul style="list-style-type: none">• Nanomaterials and organic materials for display technology (Light absorbing and emitting materials) used in optoelectronic devices• Liquid crystals display (LC's) –Introduction, classification, properties and application in Liquid Crystal Displays (LCD's)• Properties and application of Organic Light Emitting Diodes (OLED's) and light emitting electrochemical cells	07 Hrs
Unit 4: Energy System and Battery Technology <ul style="list-style-type: none">• Introduction, Classification of batteries (primary and secondary batteries)• Construction, working, advantages and applications of carbon-zinc cell, Ni-Cd and Li-ion battery as an electrochemical cell• Principle, Properties and applications of Quantum dots sensitized solar cells (QDSSC's)• Fuel cells: Concept, types of fuel cells and merits• Construction, working and applications phosphoric acid fuel cell and Hydrogen-oxygen fuel cell	07 Hrs
Unit 5: Sustainable chemistry and E-waste management <ul style="list-style-type: none">• Introduction, sources of e-waste, Composition, Characteristics, and Need of e-waste management• Toxic materials used in manufacturing electronic and electrical products;	07 Hrs



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Course Contents	Duration
<p>health hazards due to exposure to e-waste</p> <ul style="list-style-type: none"> Recycling and Recovery: Different approaches of recycling (separation, thermal treatments, hydrometallurgical extraction, direct recycling) Extraction of Metal from E-waste. Role of stakeholders in environmental management of e-waste (producers, consumers, recyclers, and statutory bodies) 	
<p>Unit 6: Engineering Advanced materials and Green chemistry</p> <ul style="list-style-type: none"> Introduction, classifications of polymer Introduction, synthesis, properties & applications of Bakelite and urea-formaldehyde resin Conducting polymers: introduction, synthesis & mechanism of conduction in polyaniline Biodegradable polymers: Introduction and their requirements. Synthesis, properties and applications of Polylactic acid <p>Green Chemistry:</p> <ul style="list-style-type: none"> Introduction, Aims, goals and applications Twelve principles of green chemistry Green Fuels: Introduction, construction and working of solar photovoltaic cell, advantages, and disadvantages 	07 Hrs

Course Outcomes (CO): After successful completion of the course, students will be able to

CO	Statements
106.1	Apply the theoretical aspects for understanding the water chemistry
106.2	Understand the principles and applications of sensors
106.3	Discuss and assess the Basic concepts of electronic memory and display Systems
106.4	Evaluate the electrochemical energy storage systems such as lithium batteries and design for usage in electrical and electronic applications
106.5	Interpret the extraction of metal from e-waste and role of stakeholders in environmental management of e-waste.
106.6	Illustrate general synthesis and mechanisms of some advanced polymeric Materials and green chemistry

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D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

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F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Course Articulation Matrix: Mapping of Course Outcomes (CO) with Program Outcomes (PO)

PO \ CO	BTL	1	2	3	4	5	6	7	8	9	10	11	12
106.1	3	3	2	--	--	--	--	--	--	--	--	--	1
106.2	2	3	--	--	--	--	--	--	--	--	--	--	1
106.3	2	3	--	--	--	--	--	--	--	--	--	--	1
106.4	2	3	--	--	--	--	--	--	--	--	--	--	1
106.5	2	3	--	--	--	--	--	--	--	--	--	--	1
106.6	2	3	--	--	--	--	--	--	--	--	--	--	1

Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Functional and smart materials	--	Chander Prakash, Sunpreet Singh, J. Paulo Davim	CRC Press, ISBN: 978-036-727-510	2020
2	A Textbook of Engineering Chemistry	12 th	S. S. Dara, S. S. Umare	S. Chand & Company Ltd., New Delhi.	2011
3	A Text Book of Engineering Chemistry	--	Shashi Chawla	Dhanpat Rai & Co.	2017
4	A textbook of Engineering Chemistry	--	Jain and Jain,	Dhanpatrai Publication.	2015

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Energy storage and conversion devices: Super capacitors, batteries and hydroelectric cells,	1 st edition,	Anurag Gaur, A. L. Sharma, Anil Arya.	CRC press, SBN: 978-1-003-14176-1	2021
2	E-waste recycling and management: present	Vol. 33.	Khan, Anish, and Abdullah M. Asiri.	Springer, ISBN: 978-3-030-14186-8.	2019

M. S. K.
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D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Sr. No	Title	Edition	Author(s)	Publisher	Year
	scenarios and environmental issues				
3	Functional and smart materials,	--	Chander Prakash, Sunpreet Singh, J. Paulo Davim	CRC Press, ISBN: 978-036-727-510	2020
4	A Textbook of Engineering Chemistry	12 th	S. S. Dara, S. S. Umare	S. Chand & Company Ltd., New Delhi.	2011

Useful Link /Web Resources:

1. <https://ndl.iitkgp.ac.in/>
2. <https://www.youtube.com/watch?v=faESCxAWR9k>



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Course Title: Applied Chemistry for Computer Science and Engineering Laboratory	
Course Code: 241CSEBSCP108	Semester: II
Teaching Scheme: L-T-P: 00-00-02	Credit: 01
Evaluation Scheme: ISE: 25	ESE Marks: 00

Prior Knowledge of:	Experiments based on titration, handling of class ware's & chemicals, preparation of solutions.
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Course Objectives:

1.	To test water quality parameters using various titration analysis methods
2.	To synthesize simple advanced materials and estimate concentration of elements in material's
3.	To know handling of glassware's and simple equipment's for chemical analysis

List of Experiments-

Exp. No	Title of Experiments	Duration
01	Determination of total hardness of water sample by EDTA method (Complex metric titration)	02 Hrs
02	To determine the normality of given strong acid by titrating against strong alkali solution by conductometer	02 Hrs
03	To determine the normality of given weak acid by titrating against strong alkali solution by conductometer	02 Hrs
04	Determination pH of given solutions by pH meter	02 Hrs
05	Estimation of Iron from a solution by colorimetry	02 Hrs
06	Estimation of Nickel from a solution by colorimetry	02 Hrs
07	To determine the approximate analysis of coal	02 Hrs
08	To study the construction and working of Galvanic cell	02 Hrs
09	To estimate amount of calcium from waste chalk	02 Hrs
10	Estimation of zinc metal from brass solution	02 Hrs
11	Preparation of urea-formaldehyde resin	02 Hrs
12	Preparation of phenol formaldehyde resin	02 Hrs



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Course Outcomes (CO): After successful completion of the course, students will be able to

CO	Statements
108.1	Analyze hardness, acidity, alkalinity and chloride content of water and percentage of elements in some alloys
108.2	Produce various advanced materials and analyze aqueous solutions using instruments
108.3	Perform various experiments by following written instructions
108.4	Express involvement by understanding concepts in applied chemistry

Course Articulation Matrix: Mapping of Course Outcomes (CO) with Program Outcomes (PO)

CO \ PO	BTL	1	2	3	4	5	6	7	8	9	10	11	12
108.1	3	3	--	--	--	--	--	--	--	1	--	--	1
108.2	3	3	--	--	--	--	--	--	--	1	--	--	1
108.3	3	3	--	--	--	--	--	--	--	1	--	--	1
108.4	3	3	--	--	--	--	--	--	--	1	--	--	1

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Laboratory manual on engineering chemistry	1 st	S. K. Bashin, Dr. Sudha Rani	Dhanpat Rai Publishing company Ltd., New Delhi	2012
2	Engineering Chemistry	15 th	P. C. Jain	Dhanpat Rai Publishing Company Ltd., New Delhi	2014

Useful Link /Web Resources:

1. <https://www.vlab.co.in/broad-area-chemical-science>



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY
Kasaba Bawada, Kolhapur
(An Autonomous Institute)
Department of Computer Science and Engineering
F. Y. B. Tech. Curriculum
w.e.f. A.Y. 2024-2025

Course Title: Generative AI	
Course Code: 241CSEESCL105	Semester: II
Teaching Scheme L-T-P: 03-00-00	Credits: 03
Evaluation Scheme ISE-I/MSE/ISE-II: 10/30/10	ESE Marks: 50

Prior knowledge of: Basics Knowledge of Computer

Course Objectives:

1.	To study basic principles of generative AI
2.	To study different types of generative models and their applications
3.	To give hands-on experiences with existing generative models and tools
4.	To explore ethical considerations and societal implications of generative AI technologies

Curriculum Details:

Course Contents	Duration
Unit 1: Introduction to Generative AI <ul style="list-style-type: none">• What is AI, History, what is Generative AI• Types of Generative models• AI Prompt Writing? Prompts, Type of Prompts• What is text-to-text Generative AI• General Rules for Prompt Writing• Generative language models• ChatGPT 3.5, ChatGPT4.0, Examples, Google Bard, Ethics in AI	7 Hrs
Unit 2: Prompt Engineering - NLP and ML Foundations <ul style="list-style-type: none">• Techniques for Prompt Engineering• Benefits of Prompt Engineering, what is NLP• What is ML, and examples• Common NLP Tasks - text Classification, language Translation,• Named Entity Recognition (NER)• Question answering, text Generation, sentiment analysis• Text summarization, recommendation systems	7 Hrs



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Course Contents	Duration
Unit 3: Tuning and Optimization Techniques <ul style="list-style-type: none">• Fine-tuning prompts• Prompt Tuning• Filtering and post-processing• Reinforcement learning• Use cases and applications• Pre-training• Designing effective prompts	7 Hrs
Unit 4: AI for Creative Applications <ul style="list-style-type: none">• Presentations gamma.ai• TL draw, AI overpowered tools• Image generation: Exploring tools like DALL-E and their creative applications like, generating concept art• product design ideas• Poem generator, video description• Music generation	7 Hrs
Unit 5: AI for Productivity Improvement <ul style="list-style-type: none">• Rytr for blog idea and outline, business idea pitch• Cover Letter, Job Description• Reply to reviews, Keyword Extractor, Tagline and Headlines etc• ResumeBuilding.com, Blog writing/ Text Summarization using Copy.ai• Image code - Blackbox	7 Hrs
Unit 6: Generative AI tools and Case Studies <ul style="list-style-type: none">• Hugging face transformers• OpenAI GPT3 API• Google cloud AI platform, Mid Journey, DALL E-2, Google Bard	7 Hrs



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Course Contents	Duration
<ul style="list-style-type: none"> • Case Studies – Token (API) Key generation on LLM (OpenAI, Google, Hugging face) in Google Colab • Hugging face demonstration of various models – image-to-text, • language translation, summarization • text generation, text-to-image • image-to-text, AI-Powered text and image generator, • Use of AI in word, power point and excel 	

Course Outcomes (CO):

Upon successful completion of this course, the students will be able to

105.1	Explain generative AI within the general history with context
105.2	Select appropriate models/tools based on the specific requirements of a given task or application
105.3	Classify different types of prompts
105.4	Generate creative content using generative AI techniques, including text, images, music etc
105.5	Develop the skill to build resume, Blog writing and Text Summarization
105.6	Develop strategies for responsibly deploying and managing generative AI systems considering issues like privacy, bias and misinformation

Course Articulation Matrix: Mapping of Course Outcomes (CO) with Program Outcomes (PO):

CO	PO												BTL
	1	2	3	4	5	6	7	8	9	10	11	12	
105.1	2	1	-	-	2	-	-	-	-	-	-	1	2
105.2	2	1	-	-	2	-	-	-	-	-	-	1	2
105.3	2	1	-	-	2	-	-	-	-	-	-	1	3
105.4	2	1	-	-	2	-	-	-	-	-	-	1	2
105.5	2	1	-	-	2	-	-	-	-	-	-	1	2
105.6	2	1	-	-	2	-	-	-	-	-	-	1	2

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D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Reference books:

Sr. No.	Title	Edition	Author	Publisher	Year
1.	Generative AI for everyone	First	Altaf Rehman	Bluerose publishers Pvt.Ltd.	2024
2.	Prompt Engineering for Generative AI	First	Jems Phoenix and mike Taylor	Shroff Publishers and Distributors Pvt. Ltd.	2024
3.	Generative AI For Beginners Playbook	First	Branson Adams	Walking Crow Publishing	2024
4.	Rise of Generative AI and ChatGPT	First	Utpal Chakraborty, Sumit Kumar and Soumyadeep Roy	BPB Publications	2023
5.	Applied Generative AI for Beginners	First	Akshay Kulkarni, Adarsha Shivananda, Anoosh Kulkarni and Dilip Gudivada	Apress	2023

Online Resources:

1. <https://www.deeplearning.ai/courses/generative-ai-for-everyone/>
2. <https://www.coursera.org/learn/introduction-to-generative-ai>
3. https://www.w3schools.com/gen_ai/gen_ai_prompt_intro.php
4. https://www.tutorialspoint.com/prompt_engineering/prompt_engineering_introduction.htm
5. <https://www.youtube.com/@AI.Overpowered>



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Course Title: Generative AI Laboratory	
Course Code: 241CSEESCP106	Semester: II
Teaching Scheme: L-T-P: 00-00-02	Credits: 01
Evaluation Scheme: ISE Marks: 25	ESE: 00

Prior knowledge of: Basics Knowledge of Computer

Course Objectives:

1.	To study basic principles of generative AI
2.	To study different types of generative models and their applications
3.	To give hands-on experiences with existing generative models and tools
4.	To explore ethical considerations and societal implications of generative AI technologies

List of Assignments / Practical's

Sr. No.	Name of Assignment	Duration
1	Suggesting 50 innovative ideas to increase sales and reduce costs (Assume suitable data)	2 Hrs
2	Citing references for an article	2 Hrs
3	Summarizing e mails/documents	2 Hrs
4	Resume generation	2 Hrs
5	Creative idea/Business presentation	2 Hrs
6	Examining the techniques used to construct a website or application	2 Hrs
7	Generate stories on a given prompt	2 Hrs
8	Image-to-text conversion	2 Hrs
9	Text to image	2 Hrs
10	Language Translation	2 Hrs
11	Blog writing	2 Hrs
12	Use of AI in word, Power point, and excel	2 Hrs



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY
Kasaba Bawada, Kolhapur
(An Autonomous Institute)
Department of Computer Science and Engineering
F. Y. B. Tech. Curriculum
w.e.f. A.Y. 2024-2025

Course Outcomes (CO):

Upon successful completion of this course, the students will be able to

106.1	Explain generative AI within the general history with context
106.2	Select appropriate models/tools based on the specific requirements of a given task or application
106.3	Classify different types of prompts
106.4	Generate creative content using generative AI techniques, including text, images, music etc
106.5	Develop the skill to build resume, Blog writing and Text Summarization
106.6	Develop strategies for responsibly deploying and managing generative AI systems considering issues like privacy, bias and misinformation

Course Articulation Matrix: Mapping of Course Outcomes (CO) with Program Outcomes (PO):

CO	PO												BTL
	1	2	3	4	5	6	7	8	9	10	11	12	
106.1	2	1	-	-	2	-	-	-	-	-	-	1	2
106.2	2	1	-	-	2	-	-	-	-	-	-	1	2
106.3	2	1	-	-	2	-	-	-	-	-	-	1	3
106.4	2	1	-	-	2	-	-	-	-	-	-	1	2
106.5	2	1	-	-	2	-	-	-	-	-	-	1	2
106.6	2	1	-	-	2	-	-	-	-	-	-	1	2

Reference books:

Sr. No.	Title	Edition	Author	Publisher	Year
1.	Generative AI for everyone	First	Altaf Rehman	Bluerose publishers Pvt.Ltd.	2024
2.	Prompt Engineering for Generative AI	First	Jems Phoenix and mike Taylor	Shroff Publishers and Distributors Pvt. Ltd.	2024
3.	Generative AI For Beginners Playbook	First	Branson Adams	Walking Crow Publishing	2024
4.	Rise of Generative AI and ChatGPT	First	Utpal Chakraborty, Sumit Kumar and Soumyadeep Roy	BPB Publications	2023
5.	Applied Generative AI for Beginners	First	Akshay Kulkarni, Adarsha Shivananda, Anoosh Kulkarni and Dilip Gudivada	Apress	2023



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY
Kasaba Bawada, Kolhapur
(An Autonomous Institute)
Department of Computer Science and Engineering
F. Y. B. Tech. Curriculum
w.e.f. A.Y. 2024-2025

Online Resources:

1. <https://www.deeplearning.ai/courses/generative-ai-for-everyone/>
2. <https://www.coursera.org/learn/introduction-to-generative-ai>
3. https://www.w3schools.com/gen_ai/gen_ai_prompt_intro.php
4. https://www.tutorialspoint.com/prompt_engineering/prompt_engineering_introduction.htm
5. <https://www.youtube.com/@AI.Overpowered>


HEAD



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A. Y. 2024-2025

Course Title: Professional Communication	
Course Code: 241CSEAECL101	Semester: II
Teaching Scheme L-T-P: 01-00-00	Credits: 01
Evaluation Scheme: ISE: 25	ESE: 00

Prior knowledge of:	Basic English grammar, Basics of communication
----------------------------	--

Course Objectives:

1.	To make students learn important communicative situations, the basics of communication, and its significance in the corporate sector
2.	To sharpen their listening, speaking, reading, writing skills
3.	To facilitate them to draft office documents effectively
4.	To enhance career skills to prepare students industry-ready

Curriculum Details

Course Contents	Duration
Unit 1 Language and Communication <ul style="list-style-type: none"> • Need for effective communication • The process and levels of communication • Professional communication • Communication networks/ flows • Forms and methods (verbal and non-verbal) of communication • Barriers to communication and solutions 	04 Hrs
Unit 2 Introduction to LSRW <ul style="list-style-type: none"> • Listening Skills: Hearing and listening, Listening as an active skill; Types of Listening; Barriers to effective listening skills • Speaking Skills: Importance, Various oral business contexts/situations, Group communication, Preparing effective public speeches (Impromptu and Prepared) • Reading Skills: Benefits of effective reading, Types of reading (Skimming; Scanning, Intensive reading, Extensive reading) Overcoming common obstacles, Reading comprehension • Writing Skills: Importance, Paragraph writing techniques 	03Hrs



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering


F. Y. B. Tech. Curriculum

w.e.f. A. Y. 2024-2025

Course Contents	Duration
Unit 3 Professional Correspondence <ul style="list-style-type: none"> Official correspondence Principles, structure (elements) Layout (complete block, modified block, semi-block), Types (enquiry and reply, order, claim and adjustment) Office drafting Writing notice, agenda, and minutes of the meeting Email writing Advantages and limitations Style, structure, and content Email etiquette 	04 Hrs
Unit 4 Career Skills and Ethics <ul style="list-style-type: none"> Resume and cover letter writing Types of resume Important features of selling resume Cover letter writing Job Interviews Interview preparation FAQs (Frequently Asked Questions) Guidance for IELTS, TOFEL and GRE Corporate etiquette and ethics 	03 Hrs

Course Outcomes (CO): After successful completion of the course, students will be able to

CO	Statements
101.1	Implement verbal and non-verbal codes for effective communication
101.2	Demonstrate language learning skills-LSRW (Listening, Speaking, Reading, and Writing)
101.3	Draft business documents competently
101.4	Improve employability and readiness for industry demand and career advancement


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 Kasaba Bawada, Kolhapur



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Course Articulation Matrix: Mapping of Course Outcomes (CO) with Program Outcomes (PO)

CO \ PO	BTL	1	2	3	4	5	6	7	8	9	10	11	12
101.1	3	-	-	-	-	-	-	-	2	3	3	-	1
101.2	3	-	-	-	-	-	-	-	2	3	3	-	1
101.3	3	-	-	-	-	-	-	-	2	3	3	-	1
101.4	3	-	-	-	-	-	-	-	2	3	3	-	1

Suggested Learning Resources:

Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Technical Communication: Principles and Practice	4 th	Meenakshi Raman & Sangita Sharma	Oxford University Press	2022
2	Personality Development and Soft- Skills	2 nd	Barun K. Mitra	Oxford University Press	2016
3	Communication Skills	2 nd	Sanjay Kumar & Pushp Lata	Oxford University Press	2015
4	Communication Skills	3 rd	Meenakshi Raman & Sangeeta Sharma	Oxford University Press	2013

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1	Business Communication	2 nd	Urmila Rai and S.M. Rai	Himalaya Publishing House Pvt. Ltd.	2014
2	A University Grammar of English	1 st	Randolph Quirk and S Greenbaum	Pearson	2007
3	Effective Technical Communication	2 nd	B. K.Mitra	Oxford University Press	2006
4	Effective Technical Communication	2 nd	M.Ashraf Rizvi	McGraw Hill Education	2005

Useful Links/Web Resources:

1. <https://www.skillsyouneed.com>
2. <https://www.psychologytoday.com>
3. <https://www.britishcouncil.in>
4. <https://www.udemy.com>
5. <https://www.englishclub.com>



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Course Title: Professional Communication Laboratory	
Course Code: 241CSEAEC102	Semester: II
Teaching Scheme L-T-P: 00-00-02	Credit: 01
Evaluation Scheme: ISE: 25	ESE Marks: 00

Prior knowledge of:	Basic language learning and people skills
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Course Objectives:

1	To familiarize students with English phonology and improve their pronunciation
2	To improve language learning skills (LSRW) by providing ample practice
3	To develop students' verbal and non-verbal communication
4	To cultivate creative thinking and workplace skills

List of Lab Sessions

Session No	Title of Activities	Duration
01	Icebreaking: Introducing self and others Different ways of introducing self and others: demonstration	02 Hrs
02	Phonetics Introduction to phonetics - consonants, vowels and diphthongs, stress, intonation in English with video samples	02 Hrs
03	Remedial English Vocabulary-building games and identifying errors revising rules of English grammar	02 Hrs
04	Listening Practice Listening comprehension, strategies for effective listening with audio/video samples	02 Hrs
05	Reading Practice Improving Comprehension Skills, Techniques for good comprehension	02 Hrs
06	Technical Writing Practice Paragraph writing, writing notices, agenda minutes of the meeting, email writing	02 Hrs
07	Public Speaking Practicing extempore and prepared speeches	02 Hrs
08	Group discussion Group discussions on current topics	02 Hrs
09	Mock Meetings Purposes, preparation, and procedure for conducting effective meetings	02 Hrs

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D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Session No	Title of Activities	Duration
10	Mock Interviews Preparing for FAQs and facing mock interviews	02 Hrs
11	Creative Writing Blog Writing	02 Hrs
12	Film/Book Appreciation Showing short films and appreciation of them. Reading novels or short stories and critical analysis of them.	02 Hrs

Course Outcomes (CO): After successful completion of the course, students will be able to

CO	Statements
102.1	Demonstrate effective LSRW skills
102.2	Articulate words accurately and prepare grammatically correct sentences
102.3	Deliver speeches and participate in GDs, business meetings, and mock interviews effectively
102.4	Draft business documents and blogs by following writing ethics

Course Articulation Matrix: Mapping of Course Outcomes (CO) with Program Outcomes (PO)

PO \ CO	BTL	1	2	3	4	5	6	7	8	9	10	11	12
102.1	3	-	-	-	-	-	-	-	2	3	3	-	1
102.2	3	-	-	-	-	-	-	-	2	3	3	-	1
102.3	3	-	-	-	-	-	-	-	2	3	3	-	1
102.4	3	-	-	-	-	-	-	-	2	3	3	-	1

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Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A. Y. 2024-2025

Suggested Learning Resources:

Text Books:

Sr. No	Title	Edition	Authors	Publisher	Year
1	A Practical Course in Spoken English	1 st	J.K. Gangaj	PHI Learning Pvt. Ltd	2014
2	English Language Laboratories	2 nd	Nira Konar	PHI Learning Pvt. Ltd	2014
3	Better English Pronunciation	2 nd	J.D.O Connor	Cambridge University Press,	1980

Reference Books:

Sr. No	Title	Edition	Authors	Publisher	Year
1	Communication Skills	2 nd	Sanjay Kumar & Pushp Lata	Oxford University Press	2015
2	Technical Communication: Principles and Practice	2 nd	Meenakshi Raman & Sangita Sharma	Oxford University Press	2011

Useful Links /Web Resources:

1. <https://www.indiabix.com>
2. <https://www.skillsyouneed.com>
3. <https://interviewbuddy.in>
4. <https://learnenglish.britishcouncil.org>
5. <https://www.fluentu.com>

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D.Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY
Kasaba Bawada, Kolhapur
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Department of Computer Science and Engineering
F. Y. B.Tech. Curriculum
w.e.f. A. Y. 2024-2025

Course Title: Computer Workshop	
Course Code: 241CSEVSECL103	Semester: II
Teaching Scheme: L-T-P: 01-00-00	Credits: 01
Evaluation Scheme: ISE: 25	ESE Marks: 00

Prior Knowledge of:	Basic computer knowledge
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Course Objectives:

1.	To get familiar with various hardware, software, operating systems and networking
2.	To identify and rectify the onboard computer hardware, software and network related problems
3.	To understand the hardware specifications that are required to run operating system and various application programs

Course Content:

Content	Duration
Unit 1: Computer Architecture Assembly of Computer <ul style="list-style-type: none">• Introduction to hardware peripherals like RAM, ROM, keyboard, Mouse, processors, etc.• Generation of processors• Working of SMPS• Study of various ports• Steps and precautions to assemble compute Computer Network Tools r <ul style="list-style-type: none">• Introduction to computer network• Study of various topologies• Preparing the network cable using crimping tools and connectors• Study of various network environments	07 Hrs
Unit 2: Operating System, Server and Internet Operating System and Software Installations	07 Hrs



D.Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY
Kasaba Bawada, Kolhapur
(An Autonomous Institute)
Department of Computer Science and Engineering
F. Y. B.Tech. Curriculum
w.e.f. A. Y. 2024-2025

Content	Duration
<ul style="list-style-type: none">• Introduction to operating system• Types of operating system (Windows and Linux).• Window:-Evolution of operating system• Introduction to software. Types of software (MS office, VLC media player, Win RAR), etc.• Linux: Evolution of operating system• Introduction to software• Types of software (open office, web browser, etc.)• Case study of Installations step for operating system and application software's <p>Server</p> <ul style="list-style-type: none">• Introduction to server• Difference between server and normal desktop• Evolution of servers• Study of various servers like Email, data, domain, etc. <p>Internet</p> <ul style="list-style-type: none">• Introduction and evolution of internet• Study of various internet-based services like Email, social network, chat• Introduction to cyber security and cyber laws <p>Driver software installation</p>	

Course Outcomes (CO): At the end of the course, the students should be able to

CO	Statements
103.1	Understand the basic concept and structure of computer hardware and networking
103.2	Identify the existing configuration of the computer and various restore operations on computer and update application software

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Department of Computer Science and Engineering
F. Y. B.Tech. Curriculum
w.e.f. A. Y. 2024-2025

Course Articulation Matrix: Mapping of course outcomes (CO) with program outcomes (PO)

CO \ PO	BTL	1	2	3	4	5	6	7	8	9	10	11	12
103.1	1	--	--	--	--	1	--	--	--	1	--	--	1
103.2	2	--	--	--	--	2	--	--	--	1	--	--	1

Suggested Learning Resources:

Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1.	Hardware and Software of Personal Computers	1 st	Sanjay K. Bose	New Age International Private Limited	2014
2.	Fundamentals of Computers	6 th	V. Raja Raman	PHI Learning	2014
3.	Hardware Bible	6 th	Winn L. Rosch	QUE	2003

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1.	Introduction to Information Technology	2 nd	ITL Education Solutions limited	Pearson Education India	2012
2.	PC Hardware and A +Handbook	1 st	Kate Chase, Wiley Dreamtech	Microsoft Press US	2004
3.	Complete computer upgrade and Repair book	3 rd	Cheryl A Schmidt	Wiley Dreamtech	2002
4.	Introduction to Computers with MS-Office 2000	1 st	Alexis Leon & Mathews Leon	McGraw Hill Education	2001

Useful Link /Web Resources:

- <https://turbofuture.com/computers/Dissassembling-and-Assembling-the-computer-system>
- <https://www.computerhope.com/jargon/c/computer.html>
- <https://www.pluralsight.com/blog/tutorials/troubleshooting-hardware>
- [http://business.toshiba.com/downloads/KB/fIUlds/14047/SoftwareTrouble_EN_\(EBN\)_Ver01F.pdf](http://business.toshiba.com/downloads/KB/fIUlds/14047/SoftwareTrouble_EN_(EBN)_Ver01F.pdf)
- https://oer.nios.ac.in/wiki/index.php/TYPES_OF_INTERNET_CONNECTIONS



D.Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY
Kasaba Bawada, Kolhapur
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F. Y. B.Tech. Curriculum
w.e.f. A. Y. 2024-2025

Course Title: Computer Workshop Laboratory	
Course Code: 241CSEVSECP104	Semester: II
Teaching Scheme: L-T-P: 00-00-01	Credit: 01
Evaluation Scheme: ISE: 25	ESE Marks: 00

Prior Knowledge of:	Basic computer knowledge
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Course Objectives:

1.	To get familiar with various hardware, software, operating systems and networking
2.	To identify and rectify the onboard computer hardware, software and network related problems.
3.	To understand the hardware specifications that are required to run operating system and various application programs.

List of Experiments

Sr. No.	Title of Experiments	Duration
01	Desktop/laptop/server type identification and its specification.	02 Hrs
02	Introduction of computer architecture and components.	02 Hrs
03	Study of peripherals of a computer, components in a CPU and its functions.	02 Hrs
04	Study and demonstration of storage devices.	02 Hrs
05	A case study on Power Supply Unit (PSU) and its components.	02 Hrs
06	Introduction to basics of networking.	02 Hrs
07	Study of computer assembly and configuration.	02 Hrs
08	Assembling and disassembling of PC.	02 Hrs
09	Introduction to Operating System.	02 Hrs
10	Installation of Operating Systems – Windows.	02 Hrs
11	Installation of Operating Systems – LINUX.	02 Hrs
12	Installation of local and network printer.	02 Hrs
13	Configuring firewalls and installation of Antivirus software.	02 Hrs
14	Introduction to office automation software like MS Word, MS Excel, MS Power Point.	02 Hrs

Minimum 12 Experiments shall be conducted from above list.



D.Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY
Kasaba Bawada, Kolhapur
(An Autonomous Institute)
Department of Computer Science and Engineering
F. Y. B.Tech. Curriculum
w.e.f. A. Y. 2024-2025

Course Outcomes (CO): At the end of the course, the student should be able to

CO	Statements
104.1	Understand the basic concept and structure of computer hardware and networking
104.2	Identify the existing configuration of the computer and various restore operations on computer and update application software

Course Articulation Matrix: Mapping of course outcomes (CO) with program outcomes (PO)

CO \ PO	BTL	1	2	3	4	5	6	7	8	9	10	11	12
104.1	1	--	--	--	--	1	--	--	--	1	--	--	1
104.2	2	--	--	--	--	2	--	--	--	1	--	--	1

Suggested Learning Resources:

Text Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1.	Hardware and Software of Personal Computers	1 st	Sanjay K. Bose	New Age International Private Limited	2014
2.	Fundamentals of Computers	6 th	V. Raja Raman	PHI Learning	2014
3.	Hardware Bible	6 th	Winn L. Rosch	QUE	2003

Reference Books:

Sr. No	Title	Edition	Author(s)	Publisher	Year
1.	Introduction to Information Technology	2 nd	ITL Education Solutions limited	Pearson Education, India	2012
2.	PC Hardware and A +Handbook	1 st	Kate Chase, Wiley Dreamtech	Microsoft Press, US	2004
3.	Complete computer upgrade and Repair book	3 rd	Cheryl A Schmidt	Wiley Dreamtech	2002
4.	Introduction to Computers with MS-Office 2000	1 st	Alexis Leon & Mathews Leon	McGraw Hill Education	2001



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Useful Link /Web Resources:

6. <https://turbofuture.com/computers/Dissassembling-and-Assembling-the-computer-system>
7. <https://www.computerhope.com/jargon/c/computer.html>
8. <https://www.pluralsight.com/blog/tutorials/troubleshooting-hardware>
9. [http://business.toshiba.com/downloads/KB/f1Ulds/14047/SoftwareTrouble_EN_\(EBN\)_Ver01F.pdf](http://business.toshiba.com/downloads/KB/f1Ulds/14047/SoftwareTrouble_EN_(EBN)_Ver01F.pdf)
10. https://oer.nios.ac.in/wiki/index.php/TYPES_OF_INTERNET_CONNECTIONS



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F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Course Title: Software Engineering	
Course Code: 241CSEPCCL101	Semester: II
Teaching Scheme: L-T-P: 02-00-00	Credits: 02
Evaluation Scheme ISE-I, MSE, ISE-II: 10/30/10	ESE Marks: 00

Prior Knowledge of:	Working knowledge of C programming language
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Course Objectives:

1	To expose the students to basic concepts and principles of software engineering
2	To make the students aware of the importance of SDLS in their project development
3	To expose the students to software project planning and scheduling

Course Outcomes (CO): Upon successful completion of this course, the students will be able to

101.1	Understand systematic methodologies of SDLC
101.2	Prepare SRS for their problem domain
101.3	Summarize Planning and Scheduling of Software Project
101.4	Understand basics of design, coding and testing standards

Curriculum Details

Content	Hours
Unit 1: Introduction to Software Engineering and Processes <ul style="list-style-type: none">• Software and its types,• Software Problem- Cost, Schedule & Quality,• Scale and change,• Difference between software engineering and software programming,• Members involved in software development.	3 Hrs



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

Unit 2: Software Processes <ul style="list-style-type: none">• Software Process and Project,• Component Software Processes,• SDLC,• Software Development Process Modules (Waterfall, Prototype, Spiral, V-model, RAD, Iterative),• Project Management Process.• Agile Development- XP, other Agile Process Models.	6 Hrs
Unit 3: Software Requirements Analysis <ul style="list-style-type: none">• Introduction to Requirements Engineering• Value of a good SRS,• Requirements Process,• Requirements Specifications,• Other Approaches for Analysis,• Validation. Case study on Software requirements.	5 Hrs
Unit 4: Software Project Planning and Scheduling <ul style="list-style-type: none">• Responsibilities of Software Project Manager,• Project Planning, Project Scheduling, Project Staffing,• People CMM, Risk Management	5 Hrs
Unit 5: Software Design <ul style="list-style-type: none">• Basics of Software Design and principles,• Data Design, Architectural Design, Component Level Design,• User Interface Design, Graphical User Interface	4 Hrs
Unit 6: Coding and Testing <ul style="list-style-type: none">• Coding Standards and Guidelines,	7 Hrs



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

Department of Computer Science and Engineering

F. Y. B. Tech. Curriculum

w.e.f. A.Y. 2024-2025

<ul style="list-style-type: none"> • Code Review, • Software Documentation, • Testing, Levels of testing, Types of Testing, Unit Testing, Black Box Testing, and White Box Testing. 	
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Course Articulation Matrix: Mapping of Course Outcomes (CO) with Program Outcomes (PO) and Program Specific Outcomes (PSOs):

CO	POs												PSOs	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
101.1	1	1	--	1	2	--	1	--	1	1	1	2	--	--
101.2	3	1	1	2	1	--	--	1	1	1	--	1	1	--
101.3	3	1	--	--	1	--	--	1	1	1	--	1	--	--
101.4	3	2	1	1	1	2	--	1	1	1	--	1	--	1

Text Books:


1. Panjkaj Jalote, "Software Engineering- A precise approach", Wiley India, 2010 (Unit 1, 2)
2. Roger S. Pressman, "Software Engineering – A Practitioner’s Approach", 7th Edition, Mc Graw Hill, 2009(Unit 1, 2)
3. Rohit Khurana, "Software Engineering Principles and Practices", Vikas Publication. 2010 (Unit 4, 4)
4. Rajib Mall, "Fundamentals of Software Engineering", PHI, Third Edition, 2009 (Unit 6)

Reference Books:

1. Hansvan Vliet, "Software Engineering Principles and Practice", Willey-India Edition. 2006
2. Sommerville, "Software Engineering", Pearson Education, India. 2011
3. P Fleeger, "Software Engineering", Pearson Education, India.2009
4. Yogesh Singh, "Software Testing", Cambridge, 2012

Online Resources:

1. https://onlinecourses.nptel.ac.in/noc21_cs13/course


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(An Autonomous Institute)

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F. Y. B. Tech. Curriculum

w.e.f. A. Y. 2024-2025

Course Title: Finishing School Training-II	
Course Code: 241CSEMCL103	Semester: II
Teaching Scheme: L-T-P :3-0-0	Credits: 00
Evaluation Scheme ISE: 50 Grade	ESE Marks: 00

Curriculum Details

Course Contents	Duration
UNIT-I: Learning Basic Aptitude Module-1: Ratio & Proportion Module-2: Mixture & Alligation Module-3: HCF & LCM	06 Hrs
UNIT-II: Logical Reasoning Module-1: Blood Relations Module-2: Seating Arrangement Module-3: Pattern Completion	06Hrs
UNIT-III: Functional English Module-1: Spotting Errors, Sentence Correction/ Sentence Improvement Module-2: Sentence completion Module-3: Sentence Formation/ Ordering of words Module-4: One word Substitution Module-5: Para jumbles	10 Hrs
UNIT-IV: Attitude Building-I Module-1. Focus & Discipline Module-2. ASK Model- Corporate Expectations Module-3. Change Management (Changing & Developing habits)	06 Hrs
UNIT-V: Technical Training Module-1: C++ Introduction-History of C++,C++ specifications and keywords, Data type and its type, type modifiers and qualifiers,Structure in C/C++, access specifier, Memory Allocation Functions-simple programs. Module-2: Creating Classes and Objects-Access Specifiers,Constructor,Types of Functions Member Functions-Internally Defined, Externally Defined,Inline Function,Friend Function Virtual Function Introduction,Nesting of Member Functions Module-3 - Functions-Function Arguments- Call by Value, Call by Reference,Object as Function Argument, Array of Objects Module-4-Constructor and Destructor Constructor Types-Default, Parameterized, Copy Constructor,Destructor,Concept of Pointers Shallow Copy,Deep Copy Module-5- Exception Handling-Static members,Static functions,Exception Handling	14 Hrs



D. Y. PATIL COLLEGE OF ENGINEERING & TECHNOLOGY

Kasaba Bawada, Kolhapur

(An Autonomous Institute)

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F. Y. B. Tech. Curriculum

w.e.f. A. Y. 2024-2025

Course Title: Capstone Project	
Course Code: 241CSEMCL104	Semester: II
Teaching Scheme: L-T-P: 0-0-0	Credits: 00
Evaluation Scheme ISE: 50 Grade	ESE Marks: 00

Course Objectives:

1	To inculcate independent learning by problem solving with social context.
2	To engages students in rich and authentic learning experiences.
3	To emphasizes learning activities that are long-term, interdisciplinary and student-centric.
4	To provide every student the opportunity to get involved either individually or as a group so as to develop team skills and learn professionalism.

Curriculum Details

As per the approved structure of curriculum, students will be allowed to do capstone project during second semester of B. Tech. program.

Topics:

Capstone Project may be a theoretical analysis, modeling & simulation, experimentation & analysis, prototype design, fabrication of new equipment, correlation and analysis of data, software development, etc. or a combination of these.

Group Structure:

Working in supervisor/mentor monitored groups; the students plan, manage, and complete a task/project/activity which addresses the stated problem.

1. There should be team/group of 4 -5 students
2. A supervisor/mentor teacher assigned to individual groups

Selection of Project:

The project demo model for learning is recommended. The model begins with the identifying of a problem, often growing out of a question or "wondering". This formulated problem then stands as the starting point for learning. Students design and analyze the problem within an articulated interdisciplinary or subject frame or based on Rural/Social internship.

A problem can be theoretical, practical, social, technical, symbolic, cultural, and/or scientific and grows out of students' wondering within different disciplines and professional environments. A chosen problem has to be exemplary. The problem may involve an interdisciplinary approach in both the analysis and solving phases.

By exemplarity, a problem needs to refer back to a particular practical, scientific, social and/or technical domain. The problem should stand as one specific example or manifestation of more general learning outcomes related to knowledge and/or modes of inquiry.